
Report

Flora of the lucidophyllous forest in Japan

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Abstract

The lucidophyllous forest in Japan is a climatic climax in the warm-temperate and subtropical zones from the Ryukyus to the southern part of the Tohoku district. The lucidophyllous forest itself and its component species are in a critical condition. Floristic investigation of the lucidophyllous forest throughout Japan was conducted. This investigation resulted in a list of the lucidophyllous forest flora in each prefecture which contains scientific name, Japanese name, life form and RDB categories. The flora of the lucidophyllous forest throughout Japan consists of 1,008 species (incl. subspecies and varieties). About 30 percent of the total number of component species are endangered.

Key words: endangered species, flora, life form, lucidophyllous forest, RDB

Introduction

The warm-temperate and subtropical zones were covered by lucidophyllous forest which was called laurel forest, oak-laurel forest, evergreen broad leaf forest, subtropical rain forest, temperate rain forest or laurisilvae (Hattori, 1985). Today, most of these zones are covered with substitute vegetation due to human activities. The lucidophyllous natural forests remain only as fragmented forests mainly in sanctuaries around shrines, secluded mountainous districts and isolated islands.

Not only the lucidophyllous fragmented forests but also the component species of the lucidophyllous forest are in a critical condition due to the influence of various human activities. A list of lucidophyllous forest flora using the Red Data Book (RDB) categories of Kyushu and northward was reported (Hattori and Minamiyama, 2001). However, the flora of the lucidophyllous forest throughout the whole of Japan

has not been compiled. In this paper, we present a list of component species of the lucidophyllous forest in Japan using the RDB categories.

Methods

Definition of component species of lucidophyllous forest

The component species of the lucidophyllous forest are defined by the following criteria according to Hattori and Minamiyama (2001): (1) lucidophyllous (evergreen broad leaf) trees, shrubs and climbers which compose lucidophyllous forest structure (Most of these plants are recognized as being characteristic or differential species of the phytosociological vegetation units belonging to the class, *Camellietea japonicae*) (e.g. *Camellia japonica*, *Aucuba japonica*, *Castanopsis cuspidata*, *Persea thunbergii*, *Quercus acuta*, *Quercus gilva*, *Quercus salicina*, *Podocarpus macrophyllus* and *Distylium racemosum*); (2)

characteristic or differential herbaceous species of those vegetation units (e.g. *Arachniodes aristata*, *Liriope platyphylla* and *Dryopteris erythrosora*); (3) rare species whose occurrence are mostly limited to the mature phase of the lucidophyllous forest (These species are not designated as characteristic or differential species of those vegetation units owing to their rare occurrence) (e.g. *Sciaphila japonica*, *Burmannia itoana*, *Cymbidium nipponicum* and *Balanophora japonica*); (4) widely distributed species whose original habitats are considered to be on the lucidophyllous forest floor (e.g. *Calanthe discolor*, *Cymbidium goeringii*, *Goodyera schlechtendaliana* and *Heterotropa takaoui*); (5) epiphitic rare species growing well on large lucidophyllous trees in the lucidophyllous forest (Epiphitic common species like *Lepisorus thunbergianus* and *Lemmaphyllum microphyllum* are recognized as being characteristic or differential species of those vegetation units) (e.g. *Neofinetia falcata*, *Dendrobium moniliforme* and *Bulbophyllum drymoglossum*).

The intolerant and pioneer plants occurring concentrically in the gap phase of the lucidophyllous forest are excluded from those component species.

Selection of the component species

For the selection of the component species, many phytosociological papers (Yamanaka, 1979; Miyawaki ed., 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1989; Miyawaki et al., eds., 1994; Hattori and Nakanishi, 1983; Hattori, 1985; Suzuki and Suzuki, 1973; Itow and Nakanishi, 1994) and the illustrated book of Japanese flora (e.g. Satake et al., eds., 1981, 1982a, 1982b, 1989a, 1989b; Iwatsuki ed., 1992) were referred to.

Prefectural distribution of the component species

Distribution of the component species of the lucidophyllous forest in each undermentioned prefecture was checked by consulting the available lists of local flora (Hatsushima, 1975; Shimabukuro, 1997; Hattori and Minamiyama, 2001), distribution maps (Kurata and Nakaike eds., 1979, 1981, 1983, 1985, 1987, 1990; Horikawa, 1972, 1976) and phytosociological papers (Yamanaka, 1979; Miyawaki ed., 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1989; Miyawaki et al., eds., 1994; Hattori and Nakanishi, 1983; Hattori, 1985). From Okinawa to Akita and Iwate, 33 prefectures, which were important districts in regard to the distribution of the lucidophyllous

forest, were selected for the compilation. These prefectures are shown in Figure 1.

Classification by life form and taxonomical group

The component species were classified into 11 categories (tree (above 15m height), semi-large tree (15–6m), small tree (below 6m), evergreen climber, summergreen climber, perennial evergreen herb, perennial deciduous herb, annual plant, epiphyte, saprophyte and parasite) by life form and into 6 categories (fern, orchid, palm, gymnosperm, Heterotropa and others) by taxonomical division (Hattori and Minamiyama, 2001). By the combination of those life forms and taxonomical division, 24 categories were recognized. These categories are shown in Appendix 1.

RDB categories

In 2000, the Environment Agency published “Threatened Wildlife of Japan—Red Data Book 2nd ed.—vol. 8”. Following Environment Agency (ed.) (2000), 33 prefectures (Figure 1) have published the Red Data Books (Hiroshima Pref. ed., 1995; Red Data Res. Gr. Kanagawa ed., 1995; Okinawa Pref. ed., 1996; Shimane Pref. ed., 1997; Comm. Inv. Rare Wildlife Kumamoto Pref. ed., 1998; Tokyo Pref. ed., 1998; Saitama Pref. ed., 1998; Kochi Pref. ed., 1999; Chiba Pref. ed., 1999; Comm. Conserv. Rare Wildlife Ibaraki Pref. ed., 1999; Ishikawa Pref. ed., 1999; Comm. Red Data Book Miyazaki, 2000; Osaka Pref. ed., 2000; Fukuoka Pref. ed., 2001; Comm. Sci. Inv. Nat. Env. Oita Pref. ed., 2001; Aichi Pref. ed., 2001; Comm. Inv. Red Data Wildlife Tokushima Pref., 2001; Iwate Pref. ed., 2001; Mie Pref. Mus., 2001; Miyagi Pref. ed., 2001; Niigata Pref. ed., 2001; Wakayama Pref. ed., 2001; Nagano Pref. ed., 2002; Akita Pref. ed., 2002; Kyoto Pref. ed., 2002; Tottori Pref. ed., 2002; Toyama Pref. ed., 2002; Comm. Inv. Precious Wildlife Ehime Pref. ed., 2003; Hyogo Pref. ed., 2003; Kagoshima Pref. ed., 2003; Okayama Pref. ed., 2003; Shizuoka Pref. ed., 2003; Yamaguchi Pref. ed., 2003). In Environment Agency (ed.) (2000), species were classified into 7 categories (EX: extinct, EW: extinct in the wild, CR: critically endangered, EN: endangered, VU: vulnerable, NT: near threatened, DD: data deficient). In the prefectural Red Data Books, categories are not standardized. Accordingly, in this paper categories were arranged mainly by the criteria of Environment Agency (ed.) (2000). Categories used herein are EX (extinct), DD (data deficient), A (critically endangered), B (endangered or endangered next to A), C (vulnerable

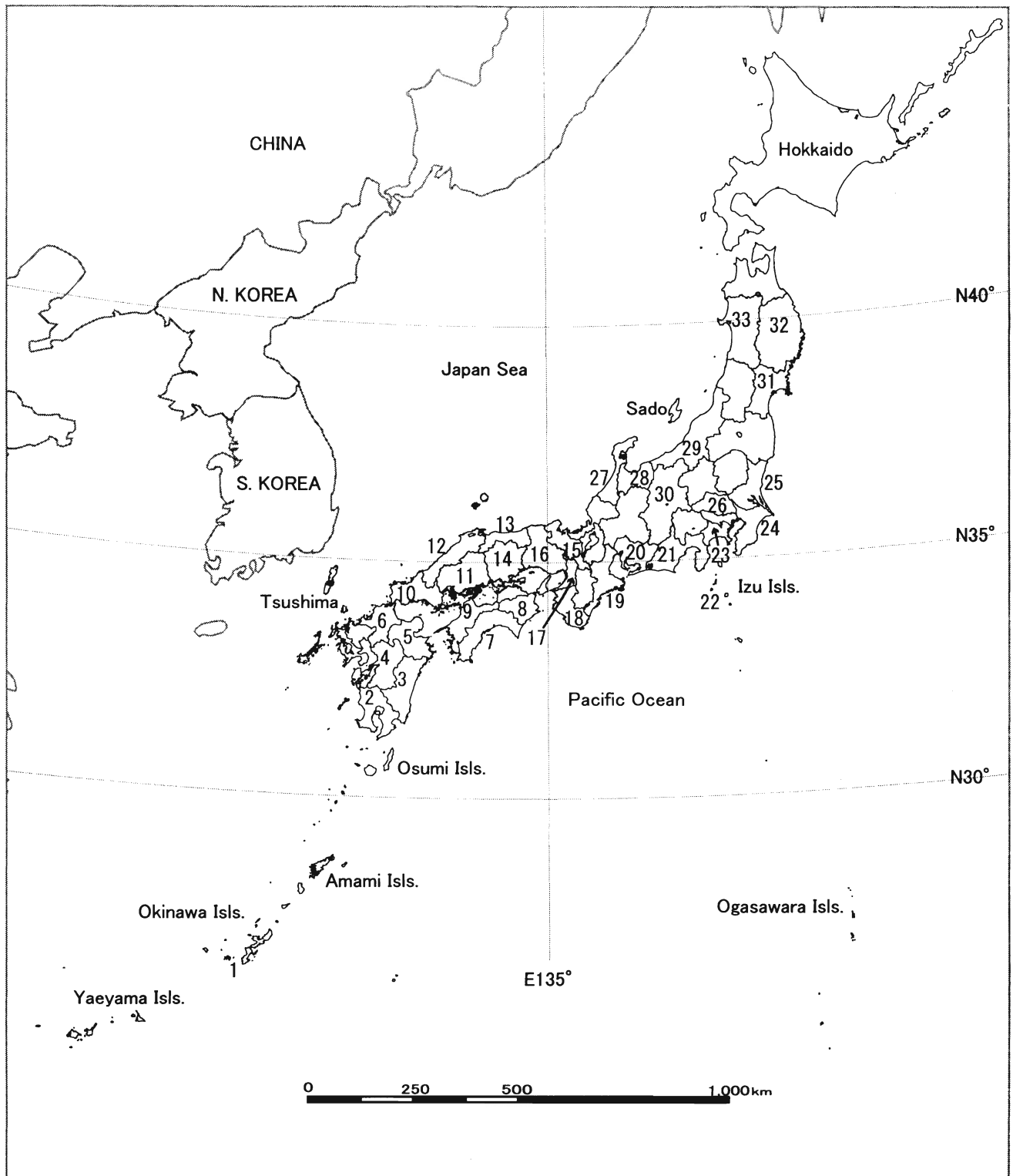


Figure 1. Location of 33 prefectures investigated.

Numerals on the map correspond to the numbers in Appendix 1.

Locality (Prefecture), 1: Okinawa, 2: Kagoshima (except for Yakushima, Tanegashima, Amamioshima and Tokunoshima), 3: Miyazaki, 4: Kumamoto, 5: Oita, 6: Fukuoka, 7: Kochi, 8: Tokushima, 9: Ehime, 10: Yamaguchi, 11: Hiroshima, 12: Shimane, 13: Tottori, 14: Okayama, 15: Kyoto, 16: Hyogo, 17: Osaka, 18: Wakayama, 19: Mie, 20: Aichi, 21: Shizuoka, 22: Tokyo (Izu Island), 23: Kanagawa, 24: Chiba, 25: Ibaraki, 26: Saitama, 27: Ishikawa, 28: Toyama, 29: Niigata, 30: Nagano, 31: Miyagi, 32: Iwate, 33: Akita.

or endangered next to B), D (near threatened or endangered next to C) and + (commonly present).

Scientific name

Scientific names were based on Satake et al. (eds.) (1981, 1982a, b, 1989a, b) and Iwatsuki (ed.) (1992).

Results

According to this floristic investigation, it has become clear that the flora of the lucidophyllous forest throughout Japan consists of 1,008 species (incl. subspecies and varieties) (Appendix 1). About 30 percent of the total number of component species are endangered.

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Appendix

Appendix 1-3. List of component species of lucidophyllous forest in Japan.

| Scientific name | Japanese name | Life form | | | | | | | | | | |
|--|---------------------|-----------|----|---|----|---|----|----|----|---|----|----|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| <i>Burmammia championii</i> | Hinanoshakujo | Sa | B | C | B | + | A | DD | B | A | C | A |
| <i>Burmammia cryptopetala</i> | Shiroshakujo | Sa | B | C | A | + | A | + | A | A | A | |
| <i>Burmammia itoana</i> | Rurishakujo | Sa | B | A | | | | | | | | |
| <i>Burmammia liukuensis</i> | Kirishimashakujo | Sa | DD | A | C | + | A | | EX | | A | |
| <i>Caesalpinia bonduc</i> | Shirotsubu | C | + | | | | | | | | | |
| <i>Caesalpinia crista</i> | Nantenkazura | C | + | | | | | | | | | |
| <i>Caesalpinia globulorum</i> | Hasunomikazura | C | + | | | | | | | | | |
| <i>Calanthe aristulifera</i> | Kirishimaebine | Pe-O | | A | B | A | DD | EX | A | A | A | A |
| <i>Calanthe aristulifera</i> var. <i>amamianus</i> | Amamiebine | Pe-O | | | | | | | | | | |
| <i>Calanthe bungoana</i> | Taganeran | Pe-O | | | | | A | | | | | |
| <i>Calanthe densiflora</i> | Tamazakiebine | Pe-O | A | | | | | | | | | |
| <i>Calanthe discolor</i> | Ebine | Pe-O | | B | C | B | B | C | A | B | C | D |
| <i>Calanthe discolor</i> var. <i>divaricatipetala</i> | Hanojiebine | Pe-O | | | | | | | | | | |
| <i>Calanthe discolor</i> var. <i>kanashiroi</i> | Katsudakeebine | Pe-O | A | | | | | | | | | |
| <i>Calanthe fauriei</i> | Darumaebine | Pe-O | A | A | A | | | | | | | |
| <i>Calanthe formosana</i> | Taiwanebine | Pe-O | B | | | | | | | | | |
| <i>Calanthe furcata</i> | Tsururan | Pe-O | B | B | + | + | | | | | | |
| <i>Calanthe furcata</i> var. <i>rubicallosa</i> | Akaboshitsururan | Pe-O | + | | | | | | | | | |
| <i>Calanthe gracilis</i> | Tokusaran | Pe-O | + | B | | | | | | | | |
| <i>Calanthe hattorii</i> | Asahiebine | Pe-O | | | | | | | | | | |
| <i>Calanthe izu-insularis</i> | Ookirishimaebine | Pe-O | | | | | | | | | | |
| <i>Calanthe lyroglossa</i> | Rengyoebine | Pe-O | B | | | | | | | | | |
| <i>Calanthe masuca</i> | Onagaebine | Pe-O | B | | | | | | | | | |
| <i>Calanthe oblancoolata</i> | Sakurajimaebine | Pe-O | | A | | | | | | | | |
| <i>Calanthe sieboldii</i> | Kiebine | Pe-O | DD | B | B | A | A | A | A | A | B | D |
| <i>Calanthe tokunoshimensis</i> | Tokunoshimaebine | Pe-O | | | | | | | | | | |
| <i>Camellia japonica</i> | Yabutsubaki | St | + | + | + | + | + | + | + | + | + | + |
| <i>Camellia lutchuensis</i> | Himesazanka | St | + | | | | | | | | | |
| <i>Camellia sasanqua</i> | Sazanka | St | + | + | + | + | + | C | + | A | | + |
| <i>Captosapelta diffusa</i> | Hyo tankazura | C | + | | | | | | | | | |
| <i>Carex alliiformis</i> | Ryukyusuge | Pe | + | C | | | | | | | | |
| <i>Carex arisanensis</i> | Arisantamatsurisuge | Pe | B | | | | | | | | | |
| <i>Carex autumnalis</i> | Oonakirisuge | Pe | | | | | | | C | A | B | |
| <i>Carex clivorum</i> | Yamaoitosuge | Pe | | | | | | | | | | |
| <i>Carex collifera</i> | Ryukyuiesuge | Pe | B | | | | | | | | | |
| <i>Carex conica</i> | Himekansuge | Pe | | + | + | + | + | + | + | + | + | + |
| <i>Carex duvaliana</i> | Kesuge | Pe | | | | + | + | + | + | + | + | + |
| <i>Carex lenta</i> | Nakirisuge | Pe | | + | + | + | + | + | + | + | + | + |
| <i>Carex lenta</i> var. <i>sendaica</i> | Sendaisuge | Pe | | | | | C | | B | B | | C |
| <i>Carex maculata</i> var. <i>tetsuoi</i> | Ryukyutachisuge | Pe | B | | | | | | | | | |
| <i>Carex matsumurae</i> | Kinokunisuge | Pe | | A | C | + | C | D | C | B | DD | C |
| <i>Carex morrowii</i> | Kansuge | Pe | | A | + | + | + | + | + | + | + | + |
| <i>Carex nachiana</i> | Kishunakiri | Pe | | B | A | | B | A | B | A | + | A |
| <i>Carex oshimensis</i> | Ooshimakansuge | Pe | | | | | | | | | | |
| <i>Carex pachygyne</i> | Sasanohasuge | Pe | | | | | | | A | B | + | + |
| <i>Carex pisiformis</i> | Honmonjisuge | Pe | | | | | | | | | | |
| <i>Carex reinii</i> | Kokansuge | Pe | | | | + | | | + | + | + | + |
| <i>Carex sacrosancta</i> | Jingusuge | Pe | | B | DD | + | B | A | B | A | DD | A |
| <i>Carex stenostachys</i> | Nishinohonmonjisuge | Pe | | | | | | | | | + | + |
| <i>Castanopsis cuspidata</i> | Kojii | T | | + | + | + | + | + | + | + | + | + |
| <i>Castanopsis cuspidata</i> var. <i>sieboldii</i> | Sudajii | T | + | + | + | + | + | + | + | + | + | + |
| <i>Cenostoma glabrum</i> | Ogasawaramokureishi | S | | | | | | | | | | |
| <i>Cephalomanes apiifolium</i> | Kikumobahoragoke | Ep-F | A | | | | | | | | | |
| <i>Cephalomanes atrovirens</i> | Sakishimahoragoke | Pe-F | C | | | | | | | | | |
| <i>Cephalomanes boninense</i> | Hahajimahoragoke | Ep-F | | | | | | | | | | |
| <i>Cephalomanes javanicum</i> var. <i>asplenioides</i> | Sotetsuhoragoke | Pe-F | + | | | | | | | | | |
| <i>Cephalomanes obscurum</i> | Onihoragoke | Pe-F | + | | | | | | | | | |
| <i>Cephalomanes obscurum</i> var. <i>siamense</i> | Nanbanhoragoke | Pe-F | B | | | | | | | | | |
| <i>Cephalomanes thysanostomum</i> | Kanshinobuhoragoke | Ep-F | + | | | | | | | | | |
| <i>Cephalotaxus harringtonia</i> | Inugaya | St-N | | C | + | + | + | + | + | + | + | + |
| <i>Cheiropleuria bicuspis</i> | Sujihitotsuba | Pe-F | + | + | + | + | | | B | A | DD | |
| <i>Cheirostylis liukuensis</i> | Akabashusuran | Pe-O | B | | A | | | | | | | |
| <i>Cheirostylis takeoi</i> | Arisanmuyoran | Pe-O | B | | | | | | | | | |
| <i>Cibotium barometz</i> | Takawarabi | Pe-F | + | | | | | | | | | |
| <i>Cinnamomum camphora</i> | Kusunoki | T | | + | + | + | + | + | + | + | + | + |
| <i>Cinnamomum daphnoides</i> | Marubanikkei | S | C | + | | | | C | | | | |
| <i>Cinnamomum doederleinii</i> | Shibanikkei | St | + | | | | | | | | | |
| <i>Cinnamomum japonicum</i> | Yabunikkei | T | + | + | + | + | + | + | + | + | + | + |
| <i>Cinnamomum okinawense</i> | Nikkei | T | + | | | | | | | | | |
| <i>Cinnamomum pseudo-pedunculatum</i> | Koyabunikkei | St | | | | | | | | | | |
| <i>Citrus depressa</i> | Hiramiremon | S | + | | | | | | | | | |
| <i>Citrus nippokoreana</i> | Koraitachibana | S | | | | | | | | | | A |
| <i>Citrus tachibana</i> | Tachibana | S | B | B | C | + | B | C | B | A | A | A |

Appendix 1-11. List of component species of lucidophyllous forest in Japan.

| Scientific name | Japanese name | Life form | | | | | | | | | | | | |
|--|------------------|-----------|----|---|---|---|---|----|----|----|----|----|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| <i>Ochrosia oppositifolia</i> | Shimasokei | St | B | | | | | | | | | | | |
| <i>Odontochilus hatusimanus</i> | Hatsushimaran | Pe-O | | A | | | | | EX | | | | | |
| <i>Odontochilus inabae</i> | Inabaran | Pe-O | B | | | | | | | | | | | |
| <i>Odontochilus tashiroi</i> | Oogimiran | Pe-O | B | | | | | | | | | | | |
| <i>Ophioglossum pendulum</i> | Koburan | Ep-F | A | | | | | | | | | | | |
| <i>Ophiopogon jaburan</i> | Noshiran | Pe | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Ophiopogon japonicus</i> | Janohige | Pe | + | C | + | + | + | + | + | + | + | + | + | + |
| <i>Ophiopogon ohwii</i> | Nagabajanoheige | Pe | + | C | + | + | + | + | + | + | + | + | + | + |
| <i>Ophiopogon planiscapus</i> | Oobajanoheige | Pe | | + | + | + | + | | DD | + | DD | | C | |
| <i>Ophiorrhiza japonica</i> | Satsumainamori | Pe-Su | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Ophiorrhiza japonica</i> var. <i>acutiloba</i> | Okinawainamori | Pe | C | | | | | | | | | | | |
| <i>Ophiorrhiza kuroiwai</i> | Ryukyuinamori | S | + | | | | | | | | | | | |
| <i>Ophiorrhiza pumila</i> | Chaboinamori | Pe | + | | | | | | | | | | | |
| <i>Oreocnide pedunculata</i> | Hadonoki | S | + | + | + | | + | | D | | | B | | |
| <i>Osmanthus heterophyllus</i> | Hiiragi | St | | | A | + | | | + | + | + | + | | |
| <i>Osmanthus heterophyllus</i> var. <i>iriomotensis</i> | YaeyamaHiiragi | St | B | | | | | | | | | | | |
| <i>Osmanthus insularis</i> | Shimamokusei | T | B | C | C | + | A | D | | | | A | A | |
| <i>Osmanthus marginatus</i> | Ryukumokusei | T | + | | | | | | | | | | | |
| <i>Osmanthus okinawensis</i> | Yanagibamokusei | S | B | | | | | | | | | | | |
| <i>Osmanthus rigidus</i> | Oomokusei | S | | | | | | | | | | | | |
| <i>Osmunda banksiifolia</i> | Shiroyamazenmai | Pe-F | + | + | + | + | A | | D | A | DD | | | |
| <i>Oxygyne hyodoi</i> | Hinanobonbori | Sa | | | | | | | | | | | A | |
| <i>Pachypleuria repens</i> | Kikushinobu | Ep-F | + | B | A | + | | | B | A | | | | |
| <i>Pachypleuria vestita</i> | Shimakikushinobu | Ep-F | + | | | | | | | | | | | |
| <i>Pachysandra terminalis</i> | Fukkiso | S | | | A | + | + | + | C | B | + | C | | |
| <i>Pasania edulis</i> | Matebashii | T | + | + | + | + | + | + | | + | | + | | + |
| <i>Pasania glabra</i> | Shiribukagashi | T | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Pellionia brevifolia</i> | Aragesanshoso | Pe-Su | | C | A | | | | | | | | | |
| <i>Pellionia minima</i> | Sanshoso | Pe-Su | B | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pellionia radicans</i> | Oosanshoso | Pe-Su | B | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pellionia scabra</i> | Kimizu | Pe-Su | + | + | + | + | + | + | + | + | + | C | + | |
| <i>Pellionia yosiei</i> | Nagabasanshoso | Pe | | | D | | | | | | | | | |
| <i>Persea boninensis</i> | Ogasawaraaogusu | T | | | | | | | | | | | | |
| <i>Persea japonica</i> | Hosobatabu | T | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Persea kobu</i> | Kobugashi | T | | | | | | | | | | | | |
| <i>Persea thunbergii</i> | Tabunoki | T | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Phacellanthus tubiflorus</i> | Kiyosumiutsubo | Pa | | A | C | + | C | + | B | A | B | A | | |
| <i>Phaius minor</i> | Ganzeikiran | Pe-O | A | A | B | + | A | | A | EX | B | | | |
| <i>Phaius mishmensis</i> | Himekakuran | Pe-O | A | | | | | | | | | | | |
| <i>Phaius tancarvilleae</i> | Kakuchoran | Pe-O | B | | | | | | | | | | | |
| <i>Photinia glabra</i> | Kanamemochi | S | | C | | + | | + | + | + | + | + | + | + |
| <i>Photinia serrulata</i> | Ookanamemochi | S | DD | | | | | | | | | A | | |
| <i>Photinia wrightiana</i> | Shimakanamemochi | S | + | | | | | | | | | | | |
| <i>Pieris japonica</i> | Asebi | S | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pieris japonica</i> var. <i>yakushimensis</i> | Yakushimaasebi | S | | | | | | | | | | | | |
| <i>Pieris koidzumiana</i> | Ryukyusebi | S | EX | | | | | | | | | | | |
| <i>Pileostegia viburnoides</i> | Shimayukikazura | C | + | | | | | | | | | | | |
| <i>Pinellia tripartita</i> | Oohange | Pe-Su | + | + | + | + | | + | + | | | + | + | |
| <i>Piper kadzura</i> | Futokazura | C | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pisonia grandis</i> | Togemiudonoki | T | | | | | | | | | | | | |
| <i>Pisonia umbellifera</i> | Udonoki | St | + | | | | | | | | | | | |
| <i>Pittosporum boninense</i> | Shirotobera | S | | | | | | | | | | | | |
| <i>Pittosporum boninense</i> var. <i>chichijimense</i> | Oominotobera | S | | | | | | | | | | | | |
| <i>Pittosporum illicioides</i> | Koyasunoki | S | | | | | | | | | | | | |
| <i>Pittosporum parvifolium</i> | Kobatobera | S | | | | | | | | | | | | |
| <i>Pittosporum parvifolium</i> var. <i>beecheyi</i> | Hahajimatobera | S | | | | | | | | | | | | |
| <i>Pittosporum tobira</i> | Tobera | S | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Plagiogyria adnata</i> | Takasagokijino | Pe-F | C | + | + | + | + | + | + | + | + | + | + | + |
| <i>Plagiogyria euphlebia</i> | Ookijino | Pe-F | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Plagiogyria japonica</i> | Kijinooshida | Pe-F | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Plagiogyria yakumonticola</i> | Kosugidanikijino | Pe-F | | | | | | | | | | | | |
| <i>Platanthera brevicealcarata</i> var. <i>yakumontana</i> | Niitakachidori | Pe-O | | | | | | | | | | | | |
| <i>Podocarpus macrophyllus</i> | Inumaki | T-N | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Podocarpus nagi</i> | Nagi | T-N | + | C | + | + | + | | + | + | + | + | + | + |
| <i>Pollia hasskarlii</i> | Nangokuyabumyoga | Pe-Su | B | | | | | | | | | | | |
| <i>Pollia japonica</i> | Yabumyoga | Pe-Su | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pollia japonica</i> var. <i>minor</i> | Koyabumyoga | Pe-Su | + | | | | | | | | | | | |
| <i>Polyalthia liukuensis</i> | Kurobomodoki | St | A | | | | | | | | | | | |
| <i>Polypodium amamanum</i> | Amamiaonekazura | Ep-F | | | | | | | | | | | | |
| <i>Polypodium formosanum</i> | Taiwanaonekazura | Ep-F | A | | | | | | | | | | | |
| <i>Polypodium niponicum</i> | Aonekazura | Ep-F | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Polystichum eximium</i> | Komochiinode | Pe-F | | | | | | | | | | | | |
| <i>Polystichum fibrilloso-paleaceum</i> | Asukainode | Pe-F | | | | | | DD | | EX | | | | |

Appendix 1-12. List of component species of lucidophyllous forest in Japan.

| Scientific name | Japanese name | Life form | | | | | | | | | | | | |
|--|-----------------------|-----------|----|---|---|---|----|---|---|----|---|----|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| <i>Polystichum hancockii</i> | Taiwanjumonjishida | Pe-F | + | C | | | | | | | | | | |
| <i>Polystichum kiusiense</i> | Kyushuinode | Pe-F | | A | | | | | | | | | | |
| <i>Polystichum lepidocaulon</i> | Orizurushida | Pe-F | + | + | + | + | + | + | + | A | + | D | | |
| <i>Polystichum longifrons</i> | Aiasukainode | Pe-F | | C | + | + | D | | | C | | | B | |
| <i>Polystichum makinoi</i> | Katainode | Pe-F | | C | + | + | + | + | + | + | + | + | | |
| <i>Polystichum obai</i> | Amamidenda | Pe-F | | | | | | | | | | | | |
| <i>Polystichum otomasui</i> | Nanpiinode | Pe-F | | | C | + | | | | | | | | |
| <i>Polystichum polyblepharum</i> | Inode | Pe-F | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Polystichum pseudo-makinoi</i> | Saigokuinode | Pe-F | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Polystichum shimurae</i> | Shimurainode | Pe-F | | | | | | | | | | | | |
| <i>Polystichum tagawanum</i> | Inodemodoki | Pe-F | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Polystichum tsus-simense</i> | Himekanawarabi | Pe-F | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Polystichum tsus-simense</i> var. <i>mayebarae</i> | Ookiyosumishida | Pe-F | | + | B | + | + | + | + | + | + | + | + | + |
| <i>Polystichum yaeyamense</i> | Yaeyamatoranoo | Pe-F | C | | | | | | | | | | | |
| <i>Pothos chinensis</i> | Yuzunohakazura | C | B | | | | | | | | | | | |
| <i>Pouteria boninensis</i> | Muninnoki | S | | | | | | | | | | | | |
| <i>Pouteria obovata</i> | Akatetsu | S | + | | | | | | | | | | | |
| <i>Protolirion sakuraii</i> | Sakuraiso | Sa | | | | | | | | | | | | |
| <i>Prunus spinulosa</i> | Rinboku | St | B | + | + | + | + | + | + | + | + | + | + | + |
| <i>Prunus zippeliana</i> | Bakuchinoki | T | + | + | + | + | + | + | + | + | + | + | D | |
| <i>Psilotum nudum</i> | Matsubaran | Ep-F | + | C | C | A | D | B | B | A | A | A | | |
| <i>Psychotria boninensis</i> | Ooshiratamakazura | C | | | | | | | | | | | | |
| <i>Psychotria homalosperma</i> | Ogasawarabochoji | S | | | | | | | | | | | | |
| <i>Psychotria manillensis</i> | Nagamibochoji | S | + | | | | | | | | | | | |
| <i>Psychotria rubra</i> | Bochoji | S | + | | | | | | | | | | | |
| <i>Psychotria serpens</i> | Shiratamakazura | C | + | + | + | | + | | C | B | | | | |
| <i>Pteris cadieri</i> | Kawaribaamakusashida | Pe-F | C | | | | | | | | | | | |
| <i>Pteris disper</i> | Amakusashida | Pe-F | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pteris excelsa</i> | Oobanohachijoshida | Pe-F | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Pteris grevilleana</i> | Ashitagashida | Pe-F | A | | | | | | | | | | | |
| <i>Pteris kiuschiensis</i> | Nishinokohachijoshida | Pe-F | | + | + | | | | B | B | | | | |
| <i>Pteris nakasimae</i> | Hinotanishida | Pe-F | | A | | | | | | | | | | |
| <i>Pteris natiensis</i> | Yawahachijoshida | Pe-F | | + | + | | A | | B | A | | | | |
| <i>Pteris oshimensis</i> | Hachijoshidamodoki | Pe-F | | + | + | | B | + | + | B | + | | | |
| <i>Pteris semipinnata</i> | Ooamakusashida | Pe-F | + | | | | | | | | | | | |
| <i>Pteris setuloso-costulata</i> | Togehachijoshida | Pe-F | | | | | | | | | | | | |
| <i>Pteris tokioi</i> | Hikageamakusashida | Pe-F | | C | A | | | | | | | | | |
| <i>Pyrrosia adnascens</i> | Hitotsubamamezuta | Ep-F | A | | | | | | | | | | | |
| <i>Pyrrosia hastata</i> | Iwaomodaka | Ep-F | | C | + | + | + | + | + | A | B | A | | |
| <i>Pyrrosia lingua</i> | Hitotsuba | Ep-F | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus acuta</i> | Akagashi | T | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus gilva</i> | Ichiiigashi | T | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus glauca</i> | Arakashi | T | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus glauca</i> var. <i>amamiana</i> | Amamiarakashi | T | + | | | | | | | | | | | |
| <i>Quercus hondae</i> | Hanagagashi | T | | B | D | + | B | | B | | A | | | |
| <i>Quercus miyagii</i> | Okinawaurajirogashi | T | + | | | | | | | | | | | |
| <i>Quercus myrsinaefolia</i> | Shirakashi | T | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus phillyraeoides</i> | Ubamegashi | St | B | + | D | + | + | | + | + | + | + | + | + |
| <i>Quercus salicina</i> | Urajirogashi | T | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Quercus sessilifolia</i> | Tsukubanegashi | T | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Randia canthioides</i> | Shimamisaonoki | S | + | | | | | | | | | | | |
| <i>Randia cochinchinensis</i> | Misaonoki | S | + | + | + | + | D | | + | + | D | | | |
| <i>Randia sinensis</i> | Hijiharinoki | S | B | | | | | | | | | | | |
| <i>Reineckea carnea</i> | Kichijyoso | Pe | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Renanthera labrosa</i> | Jinyakuran | Ep-O | EX | | | | | | | | | | | |
| <i>Rhaphidophora kortharthii</i> | Sakishimahabukazura | C | B | | | | | | | | | | | |
| <i>Rhaphidophora liukuensis</i> | Himehabukazura | C | B | | | | | | | | | | | |
| <i>Rhaphiolepis indica</i> var. <i>liukuensis</i> | Hosobasharinbai | S | + | | | | | | | | | | | |
| <i>Rhaphiolepis indica</i> var. <i>umbellata</i> | Sharinbai | S | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Rhododendron amamiense</i> | Amamiseishika | S | | | | | | | | | | | | |
| <i>Rhododendron latoucheae</i> | Seishika | S | B | | | | | | | | | | | |
| <i>Rhododendron tashiroi</i> | Sakuratsutsuji | S | + | + | | | | | A | | | | | |
| <i>Rhynchoetichum discolor</i> | Yamabiwaso | S | + | | | | | | | | | | | |
| <i>Rhynchoetichum discolor</i> var. <i>austrokiushiuense</i> | Tamazakiyamabiwaso | S | + | C | | | | | | | | | | |
| <i>Rohdea japonica</i> | Omoto | Pe | | B | + | + | + | + | + | + | + | + | + | + |
| <i>Rohdea japonica</i> var. <i>latifolia</i> | Satsumaomoto | Pe | | | | | | | | | | | | |
| <i>Rubus amamianus</i> | Amamifuyuichigo | S | | | | | | | | | | | | |
| <i>Rubus amamianus</i> var. <i>minor</i> | Kobanoamamifuyuichigo | S | | | | | | | | | | | | |
| <i>Rubus buergeri</i> | Fuyuichigo | S | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Rubus hakonensis</i> | Miyamafuyuichigo | S | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Saccolabium ciliare</i> | Matsugekayaran | Ep-O | | | | | | | | | | | | |
| <i>Saccolabium japonicum</i> | Kashinokiran | Ep-O | B | D | D | + | DD | | B | A | B | | | |
| <i>Saccolabium matsuran</i> | Matsuran | Ep-O | | A | A | + | C | + | C | DD | C | | | |

Appendix 1-14. List of component species of lucidophyllous forest in Japan.

| Scientific name | Japanese name | Life form | | | | | | | | | | | | |
|--|---------------------------|-----------|----|---|---|---|----|----|---|---|---|----|----|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| <i>Thelypteris taiwanensis</i> | Kobazakeshida | Pe-F | + | | | | | | | | | | | |
| <i>Thelypteris triphylla</i> | Komorishida | Pe-F | + | | | | | | | | | | | |
| <i>Thelypteris truncata</i> | Natagirishida | Pe-F | + | | | | | | | | | | | |
| <i>Thismia abei</i> | Tanukinoshokudai | Sa | | A | A | + | | | | | A | | | |
| <i>Thismia tuberculata</i> | Kirishimatanukinoshokudai | Sa | | A | A | | | | | | | | | |
| <i>Thrixspermum fantasticum</i> | Hagakurenagamiran | Ep-O | B | | | | | | | | | | | |
| <i>Toddalia asiatica</i> | Sarukakemikan | C | + | | | | | | | | | | | |
| <i>Torreya nucifera</i> | Kaya | T-N | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Trachelospermum asiaticum</i> var. <i>intermedium</i> | Teikakazura | C | | C | + | + | + | + | + | + | + | + | + | + |
| <i>Trachelospermum gracilipes</i> var. <i>liukiense</i> | Okinawateikakazura | C | + | + | | | | | | | | | | |
| <i>Trachelospermum jasminoides</i> | Keteikakazura | C | + | C | + | + | + | + | + | + | + | + | + | + |
| <i>Trachycarpus fortunei</i> | Syuro | S-P | | + | + | + | + | + | + | + | + | + | + | |
| <i>Tricalysta dubia</i> | Shiromimizu | S | + | | | | | | | | | | | |
| <i>Trichoglottis luchuensis</i> | Iriomoteran | Ep-O | B | | | | | | | | | | | |
| <i>Trichomanes motleyi</i> | Mamegokeshida | Ep-F | C | | | | | | | | | | | |
| <i>Trichomanes tahitense</i> | Zenigokeshida | Ep-F | + | | | | | | | | | | | |
| <i>Tristellateia australasiae</i> | Kosyunkazura | C | + | | | | | | | | | | | |
| <i>Tropidia calcarata</i> | Akonettairan | Pe-O | B | | | | | | | | | | | |
| <i>Tropidia nipponica</i> | Yakushimanettairan | Pe-O | B | A | A | | | | | A | | | DD | |
| <i>Tropidia nipponica</i> var. <i>hachijoensis</i> | Hachijonettairan | Pe-O | | | | | | | | | | | | |
| <i>Tsuga sieboldii</i> | Tsuga | T-N | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Turpinia ternata</i> | Shobennoki | St | + | + | + | + | B | | | A | | | | |
| <i>Tutcheria virgata</i> | Hisakakisazanka | St | + | | | | | | | | | | | |
| <i>Tylophora japonica</i> | Tokiwakamomezuru | C | + | + | + | + | + | DD | C | | | | C | |
| <i>Typhonium divaricatum</i> | Ryukyuhanage | Pe-Su | + | + | | | | | | | | | | |
| <i>Uncaria rhynchophylla</i> | Kagikazura | C | | + | + | + | + | + | + | + | + | + | + | + |
| <i>Vaccinium boninense</i> | Muninsyasyanbo | S | | | | | | | | | | | | |
| <i>Vaccinium bracteatum</i> | Syasyanbo | S | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Vaccinium emarginatum</i> | Yadorikokemomo | Ep | | | | | | | | | | | | |
| <i>Vaccinium wrightii</i> | Gima | S | + | | | | | | | | | | | |
| <i>Vanda lamellata</i> | Kotohisuiran | Ep-O | DD | | | | | | | | | | | |
| <i>Veronicastrum axillare</i> | Toranoosuzukake | Pe-Su | | B | + | + | + | A | C | | | | A | |
| <i>Veronicastrum tagawae</i> | Kinokunisuzukage | Pe-Su | | | | | | | | | | | | |
| <i>Vexillabium fissum</i> | Oohakuunran | Pe-O | | | | | B | | | | | | | |
| <i>Vexillabium yakushimense</i> | Yakushimahimearidooshiran | Pe-O | C | B | | | | | | | | | A | |
| <i>Viburnum awabuki</i> | Sangojyu | St | + | + | + | + | + | + | + | + | + | + | + | + |
| <i>Viburnum japonicum</i> | Hakusanboku | S | + | + | + | + | A | + | | | | | + | |
| <i>Viburnum japonicum</i> var. <i>boninsimense</i> | Tokiwagamazumi | S | | | | | | | | | | | | |
| <i>Viburnum suspensum</i> | Gomojyu | S | + | | | | | | | | | | | |
| <i>Vitex quinata</i> | Ooninjinboku | St | B | | | | | | | | | | | |
| <i>Vittaria ensiformis</i> | Himeshishiran | Ep-F | C | | | | | | | | | | | |
| <i>Vittaria flexuosa</i> | Shishiran | Ep-F | + | + | + | + | + | + | B | + | + | + | + | + |
| <i>Vittaria zosterifolia</i> | Amamoshishiran | Ep-F | + | C | | | | | | | | | | |
| <i>Vittaria forrestiana</i> | Oobashishiran | Ep-F | | | | | | | | | | | | |
| <i>Vrydagzynea nuda</i> | Misoboshiran | Pe-O | B | | | | | | | | | | | |
| <i>Wendlandia formosana</i> | Akamizuki | S | + | | | | | | | | | | | |
| <i>Woodwardia harlandii</i> | Oogimishida | Pe-F | C | | | | | | | | | | | |
| <i>Woodwardia japonica</i> | Ookaguma | Pe-F | | + | + | + | + | + | + | + | A | | + | |
| <i>Woodwardia kempii</i> | Hosobaookaguma | Pe-F | | | | | | | | | | | | |
| <i>Xiphopteris okuboi</i> | Ookuboshida | Ep-F | | C | + | B | DD | A | B | A | A | | | |
| <i>Xylosma congestum</i> | Kusudoige | St | DD | + | + | + | + | + | + | + | + | + | + | + |
| <i>Zanthoxylum nitidum</i> | Teribazansho | C | + | | | | | | | | | | | |
| <i>Zanthoxylum scandens</i> | Tsuruzansho | C | + | | | | | | | | | | | |
| <i>Zeuxine affinis</i> | Aojikukinuran | Pe-O | B | | | | | | | | | | | |
| <i>Zeuxine agyokuana</i> | Kageroran | Pe-O | C | B | C | | | | | A | | | A | |
| <i>Zeuxine fluvida</i> | Taitokinuran | Pe-O | B | | | | | | | | | | | |
| <i>Zeuxine leucochila</i> | Ishigakikinuran | Pe-O | C | | | | | | | | | | | |
| <i>Zeuxine nervosa</i> | Ookinuran | Pe-O | B | | | | | | | | | | | |
| <i>Zeuxine odorata</i> | Jakokinuran | Pe-O | B | | | | | | | | | | | |

Life form, T: Tree (Evergreen broad leaf), T-N: Tree (Needle leaf), T-P: Tree (Palm), T-S: Tree (Strangler), St: Semi-large tree (Evergreen broad leaf), St-N: Semi-large leaf), C-Su: Climber (Summergreen), Pe-O: Perennial herb (Orchid), Pe-F: Perennial herb (Evergreen Fern), Pe-H: Perennial herb (Evergreen Heterotropa), Pe: Perennial herb (Orchid), Sa: Saprophyte (Others), Pa: Parasite.

Locality (Prefecture), 1: Okinawa, 2: Kagoshima (except for Yakushima, Tanegashima, Amamiyoshima and Tokunoshima), 3: Miyazaki, 4: Kumamoto, 5: Oita, 6: Fukuoka, Aichi, 21: Shizuoka, 22: Tokyo (Izu Islands), 23: Kanagawa, 24: Chiba, 25: Ibaraki, 26: Saitama, 27: Ishikawa, 28: Toyama, 29: Niigata, 30: Nagano, 31: Miyagi, 32: Iwate, RDB Categories, A: Critically endangered, B: Endangered or Endangered next to A, C: Vulnerable or Endangered next to B, D: Near threatened or Endangered next to C,

| Locality | | | | | | | | | | | | | | | | | | | | | | | En | |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | B | | | | | | | | | | | | | | A |
| | | | | | | | | | | | | | | | | | | | | | | | | A |
| | | | | | | | | | | | | | | | | | | | | | | | | B |
| + | + | + | + | + | + | + | + | + | + | + | | + | + | + | + | | | | + | + | D | | | |
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | A | | |
| | | | + | + | C | + | + | + | | + | | | | | | | | | | | | | | |
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| + | + | C | + | + | + | + | + | + | + | + | | + | D | + | + | | | | | + | | | | C |
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| + | + | | | B | B | D | + | + | + | + | C | + | C | | | | | | | | | | | C |
| + | + | + | + | + | + | + | + | + | + | + | + | + | D | | | B | EX | | | | | | | A |
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| | | | EX | | | | | B | | C | | | | | | | | | | | | | | B |
| | | | | | | | | | | | | B | + | B | B | | | | | A | | | | B |
| | | | | | | | | | | | | | | | | | | | | | | | | B |
| | | | | | | | | | | + | + | + | | | | | | | | | | | | C |
| | | | | | | | | | | C | + | + | | | | | | | | | | | | A |
| + | C | + | + | + | + | + | + | + | + | + | + | EX | EX | B | + | | | | | B | | | | A |
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| + | C | | D | | | | | A | | | | | | | | | | | | | | | | A |
| | | | | EX | A | | B | B | D | + | | + | | B | A | | | | | D | | | | A |
| + | | + | | C | D | + | + | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | C |
| | | | | | | | A | | | C | A | | | | | | | | | | | | | C |
| | | | | | | | | | | | | | | | | | | | | | | | | A |
| | | | | | | | | | | | | | | | | | | | | | | | | C |

tree (Needle leaf), S: Small tree (Evergreen broad leaf), S-Su: Small tree (Summergreen), S-P: Small tree (Palm), S-F: Small tree (Fern), C: Climber (Evergreen broad (Evergreen others), Pe-Su: Perennial summergreen herb, A: Annual plant, Ep-O: Epiphyte (Orchid), Ep-F: Epiphyte (Fern), Ep: Epiphyte (Others), Sa-O: Saprophyte

7: Kochi, 8: Tokushima, 9: Ehime, 10: Yamaguchi, 11: Hiroshima, 12: Shimane, 13: Tottori, 14: Okayama, 15: Kyoto, 16: Hyogo, 17: Osaka, 18: Wakayama, 19: Mie, 20: 33: Akita, En: Environment Agency (2000).

DD: Data deficient, Ex: Extinct, +: Present.