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## Distribution patterns of gymnosperms in Sakhalin and a comparison with those in the Kurils: newly proposed S-K index

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**Abstract** Distribution patterns of nine species of gymnosperms native to Sakhalin and the Kuril Islands are analyzed quantitatively based on the examination of main Japanese herbaria. *Pinus pumila* and *Larix gmelinii* represent the most abundant species of gymnosperms in the regions. The Sakhalin-Kurils index (S-K index) was newly proposed for the comparison of the abundance of the species between Sakhalin and the Kurils. All S-K indices of gymnosperms show positive numbers reflecting more predominant coniferous forests found in Sakhalin than in the Kurils. For most species of gymnosperms; especially subarctic species, such as *Abies sachalinensis*, *Larix gmelinii*, *Picea jezoensis* and *Juniperus communis*, Sakhalin has functioned as a more important migratory route than the Kurils. But the Kuril Archipelago has similarly functioned as an important migratory route for *Pinus pumila* and *Taxus cuspidata* characterized by comparatively low S-K indices.

**Key words:** distribution, gymnosperms, Kurils, Sakhalin, S-K index

### Introduction

Both Sakhalin and the Kuril Islands functioned as main routes (or corridors) for arctic-alpine plant species to migrate southward to the Japanese Archipelago from the Eurasian Continent during Ice Age. Thus, Sakhalin and the Kurils are fascinating regions to the botanists retaining a keen interest in the phytogeography of Northeast Asia. Before World War II, Japanese botanists frequently conducted hard expeditions into Sakhalin and the Kurils, and then many plant specimens of the regions were brought to Japan. Recent International Cooperative Project; International Kuril Island Project (IKIP) and International Sakhalin Island Project (ISIP), added a large number of specimens further. Based on these specimens deposited in Japanese herbaria, we can understand general distribution patterns of vascular plants native to Sakhalin and the Kuril Islands. As boreal forests are mainly composed of gymnosperms, the present author tried to analyze the distribution patterns of nine species of gymnosperms quantitatively based on the specimens deposited in Japanese herbaria. In this study, the S-K index is newly proposed for the quantitative comparison of the abundance of the species between Sakhalin and the Kurils.

### Materials and Methods

Nine species of gymnosperms are native to Sakhalin and the Kurils. In this study most scientific names follow the opinion by Yamazaki (1995), but other names are adopted in some cases. Specimens collected from the

regions were examined in main Japanese herbaria; KYO, SAPS, SAPT, TI and TNS (acronyms following Holmgren *et al.* 1990). Distribution patterns of gymnosperms in the Kuril Islands was reported in the previous study (Takahashi 2003), therefore in this study those of gymnosperms in Sakhalin are clarified and discussed in comparison with the previous data in the Kurils. Specimens collected from Sakhalin are listed in Appendix (also see Fig. 1). The number of herbarium specimens (excluding duplicate sheets) of gymnosperms are counted for Sakhalin (S) and the Kurils (K) and three parts of each region (Tables 1 and 2). Newly proposed index, the Sakhalin-Kurils index (S-K index) is formulated as  $S-K / S+K$ . The numerical value of this index changes between  $-1.0$  and  $+1.0$ , a higher positive number indicates more abundance of the species in Sakhalin than in the Kurils.

### Results and Discussion

#### *Species distribution pattern*

##### PINACEAE

##### *Abies sachalinensis* (F. Schmidt) Mast.

[Distribution map – Takahashi 2003, 30, f. 2a for the Kurils; Smirnov 2002, 119 for Sakhalin, as *A. mayriana* (Miyabe et Kudô) Miyabe et Kudô and *A. sachalinensis* F. Schmidt]

This species occurs in southern to northern Sakhalin; the northern limit of its distribution is located at Okha region. In contrast with its large distribution from south to north in Sakhalin, it is limited to the southern Kurils;

Table 1. A comparison of the number of specimens of gymnosperms between Sakhalin and the Kurils.

| Taxa                                                | Regions  | Southern | Middle | Northern | Total |
|-----------------------------------------------------|----------|----------|--------|----------|-------|
| <i>Abies sachalinensis</i>                          | Sakhalin | 37       | 14     | 3        | 54    |
|                                                     | Kurils   | 22       | –      | –        | 22    |
| <i>Larix gmelinii</i>                               | Sakhalin | 38       | 38     | 9        | 85    |
|                                                     | Kurils   | 28       | –      | –        | 28    |
| <i>Picea glehnii</i>                                | Sakhalin | 11       | –      | –        | 11    |
|                                                     | Kurils   | 6        | –      | –        | 6     |
| <i>Picea jezoensis</i>                              | Sakhalin | 47       | 18     | 7        | 72    |
|                                                     | Kurils   | 22       | –      | –        | 22    |
| <i>Pinus pumila</i>                                 | Sakhalin | 43       | 39     | 10       | 92    |
|                                                     | Kurils   | 15       | 30     | 19       | 64    |
| <i>Juniperus chinensis</i><br>var. <i>sargentii</i> | Sakhalin | 32       | 2      | –        | 34    |
|                                                     | Kurils   | 20       | –      | –        | 20    |
| <i>Juniperus communis</i>                           | Sakhalin | 50       | 21     | 10       | 81    |
|                                                     | Kurils   | 11       | 7      | –        | 18    |
| <i>Juniperus conferta</i>                           | Sakhalin | 15       | 1      | –        | 16    |
|                                                     | Kurils   | –        | –      | –        | 0     |
| <i>Taxus cuspidata</i>                              | Sakhalin | 39       | 6      | –        | 45    |
|                                                     | Kurils   | 24       | 17     | –        | 41    |

In Sakhalin, “Southern” is the part between <74> and <56>, “Middle” is between <55> and <28>, and “Northern” is between <27> and <4> in the grid (see Fig. 1).

In the Kurils, “Southern” is the region of Shikotan, Kunashir and Iturup, “Middle” is the region from Urup to Onekotan, and “Northern” is the region of Paramushir, Shumshu and Atlasova (see Takahashi 2003).

Shikotan, Kunashir and Iturup (Table 1). The total number of specimens in Sakhalin and the Kurils are about average for gymnosperms of the regions (Table 2). The S-K index (0.42) indicates somewhat high positive number, which means a tendency toward more abundance of *Abies sachalinensis* in Sakhalin than in the Kurils.

Three *Abies* species are native around the Sea of Okhotsk according to Koropachinskiy (1989); *A. holophylla* Maxim. is found in Korea, northeastern China and Ussuri, *A. nephrolepis* (Trautv.) Maxim. is in Korea, northeastern China and Ussuri to Aldan, and *A. sachalinensis* is in Hokkaido, Sakhalin, the southern Kurils and Kamchatka (rare). Based on chloroplast DNA sequences, Suyama *et al.* (2000) clarified that *A. sachalinensis* of Hokkaido is closely related to *A. veitchii* of Honshu. Furthermore, the genetic relationships should be studied between *A. sachalinensis* and two Russian *Abies*; *A. holophylla* and *A. nephrolepis*. Of course the genetic variation among local populations of *A. sachalinensis* may be a highly interesting problem, especially Kamchatka population present a target for future research.

#### *Larix gmelinii* Rupr. ex Gordon

[Distribution map – Takahashi 2003, 30, fig. 2b for the Kurils; Smirnov 2002, 119 for Sakhalin, as *L. cajanderi* Mayr]

This species is commonly found in southern to northern Sakhalin, on the other hand its distribution is

limited to the southern Kurils; Shikotan and Iturup only (Table 1). The number of specimens is high in Sakhalin but not so high in the Kurils (Table 2). The comparatively high S-K index (0.50) means a tendency toward more abundance of *Larix gmelinii* in Sakhalin than in the Kurils.

Koropachinskiy (1989) regarded the Sakhalin and the Kurils larch as *Larix cajanderi* Mayr. This opinion was followed by Smirnov (2002) for Sakhalin plants. Yamazaki recognized the Kurils larch as *L. gmelinii* Rupr. ex Gordon var. *japonica* (Maxim. ex Regel) Pilg. Thus demarcations between the species of *Larix* are not in agreement between Russian and Japanese botanists. Recently, Semerikov and Lascoux (2003) clarified the genetic variation of Eurasian *Larix* populations, but for the clarification of the genetic variation in Northeast Asia more populations including Sakhalin, the southern Kurils and Kamchatka should be surveyed.

#### *Picea glehnii* (F. Schmidt) Mast.

[Distribution map – Takahashi 2003, 30, fig. 2c for the Kurils; Smirnov 2002, 119 for Sakhalin]

This species occurs very rarely in the regions and its distribution is limited only to the southern parts of Sakhalin and the Kurils; Shikotan, Kunashir and Iturup (Tables 1 and 2). This distribution pattern is also supported by Koropachinskiy (1989) and Smirnov (2002). *Picea glehnii* is actually regarded as an endemic species to Japan. Thus the northernmost and easternmost populations of *P. glehnii* are found in southern Sakhalin

Table 2. A comparison of the number of specimens and S-K index of gymnosperms between Sakhalin and the Kurils (KYO, SAPS, SAPT, TI and TNS).

| Taxa                                             | Sakhalin | Kurils | S-K | S+K | S-K index* |
|--------------------------------------------------|----------|--------|-----|-----|------------|
| <i>Abies sachalinensis</i>                       | 54       | 22     | 32  | 76  | 0.42       |
| <i>Larix gmelinii</i>                            | 85       | 28     | 57  | 113 | 0.50       |
| <i>Picea glehnii</i>                             | 11       | 6      | 5   | 17  | 0.29       |
| <i>Picea jezoensis</i>                           | 72       | 22     | 50  | 94  | 0.53       |
| <i>Pinus pumila</i>                              | 92       | 64     | 28  | 156 | 0.18       |
| <i>Juniperus chinensis</i> var. <i>sargentii</i> | 34       | 20     | 14  | 54  | 0.26       |
| <i>Juniperus communis</i>                        | 81       | 18     | 63  | 99  | 0.64       |
| <i>Juniperus conferta</i>                        | 16       | 0      | 16  | 16  | 1.00       |
| <i>Taxus cuspidata</i>                           | 45       | 41     | 4   | 86  | 0.05       |
| Total                                            | 490      | 221    | 269 | 711 |            |

\* S-K / S+K

and the southern Kurils, respectively. The S-K index (0.29) is somewhat low for the gymnosperms of the regions.

#### *Picea jezoensis* Carrière

[Distribution map- Takahashi 2003, 30, fig. 2d for the Kurils; Smirnov 2002, 119 for Sakhalin, as *P. ajanensis* (Lindl. et Gord.) Fisch. ex Carr.]

This species is found in the southern to northern parts of Sakhalin, but its distribution in the Kurils is limited to the southern parts; Shikotan, Kunashir and Iturup (Table 1). A clearly distinct distribution pattern between Sakhalin and the Kurils is the same as in *Abies sachalinensis* and *Larix gmelinii*, which were stated above. The high S-K index (0.53) means a tendency toward more abundance of *Picea jezoensis* in Sakhalin than in the Kurils.

*Picea jezoensis* is distributed in N. Korea, Ussuri, Sakhalin, the southern Kurils, Japan and C. Kamchatka (Yamazaki 1995). But Koropachinskiy (1989) did not recognize *P. jezoensis*, in place of it, he adopted *Picea ajanensis* (Lindl. et Gord.) Fisch. ex Carr. in the Far Eastern Russia. This opinion is also followed by Smirnov (2002) for Sakhalin plants. The genetic relationships among the East Asian populations of the *Picea jezoensis* – *P. ajanensis* complex should be investigated in future.

#### *Pinus pumila* (Pall.) Regel

[Distribution map – Takahashi 2003, 30, fig. 3a for the Kurils; Smirnov 2002, 120 for Sakhalin]

This species occurs the most commonly in the southern to northern parts in both Sakhalin and the Kurils (Tables 1 and 2). High number of the specimens (64) is exceptional for gymnosperms of the Kurils and the number is also at the top in Sakhalin. The S-K index (0.18); the lowest second to *Taxus*, means that *Pinus pumila* occurs abundantly in the Kurils as well as in Sakhalin.

*Pinus pumila* is endemic to Northeast Asia, and it grows common in the Sea of Okhotsk region (Koropachinskiy 1989).

#### CUPRESSACEAE

##### *Juniperus chinensis* L. var. *sargentii* Henry

[Distribution map – Takahashi 2003, 30, fig. 3b for the Kurils; Smirnov 2002, 65 for Sakhalin, as *J. sargentii* (A. Henry) Takeda ex Koidz.]

This species is found in southwestern Sakhalin and the southern Kurils; Shikotan, Kunashir and Iturup (Table 1). It is not found in northern Sakhalin and the northern Kurils and Kamchatka, therefore this species is regarded as a temperate species. The number of specimens is comparatively low in both Sakhalin and the Kurils, and the S-K index (0.26) indicates comparatively low value.

Russian botanists (Koropachinskiy 1989; Smirnov 2002) adopted *J. sargentii* (Henry) Takeda ex Koidz., but Yamazaki (1995) adopted *Sabina chinensis* (L.) Antonine var. *sargentii* (Henry) W. C. Cheng et L. K. Fu. for this species. There are differences in taxonomic interpretations of *Juniperus* s.l. between Russian and Japanese botanists.

##### *Juniperus communis* L. s.l.

[Distribution map – Takahashi 2003, 30, fig. 3c for the Kurils; Smirnov 2002, 65 for Sakhalin, as *J. sibirica* Burgsd.]

This species is recognized in a broad sense here. It occurs somewhat commonly in southern to northern Sakhalin, but is found only in the southern to middle parts of the Kurils; to Ketoi (Table 1). This species is distributed in northern Sakhalin and also in Kamchatka, therefore it is regarded as a subarctic species. The number of specimens is comparatively high in the regions, and the high S-K index (0.64) means more abundance in Sakhalin than in the Kurils.

Adams *et al.* (2003) clarified that the Kamchatka

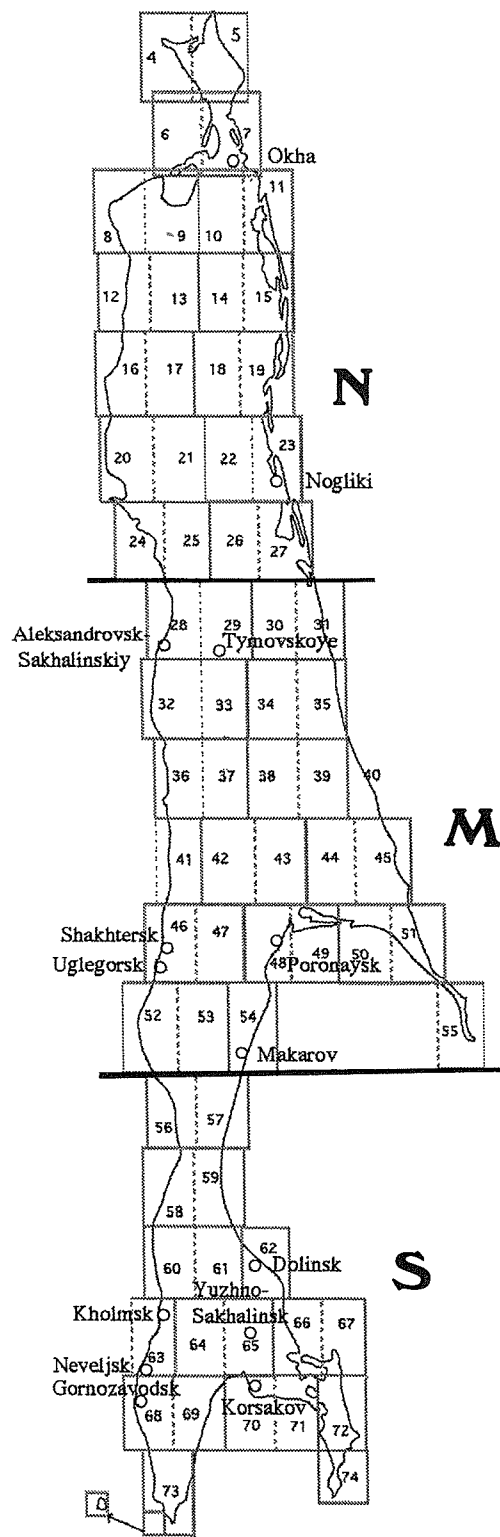


Fig. 1. A map of Sakhalin showing the division into the southern (S), middle (M) and northern (N) parts. The grid numbers are equivalent to those in a list of Appendix and the map "Atlas of Sakhalin Region part I Sakhalin (1994)".

population of *J. communis* was quite dissimilar to any populations from throughout the arctic regions based on RAPDs method. Adams & Pandey (2003) concluded that the Kamchatka population is recent in origin and likely funded by birds bringing seeds from Japan. But the

distribution in the Kuril Islands shows somewhat discontinuity between Hokkaido and Kamchatka; especially the lack in the northern Kurils (Table 1 and see Takahashi, 2003). The genetic variation in the Sakhalin and the southern Kurils populations should be investigated.

In Sakhalin, the plants with intermediate leaf forms between *Juniperus communis* and the following species, *J. conferta* are sometimes found, especially around Sakaehama, southern Sakhalin (those plants are marked with "hybrid?" in Appendix). The genetic study should be also carried out for the *J. communis* – *J. conferta* complex in Sakhalin.

#### *Juniperus conferta* Parlatore

[Distribution map – No reports for the Kurils: Smirnov 2002, 64 for Sakhalin]

This species is found rarely in southern to middle Sakhalin and is not found in the Kurils (Table 1). Among three *Juniperus* species, this species occurs most rarely in the regions. This species is clearly regarded as a temperate species and its distribution has stretched northward to Sakhalin. According to the absence of this species in the Kurils, the S-K index is 1.0 (Table 2). But recently the present author noticed a specimen of *J. conferta* (S. Saito 1956 in TI) which collected from Shikotan. Because this specimen showed some similarities to *J. communis* and there were no detailed localities within Shikotan on the label, he suspended the adoption of this specimen in this study.

#### TAXACEAE

##### *Taxus cuspidata* Siebold et Zucc.

[Distribution map – Takahashi 2003, 30, fig. 3d for the Kurils; Smirnov 2002, 179 for Sakhalin]

This species occurs in the southern to middle parts of Sakhalin, and similarly occurs in the southern and middle Kurils; to Rasshua (Tables 1 and 2). The total number of specimens in the regions are about average, and the lowest S-K index (0.05) in this study means that the occurrence of *Taxus cuspidata* shows a similarity in abundance between Sakhalin and the Kurils. This species is not distributed in northern Sakhalin and also not in the northern Kurils and Kamchatka, therefore it is regarded as a temperate species.

#### *Distribution patterns between Sakhalin and the Kurils*

Distribution patterns of *Abies sachalinensis*, *Larix gmelinii* and *Picea jezoensis* (and not so clear but also included in this category; *Juniperus communis*) show clear difference between Sakhalin and the Kurils. All these four species occur from south to north in Sakhalin, but in contrast, occur only in the southern (or to the middle) Kurils. Also all these species can be regarded as subarctic species characterized by the distribution in more northern regions; e.g. in Kamchatka. The comparatively high S-K indices of these subarctic species means that Sakhalin might have functioned as a more important migratory route than the Kurils.

*Pinus pumila* is also regarded as a subarctic species together with the above-mentioned four species. But the distribution pattern of Sakhalin and the Kurils is different from those of the above species. Comparatively low S-K index (0.18) means that the Kuril Archipelago worked a main migratory route as well as Sakhalin. Thus the distribution pattern of *Pinus pumila* is exceptional in the subarctic species of gymnosperms in the regions.

Remaining four species; *Picea glehnii*, *Juniperus chinensis* var. *sargentii*, *Juniperus conferta* and *Taxus cuspidata* are regarded as temperate species characterized by the lack of the distribution in more northern regions; e.g., Kamchatka. The S-K indices of these species show variable values and indicate no specified tendency. Among them, *Juniperus conferta* is characterized by high S-K index value (1.00), on the other hand *Taxus cuspidata* shows low value (0.05) for gymnosperms in the regions.

There are clear difference in the forest vegetation between Sakhalin and the Kurils. The middle and northern Kurils are dominated by the scrubs composed of *Alnus maximowiczii* and *Pinus pumila*, but middle and northern Sakhalin is by the coniferous forests/scrubs mainly composed of *Larix gmelinii*, *Picea jezoensis* and *Pinus pumila*. Distribution patterns and the S-K indices of nine species of gymnosperms which were clarified in this study, may correspond to the different arrangement of the forest vegetations between Sakhalin and the Kurils.

The S-K index is very simple and useful to clarify the differences of the abundance of the species between Sakhalin and the Kuril Archipelago which have worked as two main migratory routes between northern Japan and the Eurasian Continent. The implication of the high S-K index is that the species in question have migrated along Sakhalin. Future studies on the genetic variation and relationships in the populations of the Far Eastern Russia including Sakhalin and the Kurils will clarify the above-mentioned presumption.

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## Appendix

A list of the herbarium specimens of gymnosperms collected from Sakhalin. The figure between angle brackets indicates the grid on a map (Fig. 1). Four equal parts of each grid are recognized further when we can locate the collection site.

### PINACEAE

#### *Abies sachalinensis* (F. Schmidt) Mast.

Luguri – Okha. <07-lower l.>, Y. Kudo & B. Ishida 7197, Aug. 31, 1923 (SAPS); Baykal Bay <09-upper l.>, Y. Kudo & B. Ishida 7419, Sep. 5, 1923 (SAPS); Tymi, Pupuni, in forests <26-lower l.>, Y. Kudo & M. Tatewaki 6336, Aug. 8, 1922 (SAPS); Ako, tundra <28-lower l.>, Y. Kudo & M. Tatewaki 6056, Jul. 26, 1922 (SAPS); Alexandrowsk <28-lower l.>, Okada, Aug. 19, 1923 (TI); 40km E of Palevo, N of Changinskiy Pass <34-upper r.>, H. Takahashi 30374, Aug. 8, 2002 (SAPS); Shikka, Hamdasa <37-lower r.>, T. Miyake, Aug. 27, 1906 (SAPS); Shikka, Hayabusayama <38-lower l.>, T. Miyake, Aug. 28, 1906 (SAPS); Shikka, Higashiyama <38-lower l.>, T. Miyake, Aug. 28, 1906 (SAPS); Shikka, vicinity of R. Wuruna <43-lower l.>, T. Miyake, Aug. 22, 1906 (SAPS); Shikka-shicho, E. Coast, Chirikoro <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 14, 1933 (SAPS); Shikka, Unetonnai <48-lower l.>, K. Miyabe & T. Miyagi, Jul. 28, 1906 (SAPS); E. Coast, Shikka, Nayoro <48-lower l.>, T. Miyake, Sep. 6, 1906 (SAPS); Shikka, Pamaito Detu <48-upper r.>, T. Miyake, Aug. 19, 1906 (SAPS); Kitashiretoko Pen., Chirie <51-lower r.>, Y. Hoshino, S. Sugiyama & S. Okada, Jul. 15, 1933 (SAPS); E. Coast, Shikka, Ponkotan <54->, T. Miyake, Sep. 13, 1906 (SAPS); Kitashiretoko Pen., Kitashiretoko Cape <55-lower r.>, Y. Hoshino & S. Okada, Jul. 20, 1933 (SAPS); Middle stream of Chinnai River <56-upper r.>, S. Wada, Sep. 25, 1913 (SAPS); Shikka, Makunkotan <57-lower l.>, K. Miyabe & T. Miyagi, Jul. 22, 1906 (SAPS); Shikka, Buriu <57-lower r.>, T. Miyake, Aug. 24, 1906 (SAPS); Shikka, Mt. Kashipo <57-upper r.>, N. Hiratsuka, Aug. 8, 1928 (SAPS); Tomarioru <58-lower l.>, S. Saito, Aug. 8, 1929 (TI); Nayori (Nayoro) <58-upper l.>, S. Komatsu, Aug. 7, 1913 (TI); E. Coast, Toyohara, Shiraraka <59-upper l.>, T. Miyake, Sep. 20, 1907 (SAPS); Manui – Nayori (Nayoro) <59-upper l.>, S. Komatsu, Aug. 5, 1913 (TI); Miho River. <61-lower r.>, No collector name, Sep. 2, 1910 (TI); Aikawa, Tokyo Univ. Forest <61-upper r.>, M. Honda & Y. Kimura, Aug. 11, 1940 (TI); Toyohara, Galkinovlaskoe <62-lower l.>, T. Miyake, Sep. 20, 1906 (SAPS); 20km E of Sokol town, mouth of Bakhura River <62-lower r.>, H. Takahashi 29133, Jul. 19, 2001 (SAPS); Sakaehama <62-upper l.>, G. Koidzumi, Aug. 13, 1930 (KYO); Odomari, Semantomari <63-upper r.>, T. Miyake, Jul. 3, 1906 (SAPS); 20km NW of Yuzhno-Sakhalinsk, around Sanatornyy <64-upper r.>, H. Takahashi 31009, Jul. 23, 2003 (SAPS); Urajimirofka <65-upper l.>, G. Nakahara 5989, Jul., 1906 (TI); Ohsawa. <65-upper l.>, S. Komatsu, Aug. 20, 1913 (TI); Konuma <65-upper l.>, M. Sugawara, Jun. 16, 1928 (SAPS- 2 sheets); Foot of Mt. Susuya. <65-upper r.>, H. Hara, Aug. 13, 1928 (TI- 2 sheets); Peak Chekhov, along the pass <65-upper r.>, T. Fukuda 1105, Jul. 22, 2001 (SAPS); Okhotskoye, Sedykh Lake <66-lower l.>, S. Tsuji et al. 729001, Jul. 29, 1996 (TI); Okhotskoye, Sedykh Lake <66-lower l.>, S. Tsuji et al. 802001, Aug. 2, 1996 (TI); Okhotskoye, Sedykh Lake <66-lower l.>, S. Tsuji et al. 600, Aug. 14, 1996 (TI); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27903, Jul. 19, 2000 (SAPS); E. Coast, Odomari, Tonnaicha <66-lower r.>, T. Miyake, Jun. 28, 1908 (SAPS); Mt. Oyakochi <67-lower l.>, T. Miyake, Jun. 25, 1908 (SAPS); Aniwa Bay, Ootomari, Tomarionnai <69-lower l.>, K. Miyabe & T. Miyagi, Jul. 19, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Jul. 12, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Aug. 4, 1906 (SAPS); Aniwa Bay, Ootomari <70-upper r.>, T. Miyake, May 12, 1907 (SAPS); Ohtomari <70-upper r.>, Y. Narita, Aug. 20 & 26, 1923 (TI); 10km E of Korsakov, E side of Mereya River <70-upper r.>, H. Takahashi 29439, Jul. 28, 2001 (SAPS); Aniwa Bay, Chipisani <71-upper l.>, T. Miyake, Jul. 19, 1908 (SAPS); Nagahama-gun, Tobuchi <71-upper r.>, H. Sase, Aug. 11, 1936 (TNS); Nagahama-gun, Tobuchimura <71-upper r.>, H. Sase, Sep. 13, 1936 (SAPS); (Mauka), Wendgishi <73-upper l.>, K. Miyabe & T. Miyagi, Aug. 18, 1906 (SAPS- 2 sheets); (Mauka), Chiishiya <73-upper r.>, K. Miyabe & T. Miyagi, Aug. 18, 1906 (SAPS).

#### *Larix gmelinii* Rupr. ex Gordon

W of the Peninsula Schmidt, mouth of River Tum' <04-lower l.>, T. Fukuda 1882, Aug. 9, 2001 (SAPS); Schmidt-Penin., around Piliwo <04-lower r.>, Y. Kudo & B. Ishida 7083, Aug. 25, 1923 (SAPS); Schmidt Penin., Tumi <04-lower r.>, Y. Kudo & B. Ishida 7444, Sep. 6, 1923 (SAPS); Pronge Baikal, Pomeri – Moskaliwo, Takada-shokai peat land <06-lower r.>, Y. Kudo & B. Ishida 7309, Aug. 31, 1923 (SAPS); Schmidt-Penin., Pilituk, dry peat <07-upper l.>, Y. Kudo & B. Ishida 7130, Aug. 28, 1923 (SAPS); 15km S of Okha, E side of the road to Okha <10-upper r.>, H. Takahashi 31162, Jul. 28, 2003 (SAPS); 5km S of Val, between Nogliki and Okha <19-lower l.>, H. Takahashi 31120, Jul. 27, 2003 (SAPS); Nyiwo, Age Cape, sandy coast <23-lower l.>, Y. Kudo & M. Tatewaki 6468, Aug. 12, 1922 (SAPS); Tymi, Pupuni, in forests <26-lower l.>, Y. Kudo & M. Tatewaki 6337, Aug. 8, 1922 (SAPS); Alexandrowsk <28-lower l.>, Okada, Aug. 19, 1923 (TI); Shikka, Hamdasa <37-lower r.>, T. Miyake, Aug. 27, 1906 (SAPS); Poronaimura <37-lower r.>, T. Miyake, Aug. 29, 1906 (SAPS); Shikka, Higashiyama <38-lower l.>, T. Miyake, Aug. 28, 1906 (SAPS); 80km N of Poronaysk, Mirnyy – Pervomayskoye <38-lower l.>, H. Takahashi 30481, Aug. 10, 2002 (SAPS); Shisuka-shicho, Asase <40-lower l.>, Y. Hoshino & S. Sugiyama, Aug. 12, 1933 (SAPS); Shisuka-shicho, Chirie-gun, Ennai <40-lower l.>, M. Tatewaki & Y. Takahashi 22473, Jun. 14, 1936 (SAPS); Shisuka-shicho, Chirie-gun, Mirukunai <40-lower r.>, M. Tatewaki & Y. Takahashi 22487, Jun. 15, 1936 (SAPS); Shisuka, Kyoto Univ. Forest <42-upper r.>, S. Okamoto 114, Jul. 28, 1928 (KYO- 2 sheets); Shikka, vicinity of R. Wuruna <43-lower l.>, T. Miyake, Aug. 22, 1906 (SAPS); Shikka, Borodo <43-lower l.>, T. Miyake, Sep. 1, 1906 (SAPS); Shisuka-shicho, E. Coast, Naruko River <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 13, 1933 (SAPS); Shisuka-shicho, Chirie-gun, Atsunai <45-upper r.>, M. Tatewaki & Y. Takahashi 23031, Jun. 30, 1936 (SAPS); E. Coast, Shikka, Ehorokofunai <48-lower l.>, T. Miyake, Aug. 11, 1906 (SAPS); E. Coast, Shikka, Nayoro <48-lower l.>, T. Miyake,

Sep. 6, 1906 (SAPS); Poronaysk – Leonidovo, moor <48-upper l.>, H. Takahashi 30544, Aug. 13, 2002 (SAPS); Shisuka <48-upper r.>, S. Sugawara (SS1621), 1936 (SAPS, SAPT); Shikka <48-upper r.> K. Miyabe & T. Miyagi, Jul. 23, 1906 (SAPS); Telpenia Bay, Shikka <48-upper r.>, T. Miyake, Aug. 12, 1906 (SAPS); Shisuka <48-upper r.>, I. Namikawa, Aug. 7, 1914 (SAPS); Siska <48-upper r.>, T. Sawada, Aug. 14, 1923 (TI); Shikka <48-upper r.>, Y. Imai & H. Otani, Jul. 19, 1930 (SAPS); Siska <48-upper r.>, Koidzumi & Kitamura, Aug. 19, 1930 (KYO); Down stream of Horonai River, tundra <48-upper r.>, H. Hara, Aug. 2, 1931 (TI); Shisuka-shicho, Shisuka-cho, Otasunomori <48-upper r.>, Y. Hoshino & S. Sugiyama, Jul. 8, 1933 (SAPS); Taraika <49-upper r.>, T. Miyake, Aug. 14, 1906 (SAPS); Shisuka-shicho, Taraika – Nimenjo <49-upper r.>, B. Yoshimura & M. Hara, Jul. 10, 1937 (SAPS); Around Taraika <49-upper r.>, M. Honda & Y. Kimura, Aug. 17, 1940 (TI); Shikka, Jimtaki <50-upper r.>, K. Miyabe & T. Miyagi, Jul. 24, 1906 (SAPS); Shisuka-shicho, Nishinokoro <50-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 16, 1933 (SAPS); Kitashiretoko Pen., Noto <51-lower l.>, Y. Hoshino & S. Okada, Jul. 12, 1933 (SAPS); Shikka, Lak. Solenuiya <51-lower r.>, K. Miyabe & T. Miyagi, Jul. 26, 1906 (SAPS); Kitashiretoko Pen., Chirie <51-lower r.>, Y. Hoshino & S. Okada, Jul. 15, 1933 (SAPS); Kitashiretoko Pen., Funakoshi <51-lower r.>, Y. Hoshino & S. Okada, Jul. 25, 1933 (SAPS); E. Coast, Shikka, Ponkotan <54->, T. Miyake, Sep. 13, 1906 (SAPS); Kitashiretoko Pen., Kitashiretoko Cape <55-lower r.>, Y. Hoshino & S. Okada, Jul. 20, 1933 (SAPS); Kitashiretoko Pen., Enton – Nushike <55-upper l.>, Y. Hoshino & S. Okada, Jul. 21, 1933 (SAPS); Kitashiretoko Pen., Yoman – Rosoku-iwa <55-upper r.>, Y. Hoshino & S. Okada, Jul. 21, 1933 (SAPS); Motodomari-shicho, Mt. Tosso <57-lower l.>, M. Honda & Y. Kimura, Aug. 12, 1940 (TI); Tomarioru <58-lower l.>, S. Saito, Aug. 8, 1929 (TI); W. Coast, Tomarioru, Kusunnai <58-upper r.>, T. Miyake, Sep. 16, 1907 (SAPS); E. Coast, Toyohara, Manue <59-upper l.>, T. Miyake, Sep. 22, 1906 (SAPS); Manui <59-upper l.>, S. Komat, Aug. 4, 1913 (TI); Fukakusa <61-lower r.>, S. Sugawara, May 30, 1921 (TI); Toyohara-D, Fukakusa <61-lower r.>, S. Sugawara, May 10, 1925 (SAPS); Toyohara, Galkinovlaskoe <62-lower l.>, T. Miyake, Jul. 11, 1906 (SAPS); 6km W of Sokol, environs surrounding Mal Takoy river <62-lower l.>, H. Takahashi 29188, 29192, Jul. 20, 2001 (SAPS- 2 sheets); Toyohara, Dubki <62-upper l.>, K. Miyabe & T. Miyagi, Jul. 22, 1906 (SAPS); Sakaehama <62-upper l.>, S. Komat, Aug. 2, 1913 (TI); Sakaihamma <62-upper l.>, S. Saito, Jul. 28-29, 1929 (TI); Sakaehama <62-upper l.>, H. Hara, Jul. 31, 1931 (TI); 8 km N of Dolinsk, environs surrounding Nayba river <62-upper l.>, H. Takahashi 29299, Jul. 23, 2001 (SAPS); Mituriofuka. <65-lower l.>, K. Fujii, Sep. 12, 1910 (TI- 8 sheets); Korsakovsky Distr., Susuya Moor, old-Enoura station <65-lower l.>, S. Tsuji et al. 593, Aug. 9, 1996 (TI); Korsakovsky Distr., Susuya Moor, Ozeretskoye <65-lower l.>, S. Noshiro et al., Jul. 5, 1997 (TI); Toyohara <65-upper l.>, E. H. Wilson, Aug. 5, 1914 (SAPS); Toyohara. <65-upper l.>, H. Hara, Jul. 30, 1931 (TI); Konuma <65-upper l.>, Y. Kikkawa, Oct. 9, 1931 (SAPS); Mt. Susuya <65-upper r.>, H. Hara, Aug. 13, 1928 (TI); Yuzhno-Sakhalinsk, Rogatka River, alt. 120m <65-upper r.>, S. Noshiro et al., Jul. 1, 1997 (TI); Minakeshi <66-lower l.>, T. Miyake, Jun. 5, 1908 (SAPS); Odomari, Il [Isl?]. Tonnaichya <66-lower l.>, T. Miyake, Jun. 21, 1908 (SAPS); Okhotskoe, Sedykh Lake <66-lower l.>, S. Tsuji et al. 557, Aug. 5, 1996 (TI); Okhotskoe, Sedykh Lake <66-lower l.>, S. Tsuji et al., Aug. 6, 1996 (TI); Korsakovsky Distr., Okhotskoe, Sedykh Lake <66-lower l.>, S. Noshiro et al., Jul. 6, 1997 (TI); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27853, Jul. 16, 2000 (SAPS); Korsakovsky Distr., Puzin Pen., Krestonoshka <66-lower>, S. Tsuji et al. 583, Aug. 7, 1996 (TI); Korsakovsky Distr., Khazarskoye – Khwalisekoye Lakes <66-lower r.>, S. Tsuji et al. 588, Aug. 8, 1996 (TI); Aniwa Bay, Odomari, Korssakoff <70-upper r.>, T. Miyake, Jun. 19, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Jul. 12, 1906 (SAPS); Aniwa Bay, Ootomari <70-upper r.>, T. Miyake, May 12, 1907 (SAPS- 3 sheets); Aniwa Bay, Ootomari <70-upper r.>, T. Miyake, Jul. 10, 1907 (SAPS- 2 sheets); Odomari <70-upper r.>, H. Hara, Aug. 12, 1928 (TI); Aniwa Bay, Odomari, Chipisani <71-upper l.>, T. Miyake, Jul. 17, 1908 (SAPS); Nagahama-gun, Tobuchi-mura <71-upper r.>, H. Sase, Aug. 18, 1936 (SAPS); Noto – Kiridoshi <73-lower r.>, K. Kondo, Sep. 3, 1929 (TI).

*Picea glehnii* (F. Schmidt) Mast.

Odomari, Rutaka River <64-lower r.>, G. Nakahara, Aug., 1906 (TI); Trecha-paachi <65-lower l.>, G. Nakahara, Aug., 1906 (TI); Susuya Moor, old-Enoura station <65-lower l.>, S. Tsuji et al. 592, 594, Aug. 9, 1996 (TI- 2 sheets); Susuya Moor, Ozeretskoye <65-lower l.>, S. Noshiro et al., Jul. 5, 1997 (TI); Foot of Mt. Susuya <65-upper r.>, H. Hara, Aug. 13, 1928 (TI); 10km E of Korsakov, N of Prigordnoye. E side of Mereya river <70-upper r.>, H. Takahashi 29428, 29429, Jul. 28, 2001 (SAPS- 2 sheets); 45 km SE from Yuzhno-Sakhalinsk, Lake Mal. Chibisanskoye <71-upper l.>, T. Fukuda 1367, Jul. 28, 2001 (SAPS); Aniwa Bay, Odomari, Arakuri <71-upper r.>, T. Miyake, Jul. 18, 1908 (SAPS); Nagahama-gun, Tobuchi <71-upper r.>, H. Sase 71298, Sep. 4, 1936 (TNS); Nagahama-gun, tobuchi-mura, near Ponto <71-upper r.>, H. Sase, Sep. 13, 1936 (SAPS); 45km E of Korsakov, 2km E of Beregovoy <72-upper l.>, H. Takahashi 30659, Aug. 16, 2002 (SAPS).

*Picea jezoensis* Carrière

Shumid Penin., N of Piri River <04-lower r.>, Y. Kudo & B. Ishida 7002, Aug. 23, 1923 (SAPS); Shumid Penin., Ado <04-upper l.>, Y. Kudo & B. Ishida 7488, Sep. 7, 1923 (SAPS); Oha, Uruta, on the hill <07-lower r.>, Y. Kudo & B. Ishida 7265, Sep. 1, 1923 (SAPS); Oha <07-lower r.>, Okada, Sep. 3, 1923 (TI); Niywo, Wiig – Katanguri, in forests <23-lower l.>, Y. Kudo & M. Tatewaki 6556, Aug. 15, 1922 (SAPS); Tymi, Pupuni, in forests <26-lower l.>, Y. Kudo & M. Tatewaki 6338, Aug. 8, 1922 (SAPS); Tymi Pupuni – Adatuim, in forests <26-lower l.>, Y. Kudo & M. Tatewaki 6686, Aug. 20, 1922 (SAPS); Alexandrowsk, Ako, tundra <28-lower l.>, Y. Kudo & M. Tatewaki 6057, Jul. 26, 1922 (SAPS); 40km E of Palevo, N of Changinskiy Pass <34-upper r.>, H. Takahashi 30376, Aug. 8, 2002 (SAPS); Shikka, Hamdasa <37-lower r.>, T. Miyake, Aug. 27, 1906 (SAPS); Shikka, Higashiyama <38-lower l.>, T. Miyake, Aug. 28, 1906 (SAPS); Shisuka-shicho, Asase <40-lower l.>, Y. Hoshino & S. Sugiyama, Jul. 11, 1933 (SAPS); Shisuka-shicho, Atsunai River <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 12, 1933 (SAPS); Nairo <48-lower l.>, A. Hiruta (SS 1631), 1936 (SAPS, SAPT); Shikka, Unettonnai <48-lower l.>, K. Miyabe & T. Miyagi, Jul.

28, 1906 (SAPS); E. Coast, Shikka, Nayoro <48-lower l.>, T. Miyake, Sep. 6, 1906 (SAPS); Nayoro <48-lower l.>, I. Namikawa, Aug. 13, 1914 (SAPS); Shisuka <48-upper r.>, A. Hiruta (SS 1630), 1936 (SAPS, SAPT); Shikka <48-upper r.>, K. Miyabe & T. Miyagi, Jul. 23, 1906 (SAPS); Telpenia Bay, Shikka <48-upper r.>, T. Miyake, Aug. 12, 1906 (SAPS); Shisuka <48-upper r.>, I. Namikawa, Aug. 12, 1914 (SAPS); Shisuka <48-upper r.>, B. Yoshimura & M. Hara, Jul. 9, 1937 (TNS); Shisuka-shicho, Nishinokoro <50-upper r.>, Y. Hoshino & S. Sugiyama, Jul. 16, 1933 (SAPS); Kitashiretoko Pen., Noto <51-lower l.>, Y. Hoshino & S. Okada, Jul. 12, 1933 (SAPS); E. Coast, Shikka, Ponkotan <54->, T. Miyake, Sep. 13, 1906 (SAPS); Middle stream of Chinnai River <56-upper r.>, S. Wada, Sep. 25, 1913 (SAPS); 80km N of Dolinsk, Mt. Zhdanko <57-lower l.>, H. Takahashi 30153, Aug. 2, 2002 (SAPS); Mt. Kashipo <57-upper r.>, N. Hiratsuka, Aug. 8, 1928 (SAPS); Tomarioru <58-lower l.>, S. Komat, Aug. 8, 1913 (TI); W. Coast, Mauka, Kusunnai <58-upper r.>, T. Miyake, Sep. 21, 1906 (SAPS); Kitaitada <59-lower r.>, S. Komat, Aug., 1913 (TI); Miho River. <61-lower r.>, K. Fujii, Sep. 3, 1910 (TI); Toyohara-shicho, Aikawa, Tokyo Univ. Forest <61-upper r.>, M. Honda & Y. Kimura, Aug. 11, 1940 (TI); E. Coast, Toyohara, Galkinovlaskoe <62-lower l.>, T. Miyake, Sep. 20, 1906 (SAPS); Toyohara-shicho, around Ochiai. <62-lower l.>, M. Honda & Y. Kimura, Aug. 10, 1940 (TI); 20km E of Sokol town, mouth of Bakhura River <62-lower r.>, H. Takahashi 29085, Jul. 19, 2001 (SAPS); 20km SE of Dolinsk, Shuya River - Bakhura River <62-lower r.>, H. Takahashi 30085, Jul. 31, 2002 (SAPS); Sakaehama <62-upper l.>, S. Komat, Aug. 2, 1913 (TI); Sakaihamma <62-upper l.>, S. Saito, Jul. 28-29, 1929 (TI); E. Coast, Sakaehama <62-upper l.>, U. Kimoto, Aug. 25, 1931 (SAPS); 8km N of Dolinski, environs surrounding Nayba River <62-upper l.>, H. Takahashi 29298, Jul. 23, 2001 (SAPS); W. Coast, Mauka <63-upper r.>, T. Miyake, Jul. 3, 1906 (SAPS); W. Coast, Akkeboshi <63-upper r.>, T. Miyake, Jun. 2, 1907 (SAPS); Rutaka River <64-lower r.>, G. Nakahara, Jul., 1906 (TI); Oosaka <64-upper l.>, T. Miyake, Jul. 1, 1906 (SAPS); Oomgari <64-upper r.>, T. Miyake, Jun. 30, 1906 (SAPS); 20km NW of Yuzhno-Sakhalinsk, around Sanatornyy <64-upper r.>, H. Takahashi 31008, Jul. 23, 2003 (SAPS); Trecha-paach <65-lower l.>, G. Nakahara, Jul., 1906 (TI); Perwaya-paach (Odomari) <65-lower l.>, G. Nakahara, Jul. & Aug., 1906 (TI); Odomari, Isl. Tonnaichya <66-lower l.>, T. Miyake, Jun. 21, 1908 (SAPS); Korsakovsky Distr., Puzin pen., Krestonoshka Lake <66-lower l.>, S. Tsuji et al., Aug. 7, 1996 (TI); Okhotskoe, Sedykh Lake <66-lower l.>, S. Tsuji et al. 601, Aug. 14, 1996 (TI); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27866, Jul. 16, 2000 (SAPS); Tonnaichya-sando <66-lower r.>, T. Miyake, Oct. 9, 1906 (SAPS); E. Coast, 73-go gyojo <66-lower r.>, T. Miyake, Jun. 22, 1908 (SAPS)- 2 sheets; Odomari, Airopu <67-lower l.>, K. Miyabe & T. Miyagi, Jul. 31, 1906 (SAPS); W. Coast, South-Nayashi <68-lower l.>, T. Miyake, Jun. 14, 1907 (SAPS); Odomari, Tomarionnai <69-lower l.>, K. Miyabe & T. Miyagi, Jul. 19, 1906 (SAPS- 2 sheets); Aniva District, Taranai River <69-upper r.>, S. Noshiro et al., Jul. 4, 1997 (TI); Around Korsakov <70-upper r.>, S. Takeo, Sep., 1905 (SAPS); Aniwa Bay, Korssakoff <70-upper r.>, T. Miyake, Jun. 19, 1906 (SAPS- 2 sheets); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Jul. 12, 1906 (SAPS); Odomari, Mereya <70-upper r.>, K. Miyabe, T. Miyagi & T. Miyake, Jul. 14, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Aug. 4, 1906 (SAPS); Ohdomari <70-upper r.>, S. Saito, Jul. 24, 1929 (TI); Ozerskiy, Lake Mal. Chibisanskoye <71-upper l.>, T. Fukuda 1365, Jul. 28, 2001 (SAPS- 3 sheets); 25km E of Korsakov. Ozerskiy, Lake Mal. Chibisanskoye <71-upper l.>, H. Takahashi 29450, Jul. 28, 2001 (SAPS); Nagahama-gun, Tobuchi <71-upper r.>, H. Sase, Aug. 18, 1936 (TNS); Mt. Omanbetsu <72-lower l.>, T. Miyake, Jul. 15, 1908 (SAPS); Todomoshiri, Shimizutani <73-lower l.>, T. Miyake, Jul. 26, 1906 (SAPS); Kaibato, Kita-kotan <73-lower l.>, Kimoto, Murayama & Takee, Jul. 23, 1931 (SAPS); Odomari, Chiishiya <73-upper r.>, K. Miyabe & T. Miyagi, Aug. 18, 1906 (SAPS).

#### *Pinus pumila* (Pall.) Regel

Schmidt Penin., mountain near Pilewo <04-lower r.>, Y. Kudo & B. Ishida 7040, Aug. 24, 1923 (SAPS); Schmidt Penin., Ado <04-upper l.>, Y. Kudo & B. Ishida 7489, Sep. 7, 1923 (SAPS); N Coast of the Peninsula Schmidt, around the Lake Monchiger <04-upper r.>, T. Fukuda 1691, Aug. 6, 2001 (SAPS); Pronge Baikal, Pomeri - Mosukariwo, Takada-shokai peat land <06-lower r.>, Y. Kudo & B. Ishida 7310, Aug. 31, 1923 (SAPS); Oha, Uruta, on the hill <07-lower r.>, Y. Kudo & B. Ishida 7266, Sep. 1, 1923 (SAPS); Oha <07-lower r.>, Okada, Sep. 3, 1923 (TI); Schmidt Penin., Pirituk, dry peat land <07-upper l.>, Y. Kudo & B. Ishida 7131, Aug. 28, 1923 (SAPS); East Coast, along the railway to the Lake Odoptu <11-upper l.>, T. Fukuda 1453, Aug. 3, 2001 (SAPS); Nyiwo, Age Cape, sandy coast <23-lower l.>, Y. Kudo & M. Tatewaki 6683, Aug. 12, 1922 (SAPS); Tymi, Pupuni, in forests <26-lower l.>, Y. Kudo & M. Tatewaki 6339, Aug. 22, 1922 (SAPS); 40km E of Palevo, Mt. Changa <34-upper r.>, H. Takahashi 30333, Aug. 7, 2002 (SAPS); Nabilskiy Mts., Mt. Changa <34-upper r.>, N. Fujii 01151, Aug. 7, 2002 (SAPS); 40km E of Palevo, N of Changinskiy Pass <34-upper r.>, H. Takahashi 30375, Aug. 8, 2002 (SAPS); Pilebo <36-lower l.>, K. Jimbo, Aug. 13, 1907 (TNS); Alexandrowsk, Pilewo-hinan-ekisy - Aoba-eki <36-lower l.>, Y. Kudo & M. Tatewaki 6162, Jul. 20, 1922 (SAPS); Anbetsu, Oiwa-toge <36-lower l.>, Y. Tokunaga & K. Kawai, Sep. 2, 1929 (SAPS); Hamdasa <37-lower r.>, T. Miyake, Aug. 27, 1906 (SAPS); Higashiyama <38-lower l.>, T. Miyake, Aug. 28, 1906 (SAPS); Shisuka-shicho, Chirrie-gun, Ennai <40-lower l.>, M. Tatewaki & Y. Takahashi 22476, Jun. 14, 1936 (SAPS); Shisuka, Kyoto Univ. Forest <42-upper r.>, S. Okamoto, Jul. 28, 1928 (KYO); Shisuka-shicho, E. Coast, Naruko River <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 13, 1933 (SAPS); Nairo <48-lower l.>, A. Hiruta (SS 1658), 1936 (SAPT); E. Coast, Nayoro <48-lower l.>, T. Miyake, Sep. 6, 1906 (SAPS); Shikka <48-upper r.>, K. Miyabe & T. Miyagi, Jul. 23, 1906 (SAPS, TNS); Telpenia Bay, Shikka <48-upper r.>, T. Miyake, Aug. 12, 1906 (SAPS); Duwataikko <48-upper r.>, T. Miyake, Aug. 16, 1906 (SAPS); Shisuka <48-upper r.>, I. Namikawa, Aug. 12, 1914 (SAPS); Shikka <48-upper r.>, Y. Imai & H. Otani, Jul. 18, 1930 (SAPS); Siska <48-upper r.>, Koidzumi & Kitamura, Aug. 19, 1930 (KYO); Shisuka-shicho, Shisuka-cho, Otasuno-mori <48-upper r.>, Y. Hoshino & S. Sugiyama, Jul. 8, 1933 (SAPS); Shisuka-shicho, Sachi, in forests <48-upper r.>, M. Kawashima, Jul. 2, 1935 (SAPS); Around Shisuka <48-upper r.>, B. Yoshimura & M. Hara, Jul. 9, 1937 (SAPS); Nishitaraika, Nakajima <49-upper l.>, J. Ohwi, Aug. 14, 1932 (KYO); Taraika <49-upper r.>, S. Sugawara 1660, Jul. 20, 1935 (SAPT); Jimutaki <50-upper r.>, K. Miyabe & T. Miyagi, Jul.

24, 1906 (SAPS); Shisuka-shicho, Nishinokoro <50-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 16, 1933 (SAPS); Kitashiretoko Pen., Noto <51-lower l.>, Y. Hoshino & S. Sugiyama, Jul. 12, 1933 (SAPS); Chirihasan <51-lower r.>, K. Miyabe & T. Miyagi, Jul. 25, 1906 (SAPS); Lake Solenuiya <51-lower r.>, K. Miyabe & T. Miyagi, Jul. 26, 1906 (SAPS); Kitashiretoko Pen., Chirie <51-lower r.>, Y. Hoshino & S. Okada, Jul. 15, 1933 (SAPS); Kitashiretoko Pen., Funakoshi <51-lower r.>, Y. Hoshino & S. Sugiyama, Jul. 25, 1933 (SAPS); Kitashiretoko Pen., Funakoshi <51-lower r.>, Y. Hoshino & S. Okada, Jul. 25, 1933 (SAPS); Mt. Isara <52-lower l.>, S. Sugawara 1657, Aug., 1936 (SAPT); Nayoshi, Usutomanai <52-upper l.>, K. Miyabe & T. Miyagi, Aug. 14, 1906 (SAPS); W. Coast, Naikotoru <52-upper l.>, T. Miyake, Aug. 26, 1907 (SAPS); E. Coast, Ponkotan <54->, T. Miyake, Sep. 13, 1906 (SAPS); E. Coast, Chyakamaushinai <54-lower l.>, T. Miyake, Sep. 13, 1906 (SAPS); Kitashiretoko Pen., Rosoku-iwa <55-upper l.>, Y. Hoshino & S. Okada, Jul. 20, 1933 (SAPS); Kitashiretoko Pen., Rosoku-iwa – Funakoshi <55-upper l.>, Y. Hoshino & S. Okada, no date (SAPS); Central mountains, upper stream of Chinnai River. <56-upper r.>, S. Wada, Sep. 25, 1913 (SAPS); E. Coast, Mt. Nupuripo <57-lower l.>, T. Miyake, Aug. 13, 1907 (SAPS); Mt. Tosso (Mt. Nupuripo) <57-lower l.>, H. Hara, Aug. 5, 1931 (TI); Mt. Tosso <57-lower l.>, S. Sugawara 1659, Jul. 11, 1935 (SAPT); Motodomari-shicho, Mt. Tosso <57-lower l.>, M. Honda & Y. Kimura, Aug. 12, 1940 (TI); 80km N of Dolinsk, Tsapko to N peak of Mt. Vladimirovka <57-lower l.>, H. Takahashi 29582, Aug. 2, 2001 (SAPS); E. Coast, Mt. Tosso <57-lower l.>, N. Hiratsuka, S. Iwadare & M. Nagai, no date (SAPS); Kashipo <57-upper r.>, H. Abumiya, G. Takee, Y. Hoshino, Jul. 17, 1932 (SAPS); W. Coast, Kusunnai <58-upper r.>, T. Miyake, Jul. 7, 1906 (SAPS); E. Coast, Manue <59-upper l.>, T. Miyake, Sep. 22, 1906 (SAPS); E. Coast, Shiraraka <59-upper l.>, T. Miyake, Sep. 20, 1907 (SAPS); Manui – Nayori <59-upper l.>, S. Komat, Aug. 6, 1913 (TI); Manui-sando <59-upper l.>, S. Komat, Aug. 6, 1913 (TI); W. Coast, Notasan <60-upper l.>, T. Miyake, Jun. 29, 1907 (SAPS); Sakaihamma <62-upper l.>, T. Minami, Nov. 29, 1905 (SAPS); E. Coast, Dubki <62-upper l.>, T. Miyake, Jul. 10, 1906 (SAPS); Naibuchi <62-upper l.>, G. Nakahara, Aug. 24, 1906 (TI, TNS); Dubuki, in littore <62-upper l.>, U. Faurie, Jul., 1908 (KYO- 4 sheets); Sakaehama <62-upper l.>, S. Komat, Aug. 2, 1913 (TI); Sakaihamma <62-upper l.>, S. Saito, Jul. 28-29, 1929 (TI); Sakaehama-gun, Sakaehama-kaigan <62-upper l.>, H. Sase, Aug. 5, 1934 (SAPS); 8km N of Dolinsk, environs surrounding Nayba river <62-upper l.>, H. Takahashi 29300, Jul. 23, 2001 (SAPS); East Coast, near the mouth of r. Naiba <62-upper l.>, T. Fukuda 1236, Jul. 23, 2001 (SAPS); Tonnaicha-sando <65-lower r.>, T. Miyake, Oct. 10, 1906 (SAPS); Prope Novo-Alexandrovsk <65-upper l.>, G. Porubinovskaia et al., Sep. 6, 1973 (TI); Mt. Susuya <65-upper r.>, T. Miyake, Jul. 27, 1907 (SAPS); Mt. Ochopoka <65-upper r.>, T. Miyake, Jun. 13, 1908 (SAPS); 8km E of Yuzhno-Sakhalinsk, Chekhovskiy Pass – Mt. Chekhova <65-upper r.>, H. Takahashi 29275, Jul. 22, 2001 (SAPS); Peak Chekhov, at the base <65-upper r.>, T. Fukuda 1165, Jul. 22, 2001 (SAPS); Tonaicha <66-lower l.>, G. Nakahara 5987, Aug., 1906 (TI); Minakeshi <66-lower l.>, T. Miyake, May 30, 1908 (SAPS); Tonnaicha <66-lower l.>, T. Miyake, Jun. 21, 1908 (SAPS); Okhotskoe, Sedykh Lake <66-lower l.>, S. Noshiro et al., Jul. 6, 1997 (TI); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27898, Jul. 19, 2000 (SAPS); Airopu <67-lower l.>, K. Miyabe & T. Miyagi, Jul. 31, 1906 (SAPS); Mt. Oyakochi <67-lower l.>, T. Miyake, Jun. 25, 1908 (SAPS); Korsakov <70-upper r.>, T. Miwa, Sep. 12, 1906 (SAPS); Nagahama-gun, Nagahama-mura, Mt. Okuhachi <71-upper l.>, H. Sase, Sep. 23, 1936 (SAPS); Aniwa Bay, Arakuri <71-upper r.>, T. Miyake, Jul. 18, 1908 (SAPS); Mt. Ninushi <72->, T. Miyake, Jul. 2, 1908 (SAPS); Mt. Omanbetsu <72-lower l.>, T. Miyake, Jul. 15, 1908 (SAPS); E. Coast, Cheppopo <72-lower l.>, T. Miyake, Jul. 8, 1908 (SAPS); Mt. Shiretoko, Juzozan <74-upper l.>, T. Miyake, Jul. 11, 1908 (SAPS).

## CUPRESSACEAE

### *Juniperus chinensis* L. var. *sargentii* Henry

W. Coast, Ushoro, Naikotoru <52-upper l.>, T. Miyake, Aug. 26, 1907 (SAPS); Around Ushiro <52-upper l.>, H. Hara, Aug. 3, 1936 (TI); Chinmai <56-upper l.>, Yamazaki & Chohno, Oct. 20, 1933 (KYO); N of Krasnogorsk, SE of Aynskoye Lake <56-upper l.>, M. Yabe, Jul. 22, 2001 (SAPS-2 sheets); E. Coast, Mt. Tosso <57-lower l.>, N. Hiratsuka, S. Araki, M. Nagai & S. Iwadara, Jul. 20, 1927 (SAPS); E. Coast, Shikka, Soya <57-upper r.>, T. Miyake, Sep. 15, 1906 (SAPS); Mt. Kashipo <57-upper r.>, J. Ohwi, Aug. 18, 1932 (KYO); Kashipo, Kenshindai <57-upper r.>, H. Abumiya, G. Takee & Y. Hoshino, Sep. 25, 1932 (SAPS); W. Coast, 3-ri N of Arakoi, Chikai <58-lower l.>, S. Wada, Sep. 15, 1913 (SAPS); W. Coast, Kusunnai <58-upper r.>, T. Miyake, Jul. 7, 1906 (SAPS); W. Coast, Kusunnai <58-upper r.>, K. Miyabe & T. Miyagi, Aug. 9, 1906 (SAPS-2 sheets); E. Coast, Motodomari, Chikaporonai <59-upper l.>, T. Miyake, Aug. 7, 1907 (SAPS); E. Coast, Motodomari, Soyonkotan <59-upper l.>, T. Miyake, Aug. 15, 1907 (SAPS); Habomai, on sand <60-lower l.>, H. Hara, Aug. 15, 1928 (TI); Maoka-gun, Habomai-gen'ya <60-lower l.>, Harada, Sep. 18, 1929 (KYO); Noda (Tschekhov) <60-upper l.>, S. Saito, Aug. 10, 1929 (TI- 2 sheets); Honto – Kinushi Cape <63-lower l.>, S. Saito, Aug. 15, 1929 (TI- 2 sheets); Mt. Sussuja <65-upper r.>, G. Yamada, Jul., 1918 (KYO); E. Coast, 73-go gyojo <66-lower r.>, T. Miyake, Jun. 22, 1908 (SAPS); E. Coast, Toyomai <67-lower l.>, T. Miyake, Jun. 29, 1908 (SAPS); Prope Schebunino <68-lower l.>, A. K. Skvortsov, Sep. 10, 1967 (KYO, TI); W. Coast, Honto, Atowa <68-upper l.>, T. Miyake, Jun. 10, 1907 (SAPS); W. Coast, Honto, Kenushinaibo <68-upper l.>, T. Miyake, Jun. 10, 1907 (SAPS); E. Coast, Chishinai <72-lower r.>, T. Miyake, Jul. 6, 1908 (SAPS); Isl. Kaiba <73-lower l.>, G. Koidzumi, 1928 (TI); Todomoshiri, Dainanwan <73-lower l.>, T. Miyake, Jul. 23, 1906 (SAPS- 2 sheets); Todomoshiri, Tomarizawa <73-lower l.>, T. Miyake, Jul. 23, 1906 (SAPS); Isl. Kaiba <73-lower l.>, S. Komat, Aug. 12, 1915 (TI); Isl. Moneron (Kaibato) <73-lower l.>, S. Saito 3580, Jul. 19, 1929 (TI-2 sheets); Kaibato, Usu <73-lower l.>, Kimoto, Murayama & Takee, Jul. 17, 1931 (SAPS); Moneron Isl., southern part <73-lower l.>, V. Y. Barkalov, Aug. 24, 2001 (SAPS); Aniwa Bay, Chiishiya <73-upper r.>, K. Miyabe & T. Miyagi, Aug. 18, 1906 (SAPS); Odomari, C. Suryuda <74-upper l.>, K. Miyabe & T. Miyagi, Aug. 1, 1906 (SAPS); Nagahama-gun, Shiretoko-mura, Chikadomari <74-upper l.>, H. Sase, Aug. 31, 1933 (SAPS).

*Juniperus communis* L. s. l.

Schmidt Penin., Toumi <04-lower r.>, Y. Kudo & B. Ishida 7433, Sep. 6, 1923 (SAPS); Schmidt Penin., Ado <04-upper l.>, Y. Kudo & B. Ishida 7487, Sep. 7, 1923 (SAPS); Eastern coast, south of the Peninsula of Schmidt <05-lower r.>, T. Fukuda 2273, Aug. 16, 2001 (SAPS); N coast of the Peninsula Schmidt, mouth of River Nala <05-upper l.>, T. Fukuda 1771, Aug. 7, 2001 (SAPS); Eastern coast, south of the Peninsula of Schmidt <05-upper l.>, T. Fukuda 2129, Aug. 14, 2001 (SAPS); Luguri – Okha (Oha) <07-lower l.>, Y. Kudo & B. Ishida 7198, Aug. 31, 1923 (SAPS); 15km S of Okha <10-upper r.>, H. Takahashi 31164, Jul. 28, 2003 (SAPS); East Coast, at 52°45' n.l., between Nuso and Chaiwo <19-upper l.>, T. Ishikawa, Jul. 6, 1912 (SAPS- 2 sheets); Tymi, Parukata, in forests <26-upper r.>, Y. Kudo & M. Tatewaki 6446, Aug. 10, 1922 (SAPS); Palkata <26-upper r.>, Okada, Aug. 26, 1923 (TI); Doye, on the hill. <28-lower l.>, H. Ueda, Sep. 1, 1905 (SAPS); Pilebo <36-lower l.>, K. Jimbo, Aug. 13, 1907 (TNS); W. Coast, Nayashi, Anbetsu, in forests <36-lower l.>, T. Ishiyama, Jul. 11(?), 1927 (SAPS); Anbetsu, Ooiwa-toge <36-lower l.>, Y. Tokunaga & K. Kawai, Sep. 2, 1929 (SAPS); Akashiki, near Anbetsu <36-lower l.>, Y. Tokunaga & K. Kawai, Sep. 3, 1929 (SAPS); Shikka, Poronaimura <37-lower r.>, T. Miyake, Aug. 29, 1906 (SAPS); Shikka, vicinity of R. Jobboroit, in forests <37-lower r. – 43>, T. Miyake, Aug. 30, 1906 (SAPS); Onor – Luikof (Tim) <37-upper l.>, Y. Kudo & M. Tatewaki 6244, Aug. 2, 1922 (SAPS); Shisuka-shicho, Chirie-gun, Ennai River, the fifth branch <40-lower l.>, M. Tatewaki & Y. Takahashi 22563, Jun. 17, 1936 (SAPS); Nayoshi-gun, Yokunai <41-upper l.>, H. Hara, Aug. 1, 1936 (TI); Shisuka-gun, Ikeda, Mt. Sekkai <39-lower l.>, B. Yoshimura & M. Hara (81), Jul. 14, 1937 (SAPS, TNS); Shisuka-gun, Ikeda, Mt. Sekkai <39-lower l.>, B. Yoshimura & M. Hara 117, Jul. 15, 1937 (SAPS, TNS); Shisuka-shicho, Chirikoro <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 8, 1933 (SAPS); Shisuka-shicho, E. Coast, Atsunai River <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 12, 1933 (SAPS); Shisuka-shicho, E. Coast, Naruko River <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 13, 1933 (SAPS); Shisuka-shicho, Chirikoro <45-upper r.>, Y. Hoshino & S. Sugiyama, Aug. 14, 1933 (SAPS); Shisuka-shicho, Chirie-gun, Mt. Kawashima <45-upper r.>, M. Tatewaki & Y. Takahashi 22704, Jun. 21, 1936 (SAPS); Shisuka-shicho, Chirie-gun, Mt. Kawashima <45-upper r.>, M. Tatewaki & Y. Takahashi 22748, Jun. 23, 1936 (SAPS); Shisuka-shicho, Chirie-gun, Mt. Naruko-Nirayama <45-upper r.>, M. Tatewaki & Y. Takahashi 22865, Jun. 26, 1936 (SAPS); Nairo <48-lower l.>, A. Hiruta (SS 1711), 1936 (SAPT); E. Coast, Ponkotan <54->, T. Miyake, Sep. 13, 1906.09.13 (SAPS); Chinnai <56-upper l.>, Yamazaki & Chohno, Oct. 20, 1933 (KYO); Mt. Nupuripo (Mt. Tosso) <57-lower l.>, S. Saito, Aug. 3, 1929 (TI)- “hybrid?”; Maguntan <57-lower l.>, S. Saito 988, Aug. 5, 1929 (TI); Maguntan, around mud volcano <57-lower l.>, G. Koidzumi, Aug. 9, 1940 (KYO); 5km SW of Vostochnyy, Pugacheva <57-lower l.>, H. Takahashi 31094, Jul. 25, 2003 (SAPS); Mt. Kashipo, on rocks <57-upper r.>, N. Hiratsuka, Aug. 8, 1928 (SAPS); Kashipodake, Kashipo <57-upper r.>, H. Abumiya, G. Takee & Y. Hoshino, Jul. 22, 1932 (SAPS); Mt. Kashipo <57-upper r.>, J. Ohwi, Jul. 23, 1932 (KYO); W. Coast, Kusunnai <58-upper r.>, T. Miyake, Jul. 7, 1906 (SAPS); Odasamu <59-lower l.>, S. Suematsu, Jul. 21, 1929.07.21 (TI); Odasamu <59-lower l.>, S. Otagiri, Jul. 1, 1930 (KYO); Toyohara, Galkinovlaskoe <62-lower l.>, T. Miyake, Jul. 11, 1906 (SAPS); Toyohara, Sakaihami <62-upper l.>, T. Minami & T. Konno, Nov. 29, 1905 (SAPS); E. Coast, Toyohara, Dubki <62-upper l.>, T. Miyake, Jul. 10, 1906 (SAPS); E. Coast, Dubki <62-upper l.>, T. Miyake, Sep. 26, 1906 (SAPS); E. Coast, Sakaehama <62-upper l.>, T. Miyake, Sep. 26, 1906 (SAPS); Dubuki, in silvis <62-upper l.>, U. Faurie, Jul., 1908 (KYO); Sakaehama. <62-upper l.>, S. Komat, Aug. 2, 1913 (TI)- “hybrid?”; Sakaihami <62-upper l.>, T. Sawada, Aug. 10, 1923 (TI)- “hybrid?”; Sakaehama. <62-upper l.>, Y. Narita 2864, Aug. 25, 1923 (TI)- “hybrid?”; Sakaehama, seacoast, in Pinus pumila forests <62-upper l.>, H. Koidzumi, Aug., 1921 (TI)- “hybrid?”; Naibuchi <62-upper l.>, S. Otagiri, Jun. 24, 1930 (KYO); Sakaehama <62-upper l.>, G. Koidzumi, Aug. 13, 1930 (KYO); Sakaehama <62-upper l.>, H. Hara, Jul. 31, 1931 (TI); Sakaehama <62-upper l.>, J. Ohwi, Jul. 21, 1932 (KYO); 8km N of Dokinsk, environs surrounding Nayba river <62-upper l.>, H. Takahashi 29294, Jul. 23, 2001.07.23 (SAPS); NW of Oodomari, Rutaka <64-lower r.>, Z. Tashiro, Aug. 29, 1939 (KYO); Oomagari <64-upper r.>, T. Miyake, Jun. 30, 1906 (SAPS); Odomari, Tonnaicha-Sando, in forests <65-lower r.>, T. Miyake, Oct. 8, 1906 (SAPS); Tonmai-gun, Kamikiminai, Takadai <65-lower r.>, H. Sase, Sep. 10, 1939 (SAPS); Mt. Ochopoka <65-upper r.>, T. Miyake, Jun. 13, 1908 (SAPS); Korsakovsky Distr., Puzin Pen., Krestonoshka Lake <66-lower l.>, S. Tsuji et al. 587, Aug. 7, 1996 (TI); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27859, Jul. 16, 2000 (SAPS); Around Korsakov <70-upper r.>, S. Takeo, Sep., 1905 (SAPS); Aniwa Bay, Korssakoff <70-upper r.>, T. Miyake, Jun. 19, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Aug. 4, 1906 (SAPS); Korsakov <70-upper r.>, T. Miwa, Sep. 12, 1906 (SAPS); Aniwa Bay, Ootomari <70-upper r.>, T. Miyake, Jul. 10, 1907 (SAPS); Korsakov, in silvis <70-upper r.>, U. Faurie, Jun., 1908 (KYO); Odomari <70-upper r.>, Y. Narita 277, Aug. 20, 1923 (TI); Odomari <70-upper r.>, Y. Narita, Aug. 22, 1923 (TI)- “hybrid?”; Odomari <70-upper r.>, H. Hara, Aug. 17, 1928 (TI); Odomari-cho, Nankei-cho, on the hill <70-upper r.>, H. Iwamoto, Sep. 10, 1931 (TI); Chipesani (Chibisani), Naibotcho <71-upper l.>, G. Nakahara, Aug., 1906 (TI, TNS); 2km ESE of Beregovoy, SE of oz. Svirskoye <71-upper r.>, N. Fujii 01439, Aug. 16, 2002 (SAPS); 45km E of Korsakov, 2km E of Beregovoy <72-upper l.>, H. Takahashi 30662, Aug. 16, 2002 (SAPS); Todomoshiri, Mt. Dainan <73-lower l.>, T. Miyake, Jul. 26, 1906 (SAPS); Isl. Moneron (Isl. Kaiba) <73-lower l.>, S. Saito (3581), Aug. 19, 1929 (TI- 2 sheets); Notoro Peninsula, Notoro – Kiridoshi <73-lower l.>, K. Kondo 967, Sep. 3, 1929 (TI); Kaibato, Mt. Dainan <73-lower l.>, Kimoto, Murayama & Takee, Aug. 6, 1931 (SAPS).

*Juniperus conferta* Parl.

Ushoro, Usutomanai <52-upper l.>, K. Miyabe & T. Miyagi, Aug. 14, 1906 (SAPS); Mouth of Chinnai River, sandy coast <56-upper l.>, S. Wada, Sep. 25, 1913 (SAPS); Mihama-mura, Lake Shosen, on sand <56->, H. Hara, Jul. 30, 1936, (TI)- “hybrid?”; Manui <59-upper l.>, S. Komatsu, Aug. 4, 1913 (TI)- “hybrid?”; Konotoro <60-lower l.>, S. Sugawara 1701, no date (SAPT); W. Coast, Mauka, Tokotan <60-lower l.>, T. Miyake, Jun. 22, 1907 (SAPS); W Coast, Mauka, Soyanaibo <60-lower l.>, T. Miyake, Jun. 22, 1907 (SAPS); Habomai, sandy coast <60-lower l.>, H.

Hara, Aug. 15, 1928 (TI); Sakaehama <62-upper l.>, J. Ito 10234, 10248, no date (TNS); Dubuki, in littore <62-upper l.>, U. Faurie, Jul., 1908 (KYO); Dubuki, in nema littoris <62-upper l.>, U. Faurie, Jul., 1908 (KYO- 3 sheets); Naibuchi <62-upper l.>, K. Fujii, Sep. 10, 1910 (TI); Sakaehama, Kyoto Univ. Forest <62-upper l.>, T. Chohno, Jul. 13, 1928 (TNS); Sakaihama <62-upper l.>, S. Saito, Jul. 28, 1929 (TI- 2 sheets)- "hybrid?"; Sakaehama <62-upper l.>, G. Koidzumi, Aug. 13, 1930 (KYO- 3 sheets); Sakaehama <62-upper l.>, G. Koidzumi, Jul. 25, 1940 (KYO).

## TAXACEAE

### *Taxus cuspidata* Siebold et Zucc.

Hinan-ekisya – Aoba-eki (Alexand.) <36-lower l.>, Y. Kudo & M. Tatewaki 6161, Jul. 30, 1922 (SAPS); Anbetsu <36-lower l.>, Y. Tokunaga & K. Kawai, Sep. 2, 1929 (SAPS); Around Anbetsu <36-lower l.>, H. Hara, Aug. 1, 1936 (TI); Aoba-eki – Kami-Onor (Alexandr) <36-upper r.>, Y. Kudo & M. Tatewaki 6181, Jul. 31, 1922 (SAPS); E. Coast, Shikka, Ehorokofunai <48-lower l.>, T. Miyake, Aug. 11, 1906 (SAPS); W. Coast, Nayashi, Mt. Ushoro <52-upper r.>, T. Miyake, Aug. 31, 1907 (SAPS); Chinnai River, middle stream of Shimoohkawa <56-upper r.>, S. Wada, Sep. 25, 1913 (SAPS); E. Coast, Shikka, Makunkotan <57-lower l.>, T. Miyake, Sep. 15, 1906 (SAPS); E. Coast, Shikka, Nupuripo <57-lower l.>, T. Miyake, Sep. 18, 1906 (SAPS); E. Coast, Mt. Tosso <57-lower l.>, N. Hiratsuka, S. Araki, M. Nagai & S. Iwadere, Jul. 20, 1927 (SAPS); Shiraisizawa – Nupuripo <57-lower l.>, S. Saito, Aug. 2, 1929 (TI); Mt. Tosso <57-lower l.>, H. Hara, Aug. 5, 1931 (TI); Motodomari-shicho, Mt. Tosso <57-lower l.>, M. Honda & Y. Kimura, Aug. 12, 1940 (TI); 80km N of Dolinsk, Tsapko <57-lower l.>, H. Takahashi, Aug. 2, 2001 (SAPS); 80km N of Dolinsk, Tsapko to N peak of Mt. Vladimirovka <57-lower l.>, H. Takahashi 29549, Aug. 2, 2001 (SAPS); Mt. Kashipo <57-upper r.>, N. Hiratsuka, Aug. 8, 1928 (SAPS); Kashipo, Ishiyama <57-upper r.>, H. Abumiya, G. Takee, Y. Hoshino, Jul. 17, 1932 (SAPS); E. Coast, Toyohara, Shiraraka <59-upper l.>, T. Miyake, Sep. 20, 1907 (SAPS); East coast, near the mouth of r. Bakhura <62-lower r.>, E. M. Bulakh 1100, Jul. 19, 2001 (SAPS); 20km E of Dolinsk, confluence of Shuya and Bakhura rivers <62-lower r.>, H. Takahashi 30123, Jul. 31, 2002 (SAPS); Honto <63-lower l.>, S. Saito, Aug. 24, 1929 (TI); W. Coast, Tomaribokeshi <63-upper r.>, T. Miyake, Jul. 3, 1906 (SAPS); Semantomari <63-upper r.>, T. Miyake, Jul. 3, 1906 (SAPS); Mauka <63-upper r.>, K. Miyabe & T. Miyagi, Aug. 8, 1906 (SAPS); W. Coast, Akkeboshi <63-upper r.>, T. Miyake, Jun. 2, 1907 (SAPS); W. Coast, Mt. Mauka <63-upper r.>, T. Miyake, Jun. 4, 1907 (SAPS); Odomari, Mt. Ochopoka <65-upper r.>, T. Miyake, Jun. 13, 1908 (SAPS); Mt. Susuya. <65-upper r.>, H. Hara, Aug. 13, 1928 (TI); Mt. Suzuya (Susuya) <65-upper r.>, S. Saito, Jul. 26, 1929 (TI- 2 sheets); Tonnai-gun, Kamikiminai, Mt. Minamihoroto <65-upper r.>, H. Sase, Aug. 30, 1939 (SAPS); Minakeshi <66-lower l.>, T. Miyake, Jun. 5, 1908 (SAPS); 30 km SE of Yuzhno-Sakhalinsk, S of Okhotskoye <66-lower l.>, H. Takahashi 27924, Jul. 19, 2000 (SAPS); Odomari, Aioppu <67-lower l.>, K. Miyabe & T. Miyagi, Jul. 31, 1906 (SAPS); Mt. Oyakochi <67-lower l.>, T. Miyake, Jun. 25, 1908 (SAPS); Nevelsk, prope Gornozavodsk <68-upper l.>, V. Dvorakovskaia & E. Bokina, Sep. 24, 1973 (TI); Aniwa Bay, Korssakoff <70-upper r.>, T. Miyake, Jun. 19, 1906 (SAPS); Korssakoff <70-upper r.>, K. Miyabe & T. Miyagi, Aug. 4, 1906 (SAPS); Korsakov <70-upper r.>, T. Miwa, Sep. 12, 1906 (SAPS); Amiwa Bay, Ootomari <70-upper r.>, T. Miyake, May 12, 1907 (SAPS); Amiwa Bay, Ootomari <70-upper r.>, T. Miyake, May 17, 1907 (SAPS); Amiwa Bay, Odomari, Arakuri <71-upper r.>, T. Miyake, Jul. 18, 1908 (SAPS); 2km ESE of Beregovoy, SE of oz. Svirskoye <71-upper r.>, N. Fujii 01440, Aug. 16, 2002 (SAPS); Mt. Ninushi <72->, T. Miyake, Jul. 2, 1908 (SAPS); E. Coast, Cheppopo <72-lower l.>, T. Miyake, Jul. 8, 1908 (SAPS); Kaibato, Osawa <73-lower l.>, Kimoto, Murayama & Takee, Aug. 6, 1931 (SAPS).