Supplements to the Enumeratio Plantarum Formosanarum.

By

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(Continued from p. 15.)

Last year I continued my writing in this magazine under the title of "Contribution to the Flora of Mt. Morrison"; and also wrote a few times under the title of "Supplements to the Enumeratio Plantarum Formosanarum." I think now it would be better to combine the former with the latter, as both subjects are in the same field of investigation. In this paper, therefore, I shall try to give all my study to the botany of any region of the Island of Formosa.

Arundinaria niitakayamensis HAYATA, sp. nov. Culmus foliifer 50–60 cm. longus, suffruticosus, ramis glabris, ramosis, fasciculatis, inæqualibus, internodiis 5 cm. longis; folia lanceolata, $4\frac{1}{2}$ cm. longa, 5–6 mm. lata, apice acuminata, basi in petiolum brevem attenuata, margine scabra, nervis secundariis utraque latere 2–3, venulis transversis numerosis tessellata, subtus pallidiora, glabra; vaginæ striatæ 2 cm. longæ, apice ciliis paucis longis, ligulis $\frac{1}{2}$ mm. longis acutis. Culmus florifer 40–50 cm. longus, simplex, internodiis 5–6 cm. longis; folia lanceolata 10 cm. longa, 1 cm. lata, acuminatissima, supra glabra subtus pauce hirsuta; vaginæ 8–9 cm. longæ, pallido-purpurascens, ligulis conspicuis, 2 mm. longis, extus hirsutis. Panicula laxe racemosa 15 cm. longa. Spiculæ 3–4 cm. longæ, subcylindræ, 3–7 floræ, rhachillis articulatis hirsutis, longe pedicellatæ. Glumæ I. et II. inæquales lanceolatæ, gl. III. brevior; gl. [I.] 5–nervis, nervis inconspicuis, 7 mm. longa, subulata, 2 mm. lata; gl. II. longior ovato-oblonga 7–nervis, nervis inconspicuis, 8–9 mm. longa, 3–4 mm. lata, sub lente scabero-

hirsutiusecula; gl. III. 9-nervis, nervis conspicuis, ovato-acuminata, 14 mm. longa, 5 mm. lata, fusco-purpurascens, margine glabra. Palea paucobrevior, depressa, apice bimucronata, bicarinata, carinis obscure ciliatis. Lodiculæ 3, longæ, obovatæ, ciliatæ, nervosæ. Stylus 2-fidus; ovarium oblongum in stylum attenuatum.

Hab. in monte Morrison, Ganzan, ad 9141 ped. alt., leg. S. NAGASAWA, Nov. anno 1905, (No. 678).

Eremochloa ophiuroides HACK. Mon. Androp. p. 261; FORBES et HEMSL. Ind. Fl. Sin. III. p. 363.

Ischæum ophiuroides MUNRO; BENTH. Fl. Hongk p. 425.

Hab. Kimpori, leg. G. NAKAHARA, Jun. anno 1905, (No. 87); Shakkō, leg. S. NAGASAWA, anno 1905.

Distrib. South China.

Opismenus undulatifolius BEAUV. var. **imbecillis** HACK.; MERRILL, in Philip. Journ. Sci. I. Suppl. pp. 28 et 364.

Panicum imbecille TRIN. Ic. Gram. t. 191.

Hab. Taiton, leg. Z. KOBAYASHI, anno 1905.

Thuarea sarmentosa PERS.; BENTH. Fl. Hongk. p. 415; Hook. f. Fl. Brit. Ind. VII. p. 91; MAKINO, in Tōkyō Bot. Mag. IX. p. 256; HACK. in Bul. Herb. Boiss. (1899) p. 722; FORBES et HEMSL. Ind. Fl. Sin. III. p. 340; MATSUM. et HAYATA, Enum. Pl. Formos. p. 512.

Ornithocephalochloa arenicola KURZ, in Journ. Bot. XIII. (1875) p. 332, t. 171.

Hab. Kōshiryō, leg. G. NAKAHARA, anno 1905, (No. 172); Taitō: Shinkōgai, leg. T. KAWAKAMI et Z. KOBAYASHI, anno 1906, (No. 1514 et 1533)

Distrib. Ceylon, Cochinchina, Malay, North Australia, Pacific Islands, Loo-choo and South China; but not hitherto known from Formosa.

Deschampsia sp.

Hab. in verticem montis Morrison, ad 13094 ped. alt.; leg. S. NAGASAWA, Nov. anno 1905.

This specimen was collected too late in the season and there remained but a few empty glumes. But in its general appearance, its leaves and ligules, it may be a near species of *Deschampsia flexuosa* or even the same species.

Brachypodium Kawakamii HAYATA, sp. nov. Perennia erecta subcaespitosa, circ. 20 cm. alta. Folia convoluta teretia, laminis 5–6 cm. longis, utraque latere 6–7-nervis, extus glaberrima sed intus scabra pauca hirsuta, vaginis 2 cm. longis, ligulis latioribus brevibus leviter ciliolatis. Spiculæ paucæ saepe ad unam terminalem reductæ, pedunculis tenuissimis, 6–7-floræ, compressæ 2 cm. longæ, 3 mm. latæ, rhachillis inter flores articulatis hirsutissimis; floribus hermaphroditis sed superioribus imperfectis. Glumæ 2 inferiores vacuæ, 7-nervis, florentibus minores et breviores muticæ, subglabræ; gl. [I.] 7-mm. longa; gl. II. longior; gl. florens rigidula, angusta, dorso rotundata, 7–9-nervis, integra, in aristam rectam 4 mm. longam desidens; palea gluma vix brevior 7 mm. longa, latiuscula, 2-carinata, carinis ciliatis, apice truncata et emarginata. Stamina 3. Ovarium apice appendiculo brevi villosa coronatum; styli longiusculi, stigmatibus laxè plumosis. Caryopsis anguste oblonga a dorso compressa antice late sulcata palea adhærens.

Hab. in verticem montis Morrison, leg. T. KAWAKAMI et G. NAKAHARA; et ad 13094 ped. alt., leg. S. NAGASAWA, Nov. anno 1905, (No. 615).

Smallest form of *Brachypodium*, remarkable for its terete leaves, and its simplest form of a spike reduced into one spicule at the end of a very slender peduncle. Leaf very slender and it measures but 1 mm. in diameter, and 3 mm. in circumference.

Festuca ovina LINN. MIQ. Prol. p. 170 (typica); FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 181; THOME, Fl. Deutschl. I. p. 114, t. 53, A; WAGNER, Fl. Deutsch. p. 82; var. **vulgaris** KOCH; HACK. in Bull. Herb. Boiss. VII. (1899) p. 713 et Ser. 2, II. (1903) p. 506.

Hab. in verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 598).

Distrib. Europe, North China and Japan.

This is the only species of *Festuca* found in this interesting mountain. Although the specimen is in too late a stage of blossoming to show a perfect flower, I have no hisitation in identifying it with *Festuca ovina* on account of its great resemblance in the form of foliage, flowerless glumes and its habits. This grass is common on high elevations in Japan, and ranges over the Kurile Islands in the north and southwards to central Japan. It is rather a remarkable matter that we have found this species on a high elevation in the Island of Formosa.

Panicum sarmentosum ROXB. Fl. Ind. I. p. 308; BENTH. Fl. Hongk. p. 412; HANCE, in Journ. Linn. Soc. XIII. p. 133; Hook. f. Fl. Brit. Ind. VII. p. 54; FORBES et HEMSL. Ind. Fl. Sin. III. p. 333; MERRILL, in Philipp. Journ. Scienc. I. Suppl. pp. 27 et 360.

Panicum concinnum NEES; STEUD. Syn. Gram. p. 78.

Panicum incomtum TRIN. Ic. Gram. t. 232.

Panicum micrognostum STEUD. Syn. Gram. p. 78.

Panicum vacillans STEUD. l. c. p. 75.

Hab. Rokukiri (Banchoryō), leg. G. NAKAHARA, Oct. anno 1905, (No. 588); Goshizan (Shintiku), leg. T. KAWAKAMI, Dec. anno 1906, (No. 1289).

Distrib. India, Malay, Philippine Islands and Borneo.

In my specimens, I find two forms of this species; one having a rather contracted panicle, while the other has a spreading and more expanding panicle. This difference is due, I think, to the stage of the developement of the panicle. In the advancing stage, the panicle tends to expand its branchlets, though it is not so in its younger stage.

Agrostis Clarkei Hook. f. Fl. Brit. Ind. VII. p. 257.

Hab. in verticem montis Morrison, leg. T. KAWAKAMI et G. NAKAHARA, Nov. anno 1905.

Distrib. Western Himalaya at an altitude of 2100 m.

This *Agrostis* is very like *A. canina* of the northern part of Japan. But my Morrison specimen has no awn and of course it must be different from *A. canina*. Besides, in my specimen, glume I. and II. are narrow and more acuminate and gl. III. is much shorter. Hooker's description of *A. Clarkei* quite agrees with my plant.

Eragrostis formosana HAYATA, sp. nov. Annuæ; culmi caespitosi 50–60 cm. alti, internodiis 9–6 cm. longis. Folia radicalia vaginis 4 cm. longis ore paucè ciliatis, ligulis brevissimis ad orem vaginarum annulum formantibus, laminis linearibus, filiformibus, 10 cm. longis, 2–3 mm. latis basi paucè hirsutis. Panícula laxè effusa, 10–15 cm. longa, 4–5 cm. lata, ramis alternis. Spiculæ ovatæ in peripherio, 4–5 mm. longæ, 2 mm. latæ, 15–20 floræ, pedicellatæ, pedicellis 1– $\frac{1}{2}$ cm. longis, rhachillis inter flores continuis glabris, floribus hermaphroditis. Glumæ 2 inferiores vacuæ, inæquales, florentibus breviores, carinatæ, 1-nervatæ, dorso secus nervum minute denticulatæ; florens membranacea carinata, 3-nervis, nervis glabris, globosa, acuta, integra; palea gluma brevior, prominenter 2-carinata, carinis alatis, alis minute dentatis, in gluma inclusa. Stamina 2. Styli distincti, longi, stigmatibus plumosis. Caryopsis globosa.

Hab. Nankōkei, leg. G. NAKAHARA, Aug. anno 1905, (No. 208).

This new species much resembles *E. unioides* in the form of its spikelets, but differs from it by the longer and more branched panicle, and still more by the filiform leaf.

Spodiopogon tainanensis HAYATA, sp. nov. Culmi elati, erecti, teretes, 2 mm. in diametro aequantes in partibus superioribus. Folia caulina latiuscula plana, vaginis glabris margine ciliatis coriaceomembranaceis 7 cm. longis oribus longe ciliatis, cilis 3 mm. longis, ligulis brevibus glabris 1 mm. longis v. longioribus, margine ciliatis, laminis 10–12 cm. longis lanceolato-angustatis, acuminatis, planis, utraque pagina glabris, utraque latere 5-nervis, margine minute serrulatis. Panícula laxa longe pedunculata, conica, 10 cm. longa, 3–4 cm. lata, ramis ad nodos 2–3–

fasciculatis, flexuosis ascendentopatulis, ad nodum infimum usque ad 5cm. longis in parte inferiori nudis, superne breviter ramulosis et remote spiculiferis. Spiculæ ad apices ramulorum paniculæ et laterales sæpissime ternæ, una sessili ceterae stipitatae, stipitibus inæqualibus mollis, floribus omnibus hermaproditis. Glumæ 4, 2-exteriore vacuæ, tenuiter membranaceæ, oblongæ, extus longe barbatae, apice obtusæ ciliatæ; gl. I. 3mm. longa 2mm. lata, 8-nervis; gl. II. 3mm. longa v. longior 8-nervis, nervis inconspicuis; gl. III. hyalina minor 3mm. longa v. brevior, 2-nervis, paleam sæpeque in spicula sessili florem ♂ fovens; gl. IV. hyalina, apice 2-fida 2mm. longa, arista intra lobos 8mm. longa geniculata, palea tenuissima flore ♀ v. abortu ♀. Stamina 3. Styli distincti, stigmatibus plumosis.

Hab. Tainan leg. G. NAKAHARA, Oct. anno 1905.

This species resembles *S. depauperatus*, but differs from it by the shorter spikelet and long ciliated glume. The arrangement of flowers in the spikelet is rather variable in the species. In the sessile spikelet, gl. I. and II. are always empty, gl. III. has a male flower, and gl. IV. has a perfect flower. This arrangement of flowers is generally kept in the sessile as well as pedicelled spikelet. But sometimes, in a pedicelled spikelet, the perfect flower is reduced to a female one or more often to no flower at all.

Spodiopogon Kawakamii HAYATA, sp. nov. Culmi elati, erecti, $1\frac{1}{2}$ m. alti, validi, 5mm. in diametro æquantes, subcompressi, in partibus inferioribus unilateraliter sulcati. Folia latiuscula plana, vaginis glabris membranaceis ad internodium applicatis, 20-30cm. longis, oribus extime ciliatis callosis, ligulis brevibus, glabris, 4mm. longis, laminis angustis lanceolatis acutis 50cm. longis 1.7cm. latis, supra glabris subtus hirsutis apice acutissimis basi longe attenuatis et petiolum bialatum usque ad 10cm. longum attenuatis, nervis utraque latere 6-7. Panicula oblonga, 23cm. longa, 5cm. lata, longe pedunculata, ramis ad nodos multo fasciculatis flexuosis ascendentopatulis, ad nodum infimum usque ad 10cm. longis, in parte inferiore nudis

superiore breviter ramulosis et densius spiculiferis. Spiculæ 4 mm. longæ, pilosæ, sæpissime pedicellatæ, pedicellis glabris, inæqualibus, spicula sæpius brevioribus. Glumæ 4, 2-exterioribus vacuæ, tenuiter membranaceæ, longe ciliatæ, subæquales muticæ; gl. I. ovata 3½ mm. longa leviter mucronata extus hirsuta intus glabra 12-nervata; gl. II. 10-nervata leviter mucronata; gl. III. multo parvior, hyalina, margine ciliolata; gl. IV. oblonga, hyalina 2½ mm. longa, apice bifida, arista 8 mm. longa exerta. Caryopsis ovoidea 2½ mm. longa, 1½ mm. lata.

Hab. Kōshūn, leg. T. KAWAKAMI, anno 1905.

This new grass somewhat resembles *S. sibiricus*, but is easily distinguished by its shorter and more densely arranged spicules towards the end of the branchlet, and still more by its pedicelled spicules. Moreover, in this new plant, the base of the spicule is somewhat bare and there is nothing like clustered hairs as is the case with *S. sibiricus*. This species also bears some resemblance to *S. formosanus*, but differs from it by the long awned glume and hirsute leaves.

Trisetum subspicatum Beauv.; STEUD. Syn. Gram. p. 225; HACK. in Bull. Herb. Boiss. VII. (1899) p. 703; FORBES et HEMSL. Ind. Fl. Sin. III. p. 400; KAWAKAMI, in Tōkyō, Bot Mag. XIV. p. 112; *Avena subspicata* CLAIRV.; HOOK. f. Fl. Brit Ind. VII. p. 278; THOME, Fl. Deutsch. I. p. 145.

Hab. in verticem montis Morrison, ad 13094 ped. alt.; leg. T. KAWAKAMI et G. NAKAHARA; et S. NAGASAWA, Nov. anno 1905, (No. 612).

Distrib. Kurile, Himalayas, and generally found in alpine and frigid regions.

Alopecurus agrestis LINN. Sp. Pl. ed-2, p. 89; STEUD. Syn. Gram. p. 149; BENTH. Fl. Hongk. p. 407; HOOK. f. Fl. Brit. Ind. VII. p. 239; LEDEB. Fl. Ross. IV. p. 465; FORBES et HEMSL. Ind. Fl. Sin. III. p. 385.

Hab. Taihoku, leg. S. YANO, anno 1897, (No. 511).

Distrib. Europe and western and northern Asia and India.