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TYPIFYING EXTREMES: DESIGNATION OF TYPES FOR THE MINUTE *GUNNERA LOBATA* AND *G. MAGELLANICA* AND THE *GIANT G. TINCTORIA* (GUNNERACEAE)

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Abstract. González, F.; N. Pabón-Mora & C. A. Zanotti. 2024. Typifying extremes: Designation of types for the minute *Gunnera lobata* and *G. magellanica* and the giant *G. tinctoria* (Gunneraceae). *Darwiniana*, nueva serie 12(1): 16-24.

While working on the taxonomic treatment of the family Gunneraceae for the Flora of Argentina, provisional typification for the minute herbaceous species *Gunnera lobata* and *G. magellanica*, and the giant herb *G. tinctoria*, as well as for some of their synonyms, was detected. Here, we designate lectotypes for *G. lobata, G. magellanica*, *G. falklandica* (= *G. magellanica*), and *Panke tinctoria* (= *G. tinctoria*), a neotype for *G. reichei* (= *G. magellanica*), and an epitype for *G. tinctoria*.

Keywords. Epitypification; Flora of Argentina; Flora of South America; *Gunnera*; historical collections; lectotypification; neotypification; *Panke*.

Resumen. González, F.; N. Pabón-Mora & C. A. Zanotti. 2024. Tipificando extremos: Designación de tipos para las diminutas *Gunnera lobata* and *G. magellanica* y la gigante *G. tinctoria* (Gunneraceae). *Darwiniana*, nueva serie 12(1): 16-24.

Durante la preparación del tratamiento taxonómico de la familia Gunneraceae para la Flora Argentina, se detectaron designaciones de tipificación preliminares para las especies herbáceas diminutas *Gunnera lobata* y *G. magellanica* y la hierba gigante *G. tinctoria*, así como para algunos de sus sinónimos. Aquí designamos los lectotipos de *G. lobata*, *G. magellanica*, *G. falklandica* (= *G. magellanica*) y *Panke tinctoria* (= *G. tinctoria*), el neotipo de *G. reichei* (= *G. magellanica*) y el epitipo de *G. tinctoria*.

Palabras clave. Colecciones históricas; epitipificación; Flora de La Argentina; Flora de Suramérica; *Gunnera*; lectotipificación; neotipificación; *Panke*.

INTRODUCTION

Gunnera L., the sole genus of the family Gunneraceae Meisn., comprises six subgenera and ca. 60 species distributed primarily in the Southern Hemisphere (Mora-Osejo et al., 2011). Three subgenera are found in the Americas: (1) *Gunnera* subg. *Ostenigunnera* Mattf., with a single species found in southeastern Brazil (in the states of Rio Grande do Sul and Santa Catarina) and Uruguay (in the department of Rocha); (2) *Gunnera* subg. *Misandra* (Comm.) Schindl., which comprises *G. lobata* Hook. f., restricted to southern Chile (Magallanes Region) and Argentina (Patagonia), and *G. magellanica* Lam., found from the high Andes of the Central Cordillera in Colombia to southern Argentina and Chile; and (3) *Gunnera* subg. *Panke* (Molina) Schindl., with 44 species that range from the state of Chiapas (Mexico) to Central America and South America, plus a disjunct species (*G. petaloidea* Gaudich.) endemic to Hawaii. The two species from subgenus *Misandra*, both minute and dioecious herbs, naturally converge in Argentina with three giant, monoecious, herbaceous species from subgenus *Panke*. Often, individual gatherings of minute *Gunnera* species are mounted on the same herbarium sheet, whereas giant individuals

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of subgenus *Panke* need to be mounted in two or more sheets. These two contrasting conditions require the application of exceptional provisions during the process of typification.

While working on the taxonomic treatment of Gunneraceae for the Flora of Argentina (Zanotti et al., 2023), the authors have perceived that the typification of three correct names (*Gunnera lobata, G. magellanica*, and *G. tinctoria*) and three synonyms (*G. falklandica, G. reichei*, and *Panke tinctoria,* the basionym of *G. tinctoria*) require further work. Here we designate four lectotypes (for *G. falklandica, G. lobata, G. magellanica*, and *Panke tinctoria*), one neotype (for *G. reichei*) and one epitype (for *G. tinctoria*), in accordance to the provisions of the current *International Code of Nomenclature for algae, fungi, and plants* (Turland et al., 2018).

MATERIALS AND METHODS

The typification provisions follows Turland et al. (2018). The taxonomic framework follows Mora-Osejo et al. (2011) and Zanotti et al. (2023). All type specimens here cited were examined either physically or through the JSTOR Global Plants database (JSTOR, accessed September 2023), and barcodes (if available) were included. Extensive herbarium work was carried out in the herbaria A, B, BM, G, GB, GH, K, MA, NY, P, and S (acronyms after Thiers, 2023).

RESULTS

1. ***Gunnera lobata*** Hook. f., Bot. Antarct. Voy. (Fl. Antarct.). 2(15): 274. 1846. *Misandra lobata* (Hook.f.) Oerst., Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 1857: 193. 1857. TYPE. Chile: Magallanes Region: "Hermite Island, Cape Horn, Antarctic Expedition, 1839-1843", *J. D. Hooker s.n.* (lectotype, BM [barcode BM000953589!], designated here; isolectotype K [barcode K000442286!]). (Fig. 1).

Gunnera lobata was originally described by Hooker f. (1846: 274) from two specimens and an illustration. The first specimen was collected by J. Banks and D. Solander in "Fuegia; Good Success Harbour", on 15-21 January 1769, and the second one was collected by Hooker f. in "Hermite Island, Cape Horn", during the Antarctic Expedition carried out between 1839-1843. A single sheet at BM bears both collections, which are properly labeled (barcodes [BM000953590] and [BM000953589], respectively). The illustration (available at https://plants.jstor.org/stable/viewer/10.5555/al.ap.visual.nhm-uk-l-a392660-024ab-m-1), explicitly mentioned by Hooker f. (1847: 275; "*MSS. In Mus. Banks cum icone*"). Out of the two collections deposited at BM, Hooker´s gathering is more complete, and it is here designated as the lectotype (Fig. 1). Additionally, a specimen has priority over an illustration, in accordance with Art. 9.12 of the ICN (Turland et al., 2018).

An additional collection of *Gunnera lobata* made by Joseph Dalton Hooker is kept at Kew (barcode [K000442286]). This gathering contains four fragments and an original label marked with Hooker's collection number 23, made at the "Hermite Island, Cape Horn". The specimen contains a second (unnumbered) label with the same locality ("*Gunnera* (*Misandra*) *lobata* H.f., Hermite Island, Cape Horn, Antarct. Exp. 1839-1843. J.D.H."), which leads us to consider this specimen as an isolectotype.

2. ***Gunnera magellanica*** Lam., Encycl. 3(1): 61. 1789. TYPE: Chile: Magallanes Region: "Port Galant, I-1764", *P. Commerson s.n.* (lectotype, P [barcode P00697197], designated here) (Fig. 2).

The original material upon which Lamarck (1789) described *Gunnera magellanica* was collected by the French naturalist Philibert Commerson (1727-1773) in the Strait of Magellan in January 1764. There are four specimens collected by Commerson at P (barcodes [P00697195], [P00697196], [P00697197], and [P00697198]), and an additional one at BAB (barcode [BAB00000267]). The P sheet barcoded [P00697197] is designated here as the lectotype, as it is the most complete and clearly shows the diagnostic prostrate habit, the lepidophylls, the orbicular leaves with crenate margins, and contains one staminate and several carpellate individuals. Furthermore, it is unequivocally linked to the original description, as it has a Commerson's original handwritten label from which Lamarck took the vernacular name "*La Boudeuse*" (1789: 62) (Fig. 2).

A historical collection of *Gunnera magellanica* by J. Banks and D. Solander, kept at BM [barcode BM000953588], appears as a syntype at the JSTOR database (https://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.bm000953588). However, there is no citation of this specimen in Lamarck's original description, making inaccurate such designation.

The annotation of a Kew specimen at the JSTOR database (https://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.k000442293) as the holotype of *Gunnera magellanica* is erroneous. This sheet contains, side by side, three historical gatherings, two of them made by Hooker f. (an unnumbered collection from the Malvinas

Islands, barcode [K000442293], and a second collection from the Hermite Island, with the number 65, barcode [K000442291]), and a third collection labelled as "*Port Famine, Capt. King*", probably made during one of the HMS Beagle´s visits to this site, barcode [K000442292]). All three collections were done decades after the original description of the species.

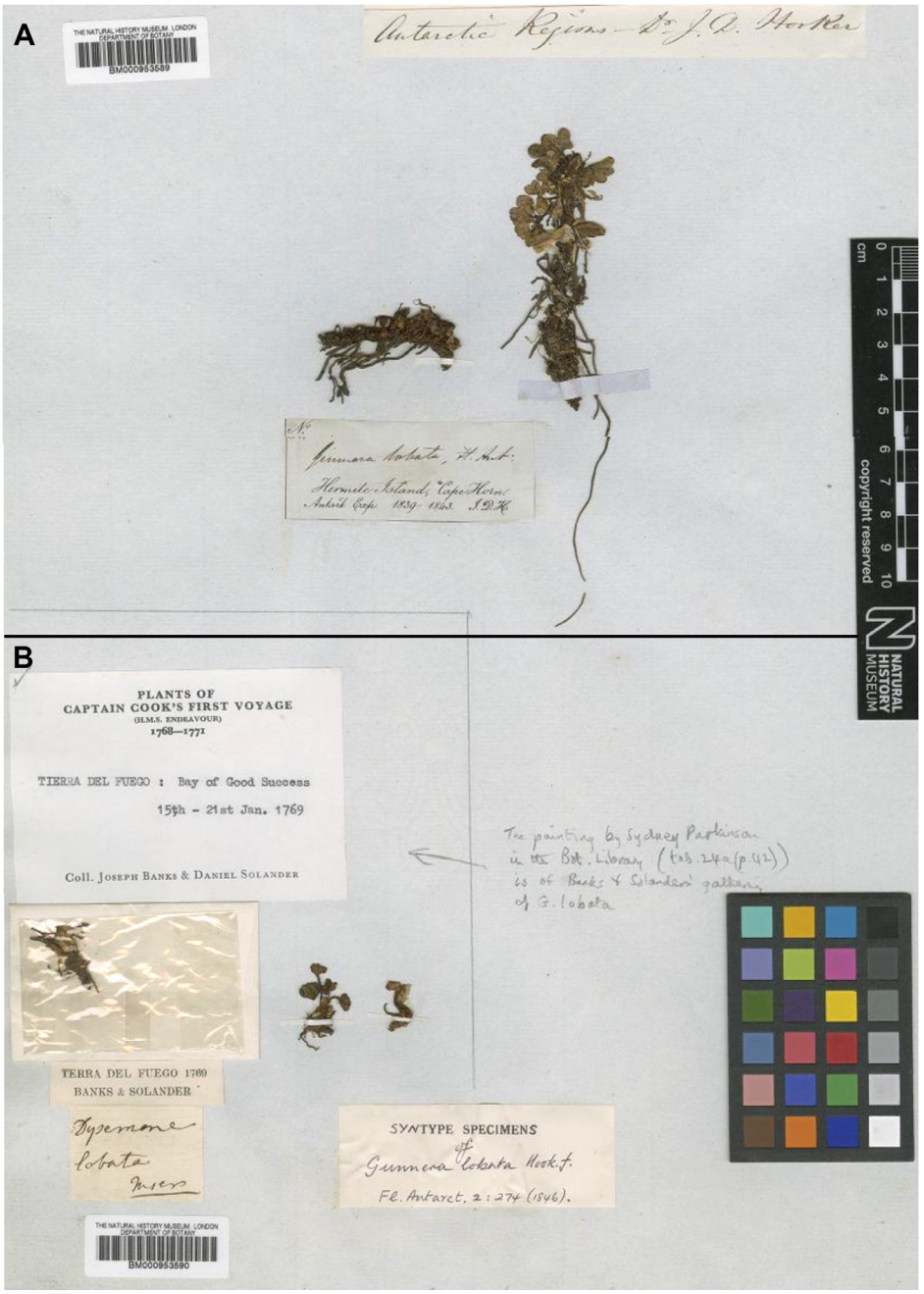

Fig. 1. *Gunnera lobata*, original material on a single sheet housed at BM. **A,** Specimens collected by J. D. Hooker (unnumbered) at the "*Hermite Island, Cape Horn, Antarct. Exp. 1839-1843*", lectotype BM (barcode [BM 000953589!]), designated here. **B,** Specimens collected by Banks & Solander (unnumbered) at "*Fuegia; Good Success Harbour*", 15-21 Jan 1769 (barcodes BM [BM000953588!], [BM000953590!]).

3. *Gunnera falklandica* Hook., Icon. Pl. 5: tabs. 489, 490. 1842. TYPE: Argentina. Malvinas Islands ("Îles Malouines"), IV-1825, *C. Gaudichaud-Beaupré s.n.* (lectotype, K [barcode K000442294], designated here).

Fig. 2. *Gunnera magellanica*, original material collected in Chile: "Port Galant, Jan 1764" by P. Commerson (s.n.), P [barcode P00697197], and designated here as the lectotype. The specimen at the lower center likely corresponds to a carpellate individual.

Hooker (1842: tabs. 489, 490) described *Gunnera falklandica* (currently under the synonymy of *G. magellanica*; Mora-Osejo et al. 2011) based on two unnumbered specimens ("*Gaudichaud, Mr. Wright*"), both collected in the Malvinas Islands. Besides, the protologue also includes two illustrations, over which the specimens have priority, in accordance with Art. 9.12 of the ICN (Turland et al., 2018). The herbarium at Kew holds a specimen collected by the French botanist

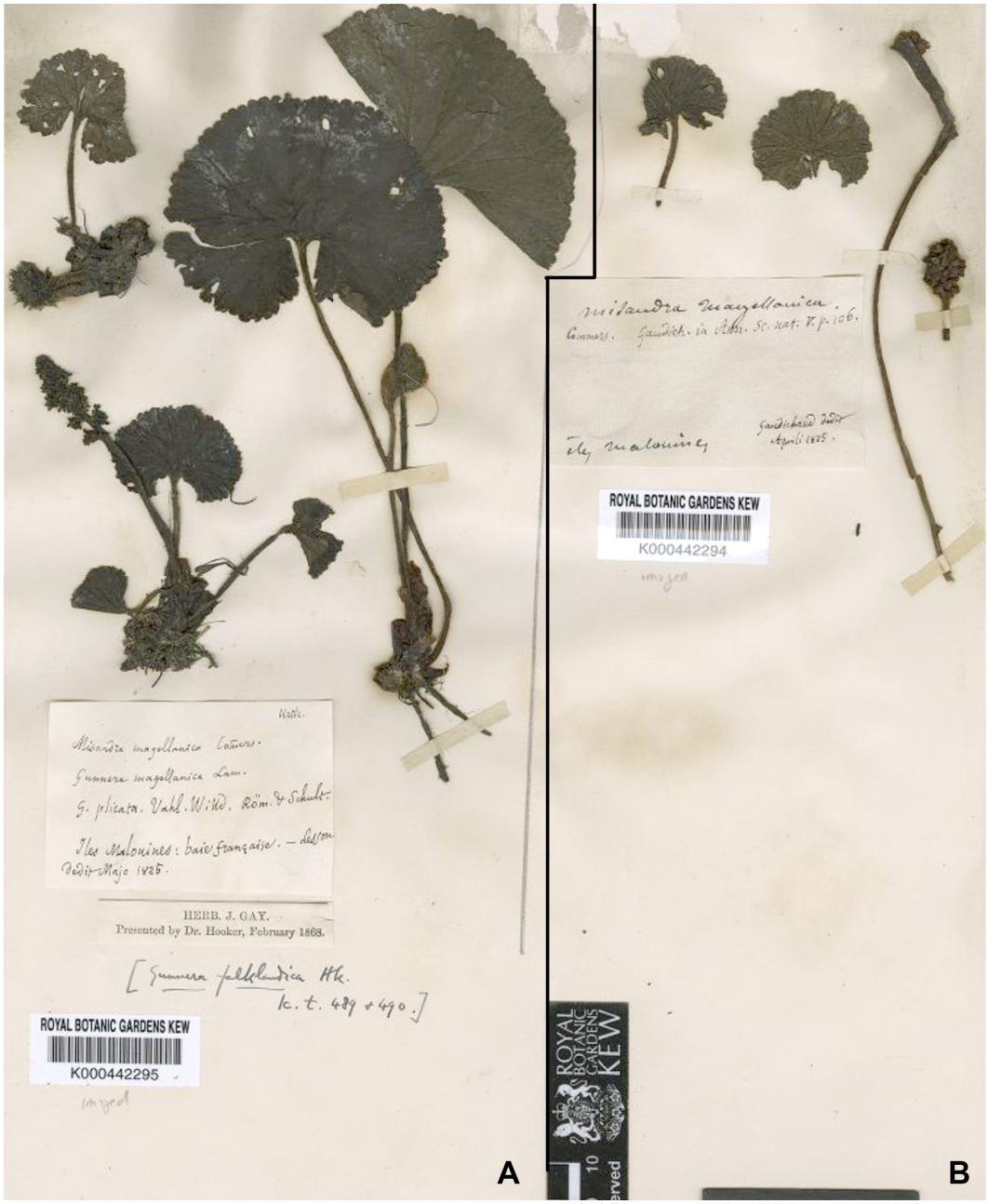

Fig. 3. *Gunnera falklandica* (= *G. magellanica*). **A,** Staminate specimen collected by Gaudichaud-Beaupré s.n., Malvinas Islands ("Îles Malouines") in May 1825 (K[barcode K000442295]). **B,** Carpellate specimen designated here as the lectotype, collected by Gaudichaud-Beaupré s.n., Malvinas Islands ("Îles Malouines") in April 1825 (K[barcode K000442294]).

Charles Gaudichaud-Beaupré (1789-1854) in the Malvinas Islands ("Îles Malouines") in April 1825 (K[barcode K000442294]). Although fragmented, this specimen can unequivocally be assigned to the protologue; thus, it is here designated as the lectotype of *G. falklandica*.

Fig. 4. *Gunnera reichei* (≡ *G. magellanica*). Neotype, designated here: Chile: "Isla de Chiloé, unos 50 km al SW de Ancud, Chepu, "césped húmedo denso a unos 300 m del Mar Pacífico", 09 Jan 1992 (fr), *S. G. Beck 18818* (COL, barcode [COL000381583]).

4. ***Gunnera reichei*** Schindl., Pflanzenr. IV(225): 114. 1905. TYPE. Chile. Region VI (Maule), "Cord. de Linares, 1800 m", I-1897 (fr), *K. F. Reiche s.n.* (holotype, B, lost). NEOTYPE (designated here): Chile. Region X (Los Lagos y Aysén): "Isla de

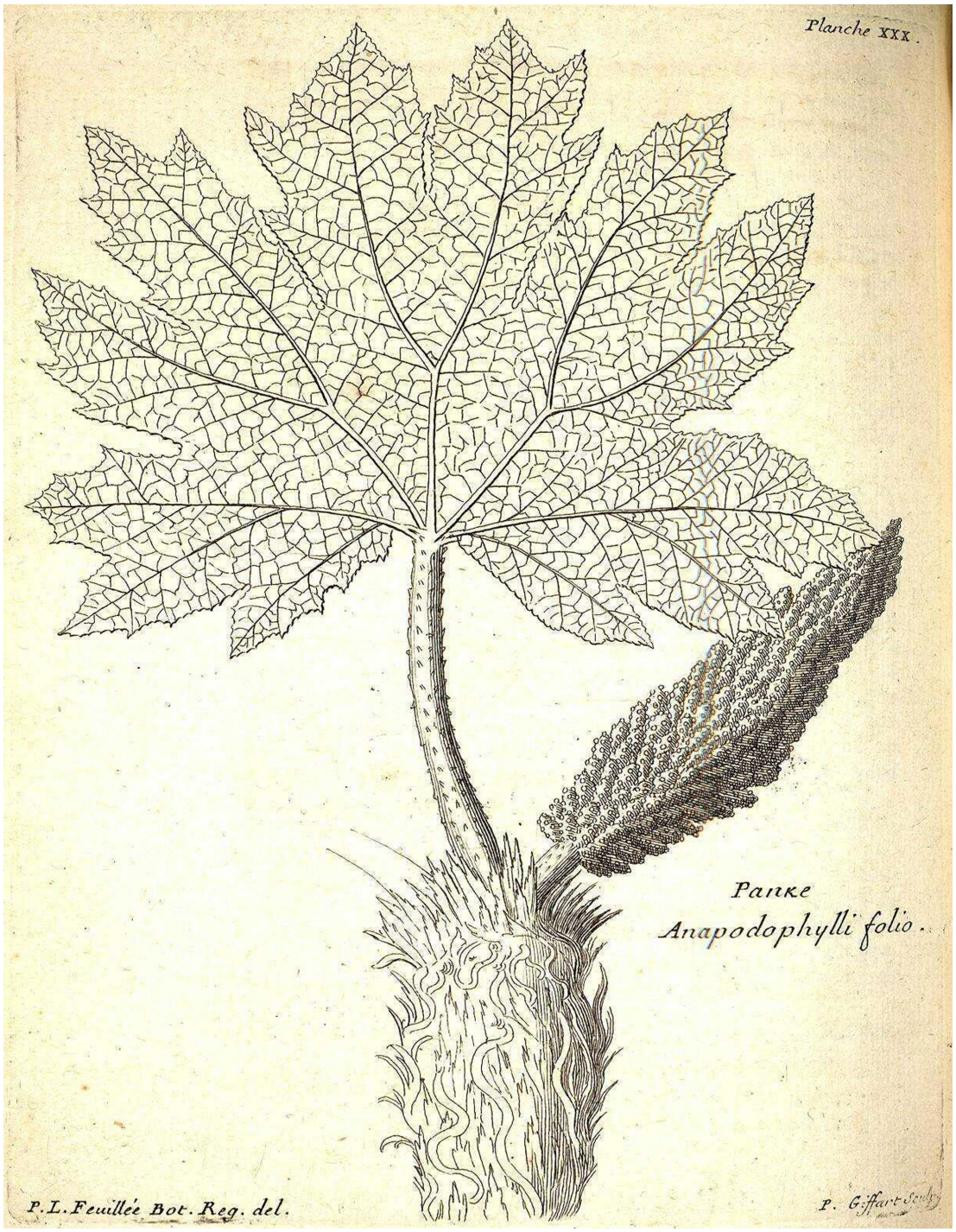

Fig. 5. *Panke tinctoria* (= *Gunnera tinctoria*). Lectotype, designated here: Feuillée, J. Obs. Phys. Math. Bot. 2: pl. 30. 1714.

Chiloé, unos 50 km al SW de Ancud, Chepu, "césped húmedo denso a unos 300 m del Mar Pacífico", 9-I-1992 (fr), *S. G. Beck 18818* (COL, barcode [COL000381583]).

Schlinder (1905) described *Gunnera reichei* (currently a synonym of *G. magellanica*; Mora-Osejo et al. 2011) based on a single gathering collected by K. F. Reiche (unnumbered), originally housed at B (destroyed). The photo that remains (F 0BN003555!) clearly shows the diagnostic characters mentioned by Schindler (1905: 114) in the original description, including the leaf morphology and dimensions ("petiole tenui gracillimo piloso 25-35 mm longo, lamina reniformi vel orbiculari-reniformi, usque ad 20 mm diametro metiente, crenato-serrata, lobis subtriangularibus acutiusculis…"), and fruits ("Fructus ad scapum brevissimum basi nudum dense capitato-spicati… obconice subglobosi carnosi 2-3 mm longi"). The photographic record does not qualify as "original material", in accordance with Art. 9.4 of the ICN (Turland et al., 2018), which prevents its designation as a lectotype. Besides, no duplicates exist of Reiche's collection. Thus, we consider necessary the designation of a neotype to fulfill the application of *G. reichei*. We have chosen the specimen *S. G. Beck 18818*, also collected in Chile ("Isla de Chiloé, unos 50 km al SW de Ancud, Chepu, "césped húmedo denso a unos 300 m del Mar Pacífico", 9-I-1992, fr), and housed at COL (barcode [COL000381583]; Fig. 4).

5. ***Gunnera tinctoria*** (Molina) Mirb., Hist. Nat. Pl. 10: 141. 1805. *Panke tinctoria* Molina, Sag. Stor. Nat. Chili: 143. 1782. TYPE: Feuillée, J. Obs. Phys. Math. Bot. 2: pl. 30. 1714, "Panke anapodophylli folio", lectotype, designated here. EPITYPE: Chile: "Habitat juntam Concepcionem Chili in palidosis, pangue vulgo", 1778-1788 (no exact date), *H. Ruiz & J. Pavón s.n.* (MA [barcode MA814046, three sheets], designated here; isoepitypes: F [F0060649F], S!).

Panke tinctoria was described by Molina (1782) based exclusively on Feuillée's (1714: 742, Plate XXX), which is here designated as the lectotype (Fig. 5). In addition, applying the Art. 9.9 of the ICN (Turland et al., 2018), an epitype is needed given that the original material linked to the name is insufficient and prevents the precise application of the name to the taxon involved. Thus, we selected the specimen *Ruiz & Pavón s.n.*, housed at MA, as the epitype, given that Feuillée's illustration does not depict the diagnostic traits of *Gunnera tinctoria*, including the morphology of the lepidophylls, the size, lobation, and surface of the leaves, the overall shape and size of the inflorescences, and the morphology of bracts, flowers and fruits.

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