

## NOTES ON THE DISTRIBUTION OF TAIWAN BEECH

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**Abstract:** The Taiwan Beech (*Fagus hayatae* Palib.) is only known from the mountains in Northern Taiwan. No collections have been made of this tree for many years and few botanists have ever seen a living tree. A large stand was accidentally discovered in May 1974 by a biology research team.

### INTRODUCTION

On May 22-23, 1974, a two-day ornithological field trip was made to the La La Shan area along the boundary of Taipei and Taoyuan counties. The principal objective of this trip was to look for Mikado and Swinhoe's Pheasants (*Syrnaticus mikado* and *Lophura swinhoii* respectively) and to obtain a general description of the habitat and terrain of the region as part of the Taiwan Pheasant Project<sup>(3)</sup> being conducted by the first author and his associates. While scouting for possible routes from La La Shan to Ch'a T'ien Shan, a relatively pure stand of Taiwan Beech (*Fagus hayatae* Palib.) was discovered on the eastern slope of La La Shan. Specimens were collected and deposited in the Herbarium of the Botany Department of National Taiwan University and of the Biology Department of Tunghai University. These specimens were the first of this species to be collected from La La Shan.

Taiwan Beech was first collected by N. Konishi in 1906 on Ch'a T'ien Shan (Hayata, 1908: 206) and considered by Hayata to be a variety of *Fagus sylvatica* Linn. M. J. Palibin named it as a new species in honor of Hayata and sent him the description for publication (Hayata, 1911: 286). It has since been collected in Ilan County on San Hsing Shan (T. S. Liu, 1960: 600, pl. 523) and in Taichung County on Anmashan (N. T. U. Herb.). Since it grows on rather inaccessible mountains, collections have seldom been made.

### LOCATION

This beech stand is located at the junction of two ridges below the peak of La La Shan: one running northward from La La Shan toward Ch'a T'ien Shan (forming the actual boundary line between Taipei and Taoyuan counties), the other running eastward from La La Shan toward Fu Shan village in Taipei county. The area can be reached by foot either from Fu Shan village to the east or from Upper Pa Lin village in Taoyuan county to the west by a trail connecting the two. On this occasion, the field team took the easier route from Upper Pa Lin (elev. about 1,200 m). The trail passes Fu Hsing No. 1. Tree (once claimed erroneously to have been the oldest living thing in the world) and crosses into Taipei County at the saddle between La La Shan and T'a Man Shan. From the saddle, the trail descends gradually along the southeastern flanks of La La Shan until it reaches the east-running ridge line. The field team made its way up the east ridge line toward the

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peak of La La Shan. There is no trail here. The ridge line is relatively gradual, but progress on foot is slow and difficult because of the dense ground cover and fallen debris.

#### HABITAT DESCRIPTION

The east ridge line of La La Shan between 1,600 and 1,900 m in elevation is virgin mixed forest, with hardwoods dominant in the understory and scattered cedars (*Chamaecyparis* sp.) protruding above them. Tree canopies are only partially overlapping. From visual estimations, the hardwoods range from 10-30 ft. in height, have a dbh of one foot or less, and are moderately dense in terms of stem count (two on a scale of three). The larger canopy trees range from 30-60 ft. in height, 1-3 ft. in dbh, and have a low density stem count (one on a scale of three). Ground cover of knee-high ferns and other broadleaf vegetation is dense. There is heavy leaf and branch litter, including rotting trunks.

The beech stand itself was purest and most extensive at the junction of the two ridge lines at an elevation of 1,900 m. Here, the stand is exposed to all directions except the southwest which is blocked by the ascending peak of La La Shan. The trees are 30-50 ft. in height and have a dbh ranging from 1-3 ft. At the time of observation, the trees were fruiting. Below 1,900 m, the beech trees become more scattered and eventually disappear. The field team did not climb higher than 1,900 m so the status of this species toward the peak of La La Shan is not known. Guides who climbed to the top of one tree on the ridge line reported seeing more beech trees at lower elevations on the ridge line running north.

#### DISCUSSION

Foresters and botanists commonly refer to Ch'a T'ien Shan as being the only mountain in Taiwan where this species can be found. Li (1963: 84) reported this species as being "localized around Taoyuan, in forests 1,300-1,800 m". Y.C. Liu (1972: 293) listed it from San Hsing Shan in Ilan County as well as from Ch'a T'ien Shan. Further search along the ridge lines north and south of La La Shan may bring to light further stands of this species. It is possible, too, that the currently disjunct appearance of the distribution may prove to be more or less continuous along the mountain range extending from the area of Ch'a T'ien Shan in the North to San Hsing Shan toward the southeast. The range is continuously higher than 1,500 m in elevation except where it is broken by the Lan Yang River valley which isolates San Hsing Shan.

It is known that the Black Bear in the United States is fond of eating beech nuts. In climbing up the east ridge line of La La Shan, the aborigine guides pointed out four trails that they said were made by the Asiatic Black Bear, *Selanarctos thibetanus formosanus* Swinhoe (Jones, Huang and Chang, 1969). The trails were 2-3 ft. wide. The ground cover vegetation was partially flattened, and the pale undersides of some of the ferns were turned upward. The guides said that there are many bears in "these mountains". The field team received more reports of bears from the La La Shan region than from any other mountainous region it has visited. Dr. Wang Chung-kuai (Department of Biology, Tunghai University) and Mr. Liu Tsing (Taiwan Forestry Research Institute) reported seeing bear claw marks on trunks of beech trees in 1972 on Ch'a T'ien Shan. It appears, therefore,

that bears may be attracted to this region by the availability of beech nuts and that their numbers may be higher here than anywhere else on the island.

#### REFERENCES

- Combined Services Forces, Rep. of China, 1973. Topographic map, 1: 50,000.
- Hayata, B., 1908. Flora Montana Formosae. Journ. Col. Sci. Imp. Univ. Tokyo **25**: 206.
- , 1911. Materials for a flora of Formosa. Journ. Col. Sci. Imp. Univ. Tokyo **30**: 296.
- Jones, G. S., F. L. Huang, & T. Y. Chang, 1969. A checklist and the vernacular names of Taiwan mammals (excluding Sirenia, Pinipedia and Cetacea): a review of the literature. Chinese J. of Microbiology **2**: 47-65.
- Li, H. L., 1963. Woody Flora of Taiwan. Livingston Pub. Co., Narberth, Pa.
- Liu, T. S., 1960. Illustrations of Native and Introduced Ligneous Plants of Taiwan. Col. Agric., N. T. U., Taipei, Taiwan, R. O. C.
- Liu, Y. C., 1972. Ligneous Plants of Taiwan. Col. Agric., Chung-Shing Univ., Taichung, Taiwan, R. O. C.