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Vascular Plants Collected at Tornaya Bay, Iturup Island in 2012

Hideki Takahashi[1] and Tomoko Fukuda[2]

[1]*The Hokkaido University Museum, N10 W8, Kita-ku, Sapporo, 060-0810 JAPAN*; [2]*Department of Botany, National Museum of Nature and Science, 4-1-1, Amakubo, Tsukuba, 305-0005 JAPAN.*
E-mail: hide@museum.hokudai.ac.jp

Abstract A list of 109 species in 40 families of vascular plants around Tornaya Bay, Iturup Islands was prepared based on a field survey in 2012. The biased composition of the ten dominant families at Tornaya Bay may be influenced by the local coastal meadow vegetation of the region. Forest vegetation is poor around Tornaya Bay. Among the noteworthy discoveries was *Agrimonia pilosa* Ledeb. var. *succapitata* Naruhashi.

Key words: *Agrimonia*, flora, Iturup, Tornaya Bay, vascular plants

Introduction

The flora of Iturup Island was discussed several times by Japanese botanists before the second world war (Kawakami 1901-02; Tatewaki 1941a, 1941b; Tatewaki and Yoshimura 1941; Koidzumi and Yokouchi 1956a, 1956b, 1956c, 1956d). Recently Barkalov (2000, 2002, 2009) summarized the total flora and vegetation of the Kuril Islands.

Vetrovoy Peresheyek (Rucharu-gen'ya), a plain approximately 6 km wide, and situated at the northeastern part of Iturup Island, forms a boundary between the southwestern Iturup-Kunashir District (southern Kurils) and the northeastern Urup District (Barkalov 2000, 2002). Since Tornaya Bay on Iturup Island is located on the northeastern side of the plain, it shows floristic similarities to Urup Island (see Fig. 1).

We collected vascular plants in several places around Tornaya Bay on August 28, 2012, which we here list. We also compared the flora and vegetation of Tronaya Bay with the Iturup-Kunashir District and Urup District.

Materials and Methods

Vascular plants around Tornaya Bay (Fig. 2A) were collected on August 28, 2012 at the following sites:

A: Around Lake Sopochnoye (Fig. 2C) and low places near beach at Tornaya Bay, Iturup. N 45°19' 21", E 148°24' 44".

B: Meadows on coastal terrace between Tornaya Bay and Senokosnaya Bay (Fig. 2D). N 45°20' 02", E 148°25' 17", alt. ca. 100m.

C: Meadows on hill NE of Lake Sopochonoye (Fig. 2B). N 45°19' 36", E 148°25' 26", alt. ca. 100m.

D: Disturbed wasteland at Tornaya Bay (Fig. 2B), N45°19' 40", E 148°25' 17", alt. ca. 10m.

Plants collected around Tornaya Bay are summarized in the Appendix. Data for the ten dominant families is compared with similar information from the southern and middle Kurils compiled by Barkalov (2009). Voucher specimens are deposited in the Herbarium of the Hokkaido University Museum (SAPS).

Results and Discussion

The geographic distribution of forest trees on Iturup was reported by Kawakami (1901-02). Vetrovoy Peresheyek (Rucharu-gen'ya) was regarded as a boundary between the central and northern parts of Iturup based on forest vegetation (Tatewaki and Yoshimura 1941). On the northeastern side of Vetrovoy Peresheyek, forest development is poor, and sparse forests composed of *Betula, Alnus*, *Salix* and so on are found only along rivers or beside lakes and wet lowlands according to the Obihiro Forestry Office (1959). Barkalov (2002, 2009) also pointed out that the *Betula ermanii* forests grow mainly in lowlands from northeastern Vetrovoy Peresheyek, Iturup, through Urup to Shimushir in the middle Kurils. We noted that herbaceous meadows formed the main vegetation around Tornaya Bay and that deciduous broad-leaved forests were limited. We could find *Betula ermanii* - *Sorbus commixta* forests only on southwestern side of Lake Sopochnoye. *Salix udensis* was the other spontaneous trees.

In total, we recorded 109 species in 40 families for Tornaya Bay region (see Appendix). Among the three dominant families, Cyperaceae, Poaceae and Asteraceae, in both the southern and middle Kurils, the Cyperaceae clearly were less important in the flora of Tornaya Bay (Table 1). The lesser importance of Cyperaceae is probably due to the regional vegetation of Tornaya Bay. The Rosaceae, Ranunclulaceae Juncaceae and Ericaceae, within the ten dominant families at Tornaya Bay, shows features in common with the southern and middle Kurils. The peculiar presence of Fabaceae, Apiaceae, and Orobanchaceae at Tornaya Bay was not reflected in the southern and middle Kurils. The peculiar composition of the dominant families shows a regional bias which is due to the nature of the coastal meadow habitats at Tornaya Bay. Based on our findings, the flora of Tornaya Bay does not show any strong evidence of similarity with the middle Kurils at the dominant family level.

Subalpine meadows composed of *Mertensia pterocarpa* and *Primula farinosa* subsp. *modesta* var. *fauriei* on coastal terraces and the occurrence of *Vaccinium vitis-idaea* and *Sorbus sambucifolia* on ridges may be due to the regional foggy climate

around Tornaya Bay.

Although we collected *Ranunculus nipponicus* var. *submersus* in a gently flowing, shallow river near its junction with the lake, we collected few water plants around Lake Sopochnoye, partly due to the limited time of our survey.

Agrimonia pilosa Ledeb. var. *succapitata* Naruhashi, which produces condensed spikes (Naruhashi and Seo 1996), is a first record from the Kuril Islands. Naruhashi and Seo (1996) reported the first occurrence of *A. pilosa* var. *succapitata* from Toyama Prefecture, central Honshu, Japan. We identified the plants of Tornaya Bay as this variety based on similarity of the inflorescence, but the shape of leaves differ somewhat from the description of the leaves given by Naruhashi and Seo (1996). More careful comparison of this collection with the Toyama plants is necessary.

The type locality of *Mertensia pterocarpa* f. *yoshimurae*, with hairs on the inner surface of the corolla tube (Fukuda and Takahashi 2002) is situated between Parusnaya Bay (Porosu) and So'fa Bay (Sokiya) on Iturup Island, which includes the present region. But as the specimens were fruiting plants, we could not confirm the forma.

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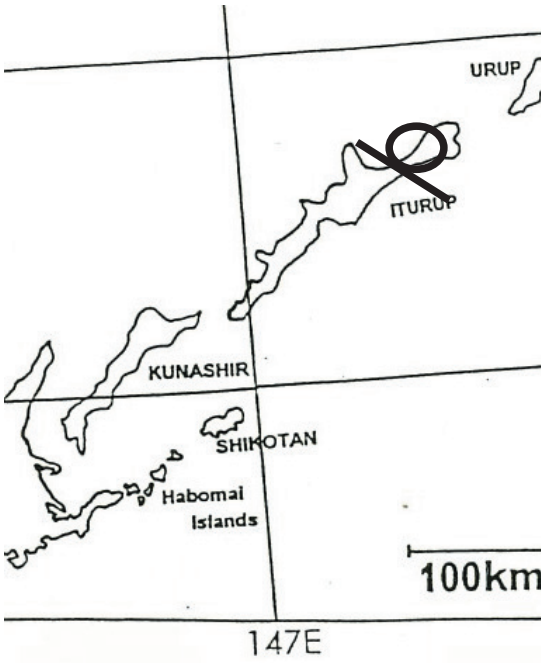


Figure 1. Location of study site. Tornaya Bay area (solid oval) and boundary (solid straight line) between Kunashir-Iturup District and Urup District.

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Table 1. A comparison of the ten dominant families in the Kurils.

Rank	S. Kurils	Rank	Tornaya Bay	Rank	M. Kurils
1	Cyperaceae (114)	1	Asteraceae (14)	1	Cyperaceae (42)
2	Poaceae (97)	2	Poaceae (10)	2	Poaceae (40)
3	Asteraceae (76)	3	Rosaceae (8)	3	Asteraceae (31)
4	Rosaceae (50)		Ranunculaceae (8)	4	Rosaceae (19)
5	Orchidaceae (42)	5	Fabaceae (6)		Ericaceae (19)
6	Ericaceae (38)		Juncaceae (6)	6	Juncaceae (16)
7	Ranunculaceae (34)		Apiaceae (6)	7	Orchidaceae (13)
8	Polygonaceae (28)	8	Orobanchaceae (5)	8	Caryophyllaceae (12)
9	Juncaceae (27)	9	Cyperaceae (3)	9	Ranunculaceae (10)
10	Lamiaceae (20)		Ericaceae (3)		Brassicaceae (10)
			Polygonaceae (3)		

The data of S. Kurils and M. Kurils follow Barkalov (2009).
The number of species in parentheses.

APPENDIX.

List of vacular plants at Tornaya Bay, Iturup Island.

<Ferns and Lycophytes>

EQUISETACEAE

Equisetum arvense L. [Sugina]
A (HT & TF 35431)

Equisetum hyemale L. [Tokusa]
A (HT & TF 35441; TF 2012-512)

THELYPTERIDACEAE

Thelypteris phegopteris (L.) Sloss. ex Rydb. [Miyama-warabi]
C (HT & TF 35509)

WOODSIACEAE

Athyrium melanolepis (Franch. et Sav.) H.Christ [Miyama-meshida]
C (HT & TF 35510)

<Angiospermae>

ADOXACEAE

Sambucus racemosa L. subsp. ***kamtschatica*** (E.L.Wolf) Hultén [Ezo-niwatoko]
A (HT & TF 35434)

AMARYLLIDACEAE

Allium victorialis L. subsp. ***platyphyllum*** Hultén [Gyōjya-nin'niku]
C (HT & TF 35508)

APIACEAE

Angelica genuflexa Nutt. ex Torr. et A.Gray [Ōba-senkyū]
A (TF 2012-502)

Angelica gmelinii (DC.) Pimenow [Ezono-shishiudo]
B (HT & TF 35477)
Note: Species name follows Takahashi (2009).

Conioselinum filicinum (H.Wolff) H.Hara [Miyama-senkyū]
A (HT & TF 35451)

Glehnia littoralis F.Schmidt ex Miq. [Hama-bōhū]
A (HT & TF 35462)

Pleurospermum uralense Hoffm. [Ō-kasamochi]
C (HT & TF 35532)

Tilingia ajanensis Regel [Shirane-ninjin]
B (HT & TF 35506)

ARALIACEAE

Aralia cordata Thunb. [Udo] (Fig. 2F)
A (HT & TF 35446; TF 2012-515 deleted!)

ASPARAGACEAE

Maianthemum dilatatum (A.W.Wood) A.Nelson et J.F.Macbr. [Maizuru-sō]
C (HT & TF 35517; TF 2012-466)

ASTERACEAE

Achillea ptarmica L. subsp. ***macrocephala*** (Rupr.) Heimerl var. ***speciosa*** (DC.) Herder [Ezo-nokogiri-sō]
B (HT & TF 35486)

Anaphalis margaritacea (L.) Benth. et Hook.f. [Yama-hahako]
A (HT & TF 35429), B (HT & TF 35480; TF 2012-444)

Artemisia montana (Nakai) Pamp. [Ō-yomogi]
B (HT & TF 35474)

Chrysanthemum arctium L. subsp. ***yezoense*** (Maek.) H.Ohashi et Yonek. [Chishima-kohama-giku]
C (HT & TF 35515)

Cirsium kamtschaticum Ledeb. ex DC. [Chishima-azami]
A (TF 2012-505), B (HT & TF 35475; TF 2012-441)

Gnaphalium uliginosum L. [Hime-chichiko-gusa] Naturalized!
A (HT & TF 35436, 35438; TF 2012-477)

Hieracium umbellatum L. [Yanagi-tanpopo]
B (HT & TF 35470)

Ligularia hodgsonii Hook.f. [Tōge-buki]
B (HT & TF 35466; TF 2012-437)

Parasenecio hastatus (L.) H.Koyama var. ***orientalis*** (Kitam.) H.Koyama [Yobusuma-sō]
A (HT & TF 35450; TF 2012-495)

Parasenecio kamtschaticus (Maxim.) Kadota var. ***kamtschaticus*** [Mimi-kōmori]
A (HT & TF 35433; TF 2012-508)

Picris hieracioides L. subsp. ***japonica*** (Thunb.) Krylov var. ***japonica*** (Thunb.) Regel ex Herder [Kōzori-na]
B (HT & TF 35472)

Saussurea riederii Herder subsp. ***yezoensis*** (Maxim.) Kitam. var. ***yezoensis*** Maxim. [Nagaba-kita-azami]
A (TF 2012-490), B (HT & TF 35500; TF 2012-442), C (HT & TF 35514, 35516)

Senecio cannabifolius Less. [Hangon-sō]
A (TF 2012-519)

Solidago virgaurea L. subsp. ***leiocarpa*** (Benth.) Hultén var. ***leiocarpa*** (Benth.) A.Gray [Miyama-akino-kirinsō]
B (HT & TF 35491; TF 2012-447)

BETULACEAE

Betula ermanii Cham. [Dake-kanba]
A (HT & TF 35437; TF 2012-509)

BORAGINACEAE

Mertensia pterocarpa (Turcz.) Tatew. et Ohwi [Chishima-rurisō]
B (HT & TF 35496)

BRASSICACEAE

Arabis stelleri DC. var. ***japonica*** (A.Gray) F.Schmidt [Hama-hatazao]
A (HT & TF 35463)

Cardamine regeliana Miq. [Ōba-tanetsuke-bana]
A (TF 2012-478)

Rorippa palustris (L.) Besser [Sukashi-ta-gobō]
A (TF 2012-503), D (HT & TF 35536)

CAMPANULACEAE

Adenophora triphylla (Thunb.) A.DC. var. ***japonica*** (Regel) H.Hara [Tsurigane-ninjin]
B (HT & TF 35494; TF 2012-446)

CARYOPHYLLACEAE

Sagina procumbens L. [Araito-tsumekusa] Naturalized!
D (HT & TF 35533)

Stellaria uliginosa Murray var. ***undulata*** (Thunb.) Fenzl [Nomino-fusuma]
A (TF 2012-479)

CELASTRACEAE

Parnassia palustris L. var. ***palustris*** [Umebachi-sō]
B (HT & TF 35501; TF 2012-440)

CORNACEAE

Cornus suecica L. [Ezo-gozen-tachibana]
C (HT & TF 35518)

CRASSULACEAE

Rhodiola rosea L. [Iwa-benkei]
C (HT & TF 35530; TF 2012-465)

CYPERACEAE













Figure 2. **A.** Tornaya Bay. **B.** Camp site on meadows above bay. **C.** Lakeside of Sopochinoye. **D.** Meadows on coastal terrace between Tornaya Bay and Senokosnaya Bay. **E.** *Astragalus japonicus*. **F.** *Aralia cordata*.

Carex gmelinii Hook. et Arn. [Nemuro-suge]
B (TF 2012-438)
Carex macrocephala Willd. ex Spreng. [Ezono-kōbō-mugi]
A (HT & TF 35461) Specimens deleted!
Carex scita Maxim. var. ***riishirensis*** (Franch.) Kük. [Rishiri-suge]
B (HT & TF 35482, 35489))

ERICACEAE

Empetrum nigrum L. var. ***japonicum*** K.Koch [Gankō-ran]
C (HT & TF 35524)
Vaccinium praestans Lamb. [Iwa-tsutsuji]
C (HT & TF 35522)
Vaccinium vitis-idaea L. [Kokemomo]
C (HT & TF 35528)

FABACEAE

Astragalus japonicus H. Boissieu [Ezo-momen-zuru] (Fig. 2E)
A (HT & TF 35427; TF 2012-521)
Hedysarum hedysaroides (L.) Schinz et Thell. f. ***neglectum*** (Ledeb.) Ohwi [Chishima-genge]
A (HT & TF 35456; TF 2012-489)
Lathyrus japonicus Willd. [Hama-endō]
A (TF 2012-520)
Thermopsis lupinoides (L.) Link [Sendai-hagi]

A (TF 2012-501)
Trifolium repens L. [Shiro-tsumekusa] Naturalized!
B (HT & TF 35467)
Vicia unijuga A.Braun [Nanten-hagi]
B (HT & TF 35479)

GENTIANACEAE
Halenia corniculata (L.) Cornaz [Hana-ikari]
B (HT & TF 35502)
Swertia tetrapetala Pall. [Chishima-senburi]
B (HT & TF 35487; TF 2012-436)

GERANIACEAE
Geranium erianthum DC. [Chishima-hūro]
C (HT & TF 35519)
Geranium yesoense Franch. et Sav. [Ezo-hūro]
B (HT & TF 35493; TF 2012-449)

HYPERICACEAE
Hypericum erectum Thunb. [Otogiri-sō]
A (TF 2012-483), B (HT & TF 35499)

JUNCACEAE
Juncus bufonius L. [Hime-kōgai-zekishō]
A (HT & TF 35432)
Juncus covillei Piper [Sekishō-i]
A (HT & TF 35423)
Juncus decipiens (Buchenau) Nakai [Igusa]
A (HT & TF 35443; TF 2012-480)
Juncus krameri Franch. et Sav. [Tachi-kōgai-zekishō]
D (HT & TF 35538)
Juncus tenuis Willd. [Kusa-i] Naturalized!
D (HT & TF 35537)
Luzula capitata (Miq.) Miq. ex Kom. [Suzumeno-yari]
B (HT & TF 35503), C (HT & TF 35520)

LAMIACEAE
Prunella vulgaris L. subsp. ***asiatica*** (Nakai) H.Hara [Utsubo-gusa]
B (HT & TF 35473)
Scutellaria yezoensis Kudô [Ezo-namiki]
A (HT & TF 35459)

LILIACEAE
Lilium medeoloides A.Gray [Kuruma-yuri]
C (HT & TF 35531)

ORCHIDACEAE
Dactylorhiza aristata (Fisch. ex Lindl.) Soó f. ***punctata*** (Tatew.) F.Maek. ex Toyok. [Uzuraba-hakusan-chidori]
C (HT & TF 35521)

OROBANCHACEAE
Euphrasia mollis (Ledeb.) Wettst. [Chishima-kogome-gusa]
A (TF 2012-482), B (HT & TF 35504)
Euphrasia maximowiczii Wettst. var. ***yezoensis*** (H.Hara) H.Hara ex T.Yamaz. [Ezo-kogome-gusa]
A (HT & TF 35453; TF 2012-518)
Pedicularis chamissonis Steven subsp. ***chamissonis*** [Kita-yotsuba-shiogama]
B (HT & TF 35495)
Pedicularis resupinata L. subsp. ***teucriifolia*** (M.Bieb. ex Steven) T.Yamaz. [Birōdo-shiogama]
A (HT & TF 35430; TF 2012-492), B (HT & TF 35465; TF 2012-451)
Rhinanthus minor L. [Okuezo-garagara] Alien!
A (TF 2012-497), B (HT & TF 35505; TF 2012-450)

PLANTAGINACEAE
Plantago asiatica L. [Ōbako]
B (HT & TF 35470)

POACEAE
Agrostis flaccida Hack. [Miyama-nukabo]
B (HT & TF 35476), C (HT & TF 35525)
Agrostis gigantea Roth [Konuka-gusa] Naturalized
A (HT & TF 35425, 35458; TF 2012-517)
Agrostis scabra Willd. [Ezo-nukabo]
D (HT & TF 35534)
Calamagrostis purpurea (Trin.) Trin. subsp. ***langsdorfii*** (Link) Tzvelev [Iwa-no-gariyasu]
A (HT & TF 35452, 35455), B (HT & TF 35488), C (TF 2012-475)
Deschampsia cespitosa (L.) P.Beauv. subsp. ***orientalis*** Hultén var. ***festucifolia*** Honda [Hirohano-kome-susuki]
B (HT & TF 35481)
Festuca ovina L. [Ushinoke-gusa]
D (HT & TF 35535)
Phalaris arundinacea L. [Kusa-yoshi] Naturalized!
A (HT & TF 35458)
Phleum pratense L. [Ō-awagaeri] Naturalized!
A (HT & TF 35464)
Poa pratensis L. [Nagaha-gusa] Naturalized!
A (HT & TF 35424, 35449)
Sasa kurilensis (Rupr.) Makino et Shibata [Chishima-zasa]
A (HT & TF 35445)

POLYGONACEAE
Bistorta vivipara (L.) Delarbre [Mukago-toranoo]
C (HT & TF 35526)
Rumex acetosella L. [Hime-suiba] Naturalized!
A (HT & TF 35448, 35460; TF 2012-481)
Rumex obtusifolius L. [Ezono-gishigishi]
A (HT & TF 35447)

PRIMULACEAE
Primula farinosa L. subsp. ***modesta*** (Bisset et S.Moore) Pax var. ***fauriei*** (Franch.) Miyabe [Yukiwari-kozakura]
B (HT & TF 35485; TF 2012-422)

RANUNCULACEAE
Aconitum maximum Pall. ex DC. subsp. ***maximum*** [Chishima-torikabuto]
B (HT & TF)
Anemone narcissiflora L. var. ***villosissima*** (DC.) Hultén [Senka-sō]
C (HT & TF 35527)
Note: This scientific name follows Ziman et al. (2005).
Cimicifuga simplex (DC.) Wormsk. ex Turcz. [Sarashina-shōma]
C (HT & TF 35512)
Ranunculus grandis Honda var. ***austrokurilensis*** (Tatew.) H.Hara [Shikotan-kinpōge]
B (HT & TF 35468)
Ranunculus nipponicus Nakai var. ***submersus*** H.Hara [Baika-mo]
A (HT & TF 35426)
Ranunculus repens L. [Hai-kinpōge]
A (HT & TF 35444)
Thalictrum minus L. var. ***hypoleucum*** (Siebold et Zucc.) Miq. [Aki-karamatsu]
B (HT & TF 35490; TF 2012-439)
Trollius riederianus Fisch. et C.A.Mey. [Chishimano-kinbaisō]
B (HT & TF 35483)

ROSACEAE
Agrimonia pilosa Ledeb. var. ***succapitata*** Naruhashi [Daruma-kin-mizuhiki]
A (HT & TF 35428; TF 2012-493)
Aruncus dioicus (Walter) Fernald var. ***kamtschaticus*** (Maxim.) H.Hara [Yamabuki-shōma]
B (HT & TF 35478)
Cerasus nipponica (Matsum.) Ohle ex H.Ohba var. ***kurilensis*** (Miyabe) H.Ohba [Chishima-zakura]
C (HT & TF 35511)
Filipendula camtschatica (Pall.) Maxim. [Oni-shimotsuke]
A (HT & TF 35454; TF 2012-516)
Potentilla stolonifera Lehm. ex Ledeb. [Tsuru-kijimushiro]
B (HT & TF 35498; TF 2012-443)
Sanguisorba tenuifolia Fisch. ex Link var. ***tenuifolia*** [Nagabono-waremokō]
B (HT & TF 35484; TF 2012-445)
Sorbus commixta Hedl. [Nana-kamado]
A (TF 2012-511), C (HT & TF 35513)
Sorbus sambucifolia (Cham. et Schltdl.) M.Roem. [Takane-nana-kamado]
C (HT & TF 35529)

RUBIACEAE
Galium trifidum L. subsp. ***columbianum*** (Rydb.) Hultén [Hosobano-yotsuba-mugura]
A (HT & TF 35439; TF 2012-498)
Galium verum L. subsp. ***asiaticum*** (Nakai) T.Yamaz var. ***trachycarpum*** DC. [Ezono-kawara-matsuba]
B (HT & TF 35497)

SALICACEAE
Salix udensis Trautv. et C.A.Mey. [Onoe-yanagi]
A (HT & TF 35435, 35442; TF 2012-507, 2012-510, 2012-514)

SAXIFRAGACEAE
Saxifraga fusca Maxim. subsp. ***fusca*** var. ***kurilensis*** Ohwi [Chishima-kurokumo-sō]
A (TF 2012-476)

URTICACEAE
Urtica platyphylla Wedd. [Ezo-irakusa]
A (TF 2012-506, 2012-513)

VIOLACEAE
Viola langsdorfii Fisch. ex DC. subsp. ***sachalinensis*** W.Becker [Ōba-tachitsubo-sumire]
C (HT & TF 35507)

XANTHORRHOEACEAE
Hemerocallis dumortierii C.Morren var. ***esculenta*** (Koidz.) Kitam. [Zenteika]
B (HT & TF 35492)

高橋英樹[1]，福田知子[2]：2012 年野外調査において択捉島塘路で採集された維管束植物

2012 年の野外調査において、択捉島塘路周辺で 40 科 109 種の維管束植物を採集した。塘路は Barkalov（2000, 2002, 2009）によると択捉島内でありながら、植物地理学的には国後・択捉地区よりもむしろウルップ地区に含まれるとされ、植生の上でも中千島に似ているとされる。そこで所産する主要 10 科を Barkalov（2009）による南千島地域、中千島地域のそれと比較した。科構成は特にどちらかの地域により似ているということはなかった。むしろ塘路周辺ではマメ科、セリ科、ハマウツボ科が主要 10 科に入る点で、南千島地域や中千島地域の主要科構成とは異なっていた。この違いは植物地理学的な異同というよりは、地域的な立地環境の違いを反映しているものと解釈された。また本州富山県から報告されているダルマキンミズヒキに酷似する植物を採集したが、さらに分類学的な検討を行う必要がある。

（[1] 北海道大学総合博物館，
[2] 国立科学博物館植物研究部）