

# The Wild Orchids from the Ogasawara Islands

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## Sumiko KOBAYASHI\* : The Wild Orchids from the Ogasawara Islands

小林純子\* : 小笠原の野生ランについて

Fourteen species of wild orchids from the Ogasawara Islands, including the Iwoh Archipelago, have been described by NAKAI, KOIDZUMI, TUYAMA and SCHLECHTER. With two additional species (KOBAYASHI, 1980; 1983), 11 genera and 16 species have been confirmed, among which 14 species (leaving aside the *Calanthe triplicata* and *Goodyera procera*) have been identified as endemic. During the investigations of endemic species in the Ogasawara Islands following the retrocession of the Ogasawara Islands from the U.S.A. to Japan in 1968, I particularly concentrated on orchids, and endeavoured to throw some light on understanding their status and on confirming their endemism.

In recent years reports on the flora of Ryukyu, Taiwan, Java, Malaysia and other geographically related areas have been successively published. However comparative studies on all the species have not yet been sufficiently carried out. In this paper I wish to comment on Orchidaceae in the Ogasawara Islands from the view point of a comparative study: the present status, morphological characteristics (especially a labial form of the flower), their interrelations and distribution. I shall also consider phytogeographical relations, mainly concentrating on the species of the genus *Calanthe* and *Malaxis* which I have first reported (KOBAYASHI, 1980; 1983), and shall also indicate the necessity of their conservation.

### A Comparison of the Morphology and Ecology of Each Species, and Comparison with Related Species.

I shall give the name of the Orchidaceae found and 1) habitat, 2) life form, 3) present status in number and vigour, 4) distribution (in the Ogasawara Islands), 5) related endemic species, and 6) world distribution of widespread species.

#### 1. *Calanthe hattorii* SCHLECHTER (Fig. 1A-2a)

1) Shaded forest floors. 2) Terrestrial. 3) The number of plants has been severely depleted

through illegal collection. 4) Chichijima, Anijima. 5) It is possibly related to the *C. gracilis* group from the Ryukyu Islands, Taiwan, Malaysia, and Sikkim, though it is necessary to compare it with living samples of this group.

#### 2. *Calanthe hoshii* S. KOBAYASHI (Fig. 1A-1b)

1) Misty forest floors in the higher altitudes of the Island (ca. 400 m alt.). 2) Terrestrial. 3) It is evident that plants have suffered both from grazing by snails and from illegal collection. 4) Hahajima. 5) *C. okinawense* of southern Kyushu, the Ryukyu Islands, and southern Taiwan.

#### 3. *Calanthe triplicata* (WILLEM.) AMES (Fig. 1A-1a)

1) Floors of the misty *Cedar* or *Machilus* forests near the mountain tops. 2) Terrestrial. 3) It has been reconfirmed in the survey carried out by the Environment Agency in 1982. 4) Minami-Iwoh-jima. 5) —, 6) Southern Japan, Southeast Asia, Micronesia, South America, New Caledonia, and Australia.

#### 4. *Cirrhopetalum boninense* SCHLECHTER (Fig. 1A-3a)

1) Cliffs and tree trunks. 2) Epiphytic. 3) A reduction in numbers through typhoons and illegal collection. 4) Chichijima, Hahajima. 5) *C. uraiense* from Tanegashima, Yakushima, Amami-ohshima, the Ryukyu Islands, Taiwan, and Sri Lanka.

#### 5. *Corymborkis subdensa* (SCHLECHTER.) MASAMUNE (Fig. 1A-4a, 4b)

1) The forest floor of the evergreen forests. 2) Terrestrial. 3) The number of individual plants found in Chichijima Island has especially decreased, and the flowers do not blossom. 4) Chichijima, Hahajima. 5) *C. veratrifolia* from the Ryukyu Islands (Ishigaki, Iriomote), India, and Samoa.

#### 6. *Eulophia toyoshimae* NAKAI (Fig. 1A-5a)

1) Forest floors of shaded and misty forests. 2) Saprophytic. 3) Rare. 4) Chichijima, Anijima, Hahajima. 5) *E. gusukumai* from southern Kyushu, the Ryukyu Islands, Taiwan, and Malaysia.

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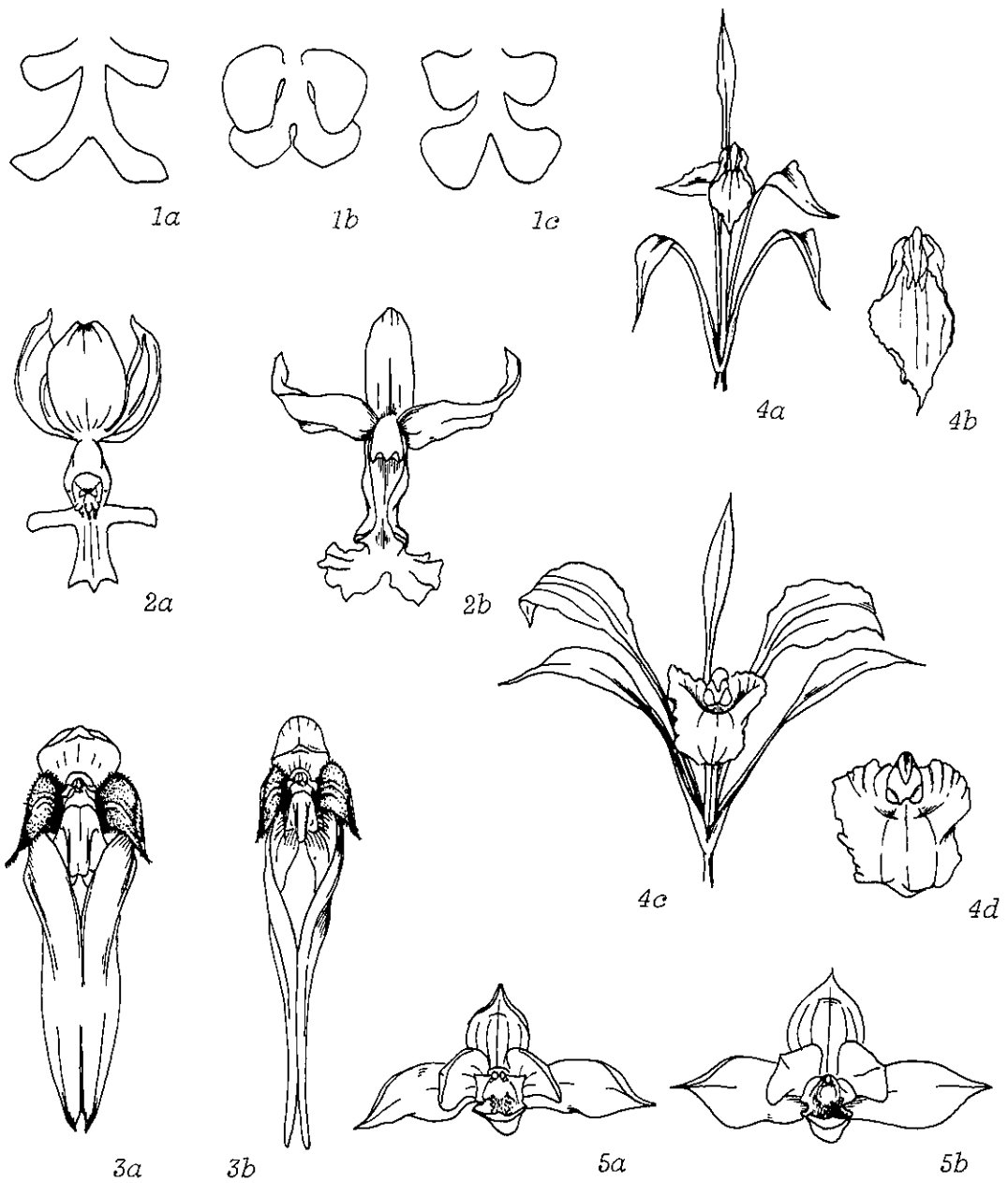


Fig. 1A. Comparison of the floral morphology of endemic species from the Ogasawara Islands and related species.

1. Lips of *Calanthe*; 1a. *Calanthe triplicata*, 1b. *C. hoshii*, 1c. *C. okinawense*. 2a. *Calanthe hattoii*, 2b. *C. gracilis*. 3a. *Cirrhopetalum boninense*, 3b. *C. uraiense*. 4a. *Corymborkis subdensa*, 4b. A lip *C. subdensa*, 4c. *C. veratrifolia*, 4d. A lip *C. veratrifolia*. 5a. *Eulophia toyoshimae*, 5b. *E. gusukumai*.

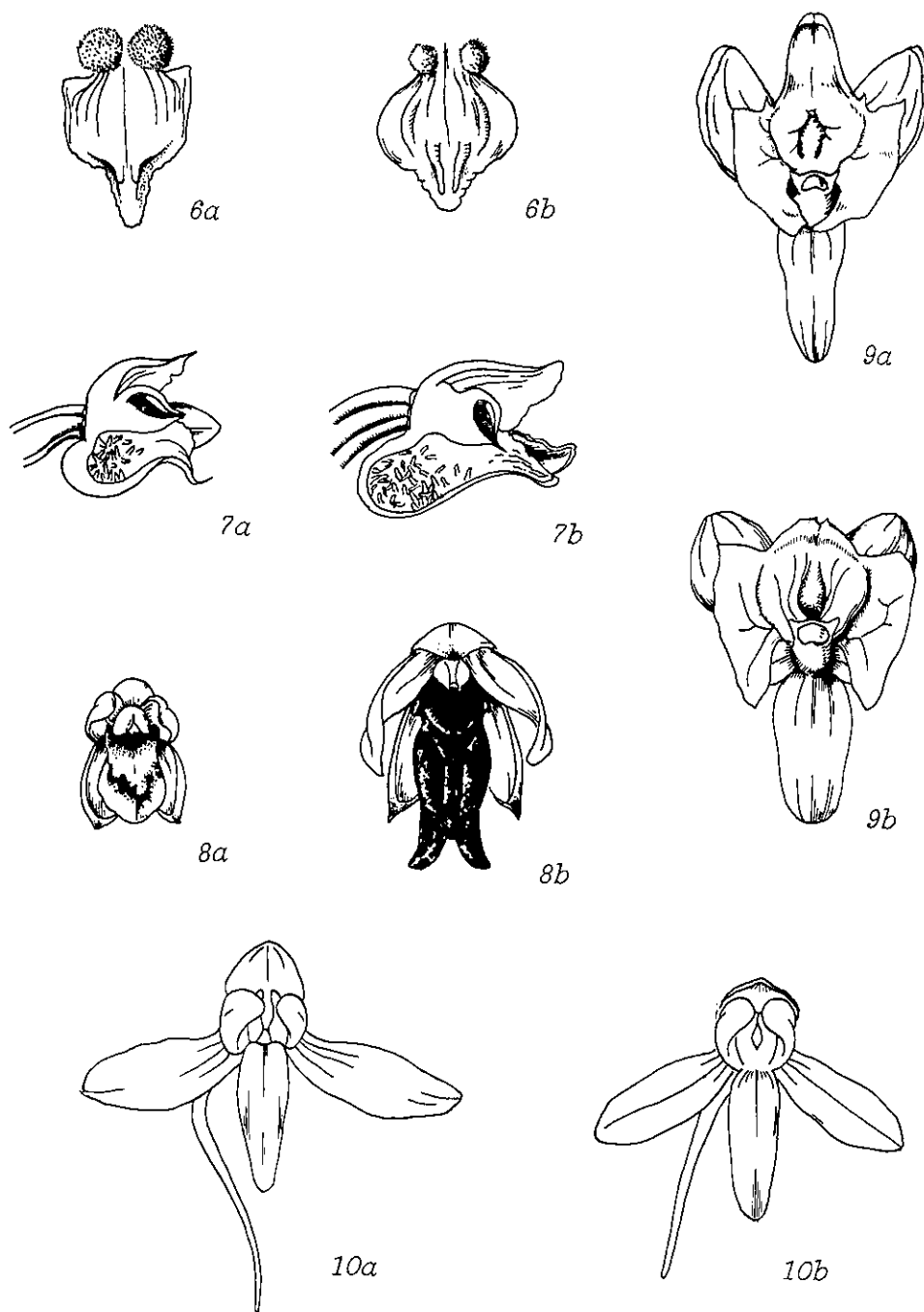


Fig. 1B. Comparison of the floral morphology of endemic species from the Ogasawara Islands and related species.

6. Lips of *Gastrodia*: 6a. *G. boninensis*, 6b. *G. nipponica*.

7. Vertical sections of *Goodyera*: 7a. *G. boninensis*, 7b. *G. hachijoensis*.

8a. *Lusia boninensis*, 8b. *L. terer*. 9a. *Malaxis boninensis*, 9b. *M. kahajimaneis*. 10a. *Platanthera boninensis*, 10b. *P. tipuloides*.

7. *Gastrodia boninensis* TUYUMA (Fig. 1B-6a)

1) Half shaded forest floors or paths. 2) Saprophytic. 3) Rare. 4) Chichijima, Hahajima. 5) It outwardly resembles *G. confusa* (from mainland Japan to the Great Sunda Archipelago) and the shape of its labial petals is like that of *G. nipponica* (Honshu, Shikoku, Kyushu and the Ryukyu Islands).

8. *Goodyera augustinii* TUYAMA

1) Floors of *Machilus kobu* forests near mountain top, where the ground is covered with rotten leaves. 2) Terrestrial. 3) Its existence was reconfirmed in a survey carried out by the Environment Agency in 1982. 4) Minami-Iwoh-jima. 5) *G. foliosa* var. *commelinoides* from southern Kyushu, the Ryukyu Islands, Taiwan, and the Himalayas.

9. *Goodyera boninensis* NAKAI (Fig. 1B-7a)

1) Shaded floors of evergreen forests. 2) Terrestrial. 3) A large number of individual plants found are vigorous. 4) Chichijima, Hahajima. 5) *C. hachijoensis* from the Izu Islands.

10. *Goodyera procera* HOOK. f.

1) *Machilus kobu* forest floors near the mountain peak. 2) Terrestrial. 3) Abundant in Minami-Iwoh-jima, but in Chichijima, the plants have not been found since the retrocession of the Islands in 1968. 4) Minami-Iwoh-jima. 5) —. 6) Southern parts of Japan, the Ryukyu Islands, Taiwan, India, and Malaysia.

11. *Liparis hostaefolia* TUYAMA

1) Floors of *Machilus kobu* forests near the mountain peak. 2) Terrestrial. 3) Found in neither Chichijima nor Hahajima since the retrocession of the Island. It was reconfirmed on Minami-Iwoh-jima in a survey conducted in 1982. 4) Minami-Iwoh-jima. 5) *L. makinoana* from Japan, Amuhl, and northeastern Asia.

12. *Luisia boninensis* SCHLECHTER (Fig. 1B-8a)

1) Trunks of trees. 2) Epiphytic. 3) Disappearance due to typhoon and development of this region. 4) Keetaajima, Chichijima, Anijima, Otohojima, Hahajima. 5) *L. terer* from southern Japan, Amamiyoshima, and Taiwan.

13. *Malaxis boninensis* (KOIDZ.) SATOMI (Fig. 1B-9a)

1) On boulders by the river banks. 2) Terrestrial. 3) ? Eradicated (through illegal collection of the plants). 4) Chichijima, Kita-Iwoh-jima. 5) *M. biloba* from the Himalayas, China, Sumatra, and Java.

14. *Malaxis hahajimensis* S. KOBAYASHI (Fig. 1B-9b)

1) Misty forest floors of the upper part of the mountain (350-400 m alt.). 2) Terrestrial. 3) Depletion through grazing by snails. 4) Hahajima. 5) *M. biloba* from the Himalayas, China, Sumatra, and Java.

15. *Platanthera boninensis* KOIDZ. (Fig. 1B-10a)

1) Shaded forest floors and sunny grassy areas. 2) Terrestrial. 3) A number of individual plants have been found. 4) Chichijima, Anijima, Otohojima, Hahajima, Mukohjima. Since the retrocession of the Islands, confirmed in Hahajima, too. 5) *P. tipuloides* from Japan (Hokkaido-Shikoku), the Kuriles, Siberia, and Kamchatka.

16. *Zeuxine boninensis* TUYAMA

1) Dark forest floors of the mountain top. 2) Terrestrial. 3) Has not been confirmed since the retrocession of the Island. 4) Hahajima (Mt. Sekimon). 5) *Z. leucochila* from Yakushima, the Ryukyu Islands, Taiwan, Philippines, Indo-China, and Thailand.

The above species can be classified into three types based on their life forms; (E) Epiphytic, 2 spp., (S) Saprophytic, 2 spp., (T) Terrestrial, 12 spp.

On the basis of the above mentioned data, chiefly morphological characteristics, 14 species are endemic and two species are widespread, though I have not yet identified in my survey *Liparis hostaefolia*, *Zeuxine boninensis* and *Goodyera augustinii* (only documentary information).

The remarkably high endemic ratio\* (87.5%; 14/16) of the orchids from the Ogasawara Islands was reconfirmed in this study.

### On the Phytogeographical Characteristics of the Wild Orchids Occurring in the Ogasawara Islands. (Table 1)

From the range of distribution of the endemic species in relation to the related species, the pattern can be divided into two types.

Type I, The Equatorial Type: Most of the

\*In this case the endemic ratio of the orchids of the Ogasawara Islands is defined by (the number of endemic taxa/the number of total taxa).

Table 1. Classification, life-form, distribution and related species of the orchids of the Ogasawara Islands.

TRIBE	GENUS	SPECIES	LIFE-FORM*	DISTRIBUTION	RELATED SPECIES	DISTRIBUTION	DISTRIBUTION PATTERN
ORCHIDEAE	Platanthera	<i>P. boninensis</i>	T	Ogasawara : Chichijima, Anjima, Ootojima, Hahajima, Mukohijima.	<i>P. tipuloides</i>	Hokkaido-Shikoku ; Chishima, Siberia, Kamchatka.	(Polar)
NEOTTIEAE	Gastrodia	<i>G. boninensis</i>	S	Ogasawara : Chichijima, Hahajima.	<i>G. confusa</i> <i>G. nipponica</i>	Honshu, Shikoku, Kyushu. Grt. Sunda. Honshu, Shikoku, Kyushu.	(Equatorial)
	Corymborkis	<i>C. subdensa</i>	T	Ogasawara : Chichijima, Hahajima.	<i>C. veratrifolia</i>	Ishigaki, Iriomote, India, Samoa.	(Equatorial)
	Goodyera	<i>G. angustini</i>	T	Iwojima : Southern Iwojima.	<i>G. foliosa</i> var. <i>commelinoides</i>	Southern Kyushu, the Ryukyu Islands, Taiwan, the Himalayas.	(Equatorial)
		<i>G. boninensis</i>	T	Ogasawara : Chichijima, Hahajima.	<i>G. hachijoensis</i> var. <i>yakushimensis</i>	Izushichitoh. Yakushima.	(Equatorial)
		<i>G. procera</i>	T	Ogasawara : (Chichijima), Iwojima : Southern Iwojima, Northern Iwojima.		the Ryukyu Islands, south of Amamioshima, Southern Kyushu-Ryukyu, Taiwan, southern China, Malaysia.	(Equatorial)
	Zeuxine	<i>Z. boninensis</i>	T	Ogasawara : Hahajima.	<i>Z. leucochila</i>	Yakushima, the Ryukyu Islands, Taiwan, Philippines, Indo-China, Thailand.	(Equatorial)
EPIDENDREAE	Calanthe	<i>C. hattorii</i> <i>C. hoshii</i>	T T	Ogasawara : Chichijima, Anjima Ogasawara : Hahajima.	<i>C. gracilis</i> <i>C. okinawense</i>	Southern Kyushu, Malaysia, Sikkim. Southern Kyushu, the Ryukyu Islands, southern Taiwan.	(Equatorial) (Equatorial)
		<i>C. triplicata</i>	T	Iwojima : Southern Iwojima.		Southern Kyushu-Ryukyu, Taiwan, Malaysia, New Caledonia, Australia.	(Equatorial)
	Cirrhopetalum	<i>C. boninense</i>	E	Ogasawara : Chichijima, Hahajima.	<i>C. uraiense</i>	Tanegashima, Yakushima, Amamioshima, the Ryukyu Islands, Taiwan, Sri Lanka.	(Equatorial)
	Eulophia	<i>E. toyoshimae</i>	S	Ogasawara : Chichijima, Anjima, Hahajima.	<i>E. gusukumai</i>	Southern Kyushu, the Ryukyu Islands, Taiwan, Malaysia.	(Equatorial)
	Liparis	<i>L. hostaeifolia</i>	T	Ogasawara : (Chichijima, Hahajima), Iwojima : (Northern Iwojima).	<i>L. makinona</i>	Japan, Korea, Amulh, Northeastern Asia.	(Polar)
	Malaxis	<i>M. boninensis</i>	T	Ogasawara : Chichijima, Iwojima : (Northern Iwojima).	<i>M. biloba</i>	The Himalayas, China, Sumatra, Java.	(Equatorial)
		<i>M. hahajimensis</i>	T	Ogasawara : Hahajima.	<i>M. biloba</i>	The Himalayas, China, Sumatra, Java.	(Equatorial)
SARCANTEAE	Luisia	<i>L. boninensis</i>	E	Ogasawara : Mukojima, Chichijima, Anjima, Ootojima, Hahajima.	<i>L. teres</i>	Southern Kyushu, Amamioshima, Taiwan.	(Equatorial)

\* T : Terrestrial, S : Saprophytic, E : Epiphytic.

Brackets denote plants which are present only in records.

endemic species (12 spp.) are classified into this group. These species are distributed from south-eastern to southern Asia, sometimes further to Micronesia and to Australia. (species nos. 1-10, 12-14, 16).

Type II, The Polar Type: The rest, two species (species nos. 11 and 15), belong to this group. Their distribution ranges from the Temperate zone of the Northern Hemisphere to the frozen regions extending to Siberia and Amuhl.

The wild orchids of the world are characterized by the differences from genus to genus in geographical distribution range. To make this relationship more clear, orchids of two sub-families and six genera (according to MAEKAWA, 1971) described in several recent studies from the representative areas of Europe, North America, Java, and Japan are presented in Table 2, including my results from the Ryukyu Islands and the Ogasawara Islands. (Table 2)

As is clearly shown in Table 2, for example, the generic composition in Europe differs from Java: in Europe a large number of the genera belong to *Orchidoideae*, whereas in Java, the *Epidendroideae* and the *Sarcantheae* are particularly numerous, with the *Neottioideae* the next most numerous. In North America and Japan the *Neottioideae* and the *Epidendroideae* are primarily abundant, with the

*Orchidoideae* and the *Sarcantheae* next in abundance. The trend in abundance among tribes is the same as in the Ryukyu and the Ogasawara Islands. From these features two fundamental patterns are recognizable in Japan including the Ryukyu and the Ogasawara Islands; the 'Equatorial type', with species derived from southeast Asia and genera from southwest Asia, and the 'Polar type', representative of the European pattern. Consequently, within the same latitude, the number of orchid species is greater than in America and Europe.

Referring to the distribution of orchids in Japan, MAEKAWA (1971) stated that, this phenomenon is not merely a topographical and climatic one, but graphically describes the fact that their relative palaeogeographic position was a good one for the introduction of young species for the north. In order to characterize the affinities of the orchids of the Ogasawara Islands, isolated in the Pacific Ocean, more detailed investigations are required, especially into their geohistory and seed dispersal.

Next, concerning a possible pattern in speciations within the Ogasawara Islands, I make reference to Lloyd (1982), using as an example a species I have identified as a new species. On the Ogasawara Islands, three species of *Calanthe* have been known: *C. hattorii* of Chichijima and

Table 2. A comparison of the number of genera belonging to different tribes of orchids distributed in different region.

Latitude	Sub-family	Cypripedioideae	Orchidoideae				Total	References
	Tribe Region		Cypripedioideae	Orchidoideae	Neottioideae	Epidendroideae		
34-73°N	Europe	1( 3)	20(108)	9( 24)	5( 5)	0( 0)	35(140)	Moore, D.M. (1980)
18-83°N	North America	1(14)	5( 60)	17( 56)	21( 60)	3( 3)	57(193)	Luer, C.A. (1972, '75)
20-46°N	Japan	1( 5)	10( 47)	27( 77)	23( 82)	11( 15)	72(226)	Satomi, N. (1982)
24-27°N	Ryukyu	—	4( 12)	22( 44)	16( 40)	9( 9)	51(105)	Garay, L.A. & Sweet, S.H.R. (1974)
20-27°N	Ogasawara	—	1( 1)	4( 6)	5( 8)	1( 1)	11( 16)	in this paper
5- 8°S	Java	( 3)	5( 30)	36(109)	41(436)	33(133)	116(711)	Backer, C.A. & Bakuizen, R.C. (1968)

Figures in brackets represent no. of species.

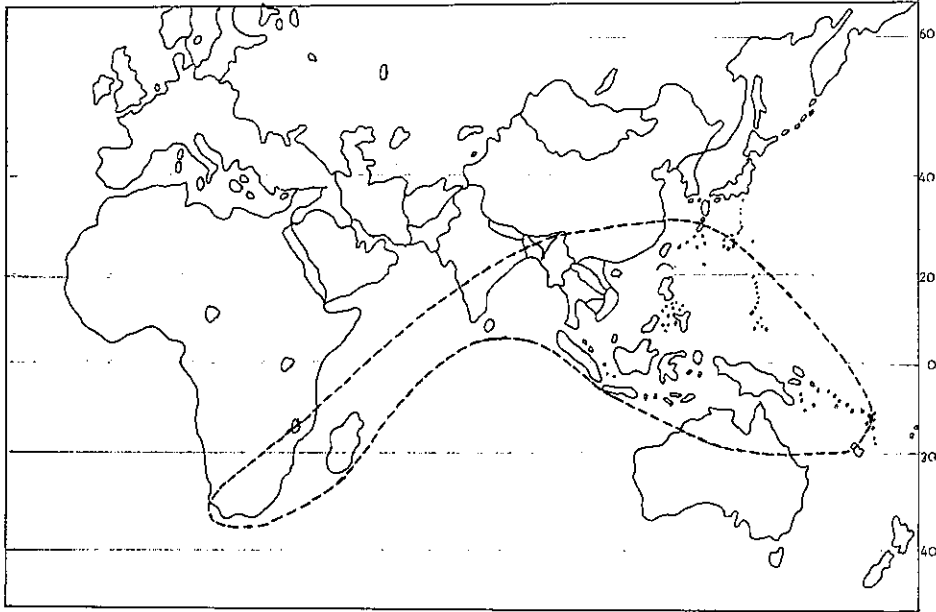


Fig. 2. Distribution range of the *Calanthe triplicata* group.

Anijima (native), *C. hoshii* of Hahajima (native), and the *C. triplicata* of southern Iwoh Island. The genus *Calanthe* is the most widely distributed among the *Epidendreae*, and the *C. triplicata* species group is one of the most widespread. They have morphologically the following common characteristics (Fig. 2).

- a) Inflorescence: Numerous flowers grow luxuriantly at the end of the scape.
- b) The blossoms are white with long spurs, and the lips have four lobes.
- c) The scape emergence is from the middle section of the bulb.
- d) The leaves are wide (9-14 cm) and robust, with prominent lateral veins, containing a broad petiole.

In the Ogasawara Islands the distribution of *C. triplicata* is restricted to the vicinity of the mountain peak of the southern Iwoh Island of the Iwoh Archipelago, whose origin due to volcanic activity is thought to be more geologically recent than the Ogasawara Islands. *Calanthe hoshii* belongs to the *C. triplicata* group, but the labial lobes are wider than those of *C. triplicata*, being rather more similar to *C. okinawensis* from the Ryukyu Islands (Fig. 1A-1a, 1b, 1c).

With regard to the nature of its pollinium and the relative position of its gynosternium, *Calanthe*

*hattorii* is closely related to the *C. triplicata* group. Yet, there is nothing in common morphological characteristics, existing among the *C. triplicata* and *C. hoshii*. The shape of its inflorescence (spike), the colour of its flower (a light yellow), the structure (having hardly any spur on its five perianth lobes which curl back on themselves, and lips which make a cross-shaped floral pattern), etc., suggest that *C. hattorii* is not belongs to the *C. triplicata* group in genus *Calanthe*, and rather closely related to *C. gracilis* or its species group from the southwest islands, Malaysia, and Sikkim. Its origin is still unknown due to a lack of related material, but it can be regarded as an endemic species which developed separately from a native Ogasawara species (Fig. 1A-2a, 2b).

The three species belonging to the genus *Calanthe*, possibly derived from ancestors, as suggested above, were introduced independently and at different times to the three islands, Chichijima, Hahajima, and Minami-Iwohijima. Then the three independently introduced species gave rise to the two endemic species, on Chichijima (*C. hattorii*) and on Hahajima (*C. hoshii*) during the long geological period.

The genus *Malaxis*, represented here by two species, seems to have differentiated through a slightly different process from the *Calanthe*

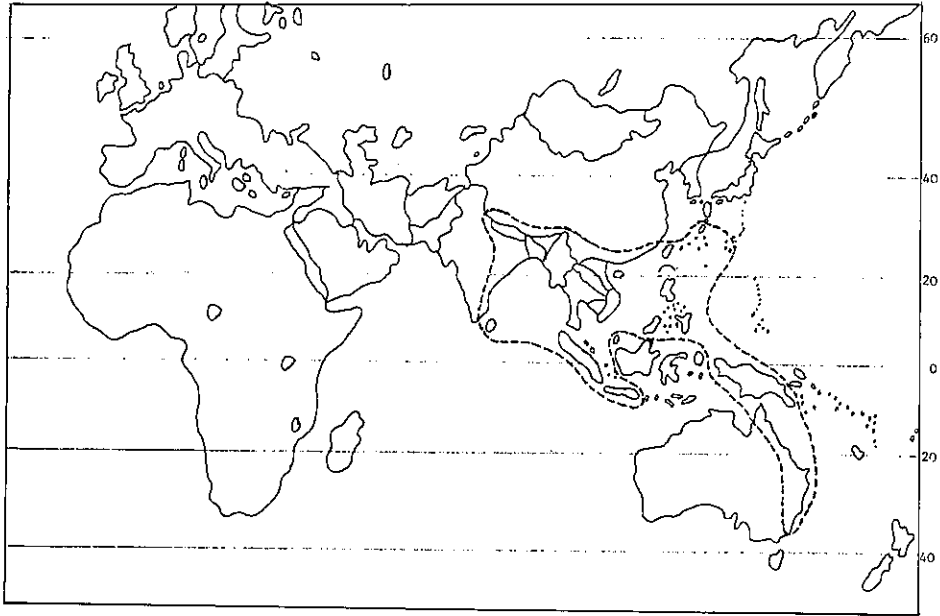


Fig. 3. Distribution range of the *Malaxis biloba* group.

indicated above. At first, *M. boninensis* alone was described on Chichijima Island in 1918, but it could not be found following the retrocession of the Ogasawara Islands from the U.S.A. in 1968. Therefore it may be considered to have completely disappeared.

In 1978, roots thought to be from *M. boninensis* were found in Hahajima Island and attempts were made to get them to flower. However the cultivated plants were different from the originally reported. *M. boninensis* both in their morphological characteristics and in chromosome number. Later living plant was found from Chichijima Island that I identified as *Malaxis boninensis* and another from Hahajima as a new species *M. hahajimensis* (KOBAYASHI, 1980). In this case the same ancestor was distributed on several islands and separately differentiated under different environments of the respective islands (Fig. 3).

As an additional example, three species of the genus *Goodyera* from the Ogasawara Islands have been reported. *Goodyera boninensis* is an endemic species, widely distributed in Chichijima and Hahajima, and is uniform in morphological features and lacks noticeably progressive seed differentiation. However, according to morphological chromosomal and distributional data, *G.*

*hachijoensis* and var. *yakushimensis*, thought to be the ancestors of *G. boninensis*, used the islands of the Pacific Ocean as a stage, and these data can be taken as a good indication that a great deal of internal species differentiation is occurring (MAEKAWA, 1971) (Fig. 4).

It can be considered that the propagative isolation of the orchids endemic to the Ogasawara Islands mainly results from the following two points.

1. The seeds of the Orchidaceae are extremely small, and are suited to long distance propagation. Moreover, they are non-albuminous, so they scarcely ever germinate by chance.
2. They have a long distributional history, and they also have a long period of geographical isolation.

The orchids of Ogasawara Islands are now draining away because nowadays the orchids must not only maintain their delicate life cycle under severe natural conditions, but also suffer from the ravages of grazing by snails, plus further extreme depletion in number due to illegal collection by orchid enthusiasts. Such severe conditions will result in disappearance of these orchids in the near future. The natural environment of the Ogasawara Islands and all the individuals which live there, are not just valuable

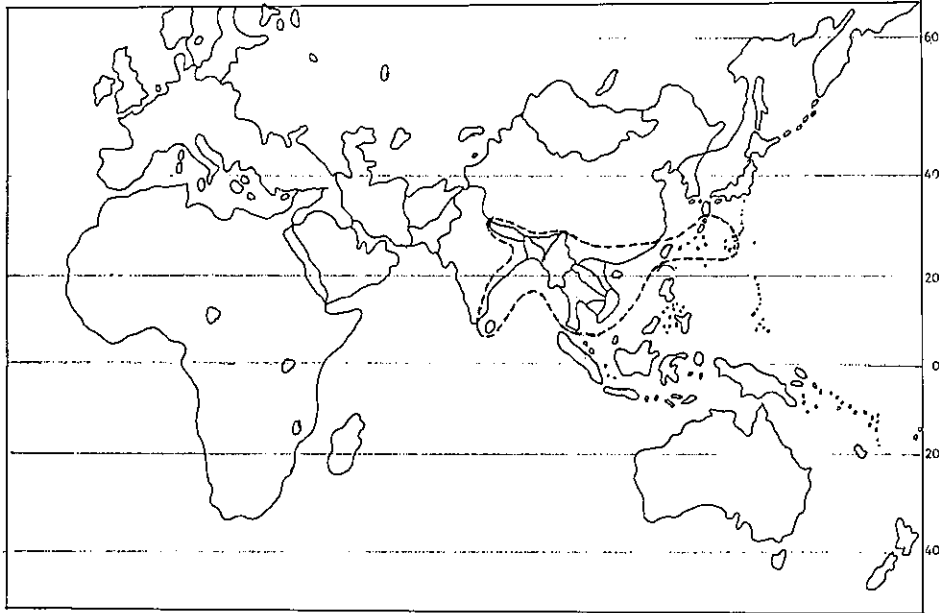


Fig. 4. Distribution range of the species related to *Goodyera* from the Ogasawara Islands.

assets which relate the living history of the past, but are a 'common heritage for the world' whose responsibility has been entrusted to us. We must protect this heritage, while further scientific studies should be continued in detail.

Taxonomic study of each species of orchids from Ogasawara Island will be discussed in a separate paper.

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## 摘 要

硫黄列島を含めた小笠原諸島からは、中井、小泉、津山、Schlechterらにより1968年の返還以前に14種のラン科植物が報告されている。その後(1980, 1983)筆者の記載した種を加えて11属16種が確認されており、その中、硫黄列島産の広分布種2種(ツルランとキンギンソウ)を除いた14種までが固有種とされている。返還後同島の陸上植物の調査を担当した私は、特にラン科植物の現況と固有性を明かにしようとした。全種に関しての比較検討はまだ十分でないが、今までの調査をもとに、最近相ついで出版された沖縄、台湾、ジャワ、マレーシアなどのフロラやランに関する文献を参考に、小笠原ラン科植物の現況と形態的特徴、近縁種と思われる種との関連性や分布について述べ、小笠原産ラン科植物の固有率の高さを再確認した。又、私が新種として記載した2種を中心に、植物地理学的考察を試み、その現況と保護の必要性にも触れた。各種の分類学的取扱は別校に譲る。(Received September 20, 1987)

○ 里見信生・小牧旌 石川県樹木誌図譜 石川県林業試験場 発行(購入申し込み先:〒921 金沢市増泉4丁目10-35 石川県山林協会 TEL.(0762)42-7221, 頒価7,000円, 送料500円), 26.2cm×19.6cm, 48+430(図版)+53ページ。

先に著者の一人、里見信生教授によって執筆編集された石川県樹木誌(1977)と一体となすもので、その図譜である。石川県樹木誌には、標本で確認された391種が記載されているが、本書では新たに採集されたものを追加した430種の図(1頁に1種類)が掲載されている。なお、巻末に新産地、誤記の訂正、追加の種類の目録があり、石川県樹木誌をこの点でも補完するものとなっている。

「序」にある通り、図はおもに小牧旌氏の労作がもとになっているが、里見教授により詳細な追加図、解剖図が加えられ、充実した図譜になっている。図の殆どは石川県産の材料によっているので、この地方の種類の特徴がよくでており、今後この地方の植物を研究する上で不可欠な参考文献となるであろう。また、石川県および北陸地方の樹木の殆どは容易に同定できることになったので、研究者・専門家のみならず、教師、植物愛好者など広範な人々に歓迎されるであろう。

残念なのは、予算の関係があつて準備された写真と図の記載文が割愛されたことである。草本と異なり、樹木の全体像や樹皮の特徴は図に描くことが難しく、写真は図を補う重要な手段である。また、図は植物画の手法により典型を描くわけであるから、植物で特に著しい変異の幅を始め図化できないことが少なくなく、記載文なしでは、著者として極めて心残りであられるであろうと拝察する。もっとも、記載文については他の成書を参考にすることもできるが、やはり、この地方の種類について行き届いた記述はできないわけで、いつの日にか折角の原稿が生かされるよう祈念してやまない。とはいえ、財政難のなかで林業試験場はじめ関係者の努力で、この貴重な図譜が世にだされたのであるから、著者の先生がたと併せて行政関係者各位に敬意を表するものである。ぜひ、貴重な本書を会員並びに読者の手元に置かれるよう、御薦めする次第である。なお、少数の部数は里見信生先生のところ(〒921 金沢市久安4-359)にも準備されている由であるので、こちらに申し込まれてもよい。

(古池 博)