

POLYPODIACEAE POLYPODY FAMILY

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Perennial herbs with branched or unbranched rhizomes, these scaly and often pruinose or glaucous, the scales sometimes clathrate (“resembling latticework”). **ROOTS** adventitious, usually branched. **AERIAL STEMS** absent. **LEAVES** closely or widely spaced along the rhizome, often attached at a joint to a low peg-like protrusion of the rhizome (phyllopodium), ours monomorphic, the vernation circinate. **PETIOLES** with usually 3 small vascular bundles basally. **BLADES** pinnatisect in ours, usually at least somewhat coriaceous, distally usually somewhat pinnatifid. **VENATION** free or more commonly casually to regularly anastomosing, sometimes difficult to observe. **SORI** on the abaxial leaf surface, surficial or from shallow pits in the blade surface, often restricted to the distal half of the blade, discrete in ours, in a single row on each side of the costa in ours, circular to oblong-elliptic in outline. **INDUSIA** absent. **PARAPHYSES** sometimes present among the sporangia, peltate or clavate. **SPORANGIA** with a stalk 2 or 3 cells wide, the capsule with a vertical ring-like annulus. **SPORES** 64 per sporangium, monomorphic, monolete, bean-shaped, usually yellow. **GAMETOPHYTES** surficial, cordate, green, usually glabrous, potentially bisexual. —Ca. 40 genera and 500 spp., nearly worldwide.

The Polypodiaceae, which at one time were circumscribed to comprise most of the more advanced groups of ferns, are here treated in a more restricted sense. Generic classification within the family continues to undergo revision. The family is most diverse in the tropics, and is an important component of epiphytic vegetation in many forest types.

1. Scales of the abaxial leaf surface relatively conspicuous, scattered over the entire surface, peltate; developing sori with a dense covering of peltate scales, these shed as the sporangia mature *Pleopeltis*
- 1' Scales of the abaxial leaf surface inconspicuous, confined to the midrib and proximal portions of the costae, attached basally; developing sori naked *Polypodium*

Pleopeltis Humb. & Bonpl. ex Willd. Scaly Polypody

RHIZOMES slender, short-creeping, not pruinose or glaucous, densely scaly, the scales strongly bicolorous, somewhat clathrate. LEAVES usually relatively widely spaced, evergreen, hygrosopic. PETIOLES mostly shorter than to about as long as the blade. BLADES leathery, the lobes linear-oblong, the margins entire or minutely crenate, glabrous adaxially, with conspicuous peltate scales scattered over the entire abaxial surface. VENATION with occasional simple areoles, difficult to observe. SORI surficial or from shallow pits in the blade surface, when young with a dense covering of ephemeral peltate scales similar to those of the blade surface. PARAPHYSES absent. SPORANGIA with the capsule nonglandular. —50 or more spp., New World, Afr., Asia. (Greek for “many” and “shield”).

Until recently, *Pleopeltis* was restricted to a small group of mostly simple-leaved ferns. Phylogenetic research on the Polypodiaceae has indicated that most of the groups of New World polypodies with peltate leaf scales are more closely related to *Pleopeltis* than *Polypodium* sensu stricto and an expanded circumscription of the genus has become accepted by many pteridologists.

Pleopeltis riograndense (Wendt) E. G. Andrews & Windham (of the Rio Grande). Rio Grande Scaly Polypody. —RHIZOMES 2–3 mm in diameter, usually short-creeping, few-branched, the scales 2.5–3 mm long, subulate to lanceolate, acuminate at the tip, the central stripe dark brown with strongly clathrate cells, surrounded by light brown nonclathrate cells, the margins fimbriate-ciliate. LEAVES 3–20 cm long. PETIOLES longitudinally grooved adaxially, green, sometimes brown to purplish brown at the base, sparsely to moderately scaly, the scales grading from like those of the rhizome to those of the blade. BLADES 1–5 cm wide, oblong-triangular to ovate, with 2–10 lateral lobes, the proximal lobes appearing alternate along the midrib, the lobes 6–25 mm long, 2–8 mm wide, the abaxial scales 1–3 mm long, mostly narrowly ovate, more or less concolorous, reddish brown, clathrate, the margins fimbriate-ciliate. SPORES 60–74 μm long, the surface smooth with scattered globose deposits. $2n = 148$. [*Polypodium thyssanolepis* A. Braun ex Klotzsch var. *riograndense* Wendt]. —Shaded ledges and crevices of rock outcrops of canyons, usually on granite, quartzite, or rhyolite: Cochise, Pima, Santa Cruz cos. (Fig. 1A); 1250–2100 m (4100–6900 ft); AZ, TX; n Mex.

Earlier authors referred to this taxon as *Polypodium thyssanolepis*. That name (in the strict sense) refers to a Mexican species with leaves having sparser scales that are broadly ovate to nearly circular, more regularly areolate venation, and more or less opposite proximal lobes.

Polypodium L. Polypody

RHIZOMES slender to stout, short- to long-creeping, sometimes pruinose or glaucous, densely scaly, the scales concolorous to somewhat bicolorous, not clathrate. LEAVES usually relatively widely spaced, evergreen or deciduous

(drought-deciduous in Arizona species), not hygroscopic. PETIOLES mostly shorter than the blade. BLADES slightly thickened, the lobes linear-oblong to linear-triangular, the margins entire or minutely to shallowly crenate or serrate, glabrous or with sparse minute glandular and/or nonglandular trichomes adaxially, with sparse minute glandular trichomes and inconspicuous basally attached lanceolate scales along the midrib and proximal portions of the costae abaxially. VENATION free or with rare simple areoles, usually easily observed, at least in young leaves. SORI surficial, naked during development. PARAPHYSES absent in ours. SPORANGIA with the capsule nonglandular or rarely glandular. —Ca. 100 spp., nearly worldwide. (Greek for “many” and “little feet”).

Reeves (1981) reported *P. glycyrrhiza* D. C. Eaton from a steep canyon in the Sierra Ancha (Gila County), but this population has since been described as *P. ×aztecum* Windham & Yatsk. (2005; Fig. 3), a novel sterile hybrid between *P. hesperium* and an as-yet unidentified second parent. This tetraploid ($2n = 148$) hybrid differs markedly from *P. hesperium* in a number of features, including the following: RHIZOMES 4–9 mm in diameter, not or very slightly pruinose, the scales ovate with a deeply cordate base. LEAVES (7–)20–45 cm long, (3–)6–12 cm wide. BLADES with 8–34 lateral lobes, the midrib and lateral veins with scattered nonglandular trichomes adaxially. SPORANGIA frequently abortive, the capsules with conspicuous 2-celled glands. *Polypodium calirhiza* Whitmore & A.R. Sm. of California and Oregon (disjunct in central Mexico) has been suggested as a possible second parent, but presently this species is not known to grow anywhere in Arizona.

Polypodium hesperium Maxon (of the West). Western Polypody (Fig. 2).

—RHIZOMES 2–6 mm in diameter, short- to long-creeping, few-branched, sometimes pruinose, the scales 3–5 mm long, lanceolate, acuminate at the tip, truncate to slightly rounded at the base, usually concolorous but occasionally with a faint central stripe of darker nonclathrate cells, tan to brown, the margins entire or denticulate. LEAVES 3–25(–35) cm long. PETIOLES longitudinally grooved adaxially, green, sometimes brown to purplish brown at the base, with sparse minute glandular trichomes. BLADES 1.5–6.5 cm wide, oblong-triangular to narrowly ovate, with 3–16 lateral lobes, the proximal lobes appearing alternate or less commonly opposite along the midrib, the lobes 7–30 mm long, 2–12 mm wide, glabrous or with a few minute glandular trichomes along the midrib adaxially, with sparse minute glandular trichomes and inconspicuous basally attached lanceolate scales along the midrib and proximal portions of lateral veins abaxially. SPORES 58–75 μm long, the surface rugose or finely verrucose. $2n = 148$. [*Polypodium vulgare* L. var. *hesperium* (Maxon) A. Nelson & J. F. Macbride, *P. vulgare* var. *columbianum* Gilbert, *P. vulgare* var. *perpusillum* Clute, *P. prolongilobum* Clute]. —Shaded ledges and crevices of rock outcrops of canyons, usually on igneous and volcanic substrates, but also on sandstone and rarely limestone: Cochise, Coconino, Gila, Graham, Pima, Yavapai cos. (Fig. 1B); 1500–3150 m (4920–10,350 ft); w U.S.; w Can.; nw Mex.

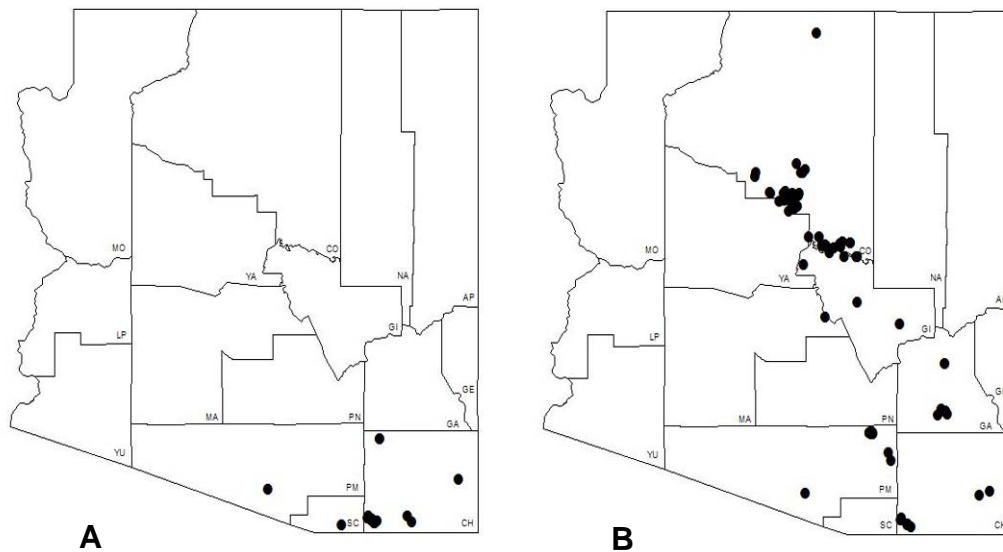
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Polypodiaceae Figure 1. Distributions of: (A) *Pleopeltis riograndense* (B) *Polypodium hesperium*.



Polypodiaceae Figure 2. *Polypodium hesperium*, closeup of plant.



Polypodiaceae Figure 3. *Polypodium* \times *aztecum*, a sterile hybrid between *P. hesperium* and an as-yet unidentified second parent.