

Distribution of the *Thelypteris japonica* Complex (Thelypteridaceae) in Japan

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Abstract The distribution of the four taxa, *Thelypteris japonica* forma *japonica*, *T. japonica* forma *formosa*, *T. musashiensis* and *T. japonica* × *T. musashiensis*, was reassessed by observation of spore morphology of 1984 herbarium specimens deposited in the National Museum of Nature and Science. As a result of frequent changes of identification especially between *T. japonica* forma *formosa* and *T. musashiensis*, the range of each taxon has been drastically updated. The hybrid was recorded in 32 prefectures in total, including newly added 25 prefectures.

Key words : distribution, hybrid, spore, *Thelypteris*.

The *Thelypteris japonica* complex (Thelypteridaceae) is common understory ferns ranging throughout Japan except in the Ryukyu Islands. Japanese members of the complex were circumscribed by Nakato *et al.* (2004) based on cytological and morphological characters, and two species, one forma and one interspecific hybrid are presently accepted (Fig. 1). Nakato *et al.* (2004) examined 77 specimens, and indicated the approximate geographical and altitudinal distribution of the taxa. Takahashi and Hori (2008) complemented the distribution data of the taxa with detailed distribution records in Gifu Prefecture where no species was recorded by Nakato *et al.* (2004) by observation of spores and gross morphology on 157 herbarium specimens. However, a complete picture of the distribution of the complex in Japan has not yet been provided by previous studies.

In this study, we reidentified voucher specimens deposited in the herbarium of National Museum of Nature and Science (TNS) for the distribution maps created by Kurata and Nakaike (1983) which are probably the largest collections

in terms of geographical coverage. The most reliable distinguishing character for the species of the complex is spore morphology as demonstrated by Nakato *et al.* (2004) (Fig. 2), and therefore sterile specimens and/or specimens with only immature spores are difficult to identify.

Materials and Methods

We examined spores of all the specimens of the complex deposited in TNS. All the specimens were geocoded manually based on place-names in their labels. For specimens with castaneous stipes most of which have been identified as *T. japonica*, spores were preliminarily observed with a microscope in 99.5% ethanol. Specimens producing only irregular spores were identified as the hybrid (*T. japonica* × *T. musashiensis*) and those producing normal-shaped spores with membranous ornamentation were identified as *T. japonica* forma *japonica*. Permanent mounts of spores were prepared with Bioleït (Oken-shoji Co.) and deposited in TNS only for the hybrid.

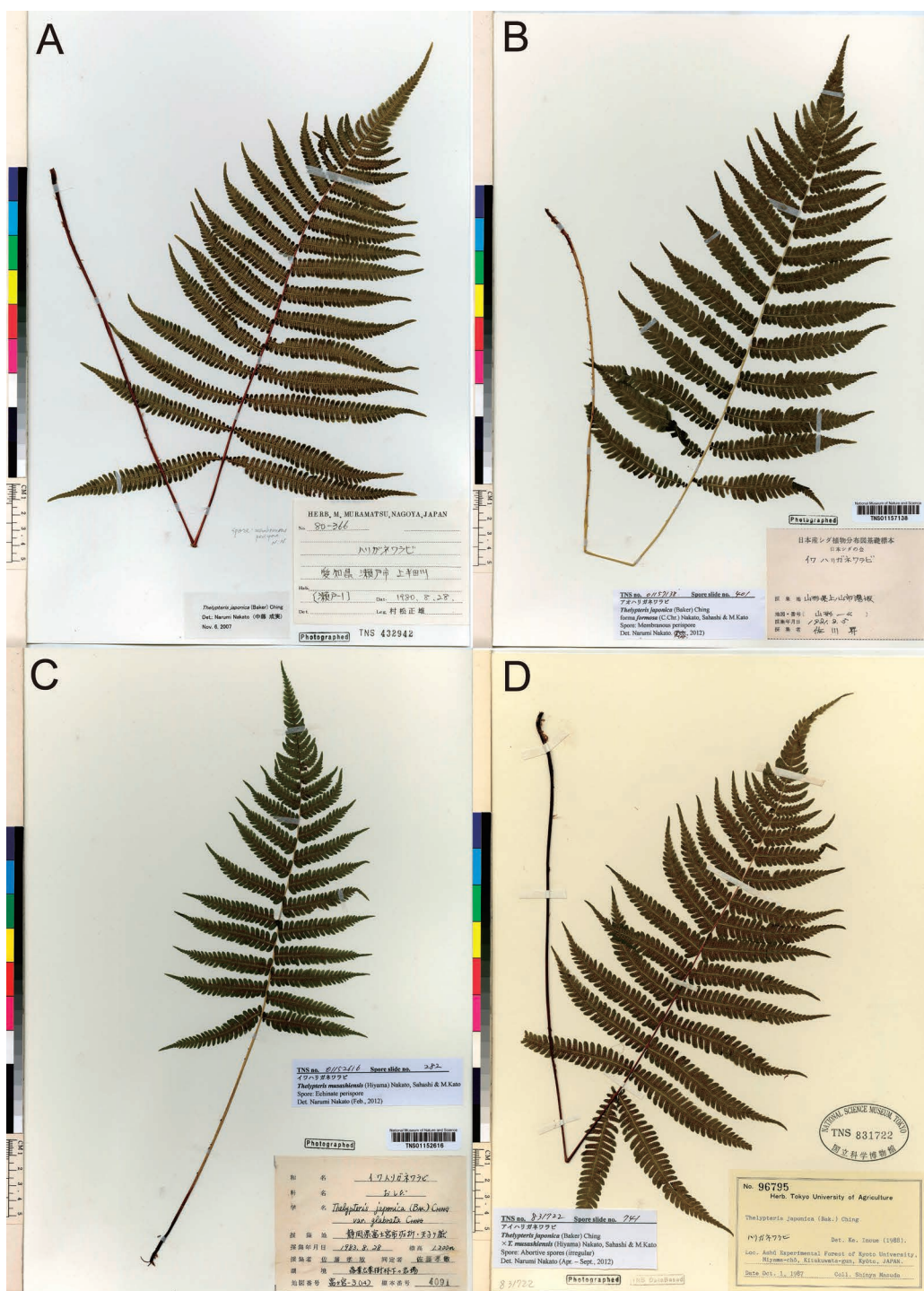


Fig. 1. Specimens of the *Thelypteris japonica* complex in Japan. A. *Thelypteris japonica* forma *japonica* (TNS-VS-432942, Aichi Pref., Seto-shi, M. Muramatsu 80366); B. *T. japonica* forma *formosa* (TNS-VS-1157138, Yamagata Pref., Kaminoyama-shi, N. Sagawa s.n.); C. *T. musashiensis* (TNS-VS-1152616, Shizuoka Pref., Fujinomiya-shi, T. Sato 4091); D. *T. japonica* × *T. musashiensis*, the castaneous stipe form (TNS-VS-831722, Kyoto Pref., Kitakuwada-gun, Miyama-cho, S. Masuda s.n.).

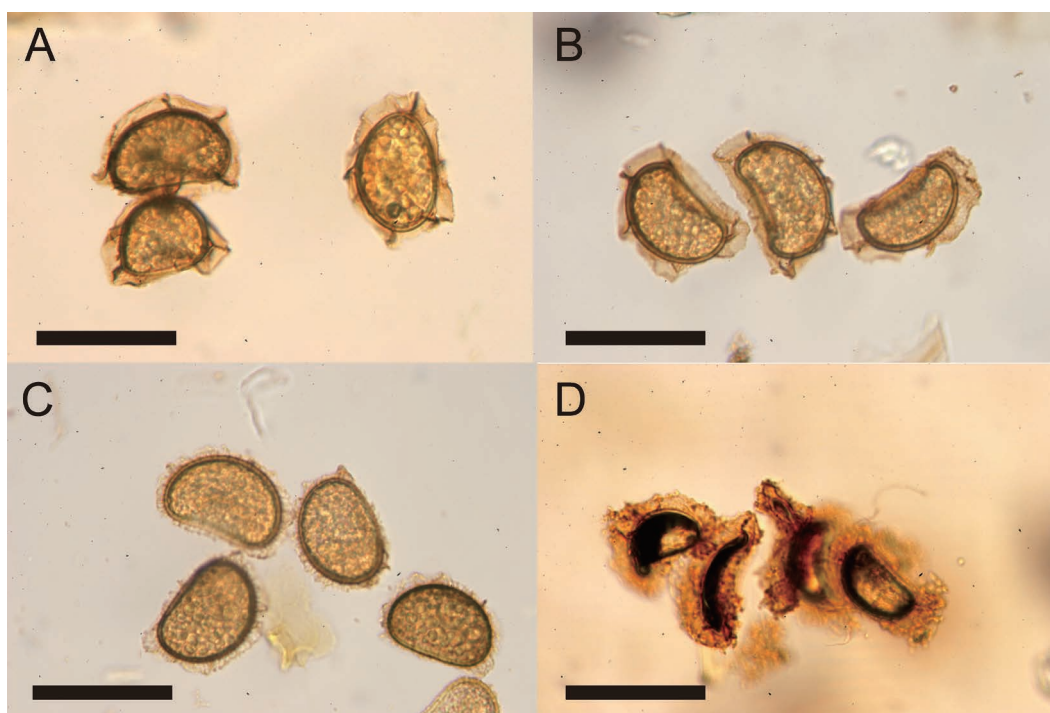


Fig. 2. Spores of the *Thelypteris japonica* complex in Japan (scale bars = 50 µm). A. spores with membraneous ornamentation produced by *T. japonica* forma *japonica* (TNS-VS-397231, Yamaguchi Pref., Iwakuni-shi, A. Minami 16677); B. spores with membraneous ornamentation produced by *T. japonica* forma *formosa* (TNS-VS-438920, Fukushima Pref., Onuma-gun, Showa-mura, Z. Kaneda s.n.); C. spores with echinate ornamentation produced by *T. musashiensis* (TNS-VS-1159828, Oita Pref., Naoiri-gun, Kuju-machi, M. Arakane s.n.); D. irregular-shaped spores of *T. japonica* × *T. musashiensis* (TNS-VS-438936, Fukushima Pref., Kitakata-shi, Z. Kaneda 6517).

For specimens with stramineous stipes (stramineous at least in the upper half of the stipes) which have been identified as *T. japonica* var. *musashiensis* (*T. musashiensis*), var. *glabrata*, f. *viridescens* and forma *formosa*, those producing only irregular spores were identified as the hybrid and those producing normal-shaped spores were separated into two taxa depending on the morphology of the spore ornamentation (membraneous for *T. japonica* forma *formosa* and echinate for *T. musashiensis*). Specimens, even with abundant irregular spores, were not identified as the hybrid when a few regular spores were mixed with the irregular ones. All the spores collected from specimens with stramineous stipes were mounted with Bioleite and the permanent mounts were deposited in TNS.

Results and Discussion

Among ca. 2500 specimens examined, mature spores were observed in 1984 specimens. As a result, 1193 specimens (60.1%) were identified as *T. japonica* forma *japonica*, 275 (13.9%) as *T. japonica* forma *formosa*, 344 (17.3%) as *T. musashiensis* and 172 (8.7%) as the *T. japonica* × *T. musashiensis* (Appendix 1). It is notable that the hybrid consists of individuals with castaneous stipes (120, 69.8% of the hybrid) and those with stramineous stipes (52, 30.2%).

Thelypteris japonica forma *japonica* is the most widespread and most common taxon in the complex, ranging throughout Japan except in Hokkaido and Okinawa Prefectures (Fig. 3A). *Thelypteris japonica* forma *formosa* is also widespread, extending to the southern part of Hok-

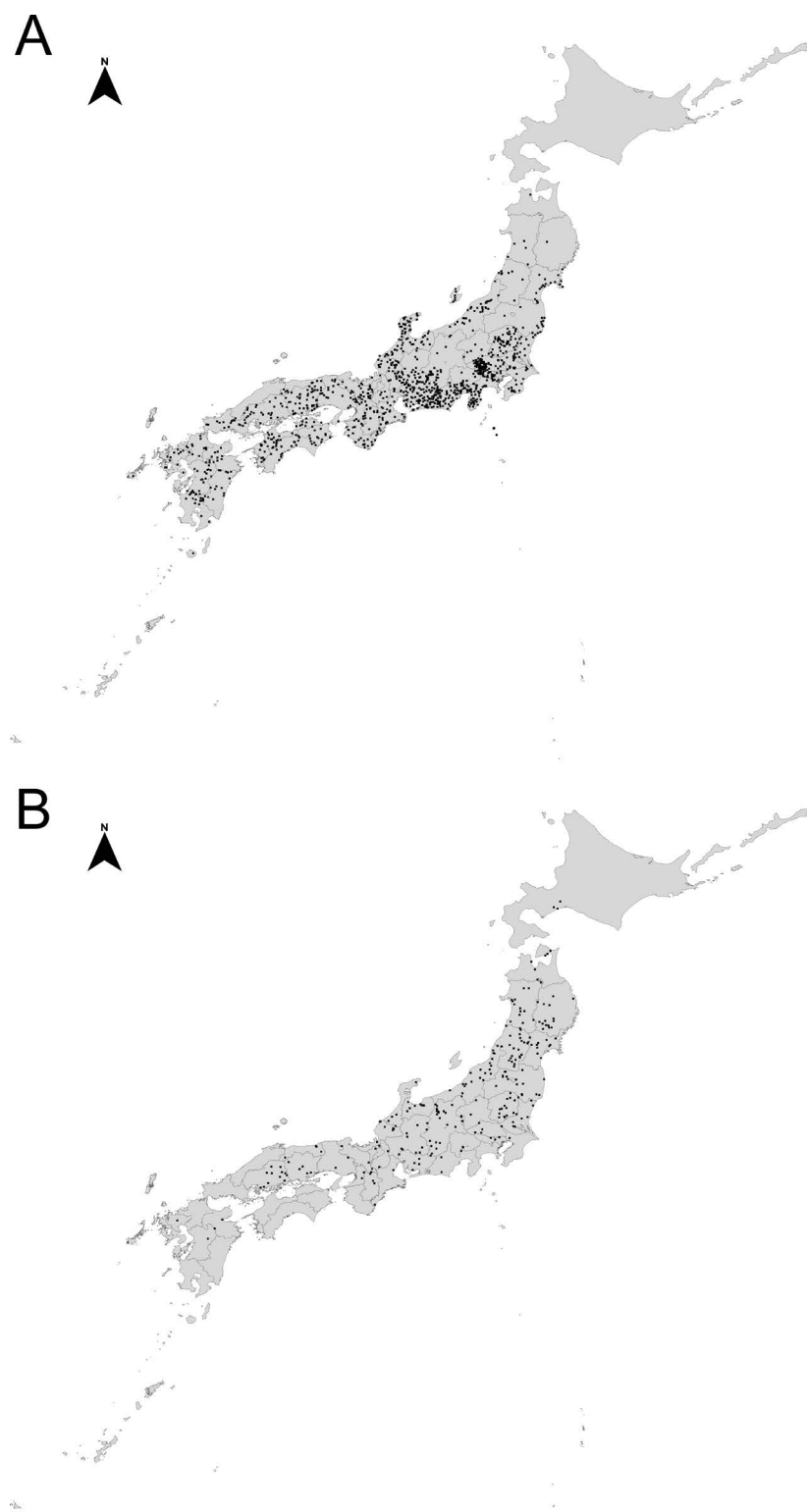


Fig. 3. Distribution maps of the *Thelypteris japonica* complex in Japan based on the specimens examined by the present study. A. *Thelypteris japonica* forma *japonica*; B. *T. japonica* forma *formosa*.

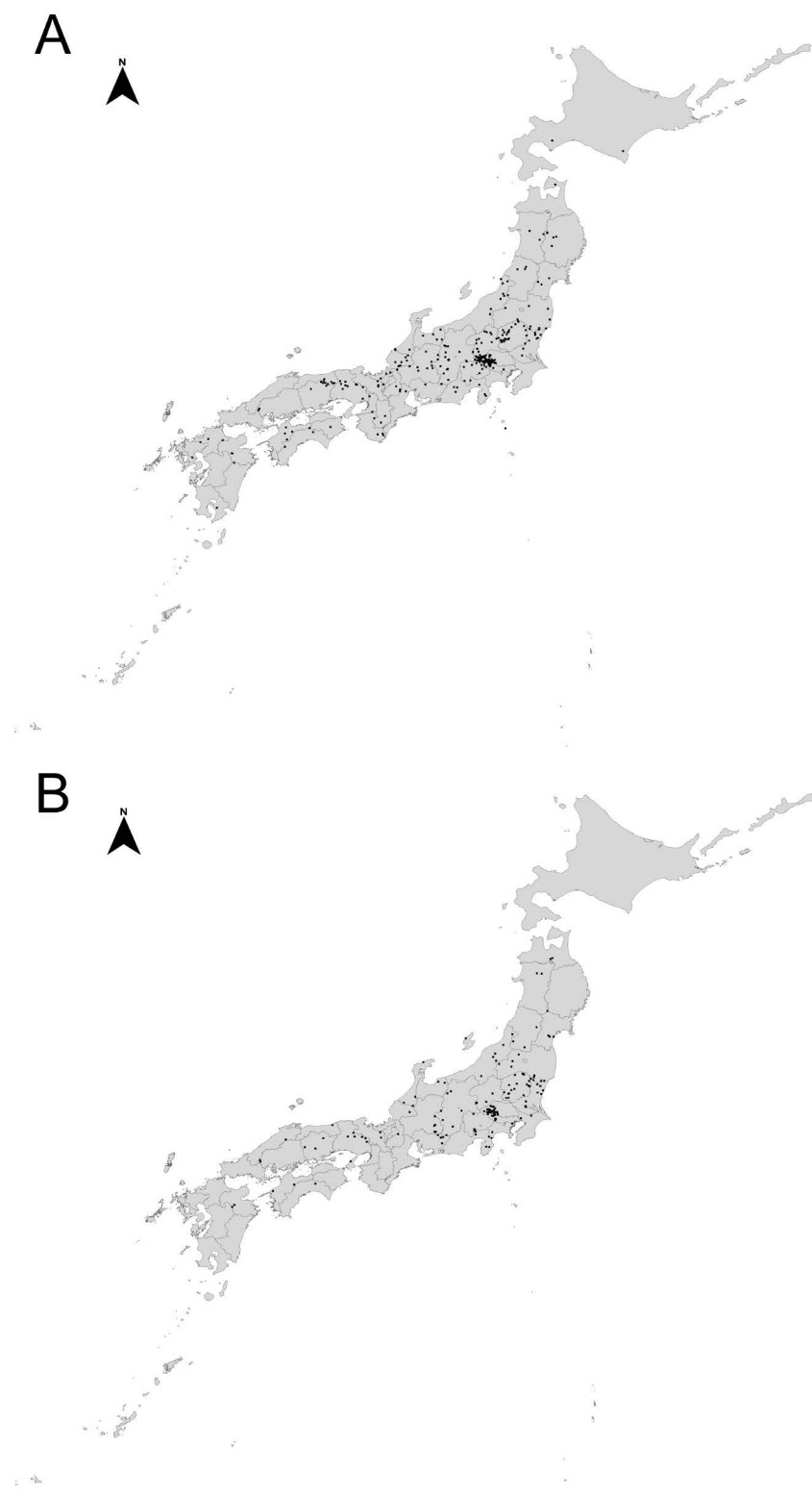


Fig. 4. Distribution maps of the *Thelypteris japonica* complex in Japan based on the specimens examined by the present study. A. *T. musashiensis*; B. *T. japonica* × *T. musashiensis*.

kaido, but less common than the type forma (Fig. 3B). *Thelypteris musashiensis* prefers rocky habitats at rather high altitudes (Nakato *et al.*, 2004), and tends to be distributed in inland areas from southern Hokkaido to Kyushu; it has not yet been found in 8 prefectures, i.e. Chiba, Kanagawa, Shimane, Yamaguchi, Kagawa, Nagasaki, Kumamoto and Okinawa (Fig. 4A). The hybrid (*T. japonica* × *T. musashiensis*) has been found in most of the prefectures where distributions of *T. japonica* s.l. and *T. musashiensis* overlap, but not yet been found in Hokkaido, Mie, Osaka, Nara, Wakayama, Tokushima, Fukuoka, Saga, Kumamoto, Miyazaki and Kagoshima Prefectures (Fig. 4B). It is also notable that the hybrid occurs in Chiba, Kanagawa and Shimane Prefectures where one of the parents, *T. musashiensis* has not yet been recorded. Takahashi and Hori (2008) already pointed out that hybrids were often recorded in the localities lacking one or both of their parents, and our present results frequently showed a similar phenomenon when localities smaller than prefectures were taken into account. Although insufficient sampling is probably a cause of this phenomenon, some of the localities of the hybrid are apparently not preferred by *T. musashiensis* (e.g. TNS-VS-517192, Tokyo, Ikegami — located in the city center of Tokyo, almost at sea level). Variation in stipe color of the hybrid is presumably due to the stipe color of one of the parents (i.e. *T. japonica* forma *japonica* vs. forma *formosa*). The hybrid with stramineous stipes has been collected in the northeastern half of Honshu so far, which seems to be influenced by the distribution of *T. japonica* forma *formosa*.

Acknowledgments

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Appendix 1. Specimens identified based on spore morphology. Municipal-level locality information is provided for *Thelypteris japonica* forma *japonica*, and locality details are provided for the remaining taxa.

Thelypteris japonica (Baker) Ching forma *japonica* [Harigane-warabi]

Honshu - Aomori Pref.: Higashisugaru-gun, Kanita-machi, 1977-8-22, N. Saitoh s.n. (TNS-VS-344145); **Iwate Pref.**: Shiwa-gun, Tonan-mura, 1980-9-15, Y. Nakajima s.n. (TNS-VS-440259); **Miyagi Pref.**: Sendai-shi, 1912-9-28, E. Iishiba s.n. (TNS-VS-254666), 1980-9-23, M. Takeichi s.n. (TNS-VS-575758); Ishinomaki-shi, 1972-10-15, Y. Ueno 8550 (TNS-VS-575754); Shiogama-shi, 1977-8-22, M. Takeichi s.n. (TNS-VS-575762); Shibata-gun, Shibata-machi, 1980-10-11, K. Shoji s.n. (TNS-VS-575751); Igu-gun, Marumori-machi, 1980-8-10, K. Okazaki s.n. (TNS-VS-576835), 1980-7-22, K. Okazaki s.n. (TNS-VS-576834), 1981-8-23, K. Matsunaga s.n. (TNS-VS-1156160); Miyagi-gun, Matsushima-machi, 1976-8-19, W. Takahashi s.n. (TNS-VS-576832); Rifu-cho, 1980-10-26, M. Takeichi s.n. (TNS-VS-575756); Shida-gun, Matsuyama-machi, 1977-?-?, M. Takeichi s.n. (TNS-VS-575761); Tamatsukuri-gun, Iwadeyama-machi, 1972-10-1, W. Takahashi s.n. (TNS-VS-576833); Mono-gun, Yamoto-cho, 1977-10-15, M. Takeichi s.n. (TNS-VS-575763); Oshika-gun, Onagawa-cho, 1981-9-23, M. Takeichi s.n. (TNS-VS-575767); Inai-cho, 1967-10-22, M. Kikuchi s.n. (TNS-VS-177138); Oshika-cho, 1979-11-4, K. Matsunaga s.n. (TNS-VS-1156161); Motoyoshi-gun, Shizugawa-cho, 1980-9-19, M. Takeichi s.n. (TNS-VS-575760); Motoyoshi-cho, 1980-7-26, Z. Kaneda s.n. (TNS-VS-575759); **Akita Pref.**: Akita-shi, 1978-9-5, J. Takada s.n. (TNS-VS-420027); Omagari-shi, 1980-10-10, J. Takada s.n. (TNS-VS-420029); Yuri-gun, Kisakata-machi, 1980-9-28, J. Takada s.n. (TNS-VS-420026); Senboku-gun, Kyowamachi, 1976-10-5, J. Takada s.n. (TNS-VS-420028); Ogachi-gun, Ogachi-machi, 1981-9-26, J. Takada s.n. (TNS-VS-420111); **Yamagata Pref.**: Yonezawa-shi, 1980-8-28, Z. Sato 326 (TNS-VS-437984); Tsuruoka-shi, 1958-10-9, S. Kato s.n. (TNS-VS-437817), 1981-8-6, A. Yamamoto s.n. (TNS-VS-437980), 1970-8-14, S. Kato s.n. (TNS-VS-437612); Murayama-shi, 1980-8-24, N. Sagawa s.n. (TNS-VS-437982); Mogami-gun, Tozawamura, 1964-9-12, S. Kato s.n. (TNS-VS-437819); Higashitagawa-gun, Haguro-machi, 1980-10-1, T. Nakaike s.n. (TNS-VS-437981); Nishitagawa-gun, Tagawa-mura, 1892-9-11, T. Nagasawa s.n. (TNS-VS-54786), 1903-8-24, T. Nagasawa s.n. (TNS-VS-517186,

- 517188); **Fukushima Pref.**: Iwaki-shi, 1976-8-8, *H. Ito s.n.* (TNS-VS-1092657), 1973-10-16, *Y. Yuzawa s.n.* (TNS-VS-438917), 1975-9-28, *Y. Yuzawa s.n.* (TNS-VS-438919), 1976-7-3, *Y. Yuzawa s.n.* (TNS-VS-438918), 1980-10-26, *S. Saito s.n.* (TNS-VS-438939), 1976-8-9, *T. Nakaike s.n.* (TNS-VS-435492), 1984-11-14, *M. Origasa s.n.* (TNS-VS-1157005), 1975-9-28, *Z. Kaneda s.n.* (TNS-VS-1172237); Shinobu-gun, Tsuchiyu-mura, 1933-8-21, *H. Koidzumi 100833* (TNS-VS-912107); Onuma-gun, Aizutakadamachi, 1980-9-21, *A. Baba s.n.* (TNS-VS-439165); Higashishirakawa-gun, Tanagura-machi, 1977-10-20, *Z. Kaneda 3503* (TNS-VS-1172238); Futaba-gun, Naraha-machi, 1975-10-20, *Z. Kaneda s.n.* (TNS-VS-438933), 1969-9-15, *Y. Yuzawa s.n.* (TNS-VS-1172236); Tomioka-machi, 1980-12-2, *Z. Kaneda 6512* (TNS-VS-438935), 1980-12-3, *Z. Kaneda 6505* (TNS-VS-438934); **Ibaraki Pref.**: Mito-shi, 1979-8-23, *M. Yasu s.n.* (TNS-VS-422597); Ishioka-shi, 1974-10-10, *H. Fujita s.n.* (TNS-VS-422809); Ryugasaki-shi, 1975-8-27, *Y. Nakazaki & N. Wada s.n.* (TNS-VS-422586); Hitachiota-shi, 1980-9-7, *M. Yasu s.n.* (TNS-VS-422594); Kitaibaraki-shi, 1974-10-5, *N. Wada 1051* (TNS-VS-595307), 1975-11-18, *T. Waku 4295* (TNS-VS-595305); Kasama-shi, 1975-8-8, *H. Fujita s.n.* (TNS-VS-422811); Toride-shi, 1975-8-27, *M. Yasu s.n.* (TNS-VS-422805), 1975-8-22, *H. Fujita s.n.* (TNS-VS-422808); Tsukuba-shi, 1995-11-11, *N. Nakato 2009* (TNS-VS-1168523), 1995-11-11, *N. Nakato 2014* (TNS-VS-1168524), 1997-9-22, *S. Fujimoto s.n.* (TNS-VS-9508642a/b); Higashiibaraki-gun, Ibaraki-machi, 1974-10-5, *M. Yasu s.n.* (TNS-VS-422588); Nishiibaraki-gun, Iwama-machi, 1958-10-31, *E. Sugiyama s.n.* (TNS-VS-1042044); Naka-gun, Ogawa-mura, 1974-11-8, *H. Fujita s.n.* (TNS-VS-422589); Kuji-gun, Satomi-mura, 1979-9-5, *M. Yasu s.n.* (TNS-VS-422580); Daigo-machi, 1970-10-18, *Y. Nakazaki s.n.* (TNS-VS-422585), 1977-10-30, *M. Yasu s.n.* (TNS-VS-422815); Kashima-gun, Kashima-machi, 1974-11-30, *M. Yasu s.n.* (TNS-VS-422807); Niihari-gun, Yasato-machi, 1973-10-31, *M. Yasu s.n.* (TNS-VS-422574), 1979-10-25, *M. Yasu s.n.* (TNS-VS-422582); Tsukuba-gun, Tsukuba-machi, 1980-12-18, *T. Nakamura & A. Nakamura s.n.* (TNS-VS-422802), 1980-11-20, *T. Nakamura & A. Nakamura s.n.* (TNS-VS-422801); Makabe-gun, Makabe-machi, 1998-8-18, *A. Satoh TKB0021* (TNS-VS-9508621a/b); Yuuki-gun, Yachiyo-machi, 1975-8-22, *Y. Nakazaki & O. Shimizu s.n.* (TNS-VS-422587); Sashima-gun, Goka-mura, 1975-8-31, *N. Wada s.n.* (TNS-VS-422599); **Tochigi Pref.**: Utsunomiya-shi, 1987-8-5, *F. Matsumura s.n.* (TNS-VS-799751), 1981-9-5, *M. Usui s.n.* (TNS-VS-427387), 1981-8-29, *M. Usui s.n.* (TNS-VS-427385), 1980-8-28, *M. Usui s.n.* (TNS-VS-422709), 1980-9-28, *M. Usui s.n.* (TNS-VS-422711); Ashikaga-shi, 1980-11-3, *M. Usui s.n.* (TNS-VS-422698), 1980-10-27, *M. Usui s.n.* (TNS-VS-422699); Tochigi-shi, 1980-10-24, *M. Usui s.n.* (TNS-VS-422718); Kanuma-shi, 1980-10-23, *K. Satoh s.n.* (TNS-VS-799737), 1980-10-9, *M. Usui s.n.* (TNS-VS-422712), 1980-9-1, *M. Usui s.n.* (TNS-VS-422714), 1980-10-29, *M. Usui s.n.* (TNS-VS-422700); Nikko-shi, 1987-8-9, *T. Kamiyama s.n.* (TNS-VS-799743), 1987-8-9, *T. Kamiyama s.n.* (TNS-VS-799742), 1956-9-10, *M. Ishihara s.n.* (TNS-VS-132660), 1980-10-22, *M. Usui s.n.* (TNS-VS-422707); Imaichi-shi, 1987-8-20, *T. Kamiyama s.n.* (TNS-VS-799754), 1987-9-28, *T. Kamiyama s.n.* (TNS-VS-799741), 1987-7-26, *T. Kamiyama s.n.* (TNS-VS-799753), 1987-8-17, *T. Kamiyama s.n.* (TNS-VS-799740), 1980-9-17, *M. Usui s.n.* (TNS-VS-422705), 1980-9-17, *M. Usui s.n.* (TNS-VS-422706); Oyama-shi, 1980-9-12, *M. Usui s.n.* (TNS-VS-422713); Otawara-shi, 1957-9-22, *K. Ogawa s.n.* (TNS-VS-1042048); Kuroiso-shi, 1981-9-15, *T. Waku s.n.* (TNS-VS-431947), 1987-9-12, *S. Ishiguro s.n.* (TNS-VS-1157006); Kawachi-gun, Minamikawachi-machi, 1979-10-20, *M. Usui s.n.* (TNS-VS-422717); Kamikawachi-mura, 1981-10-2, *S. Waku s.n.* (TNS-VS-438798); Kawachi-machi, 1987-9-13, *H. Ogawa s.n.* (TNS-VS-799755), 1987-10-4, *H. Ogawa s.n.* (TNS-VS-799744); Kamitsuga-gun, Nishikata-mura, 1981-9-8, *M. Usui s.n.* (TNS-VS-427386); Haga-gun, Mashiko-machi, 1979-9-20, *M. Usui s.n.* (TNS-VS-422716); Motegi-machi, 1987-9-13, *M. Yoshikawa 1521* (TNS-VS-799746), 1980-10-2, *M. Usui s.n.* (TNS-VS-422708); Shimotsuga-gun, Fujioka-machi, 1981-8-17, *M. Usui s.n.* (TNS-VS-518255); Shioya-gun, Shioya-machi, 1980-9-8, *T. Tashiro s.n.* (TNS-VS-422694); Ujiie-machi, 1987-9-13, *H. Ogawa s.n.* (TNS-VS-799739); Kitsuregawa-machi, 1981-9-2, *M. Usui s.n.* (TNS-VS-427390), 1987-10-28, *S. Waku s.n.* (TNS-VS-1160528); Nasu-gun, Karasuyama-machi, 1977-8-28, *T. Waku 7418* (TNS-VS-422690); Bato-machi, 1981-9-16, *M. Usui s.n.* (TNS-VS-427389); Kurobane-machi, 1981-9-30, *S. Waku s.n.* (TNS-VS-438797); Nasu-machi, 1968-8-22, *H. Ito s.n.* (TNS-VS-1092234), 1980-10-15, *M. Usui s.n.* (TNS-VS-422703), 1981-8-16, *T. Tashiro s.n.* (TNS-VS-427392), 1980-8-13, *M. Usui s.n.* (TNS-VS-422704); Nishinasuno-machi, 1987-10-8, *T. Yamamura s.n.* (TNS-VS-799756), 1988-11-13, *T. Yamamura s.n.* (TNS-VS-799738), 1968-8-22, *H. Ito s.n.* (TNS-VS-1042053), 1979-9-8, *H. Kato s.n.* (TNS-VS-422688); **Gunma Pref.**: Ota-shi, 1973-10-23, *S. Suto s.n.* (TNS-VS-435554); Seta-gun, Ogo-machi, 1980-11-4, *T. Waku 10466* (TNS-VS-435551); Gunma-gun, Haruna-machi, 1980-6-23, *S. Suto s.n.* (TNS-VS-435553); Kitagunma-gun, Onogami-mura, 1985-10-2, *S. Waku s.n.* (TNS-VS-1166304); Tano-gun, Onishi-machi, 1979-9-17, *S. Suto s.n.* (TNS-VS-435552); Kanra-gun, Shimonita-machi, 1956-9-9, *T. Satomi 16* (TNS-VS-1042065); Usui-gun, Matsuida-machi, 1986-8-3, *S. Ishiguro s.n.* (TNS-VS-1156206); Ora-gun, Chiyoda-mura, 1957-11-0, *T. Matsuzawa s.n.* (TNS-VS-1042047); Tatara-mura, 1954-8-22, *T. Wakana 27* (TNS-VS-1042124); **Saitama Pref.**: Urawa-shi, 1947-9-25, *T. Kawasaki 6767* (TNS-VS-675379), 1980-7-12, *T. Waku 10032* (TNS-VS-514508); Omiya-shi, 1980-9-5, *T. Waku 10243* (TNS-VS-514507); Chichibu-shi, 1994-10-25, *T. Iwata 40606* (TNS-VS-1133844), 1995-10-1, *T. Iwata 42159* (TNS-VS-1133835), 2000-8-10, *T. Iwata 61054* (TNS-VS-1133820), 1987-11-17, *T. Iwata 8334* (TNS-VS-1133723), 1989-10-29, *T. Iwata 9712* (TNS-VS-1133871), 1991-8-25, *T. Iwata 10515* (TNS-VS-1133860), 1991-9-15, *T. Iwata 10566* (TNS-VS-1133859), 1991-10-6, *T. Iwata 10660* (TNS-VS-1133858), 1983-9-15, *T. Iwata 2088* (TNS-VS-1133788), 1983-9-15, *T. Iwata 2094* (TNS-VS-1133787), 1983-10-28, *T. Iwata 2338* (TNS-VS-1133782), 1983-10-28, *T. Iwata 2339* (TNS-VS-1133781), 1964-8-18, *T. Iwata 289* (TNS-VS-1133810), 1981-8-25, *S. Kobayashi s.n.*

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Iwata 9110* (TNS-VS-1133895), 1984-10-19, *T. Iwata 3673* (TNS-VS-1133770), 1965-11-7, *H. Ito s.n.* (TNS-VS-1045364); Ogose-machi, 1989-9-14, *T. Iwata 9554* (TNS-VS-1133879), 1989-9-14, *T. Iwata 9560* (TNS-VS-1133877), 1989-9-14, *T. Iwata 9542* (TNS-VS-1133878); Umesono-mura, 1952-11-7, *H. Ito s.n.* (TNS-VS-1042113), 1952-11-7, *H. Ito s.n.* (TNS-VS-1042075, 1042076, 1042078); Naguri-mura, 1989-9-1, *T. Iwata 9438* (TNS-VS-1133880), 1985-11-20, *T. Iwata 5918* (TNS-VS-1133746), 1984-10-19, *T. Iwata 3750* (TNS-VS-1133769), 1984-10-19, *T. Iwata 3740* (TNS-VS-1133768), 1964-10-25, *H. Ito s.n.* (TNS-VS-1045361), 2002-9-1, *N. Nakato 2467* (TNS-VS-1168489), 1976-10-17, *H. Kobayashi s.n.* (TNS-VS-1172268); Agano-mura, 1953-9-7, *H. Inoue s.n.* (TNS-VS-1042073); Yamane-mura, 1938-9-18, *S. Okuyama 17992* (TNS-VS-281549); Hiki-gun, Ogawa-machi, 1974-11-1, *H. Ohashi, H. Ohba, Y. Tateishi & J. Murata 540* (TNS-VS-337052); Tokigawa-mura, 1984-11-17, *T. Iwata 3917* (TNS-VS-1133764), 1993-9-26, *T. Yamada s.n.* (TNS-VS-737854); Tamagawa-mura, 1989-9-14, *T. Iwata 9526* (TNS-VS-1133876), 1989-9-14, *T. Iwata 9515* (TNS-VS-1133875), 1989-9-14, *T. Iwata 9527* (TNS-VS-1133873); Chichibu-gun, Yokoze-machi, 1987-8-23, *T. Iwata 7956* (TNS-VS-1133718), 1981-8-19, *T. Iwata s.n.* (TNS-VS-1133802), 1982-11-3, *T. Iwata 1397* (TNS-VS-1133794); Minano-machi, 1985-11-6, *T. Iwata 5870* (TNS-VS-1133747); Nagatoro-machi, 1996-11-6, *T. Iwata 48175* (TNS-VS-1133830), 2001-11-9, *T. Iwata 64425* (TNS-VS-1133816), 1988-10-9, *T. Iwata 9017* (TNS-VS-1133900), 1983-8-26, *T. Iwata 2031* (TNS-VS-1133790), 1984-7-23, *T. Iwata 3071* (TNS-VS-1133777); Yoshida-machi, 1988-7-28, *T. Iwata 8676* (TNS-VS-1133907), 1982-8-18, *T. Iwata 1220* (TNS-VS-1133795); Ogano-machi, 1995-9-18, *T. Iwata 42059* (TNS-VS-1133840), 1988-9-25, *T. Iwata 8990* (TNS-VS-1133901), 2002-11-17, *T. Iwata 67354* (TNS-VS-1133813); Ryokami-mura, 1993-9-25, *T. Iwata 11332* (TNS-VS-1133848), 1995-8-31, *T. Iwata 41811* (TNS-VS-1133841), 1990-7-22, *T. Iwata 9868* (TNS-VS-1133868); Otaki-mura, 1950-11-15, *H. Ito s.n.* (TNS-VS-1042067); Arakawa-mura, 1989-8-1, *T. Iwata 9338* (TNS-VS-1133890), 1989-8-1, *T. Iwata 9340* (TNS-VS-1133886), 1989-8-4, *T. Iwata 9319* (TNS-VS-1133881), 1991-7-31, *T. Iwata 10355* (TNS-VS-1133861), 1969-11-24, *T. Iwata 293* (TNS-VS-1133806); Higashichichibu-mura, 1996-9-16, *T. Iwata 46861* (TNS-VS-1133833), 1988-9-8, *T. Iwata 8886* (TNS-VS-1133902), 1988-9-8, *T. Iwata 8883* (TNS-VS-1133903), 1985-9-23, *T. Iwata 5523* (TNS-VS-1133754), 1985-9-23, *T. Iwata 5514* (TNS-VS-1133753), 1985-11-1, *T. Iwata 5784* (TNS-VS-1133749), 1982-11-5, *T. Iwata 1442* (TNS-VS-1133793); Kodama-gun, Kamiizumi-mura, 1983-11-14, *S. Kojima & K. Mashimo s.n.* (TNS-VS-1156149); Osato-gun, Yorii-machi, 1990-10-7, *T. Iwata 10037* (TNS-VS-1133864), 1981-11-22, *S. Kobayashi s.n.* (TNS-VS-425195); Kitasaitama-gun, Okuwa-mura, 1952-8-?, *I. Nagano s.n.* (TNS-VS-1042072); Kitakatsushika-gun, Washimiya-machi, 1964-9-12, *H. Ito s.n.* (TNS-VS-1045693); Showa-machi, 1958-10-15, *F. Nagasu s.n.* (TNS-VS-162717); Chiba Pref.: Kisarazu-shi, 1987-10-7, *M. Ono s.n.* (TNS-VS-1023798); Matsudo-shi, 1979-11-12, *Y. Kimizuka s.n.* (TNS-VS-424253); Sawara-shi, 1981-8-16, *K. Ito s.n.* (TNS-VS-560436), 1981-8-6, *Y. Koike s.n.* (TNS-VS-560434); Togane-shi, 1976-9-20, *I. Ueda s.n.* (TNS-VS-424245); Katsuura-shi, 1981-8-11, *Y. Kimizuka s.n.* (TNS-VS-560438); Ichihara-shi, 1978-8-22, *Y. Kimizuka s.n.* (TNS-VS-424251), 1980-8-28, *T. Kawana s.n.* (TNS-VS-424254); Abiko-shi, 1980-10-10, *K. Aida s.n.* (TNS-VS-424255), 1979-10-14, *T. Kawana s.n.* (TNS-VS-424242); Kimitsu-shi, 1983-9-15, *T. Iwata 2266* (TNS-VS-1133789), 1972-11-12, *T. Nakaike s.n.* (TNS-VS-288360), 1977-12-3, *H. Kobayashi s.n.* (TNS-VS-424249), 1980-8-20, *Y. Kasuya s.n.* (TNS-VS-424239), 1980-8-18, *T. Kawana s.n.* (TNS-VS-427514), 1980-8-20, *Y. Kasuya s.n.* (TNS-VS-936021); Yotsukaido-shi, 1983-12-12, *J. Haginiwa JH014529* (TNS-VS-964529), 1983-12-12, *J. Haginiwa JH014530* (TNS-VS-964530); Higashikatsushika-gun, Sekiyado-machi, 1981-10-11, *Y. Kimizuka s.n.* (TNS-VS-560437); Katori-gun, Kurimoto-machi, 1976-9-19, *Y. Koike 283* (TNS-VS-424247); Chosei-gun, Chosei-mura, 1966-8-15, *M. Furuse 44360* (TNS-VS-773906); Awa-gun, Amatsukominato-machi, 1951-11-0, *H. Ito s.n.* (TNS-VS-1042120); Tokyo Pref.: Tokyo-shi, 1932-10-0, *K. Hiyama 457* (TNS-VS-1166299); Bunkyo-ku, 1980-7-12, *Y. Kimizuka s.n.* (TNS-VS-423948); Kitatoshima-gun, Iwabuchi-machi, 1929-7-?, *Y. Jotani 16* (TNS-VS-831884), 1897-8-17, *K. Watanabe s.n.* (TNS-VS-63268); Hachioji-shi, 2008-8-11, *S. Fujimoto 080811-2* (TNS-VS-776368), 1970-9-29, *H. Miyazaki 1679* (TNS-VS-831717), 1969-10-6, *S. Serizawa 11274* (TNS-VS-311877); Ome-shi, 1985-9-29, *T. Iwata 5587* (TNS-VS-1133752), 1984-10-23, *T. Iwata 3773* (TNS-VS-1133766), 1976-9-5, *C. Ohkawa s.n.* (TNS-VS-435957), 2003-7-20, *N. Nakato 2507* (TNS-VS-1168490), 1980-9-14, *H. Kobayashi s.n.* (TNS-VS-424054), 1980-10-4, *H. Endo s.n.* (TNS-VS-423942); Fuchu-shi, 1980-9-19, *M. Mitsuhashi s.n.* (TNS-VS-424053), 1980-9-30, *M. Mitsuhashi s.n.* (TNS-VS-423950); Akishima-shi, 1980-10-6, *H. Endo s.n.* (TNS-VS-424055); Kitatama-gun, Jindai-mura, 1949-11-19, *Y. Hiratsuka s.n.* (TNS-VS-513626); Chofu-shi, 1955-11-10, *T. Kawasaki s.n.* (TNS-VS-1042081), 1980-10-31, *M. Mitsuhashi s.n.* (TNS-VS-427147); Machida-shi, 1980-9-30, *A. Yamamoto s.n.* (TNS-VS-423949), 1980-10-17, *C. Azegami s.n.* (TNS-VS-936406, 936477); Higashi-

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(TNS-VS-89887); Mikurajima-mura, 1967-7-28, *Y. Jotani & al.* s.n. (TNS-VS-831703); Kamitsuki-mura, 1934-8-9, *Y. Jotani* 5495 (TNS-VS-831903), 1934-8-8, *Y. Jotani* 5497 (TNS-VS-121089); Toyotama-gun, Iogi-machi, 1931-9-?, *F. Maekawa* s.n. (TNS-VS-831868); **Kanagawa Pref.**: Yokohama-shi, 1952-8-9, *O. Deguchi* s.n. (TNS-VS-92880), 1980-8-24, *T. Sato* s.n. (TNS-VS-441341), 1980-9-7, *E. Fukushi* s.n. (TNS-VS-441345), 1981-10-11, *A. Yamamoto* s.n. (TNS-VS-427169); Kawasaki-shi Tama-ku, 1979-10-14, *Y. Kimizuka* s.n. (TNS-VS-441339); Asao-ku, 1982-11-21, *E. Fukushi* s.n. (TNS-VS-1156204); Hiratsuka-shi, 1971-8-24, *H. Komaki* s.n. (TNS-VS-287216), 1970-7-26, *J. Moriya* s.n. (TNS-VS-280517), 1974-8-29, *J. Moriya* s.n. (TNS-VS-441340), 1971-9-25, *J. Moriya* s.n. (TNS-VS-441342); Odawara-shi, 1980-11-10, *M. Akiyama* s.n. (TNS-VS-545685), 1982-11-20, *K. Tanaka* s.n. (TNS-VS-1156215); Ashigarakami-gun, Yamakita-machi, 1983-8-27, *K. Tanaka* s.n. 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Takahashi* 2846 (TNS-VS-1172232), 1948-10-17, *T. Uchikawa* s.n. (TNS-VS-89863); Kitakanbara-gun, Sasakami-mura, 1963-11-7, *F. Konta* 3405 (TNS-VS-929610), 1963-11-7, *F. Konta* 3426 (TNS-VS-929600), 1978-11-14, *M. Saito* 2391 (TNS-VS-543168), 1986-10-21, *M. Saito* s.n. (TNS-VS-1157042, 1166312), 1978-11-14, *M. Saito* s.n. (TNS-VS-1172239); Toyoura-machi, 1987-9-4, *M. Saito* s.n. (TNS-VS-1156201); Nakakanbara-gun, Muramatsu-machi, 1962-8-29, *F. Konta* 911 (TNS-VS-929589), 1948-10-?, *T. Uchikawa* 41 (TNS-VS-89864), 1978-9-7, *M. Saito* 2554 (TNS-VS-543169), 1979-10-15, *T. Takahashi* s.n. (TNS-VS-543179), 1983-8-30, *M. Saito* s.n. (TNS-VS-1156157), 1967-8-30, *S. Iwano* s.n. (TNS-VS-1172235), 1978-9-23, *M. Saito* 2177 (TNS-VS-1172234), 1978-9-23, *M. Saito* 2181 (TNS-VS-1172233); Nishikanbara-gun, Yahiko-mura, 1978-8-3, *M. Saito* 2089 (TNS-VS-543166); Bunsui-machi, 1987-10-22, *M. Saito* s.n. (TNS-VS-1156125); Minamikanbara-gun, Shitada-mura, 1979-8-27, *M. Saito* 3192 (TNS-VS-543173); Sakae-machi, 1987-10-23, *M. Saito* s.n. (TNS-VS-1156133); Higashikanbara-gun, Mikawa-mura, 1943-8-18, *S. Iwano* s.n. (TNS-VS-543178); Santo-gun, Koshiji-machi, 1985-10-21, *I. Ohzu* s.n. (TNS-VS-1166307); Teradomari-machi, 1987-10-23, *M. Saito* s.n. (TNS-VS-1156121); Minamiuonuma-gun, Shiozawa-machi, 1958-11-3, *S. Iwano* s.n. (TNS-VS-543177); Kariwa-gun, Takayanagi-machi, 1953-10-19, *S. Iwano* s.n. (TNS-VS-543174), 1985-8-14, *I. Ohzu* s.n. (TNS-VS-1166306); Nakakubiki-gun, Kakizaki-machi, 1962-11-20, *E. Sakuma* s.n. (TNS-VS-543190); Kubiki-mura, 1984-10-20, *S. Tomitori* s.n. (TNS-VS-1157004); Iwafune-gun, Sekikawa-mura, 1987-9-29, *M. Saito* s.n. (TNS-VS-1156124); Sanpoku-machi, 1987-9-28, *M. Saito* s.n. (TNS-VS-1156126); Sado-gun, Aikawa-machi, 1983-10-28, *M. Saito* s.n. (TNS-VS-1156159), 1986-9-9, *M. Saito* s.n. (TNS-VS-1157043); Kanai-machi, 1983-10-10, s.n. (TNS-VS-1156156); Mano-machi, 1987-11-15, *M. Saito* s.n. (TNS-VS-1156123); Hamochi-machi, 1995-10-24, *N. Nakato* 1991 (TNS-VS-1168525); Akadomari-mura, 1984-8-9, *M. Saito* s.n. (TNS-VS-1157037); **Toyama Pref.**: Toyama-shi, 1978-7-6, *T. Ohshima* s.n. (TNS-VS-528751); Takaoka-shi, 1977-8-9, *T. Ohshima* s.n. (TNS-VS-528748); Uozu-shi, 1981-8-20, *T. Ohshima* s.n. (TNS-VS-528744), 1977-9-23, *T. Ohshima* s.n. (TNS-VS-528746); Kurobe-shi, 1978-8-10, *T. Ohshima* s.n. (TNS-VS-528752); Tonami-shi, 1976-8-21, *T. Ohshima* s.n. (TNS-VS-528755); Oyabe-shi, 1979-8-9, *T. Ohshima* s.n. (TNS-VS-528753); Kaminiikawa-gun, Oyama-machi, 1983-8-13, *T. Ohshima* s.n. (TNS-VS-1156187); Nakaniikawa-gun, Kamiichi-machi, 1978-10-8, *T. Ohshima* s.n. (TNS-VS-528704); Tateyama-mura, 1929-8-31, *Z. Tashiro* s.n. (TNS-VS-35380); Tateyama-machi, 1976-10-20, *T. Ohshima* s.n. (TNS-VS-528745); Shimonikawa-gun, Asahi-machi, 1981-9-15, *T. Ohshima* s.n. (TNS-VS-528743), 1982-11-6, *T. Ohshima* s.n. (TNS-VS-1156181); Nei-gun, Yatsuo-machi, 1980-7-8, *T. Ohshima* s.n. (TNS-VS-528756); Yamada-mura, 1978-10-7, *T. Ohshima* s.n. (TNS-VS-528749); Higashitonami-gun, Kamitaira-mura, 1983-8-6, *T. Ohshima* s.n. (TNS-VS-1156183); Nishitonami-gun, Fukuoka-machi, 1988-8-21, *T. Ohshima* s.n. (TNS-VS-1157007); **Ishikawa Pref.**: Kanazawa-shi, 1973-9-9, *M. Honda* s.n. (TNS-VS-424527), 1975-8-20, *M. Honda* s.n. (TNS-VS-424528), 1976-10-10, *M. Honda* s.n. (TNS-VS-424515); Nanao-shi, 1979-8-11, *S. Komaki* s.n. (TNS-VS-424523), 1978-11-3, *S. Komaki* s.n. (TNS-VS-424513); Komatsu-shi, 1980-8-18, *M. Honda* s.n. (TNS-VS-424533), 1980-8-9, *M. Honda* s.n. (TNS-VS-424532), 1979-8-11, *K. Yoneyama* s.n. (TNS-VS-424525); Wajima-shi, 1975-10-5, *S. Komaki* s.n. (TNS-VS-424535), 1977-10-11, *S. Komaki* s.n.

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Komaki s.n.* (TNS-VS-424543); Kashima-gun, Tatsuruhama-machi, 1978-9-12, *S. Komaki s.n.* (TNS-VS-424505), 1977-9-17, *S. Nakada s.n.* (TNS-VS-424519); Nakajima-machi, 1978-9-3, *S. Komaki s.n.* (TNS-VS-424518), 1978-10-24, *S. Komaki s.n.* (TNS-VS-424512); Kashima-machi, 1969-11-19, *S. Komaki s.n.* (TNS-VS-424539), 1977-10-12, *S. Nakada s.n.* (TNS-VS-424524); Notojima-machi, 1978-9-27, *S. Komaki s.n.* (TNS-VS-424521); Fugeshi-gun, Anamizu-machi, 1977-10-10, *S. Komaki s.n.* (TNS-VS-424503), 1975-11-8, *S. Komaki s.n.* (TNS-VS-424542), 1969-11-10, *S. Komaki s.n.* (TNS-VS-424502); Noto-machi, 1977-10-10, *S. Komaki s.n.* (TNS-VS-424545); Yanagida-mura, 1976-10-12, *S. Komaki s.n.* (TNS-VS-424546); Suzu-gun, Uchiura-machi, 1968-10-18, *S. Komaki s.n.* (TNS-VS-424538); **Fukui Pref.:** Fukui-shi, 1977-6-4, *Y. Saito s.n.* (TNS-VS-1166214), 1987-7-26, *Y. Saito s.n.* (TNS-VS-1156134); Tsuruga-shi, 1976-7-18, *S. Watanabe s.n.* (TNS-VS-1166202); Takefu-shi, 1978-9-13, *S. Watanabe s.n.* (TNS-VS-1166200), 1984-8-19, *Y. Saito s.n.* (TNS-VS-1156993); Ono-shi, 1979-8-13, *S. Watanabe s.n.* (TNS-VS-1166197), 1971-10-3, *Y. Saito s.n.* (TNS-VS-1166209), 1979-8-31, *S. Watanabe s.n.* (TNS-VS-1166196), 1974-11-9, *Y. Saito s.n.* (TNS-VS-1166190), 1975-8-9, *Y. Saito s.n.* (TNS-VS-1166213), 1975-7-28, *Y. Saito s.n.* (TNS-VS-1166225), 1975-8-3, *Y. Saito s.n.* (TNS-VS-1166226); Katsuyama-shi, 1978-8-29, *Y. Saito s.n.* (TNS-VS-1166210), 1978-10-8, *Y. Saito s.n.* (TNS-VS-1166211), 1974-10-?, *Y. Saito s.n.* (TNS-VS-1166191); Sabae-shi, 1961-9-5, *S. Watanabe s.n.* (TNS-VS-1166199); Yoshida-gun, Eiheiji-cho, 1979-8-5, *S. Watanabe s.n.* (TNS-VS-1166195); Ono-gun, Izumi-mura, 1979-8-8, *S. Watanabe s.n.* (TNS-VS-1166203); Sakai-gun, Mikuni-cho, 1992-11-3, *S. Watanabe 36713* (TNS-VS-1156207); Kanazu-cho, 1980-8-24, *Y. Saito s.n.* (TNS-VS-1166192); Imadate-gun, Ikeda-cho, 1963-8-13, *S. Watanabe s.n.* (TNS-VS-1166201), 1964-7-28, *S. Watanabe s.n.* (TNS-VS-1166198); Nyu-gun, Asahi-cho, 1978-7-15, *Y. Saito s.n.* (TNS-VS-1166207); Mikata-gun, Mikata-cho, 1975-7-19, *Y. Saito s.n.* (TNS-VS-1166212); Onyu-gun, Natasho-mura, 1980-10-9, *S. Watanabe s.n.* (TNS-VS-1166194), 1978-9-13, *S. Watanabe s.n.* (TNS-VS-1166223), 1976-7-27, *Y. Saito s.n.* (TNS-VS-1166224); **Yamanashi Pref.:** Kofu-shi, 1981-8-17, *A. Yamamoto s.n.* (TNS-VS-1166255); Otsuki-shi, 1977-8-31, *T. Kobayashi s.n.* (TNS-VS-573491), 1968-8-12, *T. Kobayashi s.n.* (TNS-VS-573487); Nishiyatsushiro-gun, Kamikuishiki-mura, 1981-8-31, *F. Miyamoto 7176* (TNS-VS-831734), 1981-8-29, *E. Fukushi s.n.* (TNS-VS-1166254); Minamikoma-gun, Minobu-cho, 1981-10-24, *M. Nakagawa s.n.* (TNS-VS-1166259), 1968-8-17, *T. Kobayashi s.n.* (TNS-VS-573488), 1951-10-2, *S. Okuyama 14394* (TNS-VS-262042), 1951-10-2, *S. Okuyama 14389* (TNS-VS-262059); Nanbu-cho, 1985-11-24, *A. Ozaki s.n.* (TNS-VS-1166305); Tomizawa-cho, 1981-10-17, *M. 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Tsutsumi s.n.* (TNS-VS-574313); Shimojo-mura, 1930-9-20, *M. Furuse s.n.* (TNS-VS-909807); Urugi-mura, 1981-10-12, *H. Tsutsumi s.n.* (TNS-VS-574312); Tenryu-mura, 1981-11-16, *H. Tsutsumi s.n.* (TNS-VS-1157069), 1974-7-27, *K. Otsuka 1857* (TNS-VS-1157064), 1968-10-10, *Y. Hara s.n.* (TNS-VS-1157068); Yasuoka-mura, 1981-7-25, *H. Tsutsumi s.n.* (TNS-VS-574307), 1981-10-14, *H. Tsutsumi s.n.* (TNS-VS-574324); Kiso-gun, Agematsu-machi, 1981-10-31, *H. Tsutsumi s.n.* (TNS-VS-574290), 1980-8-25, *T. Nakaike s.n.* (TNS-VS-1157071), 1981-8-26, *H. Tsutsumi s.n.* (TNS-VS-574304); Nagiso-machi, 1976-7-30, *K. Otsuka 5483* (TNS-VS-431605), 1976-7-31, *T. Nakaike s.n.* (TNS-VS-1157070), 1981-10-19, *H. Tsutsumi s.n.* (TNS-VS-574300), 1981-8-24, *H. Tsutsumi s.n.* (TNS-VS-574308); Hiyoshi-mura, 1981-10-30, *H. Tsutsumi s.n.* (TNS-VS-574292); Okuwa-mura, 1973-7-28, *H. Miyazaki 2819* (TNS-VS-831863), 1980-11-4, *K. Otsuka 7634* (TNS-VS-431604), 1981-8-24, *H. Tsutsumi s.n.* (TNS-VS-574309), 1980-11-3, *M. Fuku-hara 8318* (TNS-VS-1157073), 1974-8-1, *K. Otsuka 2017* (TNS-VS-1157076), 1980-8-25, *T. Nakaike s.n.* (TNS-VS-1157079), 1981-8-25, *H. Tsutsumi s.n.* (TNS-VS-574306, 574310); Yamaguchi-mura, 1981-10-19, *H. Tsutsumi s.n.* (TNS-VS-574299), 1954-8-15, *H. Okuhara s.n.* (TNS-VS-1157110), 1967-10-26, *H. Okuhara s.n.* (TNS-VS-1157111), 1981-8-29, *H. Tsutsumi s.n.* (TNS-VS-574302); Minamiazumi-gun, Horigane-mura, 1981-9-11, *H. Tsutsumi s.n.* (TNS-VS-574311); Kamiminochi-gun, Shinano-machi, 1981-9-25, *H. Tsutsumi s.n.* (TNS-VS-574297), 1981-9-25, *H. Tsutsumi s.n.* (TNS-VS-574296); **Gifu Pref.:** Gifu-shi, 1957-10-31, *K. Inami s.n.* (TNS-VS-285244), 1967-9-13, *S. Serizawa 4731* (TNS-VS-1042057), 1976-9-4, *Y.*

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Yamamoto s.n.* (TNS-VS-435842); Ibi-gun, Tanigumi-mura, 1984-9-15, *H. Miyazaki* 6585 (TNS-VS-831713), 1984-9-15, *H. Miyazaki* 6571 (TNS-VS-831712), 1984-9-15, *H. Miyazaki* 6586 (TNS-VS-831711); Kasuga-mura, 1976-11-7, *Y. Yamamoto s.n.* (TNS-VS-435843), 1979-11-9, *Y. Yamamoto s.n.* (TNS-VS-1157132); Motosu-gun, Neo-mura, 1981-9-6, *F. Miyamoto* 7116 (TNS-VS-831733), 1981-10-4, *Y. Yamamoto s.n.* (TNS-VS-435846), 1977-10-19, *Y. Yamamoto s.n.* (TNS-VS-1157121), 1978-9-8, *Y. Yamamoto s.n.* (TNS-VS-1157122), 1978-9-1, *Y. Yamamoto s.n.* (TNS-VS-1157139), 1984-11-4, *Y. Yamamoto s.n.* (TNS-VS-1166308); Yamagata-gun, Miyama-cho, 1982-9-14, *H. Takahashi & al.* 6650 (TNS-VS-929623), 1978-7-25, *Y. Yamamoto s.n.* (TNS-VS-1157128), 1979-9-9, *M. Fukuhara* 7598 (TNS-VS-1157082); Mugi-gun, Itadori-mura, 1964-8-11, *K. Fukui* 7 (TNS-VS-929587), 1964-8-16, *N. Fukuoka & K. Yamashita* 272 (TNS-VS-929586), 1978-10-13, *Y. Yamamoto s.n.* (TNS-VS-1157116), 1977-10-21, *Y. 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Ogiyama* 5530 (TNS-VS-1157056); Kamiyahagi-cho, 1984-9-23, *T. Ogiyama* 5473 (TNS-VS-1157057); Mashita-gun, Hagiwara-cho, 1981-9-19, *A. Yamamoto s.n.* (TNS-VS-1157087); Gero-cho, 1978-11-17, *Y. Yamamoto s.n.* (TNS-VS-1157134), 1982-9-26, *N. Futamura s.n.* (TNS-VS-1157046); Kanayama-cho, 1978-9-26, *Y. Yamamoto s.n.* (TNS-VS-1157142); Yoshiki-gun, Kokufu-cho, 1981-9-18, *A. Yamamoto s.n.* (TNS-VS-1157084); Miyagawa-mura, 1979-9-15, *T. Waku* 9596 (TNS-VS-1157114); Kamioka-cho, 1977-8-12, *T. Ohshima s.n.* (TNS-VS-528747); **Shizuoka Pref.**: Shizuoka-shi, 1970-10-3, *K. Takeno* 365 (TNS-VS-929626), 1966-10-6, *F. Konta & M. Wakabayashi* 263 (TNS-VS-929574), 1967-9-30, *F. Konta* 6554 (TNS-VS-929592), 1981-9-27, *T. Shimakawa s.n.* (TNS-VS-509170), 1979-9-22, *M. Nakagawa s.n.* (TNS-VS-509171), 1979-9-8, *M. Nakagawa s.n.* (TNS-VS-509173), 1979-11-17, *M. Nakagawa s.n.* (TNS-VS-509174), 1980-8-18, *H. Suzuki s.n.* (TNS-VS-509158), 1980-8-2, *T. 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Fukushi* s.n. (TNS-VS-1156214), 1963-9-19, *F. Konta* 2746 (TNS-VS-929611), 1963-8-18, *K. Iwatsuki* 5590 (TNS-VS-248677); Higashiyama-ku, 1965-9-5, *F. Konta* 5313 (TNS-VS-929591); Ukyo-ku, 1981-9-9, *Y. Kimizuka* s.n. (TNS-VS-1157091); Kameoka-shi, 1991-9-26, *S. Tsugaru* 15396 (TNS-VS-575493), 1991-8-17, *T. Takahashi* 2104 (TNS-VS-594806), 1973-9-21, *K. Mimoro* & *S. Tsugaru* 904 (TNS-VS-337605), 1991-9-17, *S. Tsugaru* 15332 (TNS-VS-571255); Tsuzuki-gun, Yawata-cho, 1932-11-6, *H. Yamamoto* s.n. (TNS-VS-227978); Tanabe-cho, 1975-9-28, *Z. Tsujimoto* 2236 (TNS-VS-423315); Kitakuwada-gun, Keihoku-cho, 1981-8-15, *N. Yoshikawa* 8923 (TNS-VS-1157093); Miyama-cho, 1981-8-15, *N. Yoshikawa* 8979 (TNS-VS-1157090), 1981-8-15, *N. Yoshikawa* 8952 (TNS-VS-1157089); Hosono-mura, 1935-10-20, *Y. Araki* 13815 (TNS-VS-194864); Funai-gun, Mizuho-cho, 1983-8-8, *T. Nakaike* s.n. (TNS-VS-1157023, 1157025); Amata-gun, Fukuchiyama-cho, 1928-9-27, *Y. Araki* 6167 (TNS-VS-196020); Otagi-gun, Shizuichino-mura, 1933-9-17, *H. Yamamoto* 1899 (TNS-VS-227977); **Osaka Pref.**: Suita-shi, 1981-9-16, *A. Komaki* s.n. (TNS-VS-1166266); Takatsuki-shi, 1981-10-11, *A. Komaki* s.n. (TNS-VS-1166264), 1981-9-18, *A. Komaki* s.n. (TNS-VS-1166263); Kaizuka-shi, 1978-10-22, *H. Manago* s.n. (TNS-VS-549171); Toyono-gun, Toyono-cho, 1978-11-2, *T. Shiraiwa* 9188 (TNS-VS-1166267), 1978-11-12, *T. Shiraiwa* 9210 (TNS-VS-1166221); Nose-cho, 1981-9-27, *A. Komaki* s.n. (TNS-VS-1166262); Minoo-mura, 1932-10-31, *H. Yamamoto* 1877 (TNS-VS-227967); Minamikawachi-gun, Chihayaakasaka-mura, 1976-8-16, *Y. Inoue* s.n. (TNS-VS-1166265); **Hyogo Pref.**: Kobe-shi, 1979-9-15, *T. Shiraiwa* 9892 (TNS-VS-509264), 1977-12-3, *T. Shiraiwa* 7649 (TNS-VS-563791); Sumoto-shi, 1980-8-15, *K. Mune* 326 (TNS-VS-563481); Toyooka-shi, 1981-7-29, *Y. Hayashi* s.n. (TNS-VS-563478); Kawanishi-shi, 1981-9-27, *A. Komaki* s.n. (TNS-VS-576886); Sanda-shi, 1977-11-20, *T. Shiraiwa* 7605 (TNS-VS-563473); Kawabe-gun, Inagawa-cho, 2001-10-14, *K. Ushijima* 21355 (TNS-VS-756413); Taka-gun, Kurodasho-cho, 1980-11-9, *M. Inada* 40782 (TNS-VS-563776); Sayo-gun, Sayo-cho, 1978-8-29, *T. Shiraiwa* 8693 (TNS-VS-509261); Nanko-cho, 1963-8-2, *H. Ito* s.n. (TNS-VS-1045387); Shiso-gun, Yamasaki-cho, 1977-11-3, *T. Shiraiwa* 7581 (TNS-VS-563783), 1978-11-19, *T. Shiraiwa* 8949 (TNS-VS-509263); Yasutomi-cho, 1978-9-23, *T. Shiraiwa* 8796 (TNS-VS-509262); Kinokuni-gun, Hidaka-cho, 1973-10-18, *Y. Hayashi* s.n. (TNS-VS-1042052), 1978-8-10, *Y. Hayashi* s.n. (TNS-VS-576887); Izushi-gun, Tanto-cho, 1981-8-19, *Y. Hayashi*

- s.n. (TNS-VS-563476); Mikata-gun, Mikata-cho, 1977-9-15, *T. Shiraiwa* 7337 (TNS-VS-563781); Yabu-gun, Yabu-cho, 1978-8-30, *Y. Hayashi* s.n. (TNS-VS-576889); Oya-cho, 1981-9-1, *Y. Hayashi* s.n. (TNS-VS-563480); Asago-gun, Ikuno-cho, 1981-9-14, *Y. Hayashi* s.n. (TNS-VS-563472); Wadayama-cho, 1977-8-4, *Y. Hayashi* s.n. (TNS-VS-576890); Taki-gun, Sasayama-cho, 1954-10-24, *T. Kodama* s.n. (TNS-VS-129840); **Nara Pref.**: Nara-shi, 1937-8-20, *Y. Matsumura* s.n. (TNS-VS-66718), 1975-7-5, *Z. Tsujimoto* 738 (TNS-VS-423314), 1979-9-16, *Z. Tsujimoto* 5203 (TNS-VS-423331); Yamatokoriyama-shi, 1979-10-15, *Z. Tsujimoto* 5235 (TNS-VS-423333); Sakurai-shi, 1979-8-19, *A. Komaki* s.n. (TNS-VS-1166189); Gojo-shi, 1977-10-30, *Z. Tsujimoto* 3788 (TNS-VS-423332); Gose-shi, 1975-9-22, *K. Mimoro*, *S. Tsugaru* & *K. Mizoguchi* s.n. (TNS-VS-371109); Yamabe-gun, Tsuge-mura, 1951-8-7, *T. Kodama* s.n. (TNS-VS-247334); Uda-gun, Muro-mura, 1979-8-24, *Z. Tsujimoto* s.n. (TNS-VS-423316); Kitakatsuragi-gun, Taima-cho, 1981-6-7, *Z. Tsujimoto* 5773 (TNS-VS-573810); Yoshino-gun, Yoshino-cho, 1902-10-15, *J. Nikai* 1605 (TNS-VS-254664); Nosegawa-mura, 1979-9-23, *O. Yanagawa* s.n. (TNS-VS-573812); Totsukawa-mura, 1976-10-24, *Z. Tsujimoto* 3622 (TNS-VS-423317); **Wakayama Pref.**: Hashimoto-shi, 1978-10-29, *H. Manago* s.n. (TNS-VS-549150); Shingu-shi, 1976-10-22, *A. Nakajima* s.n. (TNS-VS-549158); Kaiso-gun, Shimotsu-cho, 1976-8-31, *H. Manago* s.n. (TNS-VS-549137); Naga-gun, Uchida-cho, 1981-11-3, *Sh. Yamamoto* s.n. (TNS-VS-431504); Ito-gun, Katsuragi-cho, 1974-6-2, *H. Manago* s.n. (TNS-VS-549147); Koya-cho, 1942-10-19, *Y. Satake* & *S. Okuyama* 24953 (TNS-VS-294052), 1979-8-5, *M. Matsuoka* s.n. (TNS-VS-1053154), 1950-8-25, *T. Kodama* s.n. (TNS-VS-129843), 1952-10-19, *K. Seto* 3290 (TNS-VS-130347), 1973-8-25, *H. Manago* s.n. (TNS-VS-549146); Arita-gun, Yuasa-cho, 1977-10-10, *H. Manago* s.n. (TNS-VS-549157); Shimizu-cho, 1977-10-9, *H. Manago* s.n. (TNS-VS-549140), 1971-10-24, *H. Manago* s.n. (TNS-VS-549138); Hidaka-gun, Nakatsu-mura, 1974-5-3, *H. Manago* s.n. (TNS-VS-549152); Inami-cho, 1976-11-28, *H. Manago* s.n. (TNS-VS-549161); Nishimuro-gun, Shirahama-cho, 1977-8-31, *H. Manago* s.n. (TNS-VS-549129); Nakahechi-cho, 1977-7-17, *H. Manago* s.n. (TNS-VS-549163); Oto-mura, 1973-9-11, *H. Manago* s.n. (TNS-VS-549164), 1967-9-7, *H. Manago* s.n. (TNS-VS-549162); Susami-cho, 1974-8-10, *H. Manago* s.n. (TNS-VS-549132, 549133); Kushimoto-cho, 1977-12-3, *H. Manago* s.n. (TNS-VS-549127); Higashimuro-gun, Nachikatsuura-cho, 1980-8-2, *K. Ohora* s.n. (TNS-VS-549172); Kozagawa-cho, 1956-10-16, *H. Ito* s.n. (TNS-VS-1042128), 1979-9-24, *H. Manago* s.n. (TNS-VS-549134); Kumanogawa-cho, 1973-8-13, *H. Manago* s.n. (TNS-VS-549166); Nachi-cho, 1942-10-13, *Y. Satake* & *S. Okuyama* 24952 (TNS-VS-294051); **Tottori Pref.**: Tottori-shi, 1980-9-23, *A. Tanaka* 28254 (TNS-VS-433508), 1981-9-23, *A. Tanaka* s.n. (TNS-VS-433516); Iwami-gun, Kokufu-cho, 1981-10-25, *A. Tanaka* s.n. (TNS-VS-433514), 1981-8-15, *A. Tanaka* s.n. (TNS-VS-433504); Yazu-gun, Wakasa-cho, 1955-9-12, *Y. Ikoma* & *M. Kawamoto* 32 (TNS-VS-1042112); Mochigase-cho, 1981-10-18, *M. Iwanaga* s.n. (TNS-VS-433509); Saji-son, 1955-9-6, *Y. Ikoma* & *M. Kawamoto* 62 (TNS-VS-1042051); Chizu-cho, 1981-9-23, *M. Iwanaga* s.n. (TNS-VS-433510), 1981-9-20, *K. Yasuhara* s.n. (TNS-VS-433511); Hino-gun, Nichinan-cho, 1980-9-15, *M. Aoto* s.n. (TNS-VS-433507), 1981-9-22, *M. Aoto* s.n. (TNS-VS-433515), 1980-10-21, *M. Aoto* s.n. (TNS-VS-433505); Hino-cho, 1981-8-14, *M. Aoto* s.n. (TNS-VS-433513); **Shimane Pref.**: Kanoashi-gun, Kakinoki-mura, 1958-9-2, *S. Okuyama* & *H. Utsumi* 11788 (TNS-VS-258853), 1958-9-1, *S. Okuyama* & *H. Utsumi* 11794 (TNS-VS-258838); **Okayama Pref.**: Okayama-shi, 1981-10-14, *H. Kobatake* s.n. (TNS-VS-503146), 1980-9-2, *H. Kobatake* s.n. (TNS-VS-423258), 1980-12-10, *H. Kobatake* s.n. (TNS-VS-423243), 1983-10-20, *H. Kobatake* s.n. (TNS-VS-1156982), 1980-10-22, *H. Kobatake* s.n. (TNS-VS-1172267); Kurashiki-shi, 1981-8-10, *H. Kobatake* s.n. (TNS-VS-503144); Tsuyama-shi, 1980-11-6, *H. Kobatake* s.n. (TNS-VS-423239), 1981-8-14, *T. Saito* s.n. (TNS-VS-1172273); Kasaoka-shi, 1982-11-23, *K. Yasuhara* s.n. (TNS-VS-1157029); Soja-shi, 1981-11-14, *H. Kobatake* s.n. (TNS-VS-503138); Takahashi-shi, 1977-7-27, *T. Watanabe* s.n. (TNS-VS-1172264); Niimi-shi, 1982-9-5, *T. Saito* s.n. (TNS-VS-1157031); Bizen-shi, 1980-11-30, *H. Kobatake* s.n. (TNS-VS-423242), 1981-10-22, *H. Kobatake* s.n. (TNS-VS-503142), 1987-8-4, *T. Saito* s.n. (TNS-VS-1172274); Akaiwa-gun, Seto-cho, 1956-8-19, *I. Okubo* 9 (TNS-VS-1042125); Kumayama-cho, 1981-8-4, *T. Saito* s.n. (TNS-VS-503137); Wake-gun, Hinase-cho, 1980-9-15, *T. Saito* s.n. (TNS-VS-423259); Yoshinaga-cho, 1980-9-21, *T. Saito* s.n. (TNS-VS-423245), 1977-10-16, *T. Saito* s.n. (TNS-VS-423249), 1978-9-24, *T. Saito* s.n. (TNS-VS-1172266); Wake-cho, 1983-8-28, *H. Kobatake* s.n. (TNS-VS-1156225); Oku-gun, Ushimado-cho, 1980-11-17, *H. Kobatake* s.n. (TNS-VS-423244); Oku-cho, 1989-11-26, *H. Kobatake* s.n. (TNS-VS-1156178); Asakuchi-gun, Konko-cho, 1984-8-16, *H. Kobatake* s.n. (TNS-VS-1156168); Kamogata-cho, 1957-12-2, *I. Akazawa* 39 (TNS-VS-1042049); Satoshio-cho, 1980-11-3, *K. Yasuhara* s.n. (TNS-VS-423241); Jobo-gun, Kayo-cho, 1980-10-27, *H. Kobatake* s.n. (TNS-VS-423263); Takahashi-cho, 1905-10-?, *Z. Yoshino* s.n. (TNS-VS-517187); Kawakami-gun, Nariwa-cho, 1975-9-10, *T. Watanabe* s.n. (TNS-VS-334509), 1978-8-22, *T. Saito* s.n. (TNS-VS-1172263); Atetsu-gun, Osa-cho, 1961-8-18, *T. Watanabe* s.n. (TNS-VS-423253); Tessei-cho, 1976-8-6, *T. Watanabe* s.n. (TNS-VS-1172265); Maniwa-gun, Ochiai-cho, 1974-8-25, *T. Saito* s.n. (TNS-VS-423250), 1981-11-5, *H. Kobatake* s.n. (TNS-VS-1156179), 1989-11-5, *H. Kobatake* s.n. (TNS-VS-1156180); Kuse-cho, 1984-11-2, *H. Kobatake* s.n. (TNS-VS-1157020), 1984-11-2, *H. Kobatake* s.n. (TNS-VS-1157021); Tomata-gun, Aba-son, 1980-8-21, *K. Takayama* s.n. (TNS-VS-423256); Kagamino-cho, 1981-8-14, *T. Saito* s.n. (TNS-VS-503145); Katsuta-gun, Shoboku-cho, 1984-11-5, *H. Kobatake* s.n. (TNS-VS-1157019, 1157022); Aida-gun, Nishiwakura-son, 1984-8-24, *H. Kobatake* s.n. (TNS-VS-1156167); Mimasaka-cho, 1982-9-16, *H. Kobatake* s.n. (TNS-VS-1157010); Kume-gun, Kumenan-cho, 1981-11-12, *H. Kobatake* s.n. (TNS-VS-503140); **Hiroshima Pref.**: Hiroshima-shi, 1978-10-19, *M. Matsumura* s.n. (TNS-VS-547831); Kure-shi, 1977-11-3, *T. Takeda* 10901 (TNS-VS-547854); Takehara-shi, 1990-8-17, *M. Matsumura* s.n. (TNS-VS-1156139); Mihara-shi, 1977-12-11, *T. Takeda* 10963 (TNS-

- VS-1165528); Fukuyama-shi, 1973-10-4, *T. Takeda* 1071 (TNS-VS-1165538); Higashihiroshima-shi, 1977-11-19, *T. Takeda* 10955 (TNS-VS-1165529); Aki-gun, Kamagari-cho, 1995-8-24, *M. Matsumura s.n.* (TNS-VS-1157039); Saeki-gun, Yuki-cho, 1974-9-10, *T. Takeda s.n.* (TNS-VS-1165540), 1976-10-10, *M. Matsumura s.n.* (TNS-VS-547833); Saeki-cho, 1978-7-24, *M. Matsumura s.n.* (TNS-VS-547830); Yoshiwa-mura, 1989-9-17, *M. Matsumura s.n.* (TNS-VS-1156990); Asa-gun, Asa-cho, 1969-11-2, *H. Okada* 312 (TNS-VS-1053174), 1969-11-5, *H. Okada* 395 (TNS-VS-1053175); Yamagata-gun, Tsutsuga-son, 1977-10-22, *T. Takeda* 10736 (TNS-VS-547851); Togochi-cho, 1974-9-25, *T. Takeda* 2858 (TNS-VS-1165533); Geihoku-cho, 1977-8-6, *T. Takeda* 10151 (TNS-VS-547852); Oasa-cho, 1976-8-8, *T. Takeda* 7721 (TNS-VS-547846); Toyohira-cho, 1976-8-8, *T. Takeda* 7749 (TNS-VS-1165535); Kamo-gun, Daiwa-cho, 1977-10-31, *T. Takeda* 10874 (TNS-VS-547858); Kochi-cho, 1978-11-16, *T. Takeda* 13371 (TNS-VS-547862), 1977-10-12, *T. Takeda* 10575 (TNS-VS-547848); Jinseki-gun, Jinseki-cho, 1973-10-23, *T. Takeda* 1202 (TNS-VS-1165534); Futami-gun, Kisa-cho, 1973-8-31, *T. Takeda* 286 (TNS-VS-547860); Miwa-cho, 1975-9-15, *T. Takeda* 4672 (TNS-VS-547853); Hiba-gun, Hiwa-cho, 1993-9-25, *M. Matsumura s.n.* (TNS-VS-1156176); **Yamaguchi Pref.:** Tokuyama-shi, 1980-10-12, *A. Minami* 17337 (TNS-VS-424218); Hofu-shi, 1991-11-5, *H. Masaki s.n.* (TNS-VS-1156136), 1991-11-3, *H. Masaki s.n.* (TNS-VS-1156138), 1991-10-15, *H. Masaki s.n.* (TNS-VS-1156140); Iwakuni-shi, 1980-9-21, *A. Minami* 16677 (TNS-VS-397231); Kuga-gun, Shuto-cho, 1969-10-6, *H. Masaki* 16997 (TNS-VS-262904); Miwa-cho, 1956-10-28, *M. Wada* 4287 (TNS-VS-251199), 1980-10-30, *A. Minami* 17732 (TNS-VS-424217); Tsuno-gun, Kano-cho, 1980-9-23, *A. Minami* 16766 (TNS-VS-397215); Saba-gun, Tokuji-cho, 1980-9-23, *A. Minami* 16799 (TNS-VS-397206); Yasaka-mura, 1920-9-20, *J. Nikai s.n.* (TNS-VS-254665), 1920-9-20, *J. Nikai* 2811 (TNS-VS-50385); Toyora-gun, Toyora-cho, 1982-10-10, *G. Imada* 6373 (TNS-VS-569259); Toyotashimo-mura, 1919-8-23, *J. Nikai s.n.* (TNS-VS-254663); Mine-gun, Mito-cho, 1981-9-13, *S. Miyake s.n.* (TNS-VS-424048); Shuho-cho, 1975-8-30, *S. Miyake s.n.* (TNS-VS-732958); Abu-gun, Asahi-son, 1981-8-2, *S. Miyake s.n.* (TNS-VS-424047).
- Shikoku - Tokushima Pref.:** Anan-shi, 1961-8-14, *C. Abe* 17752 (TNS-VS-596025); Naka-gun, Kaminaka-cho, 1965-8-16, *H. Ito s.n.* (TNS-VS-1045391), 1965-8-18, *H. Ito s.n.* (TNS-VS-1045380); Kito-son, 1980-8-16, *T. Nakayama s.n.* (TNS-VS-596020); Kamodani-son, 1955-8-3, *T. Inobe* 40 (TNS-VS-1042040); Kaifu-gun, Yuki-cho, 1970-11-29, *C. Abe* 43427 (TNS-VS-596027); Hiwasa-cho, 1960-8-23, *C. Abe* 17751 (TNS-VS-596026); Mugi-cho, 1979-9-23, *T. Nakayama s.n.* (TNS-VS-596018); Kainan-cho, 1959-8-18, *C. Abe* 17757 (TNS-VS-596029); Shishikui-cho, 1977-8-3, *T. Nakayama s.n.* (TNS-VS-596017); Oe-gun, Kamojima-cho, 1962-8-30, *C. Abe* 17756 (TNS-VS-596021); Kawata-son, 1911-8-27, *J. Nikai* 2104 (TNS-VS-50384); Mima-gun, Waki-machi, 1963-8-3, *C. Abe* 17755 (TNS-VS-596022); Miyoshi-gun, Sammyo-son, 1956-8-21, *T. Inobe* 97 (TNS-VS-1042041); Higashiyayama-son, 1954-7-20, *H. Inoue* 1721 (TNS-VS-1042136); **Kagawa Pref.:** Takamatsu-shi, 1980-7-6, *S. Mitani s.n.* (TNS-VS-527149); Marugame-shi, 1980-7-13, *S. Mitani s.n.* (TNS-VS-527148); Kanonji-shi, 1969-10-22, *Y. Maki* 3 (TNS-VS-257032); Okawa-gun, Shirotori-cho, 1980-10-19, *S. Mitani s.n.* (TNS-VS-511283); Nagao-cho, 1974-12-1, *S. Mitani s.n.* (TNS-VS-527147); Ayauta-gun, Ryonan-cho, 1976-9-16, *S. Mitani s.n.* (TNS-VS-527142); Nakatado-gun, Kotonami-cho, 1976-10-16, *S. Mitani s.n.* (TNS-VS-527144); Kotohira-cho, 1974-11-17, *S. Mitani s.n.* (TNS-VS-527141); Mitoyo-gun, Takase-cho, 1976-11-21, *S. Mitani s.n.* (TNS-VS-527143); **Ehime Pref.:** Matsuyama-shi, 1979-10-21, *H. Ishikawa s.n.* (TNS-VS-1166275), 1979-11-1, *H. Ishikawa s.n.* (TNS-VS-1166278); Uwajima-shi, 1978-8-16, *C. Aoki s.n.* (TNS-VS-1166290), 1987-9-20, *M. Hyodo s.n.* (TNS-VS-1156198); Niihama-shi, 1959-11-5, *H. Ishikawa* 49 (TNS-VS-1042127), 1959-11-1, *H. Ishikawa* 75 (TNS-VS-1042121); Ozu-shi, 1978-7-18, *H. Ishikawa s.n.* (TNS-VS-1166279), 1979-8-31, *H. Ishikawa s.n.* (TNS-VS-1166272), 1978-6-13, *H. Ishikawa s.n.* (TNS-VS-1166277); Iyomishima-shi, 1987-10-7, *M. Hyodo s.n.* (TNS-VS-1156197); Iyo-shi, 1981-11-3, *H. Ishikawa s.n.* (TNS-VS-1166286); Hojo-shi, 1980-9-30, *H. Ishikawa s.n.* (TNS-VS-1166270); Uma-gun, Doi-mura, 1953-8-4, *H. Inoue* 1050 (TNS-VS-1042119); Ochi-gun, Tamagawa-cho, 1978-10-10, *H. Ishikawa s.n.* (TNS-VS-1166273); Onsen-gun, Shigenobu-cho, 1980-9-15, *H. Ishikawa s.n.* (TNS-VS-1166274); Kawauchi-cho, 1981-10-25, *M. Hyodo s.n.* (TNS-VS-1166292), 1979-10-5, *H. Ishikawa s.n.* (TNS-VS-1166276); Kamiukena-gun, Omogo-mura, 1965-9-28, *S. Masuda* 4504 (TNS-VS-831696), 1953-8-17, *H. Inoue* 1445 (TNS-VS-1042114), 1953-8-17, *H. Inoue* 1443 (TNS-VS-1042131); Mikawa-mura, 1981-7-13, *H. Ishikawa s.n.* (TNS-VS-1166284), 1979-11-5, *H. Ishikawa s.n.* (TNS-VS-1166285); Yanadani-mura, 1981-9-15, *H. Ishikawa s.n.* (TNS-VS-1166271), 1979-8-14, *H. Ishikawa s.n.* (TNS-VS-1166283), 1981-9-12, *M. Hyodo s.n.* (TNS-VS-1166294); Oda-cho, 1978-10-15, *H. Ishikawa s.n.* (TNS-VS-1166281); Iyo-gun, Nakayama-cho, 1981-11-7, *M. Hyodo s.n.* (TNS-VS-1166291); Higashiwa-gun, Nomura-cho, 1980-11-9, *M. Hyodo s.n.* (TNS-VS-1166288); Shirokawa-cho, 1981-9-15, *C. Aoki s.n.* (TNS-VS-1166289); Kitauwa-gun, Matsuno-cho, 1983-11-27, *M. Hyodo s.n.* (TNS-VS-1156208); Hiyoshi-mura, 1982-10-10, *M. Hyodo s.n.* (TNS-VS-1156132); Tsushima-cho, 1981-10-6, *M. Hyodo s.n.* (TNS-VS-1166293); Nii-gun, Ofuki-mura, 1953-8-5, *H. Inoue* 1388 (TNS-VS-1042043); **Kochi Pref.:** Kochi-shi, 1975-11-23, *Y. Koukumi s.n.* (TNS-VS-938069); Nankoku-shi, 1981-8-17, *K. Yamaoka & Y. Yamamoto s.n.* (TNS-VS-503760), 1981-8-17, *K. Yamaoka & Y. Yamamoto s.n.* (TNS-VS-503756); Aki-gun, Umaji-mura, 1955-8-23, *S. Iwano s.n.* (TNS-VS-938070); Kami-gun, Tosayamada-cho, 1974-10-18, *T. Nakaike s.n.* (TNS-VS-423544); Makiyama-mura, 1954-8-24, *H. Inoue* 2097 (TNS-VS-1042117), 1954-8-24, *H. Inoue* 2096 (TNS-VS-1042123); Nagaoka-gun, Otoyo-cho, 1981-9-15, *K. Yamaoka* 19605 (TNS-VS-503761), 1978-10-21, *K. Yamaoka s.n.* (TNS-VS-938079); Gomen-cho, 1913-8-26, *Z. Tashiro s.n.* (TNS-VS-23346); Hongawa-mura, 1950-9-2, *S. Okuyama* 11437 (TNS-VS-279146); Takaoka-gun, Nakatosa-cho, 1979-9-?, *T. Miyazaki s.n.* (TNS-VS-938160);

Ochi-cho, 1974-10-25, *T. Nakaike s.n.* (TNS-VS-333285), 1949-8-13, *H. Inoue 310* (TNS-VS-1042132); Niida-mura, coll. date unknown, *H. Inoue 475* (TNS-VS-1042122); Kubokawa-cho, 2002-9-15, *K. Yamaoka & N. Nakato 2480* (TNS-VS-1168487), 2002-9-15, *K. Yamaoka & N. Nakato 2478* (TNS-VS-1168486), 2002-9-15, *K. Yamaoka & N. Nakato 2479* (TNS-VS-1168485); Higashitsuno-mura, 1978-9-24, *K. Yamaoka s.n.* (TNS-VS-938072); Hata-gun, Saga-cho, 1993-10-19, *T. Miyazaki 2022* (TNS-VS-1156175); Nishitosa-mura, 1981-8-22, *Y. Akasawa, T. Miyazaki & Y. Yamamoto s.n.* (TNS-VS-938076).

Kyushu - Fukuoka Pref.: Kitakyushu-shi, 1976-9-23, *S. Kobayashi 6534* (TNS-VS-431748); Yahatahigashi-ku, 1977-8-15, *K. Miura 177* (TNS-VS-428991); Fukuoka-shi, 1966-9-15, *S. Tsutsui 2919* (TNS-VS-428993); Kurume-shi, 1969-8-22, *S. Kobayashi 2376* (TNS-VS-429000); Chikushi-gun, Nakagawa-machi, 1973-8-19, *S. Tsutsui 9550* (TNS-VS-428995); Kasuya-gun, 1947-10-17, *S. Toyama 408* (TNS-VS-1042068); Umi-machi, 1967-9-17, *S. Tsutsui 4605* (TNS-VS-428992); Yame-gun, Hoshino-mura, 1976-8-9, *S. Tsutsui 13139* (TNS-VS-428998); Tagawa-gun, Soeda-machi, 1967-7-25, *H. Ito s.n.* (TNS-VS-1045375), 1952-10-29, *J. Ouchi 4* (TNS-VS-1042063), 1952-8-7, *J. Ouchi 59* (TNS-VS-1042079); **Saga Pref.:** Tosu-shi, 1975-9-14, *Y. Kuranari s.n.* (TNS-VS-579330); Saga-gun, Fuji-cho, 1980-7-26, *M. Sadamatsu s.n.* (TNS-VS-579333); Kanzaki-gun, Mitsuse-mura, 1981-11-8, *H. Inoue s.n.* (TNS-VS-425079); Ogi-gun, Ogi-machi, 1977-6-25, *T. Baba s.n.* (TNS-VS-579336); Higashimatsuura-gun, Nanayama-mura, 1978-9-21, *M. Koike s.n.* (TNS-VS-579334); Ochi-cho, 1975-8-17, *Y. Tanno s.n.* (TNS-VS-579335); Nishimatsuura-gun, Arita-machi, 1944-10-23, *S. Toyama s.n.* (TNS-VS-100268); Nishiarita-cho, 1975-8-24, *Y. Tanno s.n.* (TNS-VS-579715); Fujitsu-gun, Tara-cho, 1961-8-14, *B. Matsubayashi s.n.* (TNS-VS-1166217); **Nagasaki Pref.:** Nishisonogi-gun, Kinkai-cho, 1981-11-19, *B. Matsubayashi s.n.* (TNS-VS-579384), 1981-8-20, *B. Matsubayashi s.n.* (TNS-VS-579383); Higashisonogi-gun, Hasami-cho, 1976-7-30, *F. Ueno s.n.* (TNS-VS-579388); Minamitakaki-gun, Obama-cho, 1961-10-15, *B. Matsubayashi s.n.* (TNS-VS-579386); Minamimatsuura-gun, Ohama-cho, 1934-8-4, *T. Baba s.n.* (TNS-VS-423524); **Kumamoto Pref.:** Kumamoto-shi, 1973-10-10, *N. Beppu s.n.* (TNS-VS-550092); Hitoyoshi-shi, 1968-11-5, *H. Ito s.n.* (TNS-VS-1045607, 1045631), 1964-7-11, *H. Ito s.n.* (TNS-VS-1045692); Minamata-shi, 1962-10-7, *T. Yamanaka s.n.* (TNS-VS-779514), 1960-10-25, *M. Kido s.n.* (TNS-VS-550103), 1960-10-23, *M. Kido 3473* (TNS-VS-550084), 1962-11-18, *M. Kido s.n.* (TNS-VS-1172269); Tamana-gun, Gyokuto-machi, 1981-10-10, *Y. Ishizaka s.n.* (TNS-VS-533580); Aso-gun, Ichinomiya-machi, 1972-8-23, *N. Beppu s.n.* (TNS-VS-550093); Aso-machi, 1976-11-21, *N. Beppu s.n.* (TNS-VS-550098); Minamioguni-machi, 1977-7-23, *N. Beppu s.n.* (TNS-VS-550095); Oguni-machi, 1977-8-14, *N. Beppu s.n.* (TNS-VS-550075); Haku-sui-mura, 1978-8-12, *N. Beppu s.n.* (TNS-VS-550100); Kuginomura, 1978-8-12, *N. Beppu s.n.* (TNS-VS-550073); Choyo-mura, 1977-8-25, *Y. Ishizaka s.n.* (TNS-VS-1172271); Kamimashiki-gun, Mifune-machi, 1976-12-5, *N. Beppu s.n.* (TNS-VS-550102); Yabemachi, 1978-8-27, *N. Beppu s.n.* (TNS-VS-550101); Seiwa-son,

1977-11-7, *Y. Ishizaka s.n.* (TNS-VS-1172272); Yatsushiro-gun, Izumi-mura, 1974-10-10, *N. Beppu s.n.* (TNS-VS-550091), 1973-8-18, *N. Beppu s.n.* (TNS-VS-550089, 580175); Ashikita-gun, Ashikita-machi, 1978-12-29, *N. Beppu s.n.* (TNS-VS-550082); Kuma-gun, Mizukami-mura, coll. date unknown, *S. Hattori s.n.* (TNS-VS-784684), 1978-8-1, *T. Nakamura s.n.* (TNS-VS-1016993, 1016994); Itsuki-mura, 1981-8-15, *N. Beppu s.n.* (TNS-VS-550086); **Oita Pref.:** Beppu-shi, 1960-9-25, *M. Arakane s.n.* (TNS-VS-437313); Usa-shi, 1976-9-4, *M. Arakane s.n.* (TNS-VS-437311); Oita-gun, Shonai-cho, 1960-7-29, *M. Arakane s.n.* (TNS-VS-437319), 1959-11-8, *M. Hadano s.n.* (TNS-VS-437325); Minamiama-gun, Ume-machi, 1963-1-6, *Y. Takaoka s.n.* (TNS-VS-437310), 1959-8-3, *M. Hadano s.n.* (TNS-VS-437324); Ono-gun, Ogata-machi, 1975-8-3, *M. Arakane s.n.* (TNS-VS-437322), 1955-8-?, *M. Hadano s.n.* (TNS-VS-437308, 1157098); Naoiri-gun, Kuju-machi, 1968-8-9, *K. Shono 1072* (TNS-VS-286022); Kusu-gun, Kokonoe-machi, 1955-8-?, *M. Hadano s.n.* (TNS-VS-1157096); Kusu-machi, 1973-9-24, *M. Arakane s.n.* (TNS-VS-437312); Hita-gun, Kamitsue-mura, 1978-8-3, *N. Beppu s.n.* (TNS-VS-435065); Shimoge-gun, Yamakuni-machi, 1984-8-19, *T. Yamanaka s.n.* (TNS-VS-734111), 1977-8-26, *Y. Takaoka s.n.* (TNS-VS-437315); Usa-gun, Innai-machi, 1960-8-20, *M. Arakane s.n.* (TNS-VS-437320), 1960-8-26, *M. Hadano s.n.* (TNS-VS-437306); **Miyazaki Pref.:** Miyakonojo-shi, 1926-8-0, *A. Noguchi s.n.* (TNS-VS-666824); Nobeoka-shi, 1981-8-24, *S. Tsutsui 21405* (TNS-VS-588348); Kobayashi-shi, 1976-8-15, *T. Minamitani 23561* (TNS-VS-427808); Saito-shi, 1959-8-27, *I. Taki s.n.* (TNS-VS-588346); Ebino-shi, 1979-7-22, *T. Minamitani 31841* (TNS-VS-427816), 1979-10-20, *T. Minamitani 31832* (TNS-VS-427815), 1979-7-15, *T. Minamitani 31743* (TNS-VS-427817); Nishimorokata-gun, Nojiri-cho, 1977-7-29, *T. Minamitani 26957* (TNS-VS-427812); Kobayashi-machi, 1918-7-24, *collector unknown s.n.* (TNS-VS-33211); Koyu-gun, Takanabe-cho, 1980-12-27, *K. Nakamura s.n.* (TNS-VS-588347); Shimotomi-cho, 1973-9-23, *T. Minamitani 9331* (TNS-VS-427805); Tsuno-cho, 1977-10-16, *T. Minamitani 28437* (TNS-VS-427810); Higashiusuki-gun, Nango-son, 1967-5-6, *T. Minamitani 1277* (TNS-VS-427803); Kitagawa-cho, 1986-8-9, *A. Minami & U. Fujiyama 51575* (TNS-VS-1166301); **Kagoshima Pref.:** Kanoya-shi, 1980-10-10, *K. Takesako s.n.* (TNS-VS-434213); Izumi-shi, 1963-8-18, *T. Yamanaka s.n.* (TNS-VS-735651), 1974-8-31, *M. Kido s.n.* (TNS-VS-433985); Okuchi-shi, 1960-11-4, *T. Yamanaka s.n.* (TNS-VS-734241), 1960-9-4, *T. Yamanaka s.n.* (TNS-VS-511389, 734321), 1981-10-4, *T. Yamanaka s.n.* (TNS-VS-741296), 1963-8-16, *T. Yamanaka s.n.* (TNS-VS-1112895); Isa-gun, Hishikari-cho, 1980-9-28, *K. Takesako s.n.* (TNS-VS-434212); Aira-gun, Mizobe-cho, 1980-10-5, *K. Takesako s.n.* (TNS-VS-434215); Kurino-cho, 1980-9-27, *K. Takesako s.n.* (TNS-VS-434209); Makizono-cho, 1966-8-9, *T. Yamanaka s.n.* (TNS-VS-1112247), 1979-8-11, *K. Takesako s.n.* (TNS-VS-434208), 1980-10-4, *K. Takesako s.n.* (TNS-VS-434214); Kimotsuki-gun, Uchinora-cho, 1974-7-20, *K. Takesako s.n.* (TNS-VS-434216); Kumage-gun, Kamiyaku-cho, 1964-7-29, *M. Kawabata s.n.* (TNS-VS-939698).

Thelypteris japonica (Baker) Ching forma *formosa* (C.Chr.) Nakato, Sahashi et M.Kato [Ao-harigane-warabi]

Hokkaido - Hokkaido Pref.: Tomakomai-shi, Nishiki-onuma, 1981-9-20, *M. Ishizuka s.n.* (TNS-VS-545559); Chitose-shi, Monbetsu-gawa, 1984-10-8, *M. Ishizuka s.n.* (TNS-VS-1157052); Shiraio-gun, Shiraio-cho, Shadai-gawa, 1982-10-19, *M. Ishizuka s.n.* (TNS-VS-1157054).

Honshu - Aomori Pref.: Aomori-shi, Goshi-zawa, 1984-9-4, *N. Saitoh s.n.* (TNS-VS-1156142); Mutsu-shi, Kabayama, 1980-9-15, *T. Sudo s.n.* (TNS-VS-570344); Usori-gawa, 1980-9-14, *E. Fukushi s.n.* (TNS-VS-570343); Higashitsugaru-gun, Yomogita-mura, Seh-eji, 1983-8-28, *N. Saitoh s.n.* (TNS-VS-1152598); Shimokita-gun, Kawauchi-machi, Tozawa, 1980-9-14, *E. Fukushi s.n.* (TNS-VS-570292); **Iwate Pref.:** Morioka-shi, 1975-9-15, *K. Sato s.n.* (TNS-VS-440277); Mizusawa-shi, Ofukasawa, 1978-9-3, *M. Suzuki s.n.* (TNS-VS-440275); Esashi-shi, Hitokabe, 1983-10-8, *C. Komizunai s.n.* (TNS-VS-1152578); Iwate-gun, Shizukuishi-cho, Nyuto-san, 1977-9-25, *Y. Takano s.n.* (TNS-VS-440268); Iwate-machi, Yashiki, 1980-8-9, *E. Fukushi s.n.* (TNS-VS-440283); Takizawa-mura, Koiwai Farm, 1945-9-?, *Y. Jotani s.n.* (TNS-VS-831871); Waga-gun, Towa-cho, Tase, 1977-7-19, *K. Inoue s.n.* (TNS-VS-440516); Waga-cho, Geto Spa, 1977-10-6, *Y. Takano s.n.* (TNS-VS-440266); Isawa-gun, Kanegasaki-cho, Rokuhara, 1977-8-17, *M. Suzuki s.n.* (TNS-VS-440273); Hosono, 1980-9-22, *M. Suzuki s.n.* (TNS-VS-440271); Maesawa-cho, Seibo, 1980-9-15, *M. Suzuki s.n.* (TNS-VS-440276); Isawa-cho, Keshozaka, 1980-8-12, *M. Suzuki s.n.* (TNS-VS-440274); Koromogawa-mura, Minamimata, 1980-8-12, *M. Suzuki s.n.* (TNS-VS-440272); Higashi-iwai-gun, Higashiyama-cho, Natsuyama, 1980-7-23, *M. Suzuki s.n.* (TNS-VS-440269); Shimohei-gun, Tanohata-mura, Matsumae-zawa, 1980-8-9, *E. Fukushi s.n.* (TNS-VS-440282); **Miyagi Pref.:** Sendai-shi, Hachiman, 1980-10-27, *M. Takeichi s.n.* (TNS-VS-1172251); Natori-shi, Kitagama, 1981-9-30, *K. Shoji s.n.* (TNS-VS-576831); Kurokawa-gun, Taiwa-cho, Tamagaike, 1981-8-30, *K. Matsunaga s.n.* (TNS-VS-1172248); Kami-gun, Nakaniida-machi, Jou, 1981-9-6, *W. Takahashi s.n.* (TNS-VS-1172252); Onoda-machi, Suge-numa, 1976-9-15, *W. Takahashi s.n.* (TNS-VS-1172246); Nabekoshi Pass, 1976-8-29, *W. Takahashi s.n.* (TNS-VS-1172244); Shikama-cho, Ojo-ji, 1982-9-5, *M. Takeichi s.n.* (TNS-VS-1157033); Tome-gun, Hasama-cho, Tatebayashi, alt. 20m, 1975-8-15, *Y. Ueno 13855* (TNS-VS-1172249); Mono-gun, Kanan-cho, Wabuchi-yama, 1975-8-24, *Y. Ueno 19014* (TNS-VS-1172247); Asahi-yama, 1971-10-29, *Y. Ueno 5896* (TNS-VS-1160529); Motoyoshi-gun, Shizugawa-cho, Sodehama, 1980-9-20, *M. Takeichi s.n.* (TNS-VS-1172250); **Akita Pref.:** Akita-shi, Kana-ashi, 1977-10-5, *J. Takada s.n.* (TNS-VS-419804); Tegata-yama, 1981-10-19, *S. Okita s.n.* (TNS-VS-419786); Kazuno-shi, Towada-kogen, 1975-9-28, *J. Takada s.n.* (TNS-VS-419803); Kazuno-gun, Kosaka-machi, Ginzan, 1976-8-25, *J. Takada s.n.* (TNS-VS-419805); Kitaakita-gun, Takanosu-machi, Kakarido, 1981-10-18, *M. Hatakeyama s.n.* (TNS-VS-419789); Hinai-machi, Takko-mori, 1976-10-11, *T. Kikuchi s.n.* (TNS-VS-419790); Minamiakita-gun, Showa-machi, Motoki-yama, 1981-10-25, *S. Okita s.n.* (TNS-VS-419787); Ikawa-machi, Manaita-yama, 1978-8-20,

Y. Takahashi s.n. (TNS-VS-419802); Yuri-gun, Nikaho-machi, Toshi, 1978-9-23, *J. Takada s.n.* (TNS-VS-419859); Chokai-machi, Koshiki-yama, 1981-9-27, *T. Kikuchi s.n.* (TNS-VS-419792); Senboku-gun, Kamioka-machi, Hogaku-zawa, 1980-10-10, *J. Takada s.n.* (TNS-VS-419794); Nishisenboku-machi, Teramura, 1980-9-25, *J. Takada s.n.* (TNS-VS-419809); Kyowa-machi, Sakai, 1977-10-9, *J. Takada s.n.* (TNS-VS-419860); Nangai-mura, Yatate Pass, 1937-10-22, *G. Koie s.n.* (TNS-VS-88735); Hiraka-gun, Sannai-mura, Kurosawa, 1976-9-13, *T. Nakaike s.n.* (TNS-VS-420025); Ogachi-gun, Ugo-machi, Tazawa, 1978-9-17, *J. Fujiwara s.n.* (TNS-VS-419795); **Yamagata Pref.:** Yamagata-shi, Chitose-yama, 1953-9-21, *I. Igura s.n.* (TNS-VS-1042064); Hirashimizu, 1976-10-16, *N. Sagawa s.n.* (TNS-VS-437941); Yonezawa-shi, Torimachi, 1980-8-28, *Z. Sato s.n.* (TNS-VS-437960); Asagawa, 1980-8-28, *Z. Sato s.n.* (TNS-VS-); Shinjo-shi, Torigoe, 1977-9-17, *N. Sagawa s.n.* (TNS-VS-437939); Sagae-shi, Nagaoka-yama, 1981-8-6, *N. Sagawa s.n.* (TNS-VS-437972); Kaminoyama-shi, Yusaka, 1981-8-5, *N. Sagawa s.n.* (TNS-VS-1157138); Iwa-kannon, 1980-8-28, *N. Sagawa s.n.* (TNS-VS-437955); Obanazawa-shi, Tokura-ko, 1980-8-24, *N. Sagawa s.n.* (TNS-VS-437942); Ginzan, 1981-9-29, *N. Sagawa s.n.* (TNS-VS-437979); Nanyo-shi, Nakagawa, 1980-9-7, *N. Sagawa s.n.* (TNS-VS-437956); Higashimurayama-gun, Chitose-mura, Chitose-yama, 1931-8-9, *S. Okuyama 3710* (TNS-VS-663626); Nishimurayama-gun, Nishikawa-machi, Ubasawagoya, 1981-10-2, *N. Sagawa s.n.* (TNS-VS-437971); Naganuma, 1981-8-9, *N. Sagawa s.n.* (TNS-VS-437973); Kitamurayama-gun, Oishida-machi, Ashizawa, 1977-10-5, *N. Sagawa s.n.* (TNS-VS-437940); Mogami-gun, Mogami-machi, Nabekura, 1981-10-20, *N. Sagawa s.n.* (TNS-VS-437975); Mamurogawa-machi, Showa, 1963-8-23, *S. Kato s.n.* (TNS-VS-437614); Tashiro, 1981-10-27, *N. Sagawa s.n.* (TNS-VS-437976); Higashiokitama-gun, Kawanishi-machi, Inukawa, 1981-9-8, *N. Sagawa s.n.* (TNS-VS-437966); Nishiokitama-gun, Shirataka-machi, Ayukai, 1980-9-21, *N. Sagawa s.n.* (TNS-VS-437957); Narita, 1980-9-21, *N. Sagawa s.n.* (TNS-VS-437958); Iide-machi, Hagyu, 1981-9-8, *N. Sagawa s.n.* (TNS-VS-437963); Higashitagawa-gun, Asahi-mura, Otori, 1980-10-2, *T. Nakaike s.n.* (TNS-VS-437954); Akumi-gun, Yuza-machi, Onoso, 1973-10-8, *S. Kato s.n.* (TNS-VS-437613); Matsuyama-machi, 1975-9-6, *S. Kato s.n.* (TNS-VS-437620); **Fukushima Pref.:** Fukushima-shi, Machiniasaka, Shida, 1976-10-10, *Z. Kaneda 2574* (TNS-VS-438923); Aizuwakamatsu-shi, Iimori-yama, 1977-10-22, *Z. Kaneda 3555* (TNS-VS-438925); Koriyama-shi, Myoken-zan, 1977-11-10, *Z. Kaneda 3714* (TNS-VS-439167); Yatagawa, 1977-10-2, *Z. Kaneda 3364* (TNS-VS-438922); Iwaki-shi, Taira, Kamiarakawa, alt. 80m, 1977-8-11, *Y. Yuzawa s.n.* (TNS-VS-438914); Uchigo-koyamachi, alt. 250m, 1972-10-9, *Y. Yuzawa s.n.* (TNS-VS-439539); Kitakata-shi, Maki, 1976-10-11, *Z. Kaneda s.n.* (TNS-VS-438926); Yama-gun, Atsushio-kano-mura, Sakurayashiki, 1981-9-8, *Z. Kaneda 6982* (TNS-VS-439168); Atsushio, 1977-10-6, *Z. Kaneda 3424* (TNS-VS-438941); Shiokawa-machi, Baba-shinden, 1980-9-14, *S. Saito s.n.* (TNS-VS-1172241); Inawashiro-machi, Numagami, 1975-11-4, *Z. Kaneda s.n.* (TNS-VS-438927); Kawanuma-gun, Aizubange-

- machi, Toderu, 1977-9-1, *Z. Kaneda 3330* (TNS-VS-438924); Onuma-gun, Showa-mura, 1979-9-10, *Z. Kaneda s.n.* (TNS-VS-438920); Higashishirakawa-gun, Tanagura-machi, Tennouchi, 1983-10-8, *H. Kobayashi s.n.* (TNS-VS-1159876); Tsutsukowake Shrine, 1980-10-6, *A. Baba s.n.* (TNS-VS-439537); Nakanozawa, 1980-10-7, *A. Baba s.n.* (TNS-VS-439536); Futaba-gun, Namie-machi, Kitasawa, alt. 25 m, 1975-8-21, *Y. Yuzawa s.n.* (TNS-VS-438921); **Ibaraki Pref.**: Tsuchiura-shi, Shishitsuka, 1975-8-22, *M. Yasu & N. Wada s.n.* (TNS-VS-422804); Katsuta-shi, Kanaage, 1975-8-24, *M. Yasu s.n.* (TNS-VS-422812); Takahagi-shi, Takahagi, 1974-9-11, *M. Yasu s.n.* (TNS-VS-422575); Kitai-baraki-shi, Hanakawa-cho, 1972-9-15, *N. Wada 1164* (TNS-VS-596378); Tsukuba-shi, Amakubo, Tsukuba Botanical Garden, 2000-9-1, *S. Matsumoto, H. Ebata & H. Uemura 12-13* (TNS-VS-9512072); Higashibaraki-gun, Uchihara-machi, Shimizunuma, 1975-8-20, *M. Yasu s.n.* (TNS-VS-422813); Nishiibaraki-gun, Nanakai-mura, Keisoku-zan, 1977-9-10, *M. Yasu s.n.* (TNS-VS-422579, 423407); Tsukuba-gun, Tsukuba-machi, Tsukuba-san, 1970-9-6, *M. Yasu s.n.* (TNS-VS-423409); Sashima-gun, Goka-mura, Egawa, 1980-11-2, *Y. Kimizuka s.n.* (TNS-VS-596379); **Tochigi Pref.**: Utsunomiya-shi, Kogashi-yama, 1979-9-28, *T. Sato s.n.* (TNS-VS-1172245); Kanuma-shi, Kawabake-yama, 1977-9-10, *T. Waku 7468* (TNS-VS-570761); Oyama-shi, 1987-11-6, *M. Ono s.n.* (TNS-VS-1023725, 1023727); Kawachi-gun, Kaminokawa-machi, coll. date unknown, *Y. Jotani 197* (TNS-VS-831877), 1930-?-?, *Y. Jotani 179* (TNS-VS-831878); Minamikawachi-machi, Nishitsubo-yama, 1979-10-20, *M. Usui s.n.* (TNS-VS-422691); Kamikawachi-mura, Miyayamada, 1981-10-2, *S. Waku s.n.* (TNS-VS-438799); Kawachi-machi, Kamitahara, alt. 160 m, 1987-9-13, *H. Ogawa s.n.* (TNS-VS-799735); Kamitsuga-gun, Nishikata-mura, Manago, 1981-9-7, *M. Usui s.n.* (TNS-VS-427401); Haga-gun, Mashiko-machi, Kitahara, alt. 120 m, 1987-8-2, *Y. Sugita s.n.* (TNS-VS-799731); Shimotsuga-gun, Kokubunji-machi, Koganei, 1979-10-20, *M. Usui s.n.* (TNS-VS-1172277); Tomiyama-mura, Ohira-san, 1937-9-23, *Y. Jotani 15008* (TNS-VS-831879); Nasu-gun, Kurobane-machi, Kitano-gami, 1981-9-10, *M. Usui s.n.* (TNS-VS-427397); Nasu-machi, Nasu Imperial Villa, 1966-9-5, *H. Ito s.n.* (TNS-VS-1045368); Kuroiso-machi, Kutsukake, 1969-9-1, *T. Waku 1169* (TNS-VS-422689); Nishinasuno-machi, Senbonmatsu, 1967-9-7, *H. Ito s.n.* (TNS-VS-1045378, 1045381); **Gunma Pref.**: Gunma-gun, Haruna-machi, Haruna-san, 1968-7-19, *Y. Jotani 1191* (TNS-VS-831880); Kanra-gun, Shimonita-machi, Kozu Farm, 1955-8-7, *T. Satomi s.n.* (TNS-VS-1042087); Tone-gun, Minakami-machi, Okunobiki-zawa, 1985-9-23, *S. Ishiguro s.n.* (TNS-VS-1153084); **Saitama Pref.**: Iruma-gun, Naguri-mura, Hitomi, 1985-10-13, *S. Ishiguro s.n.* (TNS-VS-464003); Chichibu-gun, Otaki-mura, Taiyoji, 1988-10-15, *T. Iwata 9054* (TNS-VS-1025581); *ibid.*, 1988-10-15, *T. Iwata 9055* (TNS-VS-1025582); Higashichichibu-mura, Dodaira-san, 1983-9-25, *T. Iwata 2112* (TNS-VS-1133786); Kodama-gun, Kamikawa-mura, Niisato, 1980-10-12, *S. Kojima s.n.* (TNS-VS-514484); **Chiba Pref.**: Higashikatsushika-gun, Kamagaya-machi, 1961-8-6, *H. Ohba & M. Ohsawa s.n.* (TNS-VS-147806); **Tokyo Pref.**: Kita-toshima-gun, Shi-mura, 1929-9-23, *F. Maekawa 1212* (TNS-VS-831867); Musashino-shi, Gotenyama, 1980-9-27, *H. Endo s.n.* (TNS-VS-423916); Kitatama-gun, Yamato-mura, Shimizu, 1937-9-26, *F. Maekawa s.n.* (TNS-VS-831866); **Niigata Pref.**: Kashiwazaki-shi, Hirai, 1985-10-10, *I. Ohzu s.n.* (TNS-VS-1153097); Shibata-shi, Sugatani, 1978-10-1, *M. Saito 2379* (TNS-VS-543148), *ibid.*, 1978-10-1, *M. Saito 2385* (TNS-VS-543192); Nioji Shrine, 1962-10-28, *F. Konta 280* (TNS-VS-929631); Niitsu-shi, Akibayama, 1952-8-1, *M. Saito 2062* (TNS-VS-543147); Joetsu-shi, Atagokokubu, 1962-11-18, *T. Kuramata s.n.* (TNS-VS-543193); Nakakanbara-gun, Muramatsu-machi, Takaishi, 1978-9-23, *M. Saito 2187* (TNS-VS-1172253); Nishikanbara-gun, Yahiko-mura, Yu Shrine, 1978-8-3, *M. Saito 2085* (TNS-VS-543161); Minami-kanbara-gun, Shitada-mura, Yagihana, 1979-8-27, *M. Saito 3194* (TNS-VS-543151); Komyo-zan, 1979-8-28, *M. Saito 3168* (TNS-VS-543160); Higashikanbara-gun, Tsugawa-machi, 1978-9-23, *M. Saito 2233* (TNS-VS-543142); Mikawa-mura, Tsunagi, 1981-10-29, *M. Saito 3696* (TNS-VS-436143); Santo-gun, Koshiji-machi, Tsukayama Pass, 1985-10-21, *I. Ohzu s.n.* (TNS-VS-1153098, 1153099); Koshi-gun, Yamadori-mura, Hachibuse, 1909-10-3, *M. Nakamura s.n.* (TNS-VS-89889); Kariwa-gun, Oguni-machi, Hachioji, 1966-10-30, *S. Iwano s.n.* (TNS-VS-543171); Higashikubiki-gun, Matsunoyama-machi, Usagiguchi, 1981-10-11, *M. Saito 3704* (TNS-VS-436142); Iwafune-gun, Arakawa-machi, Hanadate, 1982-10-5, *T. Nakaike s.n.* (TNS-VS-433610); Asahi-mura, Shinbo-dake, 1987-9-27, *M. Saito s.n.* (TNS-VS-1152603); Sarusawa, 1987-9-27, *M. Saito s.n.* (TNS-VS-1152604); Nakano, 1976-11-8, *M. Saito 3344* (TNS-VS-543149); Sanpoku-machi, Odai, 1982-10-4, *T. Nakaike s.n.* (TNS-VS-433608, 433609); **Toyama Pref.**: Toyama-shi, Kureha-yama, 1979-7-17, *T. Ohshima s.n.* (TNS-VS-543547); Uozu-shi, Toradani, 1977-8-3, *T. Ohshima s.n.* (TNS-VS-543545); Himi-shi, Oura, 1977-8-29, *T. Ohshima s.n.* (TNS-VS-343999); Namerikawa-shi, Minowa, 1976-10-6, *S. Matsumoto 761006-44* (TNS-VS-9506763); Hongo, 1976-10-6, *S. Matsumoto 761006-63* (TNS-VS-9506782); Gyoden Park, 1982-9-11, *T. Ohshima s.n.* (TNS-VS-1156184); Tonami-shi, Seridani, 1976-8-21, *T. Ohshima s.n.* (TNS-VS-343915); Higashitonami-gun, Inami-machi, Tojoji, 1982-10-10, *T. Ohshima s.n.* (TNS-VS-1156182); **Ishikawa Pref.**: Suzu-shi, Hojuji Temple, 1969-9-8, *S. Komaki s.n.* (TNS-VS-424537); Enuma-gun, Higashitaniokumura, Taki - Aratani, 1953-9-27, *S. Yoshimaru 1* (TNS-VS-1042109); Nomi-gun, Kaneno-mura, Gokoji, 1953-11-3, *S. Yoshimaru s.n.* (TNS-VS-1042089); Ishikawa-gun, Tsurugi-machi, Okushishiku, 1974-9-23, *M. Honda s.n.* (TNS-VS-424526); **Fukui Pref.**: Fukui-shi, Shigetate, 1984-6-29, *Y. Yoshimura s.n.* (TNS-VS-1152599); Tsuruga-shi, Iwagomori-yama, 1964-9-20, *S. Watanabe s.n.* (TNS-VS-1159835); Ono-shi, Tsukahara, 1977-9-15, *Y. Saito s.n.* (TNS-VS-1159796); Katsuyama-shi, Heisenji, 1977-10-23, *N. Saito 7* (TNS-VS-415179); Oyatani, 1975-8-24, *Y. Saito s.n.* (TNS-VS-384610); Toritate-yama, 1967-8-9, *S. Watanabe s.n.* (TNS-VS-1159798); Sakai-gun, Mikuni-cho, Jingaoka, alt. 30 m, 1992-11-8, *S. Watanabe 36725* (TNS-VS-1152602); Hamaji, 1978-8-, *Y. Saito s.n.* (TNS-VS-1159833); **Yamanashi Pref.**: Nishiyatsu-shiro-gun, Kamikuishiki-mura, Aokigahara, alt. 1000 m, 1967-8-

- 17, *F. Konta* & *H. Takahashi* 643 (TNS-VS-929605); Shojiko, 1981-8-31, *F. Miyamoto* 11 (TNS-VS-831730a/b, 831732a/b); **Nagano Pref.**: Nagano-shi, Hikage, alt. 750 m, 1981-10-7, *H. Tsutsumi s.n.* (TNS-VS-574420); Iida-shi, Tenryukyo, 1974-11-1, *K. Otsuka* 2334 (TNS-VS-1157062); Matsukawa, alt. 1050 m, 1980-8-3, *H. Tsutsumi s.n.* (TNS-VS-1159827); Komagane-shi, Kochi, alt. 650 m, 1981-10-13, *H. Tsutsumi s.n.* (TNS-VS-574418); Omachi-shi, Otari, alt. 680 m, 1981-9-8, *H. Tsutsumi s.n.* (TNS-VS-574427); Kizaki-ko, alt. 800 m, 1981-9-7, *H. Tsutsumi s.n.* (TNS-VS-574439); Takagari-yama, 1981-8-30, *T. Waku s.n.* (TNS-VS-1157075); Iyari, 1980-8-21, *F. Miyamoto* 6710 (TNS-VS-831767); *ibid.*, 1980-8-21, *F. Miyamoto* 6709 (TNS-VS-831768); *ibid.*, 1980-8-21, *F. Miyamoto* 6711 (TNS-VS-831769); *ibid.*, 1980-8-21, *F. Miyamoto* 6708 (TNS-VS-831770); *ibid.*, 1951-9-8, *T. Nakamura* 15 (TNS-VS-831762); *ibid.*, 1951-9-8, *T. Nakamura* 26 (TNS-VS-831761); *ibid.*, 1951-9-8, *T. Nakamura* 27 (TNS-VS-831680); Koshoku-shi, Obasute, alt. 750 m, 1981-10-7, *H. Tsutsumi s.n.* (TNS-VS-574419); Saku-shi, Yoseishi-yama, alt. 1250 m, 1981-9-22, *H. Tsutsumi s.n.* (TNS-VS-574440); Minamisaku-gun, Yachiho-mura, Yachiho Lake, alt. 1050 m, 1981-9-21, *H. Tsutsumi s.n.* (TNS-VS-574435); Kitasaku-gun, Karuizawa-machi, Mine-no-chaya, alt. 1300 m, 1981-9-24, *H. Tsutsumi s.n.* (TNS-VS-574442); Yagasaki, 1980-8-19, *T. Nakaike s.n.* (TNS-VS-1159817); Chiisagata-gun, Wada-mura, Wada Pass, 1980-10-4, *K. Otsuka* 7368 (TNS-VS-431618); Shimoina-gun, Seinaiji-mura, Kamiseinaiji, 1980-11-1, *B. Sasaki s.n.* (TNS-VS-431608); Urugi-mura, Iwakura, alt. 800 m, 1981-10-12, *H. Tsutsumi s.n.* (TNS-VS-574444); Chausu-yama, 1980-10-10, *K. Otsuka* 7440 (TNS-VS-1159822); Kiso-gun, Okuwa-mura, Shimozaigo, 1980-8-25, *T. Nakaike s.n.* (TNS-VS-1159814); Kitaazumi-gun, Hokujo-mura, Sarukura, 1953-8-14, *T. Nakamura s.n.* (TNS-VS-831742); Shiroma-dake, 1953-8-29, *T. Nakamura* 698 (TNS-VS-831741); Shimoina-gun, Oshima-mura, Sakurayama, 1955-10-9, *M. Muramatsu* 1304 (TNS-VS-127296); Kitaazumi-gun, Miasa-mura, Minami-mura, alt. 840 m, 1981-9-6, *H. Tsutsumi s.n.* (TNS-VS-574422); Hakuba-mura, Sanosaka, alt. 800 m, 1981-9-4, *H. Tsutsumi s.n.* (TNS-VS-574421); Happo, 1980-8-23, *Z. Kaneda s.n.* (TNS-VS-431613); Kamiminochi-gun, Toyono-machi, Okura, alt. 500 m, 1981-9-25, *H. Tsutsumi s.n.* (TNS-VS-574443); Shimominochi-gun, Sakae-mura, Mori, alt. 300 m, 1981-10-1, *H. Tsutsumi s.n.* (TNS-VS-574437); **Gifu Pref.**: Gifu-shi, Kinka-zan, 1938-8-15, *Y. Jotani s.n.* (TNS-VS-831681); *ibid.*, 1935-9-19, *T. Nomura s.n.* (TNS-VS-1017515); Takayama-shi, Shiroyama Park, 1987-9-18, *A. Yamamoto s.n.* (TNS-VS-1157085); Mizunami-shi, Sue, 1976-9-16, *Y. Yamamoto s.n.* (TNS-VS-1159803); Ena-shi, Agi-gawa, 1981-10-11, *Y. Yamamoto s.n.* (TNS-VS-435839); Toki-shi, Nakagiri - Ohira, 1985-7-29, *T. Ogiyama s.n.* (TNS-VS-1159851); Kakamigahara-shi, Nakanagatsuka, 1979-10-23, *Y. Yamamoto s.n.* (TNS-VS-1159809); Gujo-gun, Hachiman-cho, Nishibora - Kajika, 1978-9-19, *Y. Yamamoto s.n.* (TNS-VS-1157117); Shirotori-cho, Tochibora, 1980-9-21, *Y. Yamamoto s.n.* (TNS-VS-435838); Ono-gun, Takane-mura, Hiwada, 1988-9-4, *H. Miyazaki* 7647 (TNS-VS-831751); *ibid.*, 1988-9-4, *H. Miyazaki* 7648 (TNS-VS-831750); Yoshiki-gun, Kamitakara-mura, Hirayu, 1973-8-10, *H. Ishikawa* 388 (TNS-VS-1045384); **Shizuoka Pref.**: Fujinomiya-shi, Inokasira, 1981-10-10, *M. Nakagawa s.n.* (TNS-VS-1152333); Fukuroi-shi, Yamamoto, 1984-9-23, *T. Sugino s.n.* (TNS-VS-458072); Iwata-gun, Misakubo-cho, Kogane-sawa, 1977-10-23, *T. Sugino s.n.* (TNS-VS-591599); **Aichi Pref.**: Okazaki-shi, Iwazu-cho, 1980-9-7, *K. Inukai* 3770 (TNS-VS-432930); Nakashima-gun, Sobue-cho, Sobue, 1983-9-26, *K. Inukai* 6338 (TNS-VS-1156981); Hazu-gun, Hazu-cho, Nishihazu, 1980-7-25, *M. Muramatsu s.n.* (TNS-VS-432970); Nukata-gun, Nukata-cho, Natsuyama, alt. 250 m, 1990-7-28, *Y. Fukuoka* 970 (TNS-VS-683758); Higashikamo-gun, Asuke-cho, Korankei, 1971-9-24, *M. Fukuhara* 3723 (TNS-VS-432916); **Mie Pref.**: Age-gun, Kawage-cho, Ueno, 1980-8-5, *S. Yamauchi s.n.* (TNS-VS-437420); Minamimuro-gun, Kiho-cho, Tashiro, 2004-6-15, *S. Fujimoto s.n.* (TNS-VS-764365); **Shiga Pref.**: Koka-gun, Konan-cho, Iwao-yama, 1981-9-2, *S. Yamauchi s.n.* (TNS-VS-533925); Sakata-gun, Santo-cho, Manganji, 1982-10-23, *M. Mase s.n.* (TNS-VS-1152559); Ika-gun, Nishiazai-cho, Yamakado, 1977-10-18, *T. Waku* 7871 (TNS-VS-558889); Takashima-gun, Imazu-cho, Sanamidara, 1979-11-3, *T. Tatebe s.n.* (TNS-VS-558891); **Kyoto Pref.**: Kyoto-shi Sakyo-ku, Daimonji-yama, 1979-8-29, *N. Yoshikawa* 76560 (TNS-VS-594321); Soraku-gun, Kamo-cho, Tono, 1977-7-17, *Z. Tsujimoto s.n.* (TNS-VS-594322); Wazuka-cho, Jubu-san, alt. 300-600 m, 1978-9-17, *S. Tsugaru* 5128 (TNS-VS-489993); Amata-gun, Miwa-cho, Miharu Pass, 1983-8-8, *T. Nakaike s.n.* (TNS-VS-1157024); **Osaka Pref.**: Shionawate-shi, Muroike, 1982-8-16, *A. Komaki s.n.* (TNS-VS-1156220); Minamikawachi-gun, Furuichi-machi, Ankan-tenno-ryo, 1950-8-17, *T. Koyama* 2 (TNS-VS-1042106); **Hyogo Pref.**: Kasai-gun, Shimozato-mura, Hokke-san, 1952-10-27, *T. Kodama* 3644 (TNS-VS-129845); *ibid.*, alt. 150 m, 1952-10-27, *T. Kodama* 3659 (TNS-VS-129844); Izushi-gun, Tanto-cho, Mushu, 1981-8-19, *Y. Hayashi s.n.* (TNS-VS-563475); **Nara Pref.**: Nara-shi, Kasuga-yama, 1951-11-4, *M. Tagawa* 4217 (TNS-VS-311232); Uda-gun, Oda-cho, 1950-10-15, *T. Kodama* 1241 (TNS-VS-129839); Yoshino-gun, Higashiyoshino-mura, Myojin-dake, 1982-8-22, *Z. Tsujimoto s.n.* (TNS-VS-1156219); **Tottori Pref.**: Tottori-shi, Kyusho-zan, 1980-10-12, *A. Tanaka s.n.* (TNS-VS-433501); Bogaki, 1981-10-24, *A. Tanaka s.n.* (TNS-VS-433499); Yazu-gun, Wakasa-cho, Wakasa, 1976-8-17, *A. Tanaka* 23146 (TNS-VS-424991); Hino-gun, Nichinan-cho, Shoyama, 1981-9-22, *M. Aoto s.n.* (TNS-VS-433122); **Okayama Pref.**: Okayama-shi, Yoshii, 1984-8-1, *H. Kobatake s.n.* (TNS-VS-1152625); Shinogose, 1980-10-22, *H. Kobatake s.n.* (TNS-VS-423262); Niimi-shi, Yatani, 1942-9-27, *T. Watanabe s.n.* (TNS-VS-423261); Mitsu-gun, Kamogawa-cho, Hongu-zan, 1981-10-18, *T. Saito s.n.* (TNS-VS-503836); Jobo-gun, Kayo-cho, Yoshikawa, 1980-10-27, *H. Kobatake s.n.* (TNS-VS-1172276); **Hiroshima Pref.**: Kure-shi, Haigamine, 1977-10-19, *T. Takeda* 10672 (TNS-VS-545891); Takehara-shi, Tamari, 1977-10-16, *T. Takeda* 10619 (TNS-VS-545905); Fukuyama-shi, Nanadani, 1975-10-14, *T. Takeda* 4946 (TNS-VS-547864); Kaya, 1974-8-19, *T. Takeda* 2384 (TNS-VS-545893); Fuchu-shi, Kusa, 1976-11-9, *T. Takeda* 8587 (TNS-VS-545904); Miyoshi-shi, Kamikawatachi, 1975-9-20, *T.*

Takeda 4746 (TNS-VS-545889); Toyota-gun, Yasuura-cho, Ichibara, 1976-9-15, *T. Takeda 8100* (TNS-VS-547847); Jinseki-gun, Jinseki-cho, Taishakukyo, 1972-9-25, *T. Takeda 293* (TNS-VS-545888); Sanwa-cho, Age, 1975-9-15, *T. Takeda 4684* (TNS-VS-545897); Tokiyasu, 1977-11-11, *T. Takeda 10938* (TNS-VS-545903); Futami-gun, Kisa-cho, Okada-yama, 1973-8-31, *T. Takeda 286* (TNS-VS-1152799); Hiba-gun, Kuchiwa-cho, 1975-8-24, *T. Takeda 4361* (TNS-VS-545902).

Kyushu - Saga Pref.: Taku-shi, Kitataku-machi, 1964-8-?, *Y. Inoue s.n.* (TNS-VS-579337); **Kumamoto Pref.:** Kamimashiki-gun, Yabe-machi, Yamaguchi, 1978-8-27, *N. Beppu s.n.* (TNS-VS-550076); **Oita Pref.:** Beppu-shi, Myoban Spa, 1977-9-18, *Y. Takaoka s.n.* (TNS-VS-1159829); Naoiri-gun, Kuju-machi, Akagawa, 1963-8-18, *Y. Takaoka s.n.* (TNS-VS-420030).

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Hokkaido - Hokkaido Pref.: Hiroo-gun, Hiroo-cho, Rakko-dale, 1984-8-11, *Y. Goda s.n.* (TNS-VS-1152564); Usu-gun, Otaki-mura, Kitayuzawa, 1972-9-15, *M. Hara s.n.* (TNS-VS-545560).

Honshu - Aomori Pref.: Mutsu-shi, Arakawa-dake, alt. 750 m, 1980-9-15, *M. Neichi s.n.* (TNS-VS-570348); **Iwate Pref.:** Morioka-shi, Izari-sawa, 1979-9-24, *Y. Nakajima s.n.* (TNS-VS-440270); Iwate Park, 1980-8-14, *E. Fukushi s.n.* (TNS-VS-935895); Hanamaki-shi, Shitodaira, 1966-7-9, *K. Inoue s.n.* (TNS-VS-440278); Iwate-gun, Shizukuishi-cho, Taigakura, 1977-9-16, *S. Tamakawa s.n.* (TNS-VS-440264); Takinoue Spa, 1981-8-21, *K. Inoue s.n.* (TNS-VS-1156213); Taigakura, 1977-9-15, *T. Waku 7513* (TNS-VS-935894); **Miyagi Pref.:** Natori-gun, Akiu-machi, Okunikkawa, 1980-9-20, *N. Sagawa s.n.* (TNS-VS-575764); Sakaino, 1981-8-20, *K. Shoji s.n.* (TNS-VS-576840); Miyagi-gun, Miyagi-machi, Okunikkawa, 1976-10-11, *W. Takahashi s.n.* (TNS-VS-1172231); Kurokawa-gun, Taiwa-cho, Ochiai-aikawa, 1976-10-2, *W. Takahashi s.n.* (TNS-VS-1172223); **Akita Pref.:** Kitaakita-gun, Kamikoani-mura, Haginari, 1976-10-15, *J. Takada s.n.* (TNS-VS-419808); Senboku-gun, Tazawako-machi, Tazawako-kogen, 1973-8-11, *J. Takada s.n.* (TNS-VS-419806), 1976-9-10, *T. Nakaike s.n.* (TNS-VS-419785); **Yamagata Pref.:** Mogami-gun, Sakegawa-mura, Dakigaeri Valley, 1981-9-15, *N. Sagawa s.n.* (TNS-VS-437978); Tozawa-mura, Shinjo Spa, 1980-9-13, *S. Kato s.n.* (TNS-VS-437625); Nishiokitama-gun, Oguni-machi, Nukumidaira, 1979-9-24, *M. Saito 3* (TNS-VS-543152); Chojahara - Nukumidaira, 1969-8-27, *S. Serizawa 10813* (TNS-VS-1042037); Higashitagawa-gun, Haguro-machi, Toge, 1980-10-1, *T. Nakaike s.n.* (TNS-VS-437953); **Fukushima Pref.:** Iwaki-shi, Obama-machi, 1984-11-14, *M. Origasa s.n.* (TNS-VS-1152593); Ohisamachi, 1984-11-12, *K. Nishimaki s.n.* (TNS-VS-1152596); Tabito-machi, alt. 400 m, 1972-9-17, *Y. Yuzawa s.n.* (TNS-VS-439160); Adachi-gun, Otama-mura, Endo-taki, 1977-8-23, *Z. Kaneda s.n.* (TNS-VS-439535); Yama-gun, Nishiaizu-machi, Oyamazumi Shrine, 1980-9-23, *Z. Kaneda 6099* (TNS-VS-1172255); Nishishirakawa-gun, Nishigo-mura, Kasshi-yama, 1984-8-21, *A. Yamamoto s.n.* (TNS-VS-1152566); Higashishirakawa-gun, Yamatsuri-machi, Yamatsuri-yama, 1980-10-6, *A. Baba s.n.*

(TNS-VS-439527); Chikatsu-mura, Yamamoto-fudo, 1975-8-26, *Z. Kaneda s.n.* (TNS-VS-1172256); Futaba-gun, Namie-machi, Sekimori, 1979-8-23, *Y. Kanno s.n.* (TNS-VS-439541); **Ibaraki Pref.:** Hitachi-shi, Takasuzu-yama, 1970-8-28, *M. Yasu s.n.* (TNS-VS-422578); Hitachiota-shi, Takasuzu-yama, 1969-9-15, *M. Yasu s.n.* (TNS-VS-423404); Takahagi-shi, Hananuki Valley, 1973-8-17, *M. Yasu s.n.* (TNS-VS-423405); Kitaibaraki-shi, Hanazono-yama, 1971-9-15, *M. Yasu s.n.* (TNS-VS-423399); Higashiibaraki-gun, Katsura-mura, Gozen-yama, 1971-9-12, *M. Yasu s.n.* (TNS-VS-423401); Kuji-gun, Satomi-mura, Yokokawa, 1971-9-19, *M. Yasu s.n.* (TNS-VS-423403); Kozuma Farm, 1971-9-24, *M. Yasu s.n.* (TNS-VS-423402); Niihari-gun, Sakura-mura, Tennodai, 1978-10-12, *M. Michikawa 10010* (TNS-VS-1080164); Makabe-gun, Makabe-machi, Kaba-san, 1975-9-28, *M. Yasu s.n.* (TNS-VS-423400); **Tochigi Pref.:** Kanuma-shi, Futamata-yama, 1980-9-1, *M. Usui s.n.* (TNS-VS-570767); Ozaku-san, 1979-9-24, *H. Kobayashi s.n.* (TNS-VS-570765); Kawabake-yama, coll. date unknown, *F. Maekawa 80216* (TNS-VS-831864); Ozaku-san, 1981-10-12, *M. Usui s.n.* (TNS-VS-427402); Nikko-shi, Takino-o, 1980-10-22, *M. Usui s.n.* (TNS-VS-427399); Hoso-o, alt. 1250 m, 1987-8-7, *S. Nemoto s.n.* (TNS-VS-799764); Uwano, alt. 520 m, 1987-8-9, *T. Kamiyama s.n.* (TNS-VS-799767); Imaichi-shi, Tokawa River, alt. 500 m, 1987-8-6, *T. Kamiyama s.n.* (TNS-VS-799769); Kuroiso-shi, Momura-yama, 1967-9-30, *T. Waku 336* (TNS-VS-570764); *ibid.*, 1987-9-13, *S. Ishiguro s.n.* (TNS-VS-1152588); Kamitsuga-gun, Awano-machi, Ode-yama, 1957-9-8, *K. Ogawa s.n.* (TNS-VS-1042094); Kaminagano, 1978-8-27, *T. Waku 8993* (TNS-VS-1172226); Iriawano, 1957-9-8, *K. Ogawa s.n.* (TNS-VS-1172225); Ashio-machi, Mochigase, 1957-8-19, *K. Ogawa s.n.* (TNS-VS-570756); Haga-gun, Motegi-machi, Yaki-mori-yama, 1982-9-15, *T. Tashiro s.n.* (TNS-VS-1152580); Shioya-gun, Shiobara-machi, Fuji-san, 1977-8-15, *T. Waku 7285* (TNS-VS-570760); Kuriyama-mura, Nokado, 1982-9-5, *T. Tashiro s.n.* (TNS-VS-1157012); Fujihara-machi, Ryuo-kyo, 1984-9-15, *M. Usui s.n.* (TNS-VS-1152565); Kosagoe, 1981-9-29, *M. Usui s.n.* (TNS-VS-427398); Nasu-gun, Bato-machi, Torinoko-san, 1982-8-24, *H. Kato s.n.* (TNS-VS-1152590); Kurobane-machi, Unganji Temple, 1967-9-6, *H. Ito s.n.* (TNS-VS-1045685); Nasu-machi, Kita Spa, 1965-8-29, *H. Ito s.n.* (TNS-VS-1045367); Nigato-gawa, alt. 620 m, 1985-8-27, *H. Ogura s.n.* (TNS-VS-799770); Ashino, 1968-8-22, *H. Ito s.n.* (TNS-VS-1042034); Aso-gun, Tanuma-machi, Oto, 1981-9-23, *T. Waku s.n.* (TNS-VS-431951); Horai-san, 1963-10-6, *K. Ogawa s.n.* (TNS-VS-1172228); **Gunma Pref.:** Kiryu-shi, Nemoto-yama, 1973-11-3, *S. Suto s.n.* (TNS-VS-435558); Seta-gun, Miyagi-mura, Chuji Spa, 1971-10-11, *S. Suto s.n.* (TNS-VS-435559); Azuma-mura, Sori - Otaki, 1987-9-24, *S. Waku s.n.* (TNS-VS-1153090); Gunma-gun, Haruna-machi, 1977-9-8, *H. Suzuki s.n.* (TNS-VS-435556); Kurabuchi-mura, Tsukinami, 1987-8-20, *Y. Terao s.n.* (TNS-VS-1156194); Tano-gun, Nakasato-mura, Tofukuji-gawa, 1984-8-29, *T. Iwata 3372* (TNS-VS-1025521); Ueno-mura, Suwa-yama, 1985-10-20, *T. Iwata 5741* (TNS-VS-1025496); Tenmaru-yama, 1984-10-10, *T. Iwata 3595* (TNS-VS-1025517); *ibid.*, 1984-10-10, *T. Iwata 3613* (TNS-VS-1025518); Hamadaira, 1965-8-11, *T.*

- Satomi s.n.* (TNS-VS-1045369); Kanra-gun, Myogi-machi, Myogisan, 1973-5-19, *S. Suto s.n.* (TNS-VS-435561); Shimonita-machi, 1986-10-18, *M. Ono s.n.* (TNS-VS-831860); Usui-gun, Matsuida-machi, Myogi-san, 1951-10-13, *N. Adachi s.n.* (TNS-VS-92803); Agatsuma-gun, Nakanojo-machi, Yamada, 1985-9-19, *S. Waku s.n.* (TNS-VS-1159877); Agatsuma-machi, Agatsuma Valley, 1972-10-10, *S. Suto s.n.* (TNS-VS-435560); Tone-gun, Kawaba-mura, Maehotaka, 1975-8-21, *S. Kurata s.n.* (TNS-VS-333438); Akakura, 1985-9-6, *S. Waku s.n.* (TNS-VS-1153086); Minakami-machi, Yubiso-gawa, 1980-10-22, *T. Waku 10367* (TNS-VS-435562); Okura-zawa, 1981-10-18, *T. Waku s.n.* (TNS-VS-435557); **Saitama Pref.**: Chichibu-shi, Urayama, Baramo-sawa, 1993-10-31, *T. Iwata 11430* (TNS-VS-1025558); Shiratono-sawa, 1994-8-11, *T. Iwata 38863* (TNS-VS-1025551); Sobatsubu-yama, 1987-9-1, *T. Iwata 8074* (TNS-VS-1025590); Hirogawara-dani, 1987-9-1, *T. Iwata 8058* (TNS-VS-1025591); *ibid.*, 1987-9-1, *T. Iwata 8076* (TNS-VS-1025592); Urayama, 1981-9-17, *T. Iwata s.n.* (TNS-VS-1025537); Okubo-dani, 1973-9-30, *T. Iwata s.n.* (TNS-VS-1025541); Ohira-yama, 1969-8-21, *T. Iwata 290* (TNS-VS-1025544); Hanno-shi, Tenran, 2001-9-19, *T. Iwata 64020* (TNS-VS-1025469); Higashiagano - Ogami-yama, 1975-9-28, *T. Nakaike s.n.* (TNS-VS-332968); Agano - Koburi Pass - Kasasugi Pass - Kuroyama-santaki Falls, 2001-9-30, *A. Yamamoto s.n.* (TNS-VS-9512773); Karibasaka Pass, 1984-11-17, *T. Iwata 3931* (TNS-VS-1025512); *ibid.*, 1984-11-17, *T. Iwata 3930* (TNS-VS-1025513); Kusumi, 1981-11-1, *S. Kobayashi s.n.* (TNS-VS-425190); Iruma-gun, Ogose-machi, Otakatori-yama, 1997-5-23, *T. Iwata 49601* (TNS-VS-1025476); Kasasugi Pass, 1984-8-21, *T. Iwata 3282* (TNS-VS-1025522); *ibid.*, 1984-8-21, *T. Iwata 3283* (TNS-VS-1025523); Naguri-mura, Yamanaka, 1989-9-1, *T. Iwata 9484* (TNS-VS-1025574); *ibid.*, 1989-9-1, *T. Iwata 9418* (TNS-VS-1025575); *ibid.*, 1989-9-1, *T. Iwata 9424* (TNS-VS-1025576); Agano-mura, Izugatake, 1935-10-20, *S. Okuyama s.n.* (TNS-VS-1159852); *ibid.*, 1935-7-7, *S. Okuyama s.n.* (TNS-VS-1152711); Chichibu-gun, Yokoze-machi, Komochi-yama, 1993-8-7, *T. Iwata 11254* (TNS-VS-1025564); Omochi-sawa, 1994-9-18, *T. Iwata 39920* (TNS-VS-1025550); *ibid.*, 1994-9-18, *T. Iwata 39921* (TNS-VS-1025549); 1987-8-23, *T. Iwata 7981* (TNS-VS-1025593); 1987-8-23, *T. Iwata 7965* (TNS-VS-1025594); Nagatoro-machi, Ido, 1994-5-16, *T. Iwata 36344* (TNS-VS-1025557); *ibid.*, 1994-5-16, *T. Iwata 36346* (TNS-VS-1025547); Yoshida-machi, Onagata, 1985-10-6, *T. Iwata 5659* (TNS-VS-1025498); Ogano-machi, Haccho Pass, 1993-10-3, *T. Iwata 11343* (TNS-VS-1025555); Nunosawa, 1994-7-5, *T. Iwata 37463* (TNS-VS-1025555); Shiraishi-yama, 1999-7-26, *T. Iwata 58720* (TNS-VS-1025474); Onouchi-sawa, 2002-8-15, *T. Iwata 66240* (TNS-VS-1025465); Kurio, 1981-8-26, *S. Kobayashi s.n.* (TNS-VS-514476); Ryokami-mura, Ryokami-san, 1993-7-25, *T. 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7079 (TNS-VS-831749); *ibid.*, 1986-8-30, *H. Miyazaki* 7075 (TNS-VS-831752); *ibid.*, 1986-8-30, *H. Miyazaki* 7077 (TNS-VS-831748); Mie Pref.: Yokkaichi-shi, Nishisakabe-cho, Oike, 1983-10-29, *K. Kada* 10552 (TNS-VS-454284); **Shiga Pref.**: Otsu-shi, Hira-san, 1966-10-16, *H. Ito s.n.* (TNS-VS-1045371, 1045373); Shiga-gun, Shiga-cho, Uchimi-yama, 1975-8-20, *T. Yahara* 4054 (TNS-VS-364353); Koka-gun, Tsuchiyama-cho, Inaga-tani, 1981-8-17, *T. Shiraiwa* 10283 (TNS-VS-1159830); Kanzaki-gun, Eigenji-cho, Echi-gawa, 1979-9-24, *S. Yamauchi s.n.* (TNS-VS-558883); Echi-gun, Koto-cho, Gion, Oshitate-yama, 1980-9-15, *T. Tatebe s.n.* (TNS-VS-558892); **Kyoto Pref.**: Kitakuwada-gun, Miyama-cho, Ashu Experimental Forest of Kyoto University, 1987-10-1, *S. Masuda s.n.* (TNS-VS-831724); Kurodamura, Uodani Pass, 1952-9-23, *T. Kodama* 2041 (TNS-VS-129837); Haiya, 1951-9-23, *T. Kodama s.n.* (TNS-VS-247418); **Osaka Pref.**: Toyono-gun, Minoo-mura, Minoo, 1913-9-?, *U. Faurie* 307 (TNS-VS-194774); Minamikawachi-gun, Nagano-cho, Iwakaki-san, 1950-7-27, *M. Tagawa* 3437 (TNS-VS-311233); *ibid.*, 1950-7-27, *T. Kodama* 634 (TNS-VS-247431); **Hyogo Pref.**: Kobe-shi Higashinada-ku, Rokko-san, 1979-11-3, *T. Shiraiwa* 9919 (TNS-VS-509259); Shikama-gun, Yumesaki-cho, Seppiko-san, 1978-9-11, *K. Kobayashi s.n.* (TNS-VS-831693); Shiso-gun, Ichinomiyama-cho, Mizotani, 1977-9-15, *T. Shiraiwa* 7328 (TNS-VS-563484); Yabu-gun, Yabu-cho, Mochikochi, 1972-8-13, *T. Shiraiwa* 2719 (TNS-VS-563488); Oya-cho, Yokoyuki, 1968-8-12, *T. Shiraiwa* 1313 (TNS-VS-563482); Asago-gun, Ikuno-cho, Kami-ikuno, 1977-8-15, *T. Shiraiwa* 7176 (TNS-VS-563486); Tochi-hara, 1977-9-23, *T. Shiraiwa* 7399 (TNS-VS-563485); Hikami-gun, Hikami-cho, Kora, 1976-9-23, *T. Shiraiwa* 5863 (TNS-VS-563483); Ichijima-cho, Nago-ike - Godai-san, alt. 120-400m, 1997-11-16, *N. Kurosaki* 21299 (TNS-VS-697399); Taki-gun, Sasayama-cho, Koganegadake, 1954-10-24, *M. Inada* 3494 (TNS-VS-563489); *ibid.*, 1954-10-24, *T. Kodama s.n.* (TNS-VS-129842); **Nara Pref.**: [detailed locality unknown], 1913-9-?, *U. Faurie* 308 (TNS-VS-194773); Yoshino-gun, Tenkawa-mura, Sanjo-ga-tsuji, 1981-8-23, *Z. Tsujimoto s.n.* (TNS-VS-1159799, 1159831); Totsukawa-mura, Okusato, 1976-10-24, *Z. Tsujimoto s.n.* (TNS-VS-423335); **Wakayama Pref.**: Ito-gun, Koya-cho, Otaki, 1978-8-12, *H. Manago s.n.* (TNS-VS-549123); Higashimuro-gun, Nachikatsuura-cho, Okumotori, 1978-11-5, *K. Ohora s.n.* (TNS-VS-549124); Kozagawa-cho, 1977-11-3, *K. Ohora s.n.* (TNS-VS-549125); Nachi-cho, Nachi-san, 1942-10-13, *Y. Satake* 24954 (TNS-VS-294053); **Tottori Pref.**: Yazu-gun, Kawahara-cho, Somagoya, 1981-8-12, *A. Tanaka s.n.* (TNS-VS-433502); Saji-son, Yodo, 1979-10-14, *A. Tanaka s.n.* (TNS-VS-424989); Chizu-cho, Okinoyama, 1958-7-27, *A. Tanaka* 785 (TNS-VS-424990); Ashizu, 1980-10-26, *A. Tanaka* 28440 (TNS-VS-433121); Nagi-san, 1981-9-20, *K. Yasuhara s.n.* (TNS-VS-433500); **Okayama Pref.**: Maniwa-gun, Katsuyama-cho, Taniyama, 1984-9-16, *H. Kobatake s.n.* (TNS-VS-1152567); Tomata-gun, Kamo-cho, Kurami, 1976-9-8, *T. Saito s.n.* (TNS-VS-1172275, 1172229); *ibid.*, 1975-9-19, *T. Saito s.n.* (TNS-VS-1172224); Kamisaibara-son, Endo, 1979-9-16, *T. Saito s.n.* (TNS-VS-1172227); Aba-son, Osugi, 1980-8-21, *K. Takayama s.n.*

(TNS-VS-423236); Katsuta-gun, Nagi-cho, Takiyama, 1979-8-18, *K. Takayama s.n.* (TNS-VS-423235); Aida-gun, Nishiwakura-son, Wakasugi Pass, 1977-9-25, *T. Saito s.n.* (TNS-VS-1172230); **Hiroshima Pref.**: Saeki-gun, Saeki-cho, Iiyama, 1971-10-10, *T. Tamaru* 392 (TNS-VS-545899); Yoshiwa-mura, Nakatsuya, 1978-8-29, *T. Tamaru* 4363 (TNS-VS-545898).

Shikoku - Tokushima Pref.: Myozai-gun, Kamiyama-cho, 1948-8-15, *T. Inobe* 48 (TNS-VS-1042090); **Ehime Pref.**: Niihama-shi, Sasagamine, 1963-8-15, *H. Ishikawa* 384 (TNS-VS-1045383); Ochi-gun, Tamagawa-cho, Kiji, Shiratsue, 1981-10-29, *H. Ishikawa s.n.* (TNS-VS-1152326); Kamiukena-gun, Kuma-cho, Saragamine, 1980-10-25, *H. Ishikawa s.n.* (TNS-VS-1152327); Omogo-mura, Ishizuchi-san, 1965-9-29, *S. Masuda* 4617 (TNS-VS-831740); Yanadani-mura, Kamikiji, 1990-10-14, *M. Hyodo s.n.* (TNS-VS-1152621); Kitauwa-gun, Hiyo-shi-mura, Jizo-yama, 1982-10-10, *M. Hyodo s.n.* (TNS-VS-1152558); **Kochi Pref.**: Nagaoka-gun, Nishitoyonaga-mura, Kajigamori, coll. date unknown, *H. Inoue* 148 (TNS-VS-1042096).

Kyushu - Fukuoka Pref.: Fukuoka-shi, Nishi-ku, Ryoshiiwa-yama, alt. 820m, 1967-10-15, *S. Tsutsui* 4983 (TNS-VS-431738); Buzen-shi, Inugadake, alt. 1000m, 1969-9-15, *S. Tsutsui* 6710 (TNS-VS-431735); Kasuya-gun, Umi-machi, Goura-tani, alt. 580m, 1972-7-30, *S. Tsutsui* 8612 (TNS-VS-431739); **Saga Pref.**: Kashima-shi, Kyogadake, 1981-11-3, *Y. Kuranari s.n.* (TNS-VS-425080); **Oita Pref.**: Oita-gun, Shonai-cho, Kuro-dake, 1960-7-30, *M. Hadano s.n.* (TNS-VS-420031); Naoiri-gun, Kuju-machi, Hiji-dake, 1978-8-26, *M. Arakane s.n.* (TNS-VS-1159828); Kuro-dake, 1968-8-9, *K. Shono* 1048 (TNS-VS-285997); *ibid.*, 1968-8-30, *K. Shono* 1053 (TNS-VS-286002); *ibid.*, 1968-9-8, *K. Shono* 1061 (TNS-VS-286010); *ibid.*, 1968-9-8, *K. Shono* 1070 (TNS-VS-286020); *ibid.*, 1968-9-8, *K. Shono* 1071 (TNS-VS-286021); **Miyazaki Pref.**: Nishiusuki-gun, Takachiho-cho, Sobo-san, 1972-8-16, *T. Minamitani* 7656 (TNS-VS-427819); **Kagoshima Pref.**: Kanoya-shi, Ontake, 1980-10-10, *K. Takesako s.n.* (TNS-VS-434207).

Thelypteris japonica (Baker) Ching $\times$ *T. musashiensis* (Hiyama) Nakato, Sahashi et M.Kato [Ai-harigane-warabi]

*Specimens with stramineous stipes.

Honshu - Aomori Pref.: Kamikita-gun, Towadako-machi, Ouse, 1981-10-13, *M. Neichi s.n.* (TNS-VS-436671*); Goshogawaratai, alt. 800m, 1979-10-27, *M. Neichi s.n.* (TNS-VS-570290*); **Iwate Pref.**: Ichinoseki-shi, Sukawa Spa, 1979-10-11, *Y. Nakajima s.n.* (TNS-VS-440279*); **Miyagi Pref.**: Sendai-shi, Moniwa, Taihaku-san, 1979-10-20, *K. Shoji s.n.* (TNS-VS-575750*); Ido-hama, 1979-9-22, *K. Shoji s.n.* (TNS-VS-1160530*); Natori-shi, Takedatekumanodo, 1981-10-31, *K. Matsunaga* 4462 (TNS-VS-1152618*); **Akita Pref.**: Kitaakita-gun, Takanosu-machi, Yosuketai, 1980-9-12, *M. Hatakeyama s.n.* (TNS-VS-419749*); Ryugamori, 1962-8-5, *M. Hatakeyama s.n.* (TNS-VS-1172243); **Yamagata Pref.**: Yonezawa-shi, Nadera-yama, 1991-9-22, *Z. Sato* 1831 (TNS-VS-1157036*); Murayama-shi, Koshiki-dake, 1974-9-8, *S. Kato s.n.* (TNS-VS-437623*); Nishiokitama-gun, Oguni-machi, Jushiga-mori, 1969-9-10, *S. Kato s.n.* (TNS-VS-437818);

- Fukushima Pref.:** Kitakata-shi, Hirabayashi, 1980-11-19, *Z. Kaneda* 6517 (TNS-VS-438936*); Minamiaizu-gun, Tadami-machi, 1980-9-4, *Z. Kaneda* s.n. (TNS-VS-438928); Kawanuma-gun, Yanaizu-machi, Yanaizu, 1980-10-11, *A. Baba* s.n. (TNS-VS-439538*); Onuma-gun, Showa-mura, Yanohara, 1981-10-12, *A. Baba* s.n. (TNS-VS-427599*); Higashishirakawa-gun, Tanagura-machi, Tsutsukowake Shrine, 1980-10-6, *Z. Kaneda* 6163 (TNS-VS-439164*); Yamamoto-fudo Valley, 1975-8-26, *Z. Kaneda* s.n. (TNS-VS-438932); Yamatsuri-machi, Kamimiyoga, 1980-10-6, *Z. Kaneda* 6179 (TNS-VS-1172242); **Ibaraki Pref.:** Hitachi-shi, Narusawa-cho, 1973-9-16, *N. Wada* 1053 (TNS-VS-595306); Takahagi-shi, Yanagisawa, 1972-8-16, *M. Yasu* s.n. (TNS-VS-422596*); Kitaibaraki-shi, Hanazono-yama, 1966-8-22, *H. Fujita* s.n. (TNS-VS-422600); Tsukuba-shi, Kurakake, 1988-7-14, *S. Matsumoto* s.n. (TNS-VS-763917); Naka-gun, Tokai-mura, Shirakata, 1973-11-18, *M. Yasu* s.n. (TNS-VS-422584*); Miwa-mura, Torinoko-yama, alt. 350 m, 1985-8-25, *H. Kubota* s.n. (TNS-VS-799566); Kuji-gun, Kanasago-mura, Nakano, 1973-8-20, *M. Yasu* s.n. (TNS-VS-422573); Satomi-mura, Inohana Pass, 1972-9-17, *N. Wada* 1048 (TNS-VS-595342); Daigo-machi, Yamizo-san, 1958-6-0, *T. Matsumoto* s.n. (TNS-VS-1042045); Taga-gun, Juuomachi, Tatsuwara-yama, 1980-10-12, *M. Yasu* s.n. (TNS-VS-422593); Niihari-gun, Sakura-mura, University of Tsukuba, Matsumi, 1978-11-2, *M. Michikawa* 10043 (TNS-VS-1080197); Makabe-gun, Makabe-machi, Yubukuro Pass, alt. 150 m, 1998-8-18, *A. Satoh* TKB0017 (TNS-VS-9508616*); **Tochigi Pref.:** Tochigi-shi, Izuru-yama, 1979-10-10, *M. Usui* s.n. (TNS-VS-422697); Sano-shi, Akami-cho, 1981-10-15, *M. Usui* s.n. (TNS-VS-1160531*); Karasawa-yama, 1980-10-5, *M. Usui* s.n. (TNS-VS-570769*); Kanuma-shi, Futamata-yama, 1978-9-23, *H. Kobayashi* s.n. (TNS-VS-1172261); Nikko-shi, Konosu-yama, 1981-9-21, *M. Usui* s.n. (TNS-VS-427391); *ibid.*, 1979-10-26, *M. Usui* s.n. (TNS-VS-570770*); Moka-shi, Nemoto-yama, alt. 100 m, 1987-8-2, *Y. Sugita* s.n. (TNS-VS-799749); Kawachi-gun, Shiroyama-mura, Kogashi-yama, 1941-10-12, *Y. Jotani* s.n. (TNS-VS-831874*); Kamitsuga-gun, Awano-machi, Shimonagano, 1978-10-14, *T. Waku* 9058 (TNS-VS-1172257); Shioya-gun, Shiobara-machi, Hiruga-dake, 1961-8-5, *T. Tashiro* s.n. (TNS-VS-422702); Shioya-machi, Tamanyu, 1980-8-8, *T. Tashiro* s.n. (TNS-VS-422692); *ibid.*, 1982-9-19, *T. Tashiro* s.n. (TNS-VS-1152581*); Nasu-gun, Bato-machi, Minamidaira, 1981-9-16, *M. Usui* s.n. (TNS-VS-427388); Yamata, 1984-10-26, *M. Usui* s.n. (TNS-VS-1152587); Kurobane-machi, Unganji, 1967-9-6, *H. Ito* s.n. (TNS-VS-1045392, 1045393, 1045394, 1045395, 1045684); Nasu-machi, Tarasawa, 1964-8-22, *H. Ito* s.n. (TNS-VS-1045682*); Takakuhei, alt. 540 m, 1985-8-27, *H. Ogura* s.n. (TNS-VS-799757); Nasu Imperial Villa, 1963-8-28, *H. Ito* s.n. (TNS-VS-1045683); Aso-gun, Tanuma-machi, Narabu-san, alt. 520 m, 1987-9-14, *T. Noguchi & Y. Tamura* s.n. (TNS-VS-799747); **Gunma Pref.:** Seta-gun, Fujimi-mura, Akagi-san, 1957-8-31, *T. Matsuzawa* s.n. (TNS-VS-1042086*); Kanra-gun, Shimonita-machi, Arafune-yama, 1956-9-9, *T. Satomi* 17 (TNS-VS-1042082*); *ibid.*, 1956-9-9, *T. Satomi* s.n. (TNS-VS-1042088*); *ibid.*, 1955-9-4, *T. Satomi* s.n. (TNS-VS-1042097*); Kanra-machi, Ueno, 1987-10-10, *S. Kojima* s.n. (TNS-VS-1156191); **Saitama Pref.:** Chichibu-shi, Urayama, Dainichido, 1996-9-21, *T. Iwata* 46921 (TNS-VS-1133832); Urayama, Kawamata, 1981-8-25, *S. Kobayashi* s.n. (TNS-VS-514479*); Hanno-shi, Atera, Nagasawa, 1975-10-10, *T. Nakaie* s.n. (TNS-VS-333387); Higashiagano - Ogami-yama, 1975-9-28, *T. Nakaie* s.n. (TNS-VS-324823); Iruma-gun, Naguri-mura, Shirayazawa, 1964-10-25, *H. Ito* s.n. (TNS-VS-1045694); Anazawa, alt. 320 m, 2002-9-1, *N. Nakato* 2468 (TNS-VS-1168505); Fujidana-yama, 1985-10-13, *S. Ishiguro* s.n. (TNS-VS-464002); Agano-mura, Agano, 1953-9-0, *H. Inoue* s.n. (TNS-VS-1042092*); Izugatake, 1934-10-17, *S. Okuyama* 102175 (TNS-VS-1166297); Chichibu-gun, Yokoze-machi, Maruyama, 1994-10-21, *T. Iwata* 40488 (TNS-VS-1025548*); Ubugawa, 1987-8-23, *T. Iwata* 7957 (TNS-VS-1133717); Yokoze-mura, Bukozan, 1952-8-0, *H. Ito* s.n. (TNS-VS-1042134); Minano-machi, Kamafuse Pass, 1987-10-18, *T. Iwata* 8241 (TNS-VS-1133720*); Otaki, 1987-10-18, *T. Iwata* 8245 (TNS-VS-1133721); Shimotano, 1981-11-4, *S. Kobayashi* s.n. (TNS-VS-425194*, 1172258); Ogano-machi, Nunosawa, 1983-12-4, *T. Iwata* 2400 (TNS-VS-1133780); Nagaru, 1991-10-27, *T. Iwata* 10697 (TNS-VS-1133856); *ibid.*, 1991-10-27, *T. Iwata* 10698 (TNS-VS-1133857); Futtoyama, 1990-9-24, *T. Iwata* 10004 (TNS-VS-1133866); Kamihara, 1981-8-25, *S. Kobayashi* s.n. (TNS-VS-514516); Ryokami-mura, 1994-10-8, *T. Iwata* 40267 (TNS-VS-1133843); Azumaya-san, 1990-9-30, *T. Iwata* 10018 (TNS-VS-1133865); Otaki-mura, Taiyoji Temple, 1987-11-6, *T. Iwata* 8275 (TNS-VS-1133722); Tochimoto, 1993-9-11, *T. Iwata* 11232 (TNS-VS-1133849); *ibid.*, 1993-9-11, *T. Iwata* 11240 (TNS-VS-1133851); Myohogatake, 1988-10-15, *T. Iwata* 9063 (TNS-VS-1133898); Arakawa-mura, Kawauradani, 1984-9-15, *T. Iwata* 3489 (TNS-VS-1133772); *ibid.*, 1984-9-15, *T. Iwata* 3490 (TNS-VS-1133771); *ibid.*, 1987-8-9, *T. Iwata* 7867 (TNS-VS-1133725); Otofujii-yama, 1990-11-19, *T. Iwata* 10166 (TNS-VS-1133862); Yadake, 1989-10-1, *T. Iwata* 9659 (TNS-VS-1133872); Anyagawa, 1981-11-4, *S. Kobayashi* s.n. (TNS-VS-1172259); Higashichichibu-mura, Hagidaira, 1985-11-1, *T. Iwata* 5771 (TNS-VS-1133750); **Chiba Pref.:** Ichikawa-shi, Kashiwai-machi, 1979-10-14, *K. Nakamura* s.n. (TNS-VS-424240); Narita-shi, Kamifukuda, 1978-9-29, *I. Ueda* s.n. (TNS-VS-424244); **Tokyo Pref.:** Ota-ku, Ikegami, 1886-9-?, *K. Shirai* s.n. (TNS-VS-517192); Hachioji-shi, Imakuma Shrine, alt. 300–400 m, 1974-9-22, *T. Nakaie* s.n. (TNS-VS-335120); Kamiange, 1953-9-6, *Y. Tokashiki* s.n. (TNS-VS-543245*); Ome-shi, 1981-8-31, *H. Endo* s.n. (TNS-VS-435238*); Nishitama-gun, Itsukaichi-machi, Bonbori-gawa, 1978-9-17, *T. Yoshizawa* s.n. (TNS-VS-831890); Okutama-machi, the foot of Bonoore-yama, alt. 440 m, 2003-9-29, *N. Nakato* 2546 (TNS-VS-1168504); Atago-yama, alt. 440 m, 2003-7-30, *N. Nakato* 2526 (TNS-VS-1168503*); Okumotori-dani, 1980-9-23, *H. Endo* s.n. (TNS-VS-423943); Koizawa, 1967-11-5, *H. Ito* s.n. (TNS-VS-1045688); Nariki-mura, Takamizu-san, 1933-9-18, *S. Okuyama* 100863 (TNS-VS-1166298); **Kanagawa Pref.:** Minamiashigara-shi, Kano, 1977-5-22, *H. Kobayashi* s.n. (TNS-VS-441338); **Niigata Pref.:** Shibata-shi, Miyayorikami, 1946-10-

- 3, *T. Uchikawa* s.n. (TNS-VS-543162); Sugatani, alt. 180m, 1962-10-21, collector unknown s.n. (TNS-VS-929607); Nakakanbara-gun, Muramatsu-machi, Atago-yama, alt. 50m, 1962-8-29, *F. Konta* 910 (TNS-VS-929606); Minamikanbara-gun, Shitada-mura, Komyo-zan, 1979-8-28, *M. Saito* 3158 (TNS-VS-543163); Nakauonuma-gun, Nakasato-mura, Atema-yama, 1986-10-8, *M. Ono* s.n. (TNS-VS-831858); Iwafune-gun, Asahi-mura, Saruta Dam, 1986-10-18, *M. Saito* s.n. (TNS-VS-1157044); Sado-gun, Aikawa-machi, Funayama, 1979-10-16, *M. Saito* 3245 (TNS-VS-543159*); **Toyama Pref.**: Kurobe-shi, Oyama, 1978-8-10, *T. Ohshima* s.n. (TNS-VS-543549*); Shimoniikawa-gun, Unazuki-machi, Kitamata - Iburi-yama - Asahi-goya, 1969-8-27, *N. Satomi* & *R. Mochizuki* s.n. (TNS-VS-256057*); **Ishikawa Pref.**: Kanazawa-shi, Daimon-zan, 1975-10-10, *M. Honda* s.n. (TNS-VS-424504*); Wajima-shi, Nishide, 1973-10-4, *S. Komaki* s.n. (TNS-VS-424536*); Enuma-gun, Yamanaka-machi, 1931-10-20, *N. Hiratsuka* 114 (TNS-VS-513158); Ishikawa-gun, Shiramine-mura, Ichinose, 1979-9-15, *K. Yoneyama* s.n. (TNS-VS-424517); **Fukui Pref.**: Ono-gun, Izumi-mura, Shimoyama, Otaru, 1967-10-1, *Y. Saito* s.n. (TNS-VS-1166188); **Yamanashi Pref.**: Kitakoma-gun, Sutama-cho, Masutomi, 1963-8-11, *K. Akiyama* s.n. (TNS-VS-573506*); **Nagano Pref.**: Omachi-shi, Iyari, 1980-8-21, *F. Miyamoto* 6707 (TNS-VS-831765*); *ibid.*, 1980-8-21, *F. Miyamoto* 6712 (TNS-VS-831766*); *ibid.*, 1980-8-24, *T. Nakaike* s.n. (TNS-VS-1159818*); Kuzu Spa, alt. 1000m, 1981-9-8, *H. Tsutsumi* s.n. (TNS-VS-574425*); Saku-shi, Kabutoiwa-yama, 1980-9-28, *K. Nakayama* 34 (TNS-VS-401536*); Suwa-gun, Miyagawa-mura, 1952-9-5, *S. Gomi* 11 (TNS-VS-1042070); Shimoina-gun, Takagi-mura, Shimoujinori, alt. 600m, 1981-10-20, *H. Tsutsumi* s.n. (TNS-VS-574298); Kiso-gun, Kaida-mura, Sekiya, alt. 1300m, 1981-8-27, *H. Tsutsumi* s.n. (TNS-VS-574441*); Okuwa-mura, Adera Valley, 1980-8-25, *T. Nakaike* s.n. (TNS-VS-1157078); **Gifu Pref.**: Ena-shi, Kasagi-yama, 1984-9-30, *H. Miyazaki* 6607 (TNS-VS-831714); Ena-gun, Kashimo-mura, Higashihondani, coll. date unknown, *Y. Yamamoto* s.n. (TNS-VS-435837*); Hirukawa-mura, Nakagiri, 1978-11-25, *Y. Yamamoto* s.n. (TNS-VS-1157147); Yamaoka-cho, Hara, Nakada, 1981-9-27, *T. Ogiyama* s.n. (TNS-VS-545768); Akechi-cho, Sugidaira, 1977-10-16, *Y. Yamamoto* s.n. (TNS-VS-435762*); **Shizuoka Pref.**: Atami-shi, Izumi, 1980-11-8, *A. Suzuki* s.n. (TNS-VS-509163*); Mishima-shi, Yamanaka-shinden, 1979-8-19, *A. Suzuki* s.n. (TNS-VS-591592*); Fujinomiya-shi, Asagiri-kogen, alt. 860m, 1985-10-2, *T. Sato* 8619 (TNS-VS-929581); *ibid.*, 1985-10-2, *T. Sato* 8620 (TNS-VS-929580); *ibid.*, alt. 170m, 1983-9-18, *T. Sato* 4579 (TNS-VS-929576); Inokashira, 1961-9-2, *J. Sugimoto* s.n. (TNS-VS-247757); Fumoto, alt. 800m, 1974-8-29, *F. Konta* 10474 (TNS-VS-637704); Egasha, alt. 170m, 1983-9-18, *T. Sato* 4578 (TNS-VS-1156115); Saori, 1978-10-12, *T. Sato* s.n. (TNS-VS-1157107); Tagata-gun, Amagi-yugashima-cho, Joren-no-taki Fall, 1971-10-10, *H. Ito* s.n. (TNS-VS-1092284); Kamiohmi-mura, Amagi-san, 1938-8-25, *M. Nakaji* s.n. (TNS-VS-782508); **Aichi Pref.**: Higashikamo-gun, Asahi-cho, Komayama, 1979-10-28, *K. Inukai* 2642 (TNS-VS-432950); Kitashitara-gun, Shitara-cho, Higahsinagura, 1979-9-24, *K. Inukai* 2536 (TNS-VS-432957*); Toyone-mura, 1995-8-27, *J. Haginiwa* JH034067 (TNS-VS-984067); Tsugu-mura, Okuwa, 1985-9-1, *H. Miyazaki* 6970 (TNS-VS-831715); Minamishitara-gun, Horai-cho, 1967-11-19, *C. Ohkawa* s.n. (TNS-VS-428527); **Shiga Pref.**: Hikone-shi, Amatsubo-yama, 1978-10-15, *T. Tatebe* s.n. (TNS-VS-533916); **Kyoto Pref.**: Kitakuwada-gun, Miyama-cho, Ashu Experimental Forest of Kyoto University, 1987-10-1, *S. Masuda* s.n. (TNS-VS-831722, 831723); Kuroda-mura, Uodani Pass, 1952-9-23, *T. Kodama* 2042 (TNS-VS-129836); **Hyogo Pref.**: Taka-gun, Kami-cho, Toba, 1976-10-10, *T. Shiraiwa* 6129 (TNS-VS-563790); Asago-gun, Ikuno-cho, Tochihara, 1977-9-23, *T. Shiraiwa* 7420 (TNS-VS-563784); Santo-cho, Awaga, 1976-8-15, *T. Shiraiwa* 5644 (TNS-VS-563780*); Hikami-gun, Kamonosho-mura, Myoko-san, 1929-10-27, *Y. Araki* 6175 (TNS-VS-194865); Taki-gun, Sasayama-cho, Shitsukawakami, 1977-10-10, *T. Shiraiwa* 7447 (TNS-VS-763782); Koganegadake, 1976-10-25, *T. Shiraiwa* 6213 (TNS-VS-563787); Tsuna-gun, Ichinomiya-cho, Yamada, Fudono-taki Fall, 1981-9-20, *K. Mune* 554 (TNS-VS-509265); **Tottori Pref.**: Tottori-shi, Manidera, 1951-3-21, *A. Tanaka* 981 (TNS-VS-433503); **Shimane Pref.**: Iishi-gun, Tonbara-cho, Oyorogi-yama, 1977-8-11, *H. Yamamoto* s.n. (TNS-VS-511261); **Okayama Pref.**: Tsuyama-shi, Kurosawa-yama, 1980-7-11, *K. Takayama* s.n. (TNS-VS-423264); Jobo-gun, Kayo-cho, Higashikario, 1981-9-27, *T. Saito* s.n. (TNS-VS-1172260); Kawakami-gun, Nariwa-cho, Tenjin-yama, 1975-11-21, *T. Watanabe* s.n. (TNS-VS-1172262); **Hiroshima Pref.**: Saeki-gun, Saeki-cho, Iiyama, 1971-10-10, *T. Tamaru* 391 (TNS-VS-547835); Yoshiwa-mura, Kanmuri-yama, 1971-10-10, *T. Tamaru* 391 (TNS-VS-547880); **Shikoku - Ehime Pref.**: Kamiukena-gun, Omogo-mura, Omogo Valley - Ishizuchi-yama, 1965-9-29, *S. Masuda* 4656 (TNS-VS-831697); *ibid.*, 1965-9-29, *S. Masuda* 4654 (TNS-VS-831698); Kita-gun, Nagahama-cho, Kinzansyussekiiji Temple, 1980-7-30, *H. Ishikawa* s.n. (TNS-VS-1166280); **Kochi Pref.**: Nagaoka-gun, Nishitoyonaga-mura, Kajigamori, coll. date unknown, *H. Inoue* 149 (TNS-VS-1042130); **Kyushu - Oita Pref.**: Naoiri-gun, Kuju-machi, Kuro-dake, *K. Shono* s.n. (TNS-VS-1168492); Akagawa, 1973-10-14, *M. Hadano* s.n. (TNS-VS-1157097).