Lomariopsis ×farrarii: a new hybrid fern between L. japurensis and L. vestita (Lomariopsidaceae) from Costa Rica

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Moran, R. C. (The New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.; email: rmoran@nybg.org) & J. E. Watkins Jr. (Department of Botany, University of Florida, 220 Bartram Hall, P.O. Box 118526, Gainesville, FL 32611-8526, U.S.A.; email: ewatkins@ufl.edu). *Lomariopsis* ×*farrarii*: a new hybrid fern between *L. japurensis* and *L. vestita* (Lomariopsidaceae) from Costa Rica. Brittonia 56: 205–209. 2004.—A new hybrid, **Lomariopsis ×farrarii**, is illustrated and described from the La Selva Biological Station, Costa Rica. It is intermediate between its parents, *L. japurensis* and *L. vestita* in length and color of the rhizome scales, shape and number of the pinnae, and size and division of the juvenile leaves in a heteroblastic series.

Key words: ferns, hybrids, *Lomariopsis*, Lomariopsidaceae, Pteridophyta.

Moran, R. C. (The New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.; email: rmoran@nybg.org) & J. E. Watkins Jr. (Department of Botany, University of Florida, 220 Bartram Hall, P.O. Box 118526, Gainesville, FL 32611-8526, U.S.A.; email: ewatkins@ufl.edu). *Lomariopsis* ×*farrarii*: a new hybrid fern between *L. japurensis* and *L. vestita* (Lomariopsidaceae) from Costa Rica. Brittonia 56: 205–209. 2004.—Un híbrido nuevo, **Lomariopsis ×farrarii**, se describe y se ilustra de la Estación Biológica La Selva, Costa Rica. Tiene características intermedias de sus padres, *L. japurensis* y *L. vestita*, en la longitud y el color de las escamas del rizoma, la forma y el número de las pinnas, y el tamaño y la división de las hojas jóvenes en una serie heteroblástica.

In *Lomariopsis*, a pantropical genus with about 45 species (Kramer, 1990), hybrids are apparently rare. None are cited by Knobloch (1974, 1984) in his compilations of fern hybrids, nor have any been reported from Malesia (Holttum, 1978), the paleotropical region of highest species richness for the genus. In the Neotropics, Moran (2000) suspected two unnamed hybrids on the basis of herbarium specimens with intermediate morphology. The first, a cross between *L. japurensis* (Mart.) J. Sm. and *L. nigropaleata* Holttum was from Amazonian Ecuador; the second, between *L. japurensis* and *L. vestita* E. Fourn. was from Costa Rica. The latter hybrid combination is the subject of this paper.

The specimen tentatively identified as *Lomariopsis japurensis* × *L. vestita* and cited by Moran (2000) was based on *Stork 1194* (UC), collected in Costa Rica, province of Limón, near Bananito at 30 m. This locality is situated in the Atlantic coastal plain of Costa Rica, a region where both parents are common (pers. obs.). In this same region we also found this hybrid occurring as a single individual at the La Selva Biological Station near Puerto Viejo, about 125 km from the where the Stork specimen was collected. The morphology of the hybrid appeared intermediate between nearby plants of *L. japurensis* and *L. vestita*. The most conspicuous intermediate characteristic was the number of pinna pairs: 8–12 in *L. japurensis*, 14–18 in the hybrid, and 20–35 in *L. vestita* (Fig. 1). The

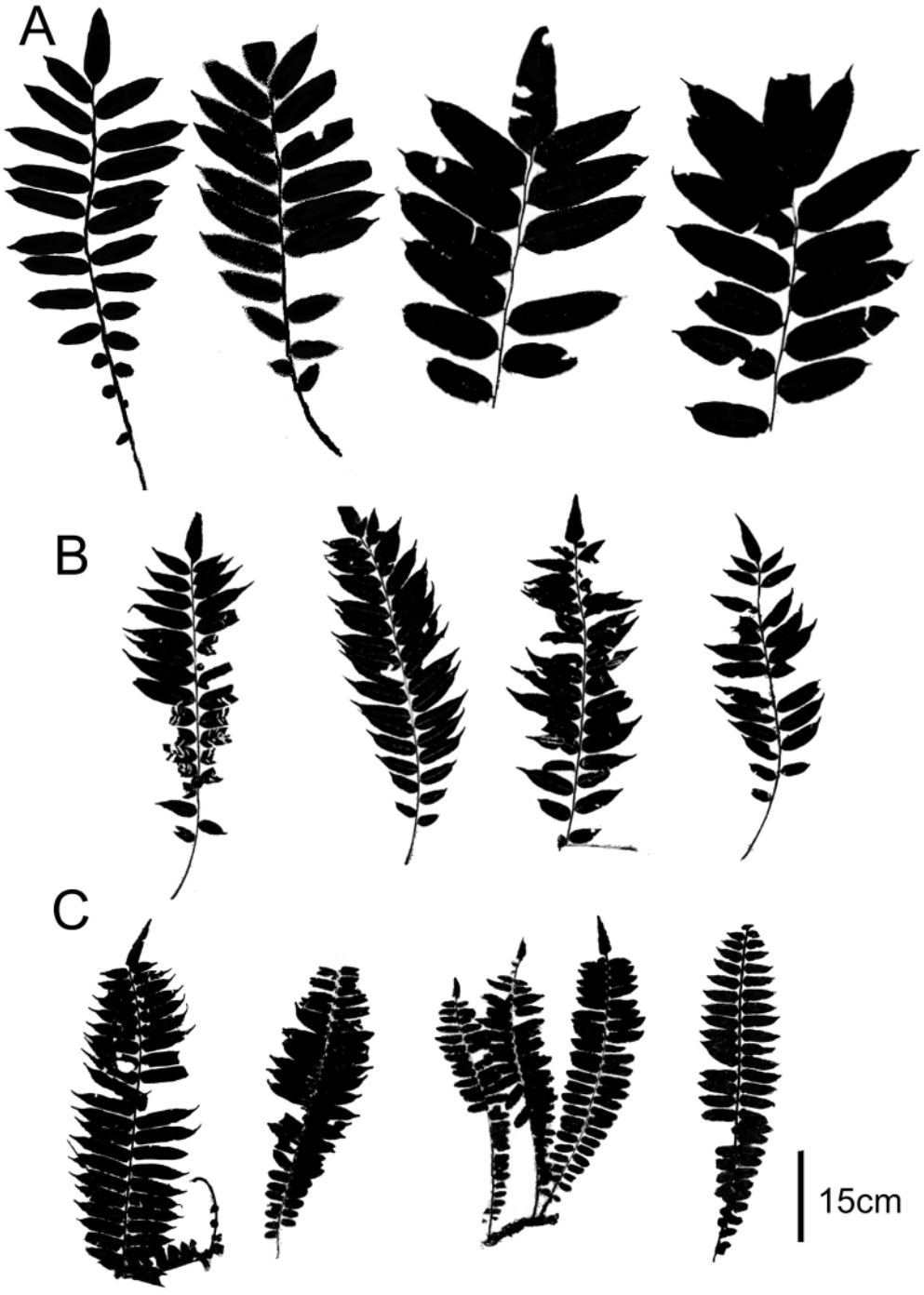

FIG. 1. Leaves of the new hybrid and its parents. **A.** *Lomariopsis japurensis*, two leaves on right lack base of lamina and petiole. **B.** *L.* ×*farrarii*. **C.** *L. vestita*.

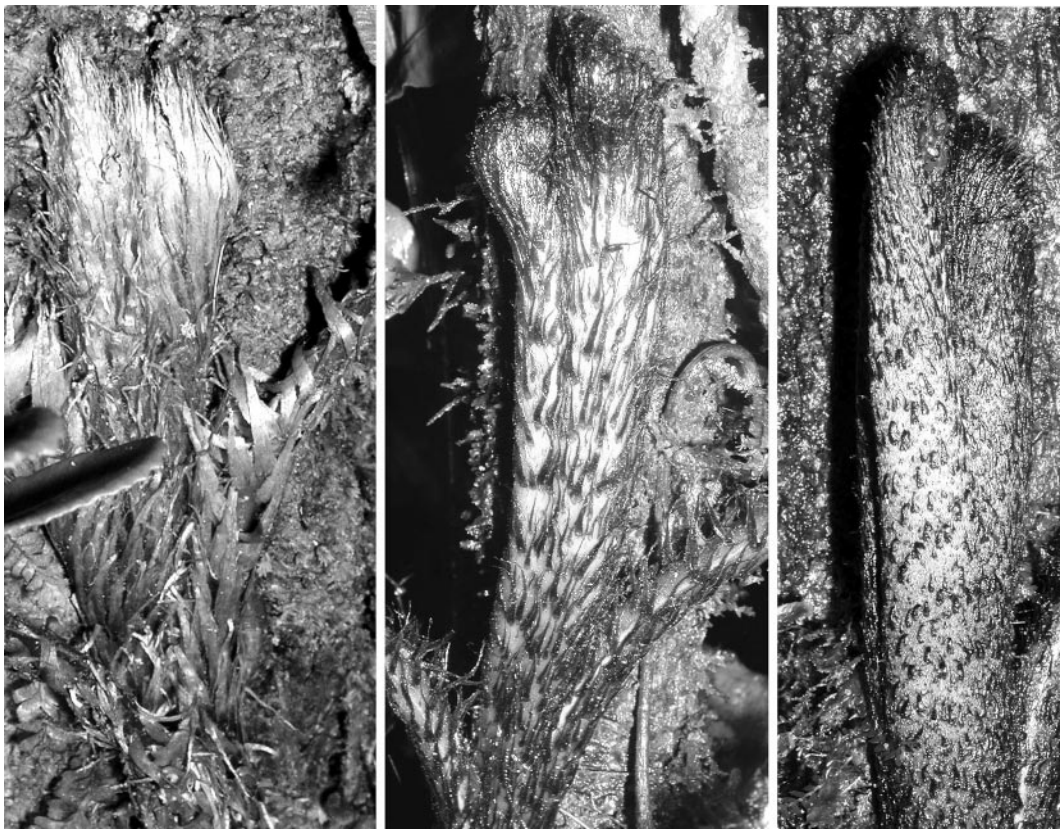

FIG. 2. Rhizome scales of the hybrid *Lomariopsis* ×*farrarii* (middle) and its two parents, *L. vestita* (left) and *L. japurensis* (right). All photos taken at La Selva Biological Field station, Costa Rica.

pinnae were also intermediate in size, with those of *L. japurensis* 14–22 × 2.8–5 cm, the hybrid 8–11.5 × 2.2–3 cm, and *L. vestita* 4–12 × 1–1.8 (measurements of the parents obtained from Moran, 2000). The shape of the hybrid's pinnae bases was also intermediate between the broadly rounded bases of *L. japurensis* and the truncate ones of *L. vestita*. Less conspicuous but also intermediate were scales of the rhizome and petioles (Fig. 2). The rhizome scales in *L. japurensis* were dark brown to nearly black and 2–5 mm long, whereas those of *L. vestita* were whitish or very pale orange and 5–10 mm long. The hybrid's rhizome scales were variably intermediate in color and length (4–6 mm) between the extremes of the parents. The hybrid's petiole scales were also intermediate in length but tended to be dark at the base (a *L. japurensis* characteristic) and lighter toward the apex (a *L. vestita* characteristic). Unfortunately, the hybrid lacked fertile leaves so that spore abortion could not be checked.

The juvenile leaves of the hybrid provided a particularly interesting example of intermediacy. The parents had been assigned to separate subgroups of the genus based on differences in their heteroblastic leaf series (Moran, 2000). *Lomariopsis japurensis* was placed in the ''*L. japurensis* group,'' whose juvenile leaves are at first simple and entire until they reach lengths of about 15–30 cm. Upon reaching this size, they produce a single lateral pinna. As the successive leaves in the series become longer, they develop more pinnae until, when finally mature, 8–12 pinna pairs are present. In contrast, *L. vestita* was placed in the ''*L. sorbifolia* group,'' which has juvenile leaves that become divided at a much earlier stage of development. In *L. vestita* at La Selva, the

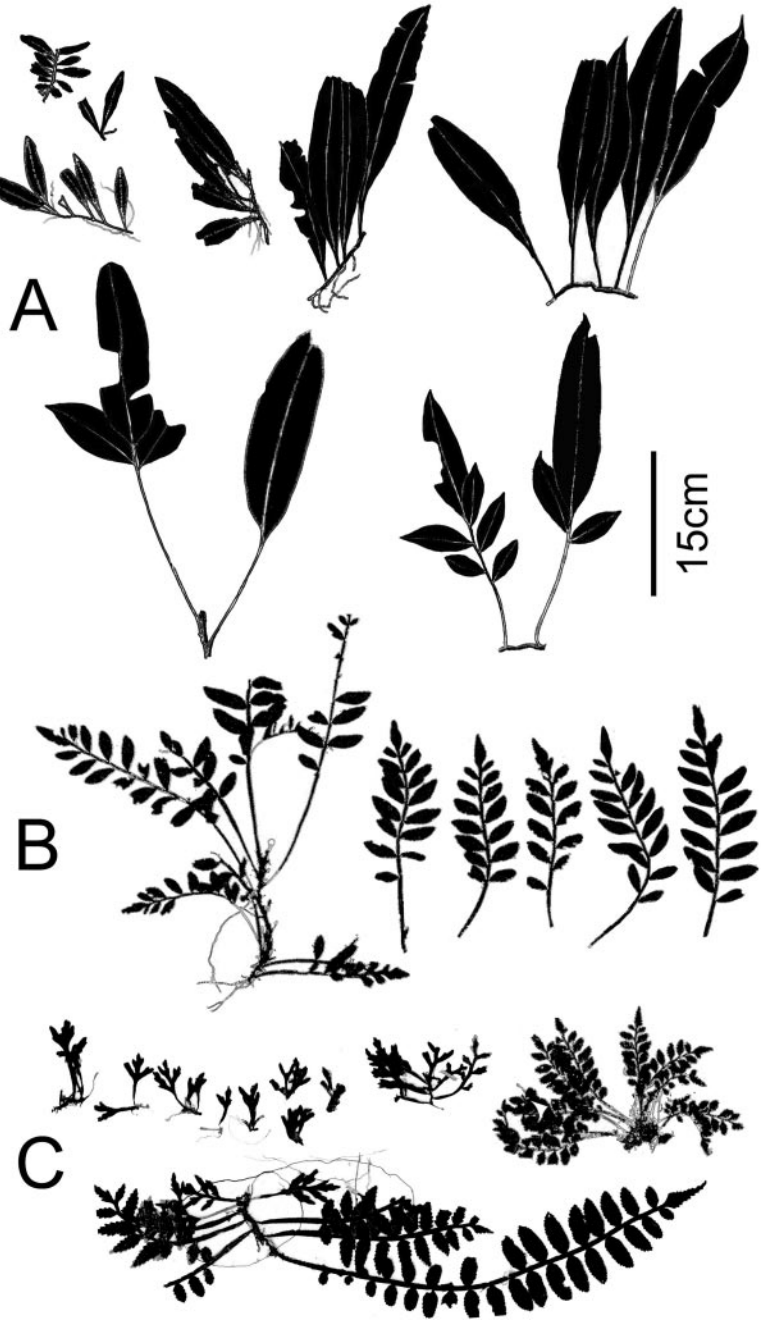

FIG. 3. Comparison of heteroblastic leaf series of the new hybrid and its parents. **A.** *Lomariopsis japurensis*. **B.** *L.* ×*farrarii*. **C.** *L. vestita*. (A from *Scamman 7181,* GH; B from the holotype *Moran & Watkins 6691,* INB; C from *Whetmore & Woodworth 137,* GH. All plants collected in Costa Rica.)

juvenile leaves still attached to the gametophyte are strap-shaped and generally 1–2 cm long. After the sporophyte loses its attachment to the gametophyte, the new leaves produced are at first forked, and later ones are pinnate. They are typically pinnate when only 2 or 3 cm long. The pinnae are dentate and there may be 10–15 pairs by the time leaves are about 15 cm long. In all of these characteristics the hybrid is intermediate (Fig. 3).

Regardless of how common or rare it might be, the hybrid should be named with a binomial (not a formula name) because binomials are more stable than formula names (Wagner, 1969, 1987). Unlike formula names, binomials do not change, as a formula name would, if one or both of the parental names change, or if the parentage is reinterpreted. Therefore, we propose the following binomial for the hybrid:

Lomariopsis ×**farrarii** R. C. Moran & J. E. Watkins, hybrid nov. (Figs. 1–3)

TYPE: COSTA RICA. Heredía: Puerto Viejo, La Selva Biological Station, 10°26′N, 83°59′W, 50 m, wet forest, 9 Jun 2003, *Moran & Watkins 6691* (HOLOTYPE: INB; ISOTYPES: CR, NY, UC).

Hybrida inculta e *Lomariopse japurensi* et *L. vestita* genita, epiphytica; rhizoma longe repens paleis 4–6 mm longis pallide vel obscure brunneis; folia 42–55 cm longa, pinnis 8–11.5 × 2–3 cm in paribus 14–18 dispositis; folia fertilia ignota.

Plant epiphytic. Rhizome long-creeping. Rhizome scales 4–6 mm long, linear-lanceolate, usually dark at the base and light brown to pale toward the apex, ascending to appressed. Leaves 42–55 cm long, 1-pinnate. Pinnae (largest) 8–11.5 × 2–3 cm, 14–18 pairs. Rachis not winged at the base, becoming slightly winged distally. Fertile leaves unknown.

The specific epithet honors Donald R. Farrar, Professor of Botany at Iowa State University, Ames, for his many outstanding contributions to pteridology.

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