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Gerald A. Wheeler
University of Minnesota

Paul Goetghebeur
University of Gent

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UNCINIA (CYPERACEAE) OF ECUADOR

GERALD A. WHEELER

Department of Plant Biology
University of Minnesota
St. Paul, Minnesota 55108-1095

AND

PAUL GOETGHEBEUR

Department of Morphology, Systematics and Ecology
Laboratory of Botany, University of Gent
Ledeganckstraat 35, Gent, Belgium

ABSTRACT

Nine species of *Uncinia* (Cyperaceae: Caricoideae) are recorded from Ecuador, one of which, *U. ecuadorensis*, is newly described and illustrated here. Descriptions, illustrations, distribution maps, and both artificial and vegetative keys are provided for the nine species, and for some unciniads additional taxonomic, phytogeographic and ecological comments are made. A lectotype is designated for the name *U. tenuis*.

Key words: Caricoideae, Cyperaceae, Ecuador, *Uncinia ecuadorensis*, *U. hamata*, *U. lacustris*, *U. macrolepis*, *U. paludosa*, *U. phleoides*, *U. subsacculata*, *U. tenuifolia*, *U. tenuis*.

INTRODUCTION

All of the 60 to 70 species of *Uncinia* Pers. (Cyperaceae: Caricoideae) occur south of the Tropic of Cancer, with about 25 growing in the mountains and cooler regions of South America (Wheeler and Goetghebeur 1995). Of the ten *Uncinia* taxa (nine species and one variety) previously reported from the northern half of the continent (Kunth 1837; Kükenthal 1909; Steyermark 1951; Wheeler and Goetghebeur 1995; Wheeler 1995), we recognize eight species as occurring in Ecuador; in addition, *U. ecuadorensis* G. A. Wheeler & Goetghebeur is newly described and illustrated here.

This paper represents the first comprehensive treatment of the Ecuadorian species of *Uncinia*. Based on early collections made by William Jameson, Aloysius L. Sodiro, and Richard Spruce, Clarke (1883) and Kükenthal (1909) reported two species and one variety, *U. hamata* (Sw.) Urban, *U. phleoides* (Cav.) Pers. and its var. *nux-nigra* C. B. Clarke, whose type was collected in Ecuador. In 1988, Lægaard (Cyperaceae of Ecuador, unpublished) recorded an additional species, *U. tenuis* Poeppig ex Kunth, and also made reference to two unknown species. Based on many new collections, four new species have recently been described from northern South America, *U. lacustris* G. A. Wheeler, *U. paludosa* G. A. Wheeler & Goetghebeur, *U. subsacculata* G. A. Wheeler & Goetghebeur, and *U. tenuifolia* G. A. Wheeler & Goetghebeur, all of

which whose types come from Ecuador (Wheeler and Goetghebeur 1995).

All Ecuadorian *Uncinia* are montane or páramo plants (Table 1), with essentially none growing below 1200 m. The páramo unciniads, all of which are diminutive in stature, grow in moist to wet places on high, wind-swept plains, which are dominated by low shrubs and herbs, particularly grasses and sedges. Indeed, *U. ecuadorensis*, *U. lacustris*, *U. paludosa*, and *U. macrolepis* Decne. seldom occur below 3500 m and the last-named species is known to reach as high as 4600 m. The remaining five species grow at lower elevations, mostly in montane rain forest, although *U. tenuifolia* seems to be confined to steep, calcareous cliffs. By far the most frequently collected species are *U. hamata* and *U. phleoides*, both of which grow in forests and in partially disturbed sites. Of the nine species recorded from Ecuador, four are known only from that country: viz., *U. ecuadorensis*, *U. lacustris*, *U. subsacculata*, and *U. tenuifolia*, with the last two known thus far only from their types. Parenthetically, no members of the subfamily Caricoideae, such as *Uncinia*, occur in the nearby Galápagos Islands (Koyama 1971).

The members of *Uncinia* are characterized by perigynia (transformed prophylls) that contain a greatly exserted rachilla, the latter being invariably terete and tipped by a retrorse, inrolled scale (a transformed glume of a reduced male flower) that forms an “un-

Table 1. Schematic of the relative occurrence, at increasing altitudes, for nine *Uncinia* species in Ecuadorian montane rain forest and páramo.

Species*	Montane Rain Forest						Páramo	
	1200-1999	2000-2499		2500-3099	3100-3699	3700-4000	3500-4199	4200-4600
		cliff	forest					
<i>Uncinia macrolepis</i>							*	*
<i>Uncinia ecuadorensis</i>							⊛	
<i>Uncinia lacustris</i>							⊛	
<i>Uncinia paludosa</i>							*	*
<i>Uncinia subsacculata</i>						⊛		
<i>Uncinia tenuis</i>					*	*		
<i>Uncinia phleoides</i>				*	*	*	*	
<i>Uncinia tenuifolia</i>		⊛						
<i>Uncinia hamata</i>	*		*	*	*			

* For each species, symbols of increasing size represent higher values for the ratio of the number of collections made within a specified altitudinal range, given in meters (m), to the total number of collections seen; circled symbols represent species known from fewer than five collections.

cus" or hook (Snell 1936; Kukkonen 1967). Although it has been debated, pro (Savile and Calder 1953) and con (Hamlin 1959), whether the rachilla of *Uncinia* developed *de facto* as a dispersal mechanism from a simple seta, it is abundantly clear that the rachilla does indeed serve as an agent of dispersal. According to most authors (Croizat 1952; Nelmes 1952; Hamlin 1959), *Uncinia* most likely originated in the Southern Hemisphere. Because it is believed that the Cyperaceae originated in the late Cretaceous or early Tertiary, with rapid diversification of the major groups after that (Ball 1990), differentiation within the genus probably took place sometime in the Tertiary. *Uncinia* species may be either protandrous or protogynous (Edgar 1970) and most, if not all, species are wind-pollinated (anemophilous). However, very little is known about the reproductive biology of South American unciniads and no chromosome number based on Ecuadorian material has been reported. Although both natural and artificial hybrids have been reported from New Zealand (Hamlin 1959; Edgar 1970), essentially nothing is known about the hybridization of *Uncinia* in South America.

Like most genera of the Cyperaceae, mature fruit is *sine qua non* for the positive identification of *Uncinia* species. The primary taxonomic characters useful in the systematics of the genus are: deciduous versus persistent scales; perigynia vestiture or the lack of it; and staminal filament width compared to anther width. Other useful features are spike shape and density and variations in perigynia, and include size, shape, color, position and density of marginal hairs, and beak characteristics. Still other useful features are achenes, rachillae, rhizomes, anther length, and scale and leaf characters. On the other hand, some features are unreliable as taxonomic characters. For example, a sterile bract may be present or absent from different spikes of the same plant. Also, some features of the perigynium, such as differences in texture, venation, winging of the margins, and orifice shape, are only of limited importance in the taxonomy of the genus (Hamlin 1959). Moreover, in the Ecuadorian plants coloration of the basal sheaths vary little among species.

Two keys to the Ecuadorian *Uncinia* are provided below. The Artificial Key is based primarily on flowering and fruiting material and thus provides the most

reliable means of identifying the material at hand. The second key is based primarily on vegetative characteristics, although habitat information has also been utilized. The Vegetative Key was constructed to provide a means of identifying *Uncinia* material when no flowering or fruiting parts are available. For instance, the latter key has been helpful in identifying sterile plants mounted on herbarium sheets. Issued as a caveat, however, vegetative material of *Uncinia* is often difficult to distinguish from other cyperaceous genera, particularly *Carex* L. (Wheeler 1994). Nevertheless, it is apposite to note that while many *Carex* species have long internodes with conspicuous cauline leaves, most *Uncinia* species have short internodes so that the leaves are basal (Hamlin 1958; Kukkonen 1967). Also, the basal sheaths of many *Carex* species are strongly reddish- or purplish-tinged, whereas all Ecuadorian *Uncinia* have pale brown to brown or, more often, dark reddish brown basal sheaths.

Although the keys are largely self-explanatory, explanations for some characters are as follows. In the Artificial Key: 1) rachilla length was measured unidirectionally from the point of attachment (at the achene base within the perigynium) to the "end" of the terminal hook (i.e., the length of the descending portion of the hook was excluded, though that dimension is given separately); and 2) spike width was measured from the tip of the perigynium (or pistillate scale) on one side of the rachis to that on the opposite side; hence, rachilla length (and its concomitant width) was excluded. In both keys, the measurements of the widest leaves include dead leaves and other leaf remnants at the base of the plant.

All names based on Ecuadorian specimens are typified here with the exception of *Uncinia phleoides* (whose syntypes come from Chile), which must await a revision of the taxonomically difficult *U. phleoides* species complex. Species are arranged alphabetically and sectional relationships are indicated, with six species placed in section *Platyandrae* C. B. Clarke (sensu Clarke 1883 and Kükenthal 1909) and the remaining three in section *Uncinia*. As presently circumscribed, the members of section *Platyandrae* have staminal filaments that are as wide as or wider than the anthers and the margins of the appressed-hispid perigynia are ciliate from the apex to near the base; in contrast, the members of section *Uncinia* have staminal filaments narrower than the anthers and perigynia that are glabrous or sparsely hispid distally. Moreover, the pistillate scales in members of section *Platyandrae* are persistent, whereas in two of the three Ecuadorian members of section *Uncinia* the scales are deciduous. However, the two sections of *Uncinia*, as currently delimited, contain considerable morphological variation within each section and, as such, one of us (GAW) is currently pursuing this problem.

The species descriptions were written from Ecuadorian specimens. Recent collections have come, at least in large part, from the joint botanical expeditions of the Botanical Institute, University of Aarhus, Denmark, and the Universidad Católica del Ecuador, Quito. Data gathered from the literature, personal communication, and the labels of specimens received on loan from various herbaria (see Acknowledgments) were used to prepare distribution maps and develop habitat descriptions.

TAXONOMY

KEYS TO THE UNCINIA SPECIES OF ECUADOR ARTIFICIAL KEY

1. Perigynia glabrous; pistillate scales deciduous; filaments narrow (ca. 0.1 mm wide); plants rhizomatous.
2. Perigynia 3.6–4.5 mm long; rachilla (exserted part) 2.4–3.6 mm long; persistent appendage of pistillate scales 0.8 mm long or longer 9. *U. tenuis*
2. Perigynia 4.8–5.6 mm long; rachilla (exserted part) 4.7–5.6 mm long; persistent appendage of pistillate scales less than 0.5 mm long 7. *U. subsacculata*
1. Perigynia slightly to densely pubescent, the margins ciliate; pistillate scales persistent; filaments wide (ca. 0.2–0.3 mm) or narrow; plants cespitose or rhizomatous.
3. Leaves 1 mm wide or less; plants densely cespitose; perigynia 2.8–3.2 mm long and 0.8–1 mm wide 8. *U. tenuifolia*
3. Leaves more than 1 mm wide; plants cespitose or rhizomatous; perigynia not as above.
4. Spikes less than 2.5 cm long, with fewer than 20 perigynia per spike; filaments narrower than anthers; culms frequently scabrous beneath inflorescence; leaves less than 10 cm long, spreading and often strongly curved 4. *U. macrolepis*
4. Spikes 2.5 cm long or longer, with more than 20 perigynia per spike; filaments as wide as anthers; culms usually smooth beneath inflorescence; leaves ascending or spreading but seldom strongly curved.
5. Longest perigynia more than 6.5 mm; achenes narrowly oblong; spikes thickish, clavate (or subclavate); robust plants up to 1.2 m tall . . . 6. *U. phleoides*
5. Perigynia less than 6.5 mm long; achenes not narrowly oblong; spikes linear or cylindric and at most subclavate; plants short or tall.
6. Achenes more than 3 mm long; rachilla often bent just beneath the hook; spikes subclavate; leaves flaccid, some cauline 2. *U. hamata*
6. Achenes less than 3 mm long; rachilla straight or curved but not commonly bent just beneath the hook; spikes linear or cylindric; leaves basal, rigid and mostly ascending.
7. Perigynium beak more than 1 mm long; rachillae (exserted part) more than 5 mm long, wide spreading; spikes oblong-cylindric 1. *U. ecuadorensis*
7. Perigynium beak less than 1 mm long; rachillae (exserted part) less than 5 mm long, ascending; spikes linear.
8. Perigynia 2.8–3.6 mm long; pistillate scales 2.6–4 mm long; leaves 3 mm wide or less 3. *U. lacustris*

8. Perigynia 4.5–5.4 mm long; pistillate scales 4–6.2 mm long; leaves 3–5.5 mm wide 5. *U. paludosa*

VEGETATIVE KEY

1. Widest leaves (6–)6.5–10 mm and few leaves less than 5 mm wide; plants caespitose 6. *U. phleoides*
1. Widest leaves less than 6.5 mm and the majority of leaves less than 5 mm wide; plants caespitose or rhizomatous.
 2. Leaves stiff, coriaceous, basal; páramo plants.
 3. Rhizomes slender, less than 1 mm thick; leaves generally spreading and often strongly curved 4. *U. macrolepis*
 3. Rhizomes stoutish, more than 1.5 mm thick; leaves ascending, straight or slightly curved.
 4. Leaves 1.5–3 mm wide (average width 2.2 mm) 3. *U. lacustris*
 4. Widest leaves more than 3 mm; average leaf width at least 2.8 mm.
 5. Widest leaves 5.5 mm; leaves 5–29 cm long and very few (if any) less than 3 mm wide, average leaf width 4 mm 5. *U. paludosa*
 5. Widest leaves 3.5 mm; leaves 2–13 cm long and usually some less than 3 mm wide, average leaf width less than 3.5 mm 1. *U. ecuadorensis*
 2. Leaves flaccid, membranaceous, cauline or basal; montane plants.
 6. Leaves 1 mm wide or less; plants very densely caespitose (thus far known only from calcareous rock wall) 8. *U. tenuifolia*
 6. Leaves mostly more than 1 mm wide; plants rhizomatous or loosely to densely caespitose (in forested areas but *U. hamata* also grows in clearings and along trails).
 7. Widest leaves 4–6.4 mm; plants in loose to dense caespitose clumps, with short to long rhizomes 2. *U. hamata*
 7. Leaves less than 4 mm wide; plants with slender, long-creeping rhizomes.
 8. Leaves serrulate from apex to base though sometimes sparingly so near the middle 9. *U. tenuis*
 8. Leaves smooth below the middle except near the base, where sometimes sparingly serrulate 7. *U. subsacculata*

SPECIES OF UNCINIA FROM ECUADOR

1. *Uncinia ecuadorensis* G. A. Wheeler & Goetghebeur, sp. nov. Fig. 13, 15

TYPE.—ECUADOR. Prov. Imbabura: Volcán Cotacachi, 00° 22' N. lat., 78° 20' W. long., alt. 3900–4100 m, páramo, 6 Jun 1985, *Lægaard 54497A* (holotype: AAU!; isotype: GENT).

Herbae caespitosae; culmi 8–32 cm alti; vaginae basales brunneo-purpureae, glabrae. Folia 5–7, basilaria; laminae 2–13 cm longae, 2–3.5 mm latae; ligulae 1–2 mm longae. Spica solitaria, terminalis, androgyna, 1.4–3 cm longa, 3–6 mm lata. Pars mascula 3.5–8.5 mm longa, 5–13-flora. Pars feminea ca. 20–70-flora; squamae pistillatae persistentes, 2.8–5 mm longae, 1–1.6(–2) mm latae. Perigynia 3.7–5 mm longa, 1–2 mm lata, superne scabrido-hispidula, marginibus ciliolata; rostra 1.2–2 mm longa, hispidula. Achenium 1.8–2.2 mm longum, 1–1.6 mm latum; rachilla 6.5–13 mm longa, exserta pars 3.4–10 mm longa, persaepe late patula, glabra. Stigmata 3. Antherae

3, 1–1.3 mm longae, ca. 0.2 mm latae; filamenta linearia dilatata, ca. 0.2 mm lata.

Plants loosely to densely caespitose, with short, creeping rhizomes; rhizomes ca. 1.5–2 mm thick, dark reddish brown. Fertile culms 8–32 cm tall, 0.5–1.2 mm thick, erect or slightly curved, about equaling or more often exceeding the leaves, obscurely trigonous, smooth, with glabrous, dark reddish brown basal sheaths. Leaves 5–7, basal; blades 2–13 cm long, 2–3.5 mm wide, ascending, rigid, subcoriaceous, glabrous, the margins scabrous (a mixture of antrorse, retrorse, and dolabriform hairs), terminating in a 3-angled, scabrous attenuated tip; inner band of leaf sheaths hyaline with reddish veins or reddish brown, glabrous, the apex slightly concave; ligules 1–2 mm long, rounded. Inflorescence a solitary, androgynous spike, 1.4–3 cm long, 3–6 mm wide, oblong-cylindric. Staminate part 3.5–8.5 mm long, 5–13-flowered; scales 2.2–3.2 mm long, 0.8–1.5 mm wide, ovate, obtuse to subacute, glabrous, pale brown to brown, 3(–5)-veined, the tips with narrow hyaline margins and ciliate. Pistillate part tightly flowered with ca. 20–70 perigynia; scales persistent, 2.8–5 mm long, 1–1.6(–2) mm wide, shorter than the perigynia, ovate to lanceolate, subacute to acute, subcoriaceous, glabrous, stramineous center with broad, pale brown to brown margins, 3–5(–7)-veined, the tips with narrow hyaline margins and ciliate, the lowermost one sometimes with a scabrous-ciliate awn up to 2 cm long. Perigynia 3.7–5 mm long, 1–2 mm wide, ovate-lanceolate, appressed-hispid distally, smooth or sparsely hispid proximally, the margins ciliate (at least in the distal half), reddish brown or stramineous with reddish streaks, 2 veins prominent the rest faint, tapered to a long beak; perigynium beak narrowly conical, 1.2–2 mm long, hispid. Achenes 1.8–2.2 mm long, ca. 1–1.6 mm wide, compressed-trigonous with more or less flat, oblong sides, tightly enveloped by the perigynium, brown, sessile. Rachilla 6.5–13 mm long, terete, projecting beyond orifice of perigynium, the exserted portion 3.4–10 mm long, slightly to very widely spreading and sometimes perpendicular (or even reflexed) to the axis of the spike, smooth, stramineous or pale brown to brown, the hook 0.8–1.4 mm long and stramineous or brownish. Stigmas 3; style base little thickened. Anthers 3, 1–1.3 mm long, ca. 0.2 mm wide; filaments linear, dilated (ca. 0.2 mm wide), as wide as or wider than the anthers.

PARATYPES.—PROV. CHIMBORAZO: Páramo de los Altares, Collanes Valley, 4000 m, 3 Sep 1987, *Ramsay and Merrow-Smith 349* (K).—PROV. COTACACHI: slopes of Volcán Cotacachi, 4100 m, 11 Oct 1987, *Ramsay and Merrow-Smith 800* (K).

Uncinia ecuadorensis is known from three localities in Ecuador (Fig. 15), where it grows in páramo, at about 4000–4100 m. At the type locality, it was grow-

ing "in small tussocks in pajonal" with grasses and other cyperaceous plants, such as the rarity *U. lacustris*. Plants with ripe fruit have been collected in May and June. The epithet refers to the discovery of this species in Ecuador.

Although this species (Fig. 13) resembles *Uncinia erinacea* (Cav.) Pers. and somewhat less so two newly described South American uncinias (Wheeler 1997), all of which occur in Chile, it differs from them by having smaller and differently shaped perigynia and achenes, shorter rachillae, narrower leaves, and acute pistillate scales. Moreover, whereas the culms of the three above-mentioned Chilean species have long internodes and conspicuous cauline leaves, the internodes of *U. ecuadorensis* are short so that the leaves are basal. If one assumes that *U. erinacea* and *U. ecuadorensis* are closely related, then the robust *U. erinacea*, with its leafy culm, broad leaves, and longer rachillae, seemingly is the more "primitive" of the two. In this regard, Hamlin (1958, p. 85) considers *U. erinacea* to be "the most primitive living member of the genus." Like *U. erinacea*, the new species belongs in section *Platyandrae*.

2. *UNCINIA HAMATA* (Swartz) Urban, *Symb. Antill.* 2: 169. 1900. Fig. 3, 4, 14

TYPE.—JAMAICA, s.d., Swartz s.n. (holotype: S; isotypes: LD-2 sheets!)

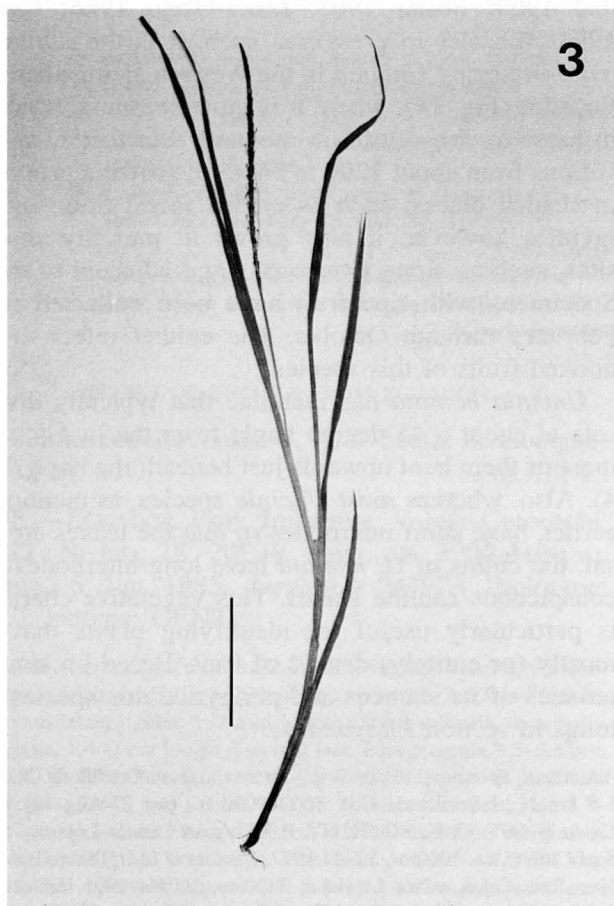
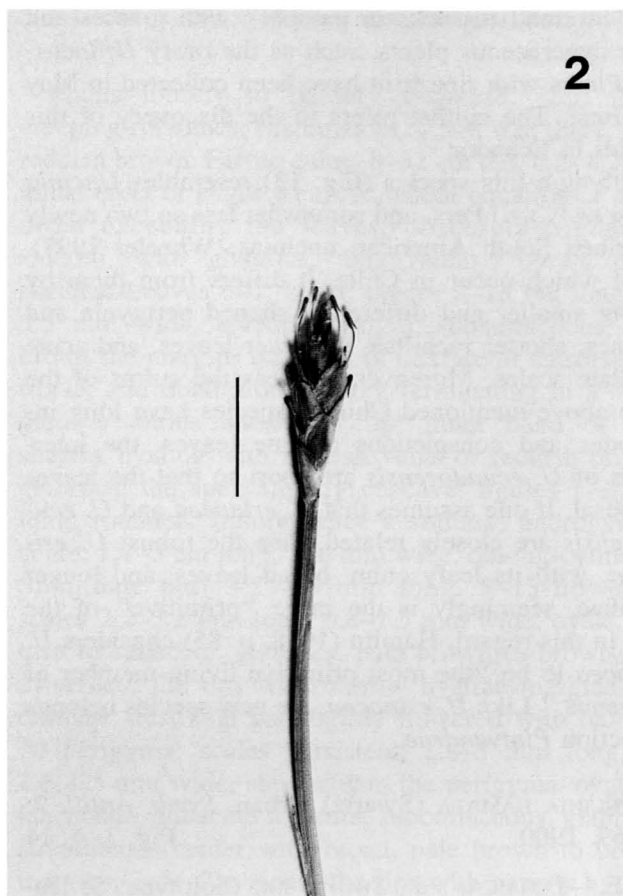
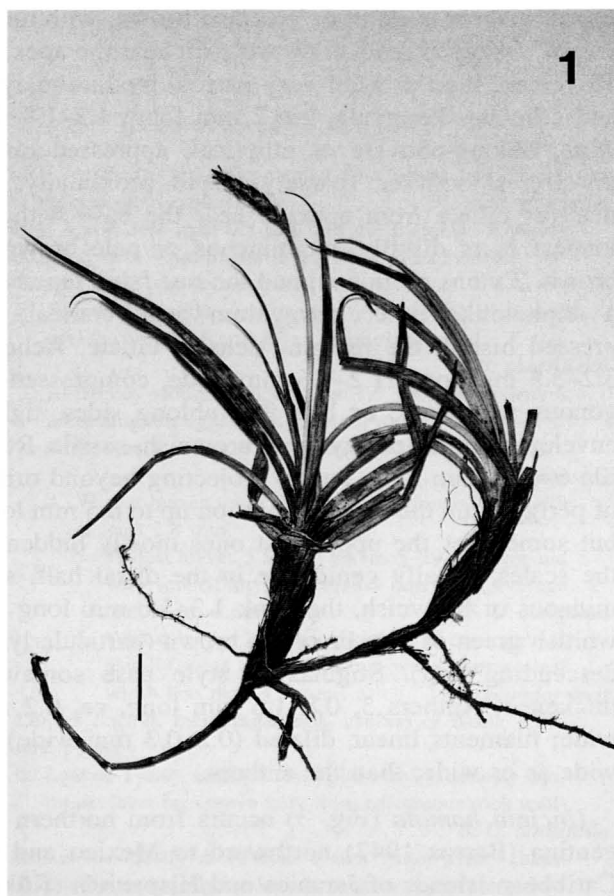
Plants caespitose, from short-to long-creeping rhizomes. Fertile culms 20–60 cm tall, 0.5–1 mm thick, erect or somewhat curved, from shorter than to exceeding the leaves, obscurely trigonous, smooth, with glabrous, brownish sheaths. Leaves 5–7, the uppermost ones cauline with conspicuous sheaths and long internodes; blades (4.5–)8–50 cm long, 2.4–6.4 mm wide, flat, membranaceous, flaccid, glabrous, the margins antrorsely scabrous, terminating in a scabrous attenuate tip; leaf sheaths up to 6.5 cm long, more or less tightly enveloping culm, glabrous, green; inner band glabrous, greenish below and whitish green or pale reddish brown above, mouth slightly thickened and often dark reddish brown, the apex concave; ligules 2–6 mm long, rounded to acute. Inflorescence a solitary, androgynous spike, (4.5–)7–16 cm long, 2–4 mm wide, linear to cylindric, subclavate. Staminate part 6–16 mm long, 10–30-flowered; scales 1.8–3.2 mm long, 0.8–1.8 mm wide, obovate, obtuse to subacute, coriaceous, glabrous, greenish center and stramineous or pale brown margins, with an inverted V-shaped reddish brown strip near the apex, 1–3-veined, the tips with very narrow hyaline margins and ciliolate. Pistillate part tightly flowered, with ca. 25–100 perigynia; scales persistent, 3.3–5.8 mm long, 1.5–2.8 mm wide, shorter than to about equaling the perigynia, oblong-obovate, obtuse to subacute, coria-

ceous, glabrous, green or greenish brown, with an inverted V-shaped reddish brown strip near the apex, 9–13-veined, the tips with very narrow hyaline margins and ciliolate. Perigynia 4–6.2 mm long, 1.3–1.8 mm wide, oblong-obovate or elliptical, appressed hispid distally, smooth or sparsely hispid proximally, the margins ciliate from apex to near the base with the longest hairs distally, stramineous or pale brown to brown, 2 veins prominent and the rest faint, tapered to a stipitatelike base; perigynium beak conical, appressed hispid, the margins densely ciliate. Achenes 3.2–3.8 mm long, 1.2–1.6 mm wide, compressed-trigonous with more or less flat, oblong sides, tightly enveloped by the perigynium, brownish, sessile. Rachilla 6–11.5 mm long, terete, projecting beyond orifice of perigynium, the exerted portion up to 6.5 mm long, but sometimes the uppermost ones mostly hidden by the scales, usually geniculate in the distal half, stramineous or brownish, the hook 1.3–1.6 mm long and whitish green or pale brown to brown (particularly the descending part). Stigmas 3; style base somewhat thickened. Anthers 3, 0.8–1.6 mm long, ca. 0.2 mm wide; filaments linear, dilated (0.2–0.3 mm wide), as wide as or wider than the anthers.

Uncinia hamata (Fig. 3) occurs from northern Argentina (Barros 1947) northward to Mexico and the Caribbean islands of Jamaica and Hispaniola (Küken-thal 1909; Foster 1965; Mora-Osejo 1966; Chater 1994; Wheeler in press); as such, it is the northernmost-occurring *Uncinia* in the Western Hemisphere. In Ecuador (Fig. 14), where it is quite common, it grows in loose to dense tufts in montane rain forest, at elevations from about 1200 to 3400 m, growing primarily in shaded places, such as on the forest floor and in ravines; however, it also grows in partially shaded sites, such as along river banks and adjacent to trails. Specimens with ripe fruit have been collected from February through October. The epithet refers to the hooked fruits of this species.

Uncinia hamata has rachillae that typically divaricate at about a 45 degree angle from the rachis, with most of them bent upwards just beneath the hook (Fig. 4). Also, whereas most *Uncinia* species, as mentioned earlier, have short internodes so that the leaves are basal, the culms of *U. hamata* have long internodes and conspicuous cauline leaves. This vegetative character is particularly useful for identifying plants that are mostly (or entirely) devoid of fruit. Based on characteristics of its stamens and perigynia, this species belongs in section *Platyandrae*.

Additional Specimens Examined.—PROV. AZUAY: Cordillera Oriental, 1–8 km N of Sevilla de Oro, 8000–9000 ft., (Jul 27–Aug 12) 1945, *Camp E-4479* (G. K. MICH, NY, P. US); road Cuenca-Loja, ca. 8 km S of Cumbe, ca. 3000 m, 5 Nov 1977, *Harling et al.* 15043 (GB); Area Nac. Rec. Cajas, sector Llaviuco, 3400 m, 10 Jan 1991, *León et al.* 2620 (QCA); Par. Nac. Cajas, NW of Cuenca, at Laguna Llaviuco, 3150



m, 22 Apr 1990, *Peterson et al.* 8873 (MICH, US).—PROV. CARCHI: between El Pun and Puente Chingual, 2850 m, 15 Jul 1955, *Asplund* 16940 (LD, NY, S); road Tulcán–Maldonado, ca. 10 km SE of Maldonado, 2200–2400 m, 28 Feb 1974, *Harling et al.* 12322 (NY); Valle de Maldonado, km 71 on road Tulcán–Maldonado, 2100–2200 m, 20 May 1973, *Holm-Nielsen et al.* 5989 (AAU, NY); Mira Canton, Norte del carmen, camino a Chical, 2000–2200 m, 10 Feb 1992, *Palacios et al.* 9821 (GENT, QCNE); Tulcán Canton, Colonia Huaqueña, Loma El Corazon, 3000 m, 8 Jul 1992, *Tipaz et al.* 1578 (MO, QCNE).—PROV. COTOPAXI: Isinlivi, 3500 m, 2 Jul 1985, *Lægaard* 54612 (AAU-2 sheets, GENT, MIN).—PROV. EL ORO: near Pampa de los Cedros, S of Cerro Chivo-Turco, along tributary to Río Palma (tributary to Río Amarillo), 2135–2285 m, 11 Aug 1943, *Steyermark* 53779 (F).—PROV. IMBABURA: Cordillera Occidental, Islotes de la Laguna de Cuicocha, 2900–3000 m, 8 Sep 1945, *Acosta-Solís* 11038 (F; however, this number at US is *U. phleoides*); Shanshipamba, 2500 m, 10 Nov 1949, *Acosta-Solís* 14103 (US); Angochagua, 2800 m, 20 Nov 1949, *Acosta-Solís* 14597 (F, US); Cordillera Occidental, El Tambor, 2700 m, 22 Jul 1950, *Acosta-Solís* 17264 (US); Cordillera Oriental, Páramo de Angochagua, 2900–3600 m, 10 Sep 1950, *Acosta-Solís* 18841 (US); Lake Cuicocha, Islote Chica, 3150 m, 23 Jun 1939, *Asplund* 7134 (G, K, NY, P, S, US); Cordillera Oriental, E of Volcán de Cayambe, 10100 ft., 28 Jul 1944, *Drew* E-400 (US); via Mariano Acosta–Nueva America, 10000 a 11800 pies, 29 Dec 1979, *Jaramillo et al.* 1641 (AAU, QCA).—PROV. LOJA: Par. Nac. Podocarpus, E of Nudo de Cajanuma, 2900 m, 29 Mar 1989, *Eriksen* 91162 (QCA); Par. Nac. Podocarpus, Cajanuma, at Casa de Predesur, 2850 m, 21–22 Feb 1985, *Lægaard* 53608 (AAU, QCA); 5 km N of Paso de Sabanilla on road Yangana–Valladolid, 2500 m, 3 Sep 1985, *Lægaard* 55188 (AAU, GENT); Par. Nac. Podocarpus, along trail to Laguna de Compadre, 3000–3200 m, 25 Mar 1992, *Lægaard* 101903 (AAU, GENT); Par. Nac. Podocarpus, near Laguna de Compadre, 3200–3300 m, 25–26 Mar 1992, *Lægaard* 101925 (AAU, GENT, MIN); Par. Nac. Podocarpus, above Nudo De Cajanuma, 2800–3000 m, 14–15 May 1988, *Øllgaard et al.* 74093 (AAU, QCA).—PROV. MORONA-SANTIAGO: Cordillera de Cutucú, trail from Logroño To Yaupi, 1400 m, Nov 1976, *Madison et al.* 3611 (US).—PROV. NAPO: camino Santa Barbara–La Bonita, 2100 m, 17 May 1982, *Balslev et al.* 2608 (AAU, QCA, QCNE); Cumandá 6 km W of Mera, 1000 m, 14 Mar 1980, *Harling et al.* 17298 (NY); N side of Cerro Sumaco, 3100–3150 m, 28 Apr 1979, *Holm-Nielsen et al.* 17416 (AAU); upper slopes of Guagra Urcu, 2650 m, 26 Sep 1980, *Holm-Nielsen et al.* 27125 (AAU); S side of Cerro Sumaco, 2900–3050 m, 1–2 May 1979, *Løjtnant & Molau* 13092 (AAU); ca. 2 km before Baeza on Quito–Baeza road, 1850–2000 m, 31 Mar 1992, *Luteyn & Gavilanes* 14378 (AAU, NY); 1 km SW of Baeza, 2000 m, 20 Oct 1976, *Øllgaard & Balslev* 10183 (AAU, NY).—PROV. PICHINCHA: slope of Pichincha above Lloa, 3300 m, 3 Jul 1939, *Asplund* 7556 (G, LD, NY, S, US); about 2 km S of Atahualpa, 2650 m, 17 Apr 1956, *Asplund* 20306 (G, K, NY, S); quebrada pres de Quito, 30 Mar 1930, *Benoist* 2295 (P); Parroquia Calacali, Reserva Geobotanica Pululahua, camino a los tanques de captacion de agua, 200–250 m, 16 Nov 1987, *Cerón & Cerón* 2755 (QCNE, MO); Quito Canton, Parroquia Calacali, Reserva Geobotanica Pululahua, 2800–3200 m, 26 Nov 1990, *Cerón et al.* 12368 (GENT, MO, QCNE); ca. 27 km from Chiriboga, 2000 m, Dec 1952, *Fagerlind & Wibom* 1938 (LD, MICH); Paschoa, 30 km SE de Quito, 2850–3900 m, 5 Apr 1987, *Freire-Fierro et al.* 557AA (QCA); 1 km above Tandapi on Quito–Santo Domingo road, 1500–1600 m, 21 Mar 1985, *Harling et al.* 23221 (NY, QCA); W side of Pichincha, 1845, *Jameson* 284 (BM, G-2 sheets, US); Paschoa, 2900–3300 m, 16 Sep 1985, *Lægaard* 55259 (AAU); Palmeras, km 36 San Juan–Alluriquin, 1800–1900 m, 9 Feb 1988, *Lægaard* 70026 (AAU); in valle Lloa, 2800 m, s.d., *Mille*

329 (US); road Guale–La Armenia, 3 km from La Armenia, 1800 m, 3 May 1982, *Øllgaard et al.* 37929 (AAU); road from Lloa to the W, km 19.5, 2550 m, 1 May 1991, *Øllgaard* 98894 (AAU, QCA); road Chillogallo–Chiriboga, 26–27 km from San Juan, 1900 m, 17 Mar 1992, *Øllgaard* 99866 (AAU, QCNE); Volcán Paschoa, 3225–3310 m, 11 Oct 1987, *Valencia* 205 (AAU, QCA).—PROV. PICHINCHA/NAPO: Cerro Antisana, 2 km SE of Borja, 5700 ft., 3 Aug 1960, *Grubb et al.* 1200 (K, NY).—PROV. TUNGURAHUA: Mochapata, 2900–3000 m, 23 Jul 1952, *Acosta-Solís* 21264 (US); Río Mapoto, 1230 m, 24 Mar 1939, *Penland & Summers* 286 (F, NY).—LOCALITY UNKNOWN: *André* 3063 (K); *Grubb et al.* 1059 (K); *Jameson* 190 (K-2 sheets); *Sodi* 58 (? P, n.v.); in Andes, 1857–59, *Spruce* 5405 (BM, DL, G-2 sheets, K-2 sheets, NY, P).

3. UNCINIA LACUSTRIS G. A. Wheeler, *Aliso* 14:141. 1995. Fig. 5, 14

TYPE.—ECUADOR. Prov. Pichincha: Páramo de Guamani, about 5 km W of Paso de la Virgen, 00° 18' S. lat., 78° 14' W. long., alt. 3900 m, at small lake, 29 Mar 1984, *Lægaard* 51887 (holotype: AAU!; isotypes: GENT, MIN!, NY, QCA!, QCNE!).

Plants loosely caespitose from short, creeping rhizomes; rhizomes 1.7–2.3 mm thick, dark reddish brown. Fertile culms 5.5–23 cm tall, 0.6–0.8 mm thick, erect or slightly curved, from shorter than to exceeding the leaves, obscurely trigonous to nearly terete, smooth, with glabrous, reddish brown basal sheaths. Leaves 5–7, basal; blades 3.5–14 cm long, 1.5–3 mm wide (average 2.2 mm), ascending, rigid, flat or channeled (especially proximally), glabrous, the margins scabrous (a mixture of antrorse and dolabriform hairs), terminating in a 3-angled, scabrous attenuate tip; inner band of leaf sheaths hyaline or reddish brown-tinged, glabrous, the apex slightly concave; ligules 0.8–1.5 mm long, rounded to subacute, wider than long. Inflorescence a solitary, androgynous spike, 2.5–3.8 cm long, 1.5–2.3 mm wide, linear. Staminate part 5–10 mm long, 7–15-flowered; scales 1.6–2.8 mm long, 0.8–1.4 mm wide, oblong to slightly obovate, obtuse, glabrous, pale brown or reddish brown-tinged, 1-veined, the tips with hyaline margins and ciliate. Pistillate part tightly flowered with ca. 25–45 perigynia; scales persistent, 2.6–3.5(–4) mm long, 1.4–1.8 mm wide, from shorter than to slightly exceeding the perigynia, oblong to slightly obovate, obtuse to subacute, coriaceous, glabrous, reddish brown and stramineous center, 1(–3)-veined, the tips with hyaline margins and ciliate, the lowermost one infrequently with a scabrous-ciliate awn up to 7.5 mm long. Perigynia 2.8–3.6 mm long, 0.8–1.2 mm wide, elliptical, appressed hispid distally, smooth or sparsely hispid proximally, the margins ciliate from apex to near the

Fig. 1–4. 1–2 *Uncinia macrolepis*.—1. Habit, from *Balslev* 3928 (QCA).—2. Inflorescence, from *Ehrenburg* 114 (QCA).—3–4. *Uncinia hamata*, from *Lægaard* 54612 (MIN).—3. Habit.—4. Inflorescence (arrows point to geniculate rachillae). (Bars = 1 cm in Figs. 1, 2, 4; bar = 5 cm in Fig. 3.)

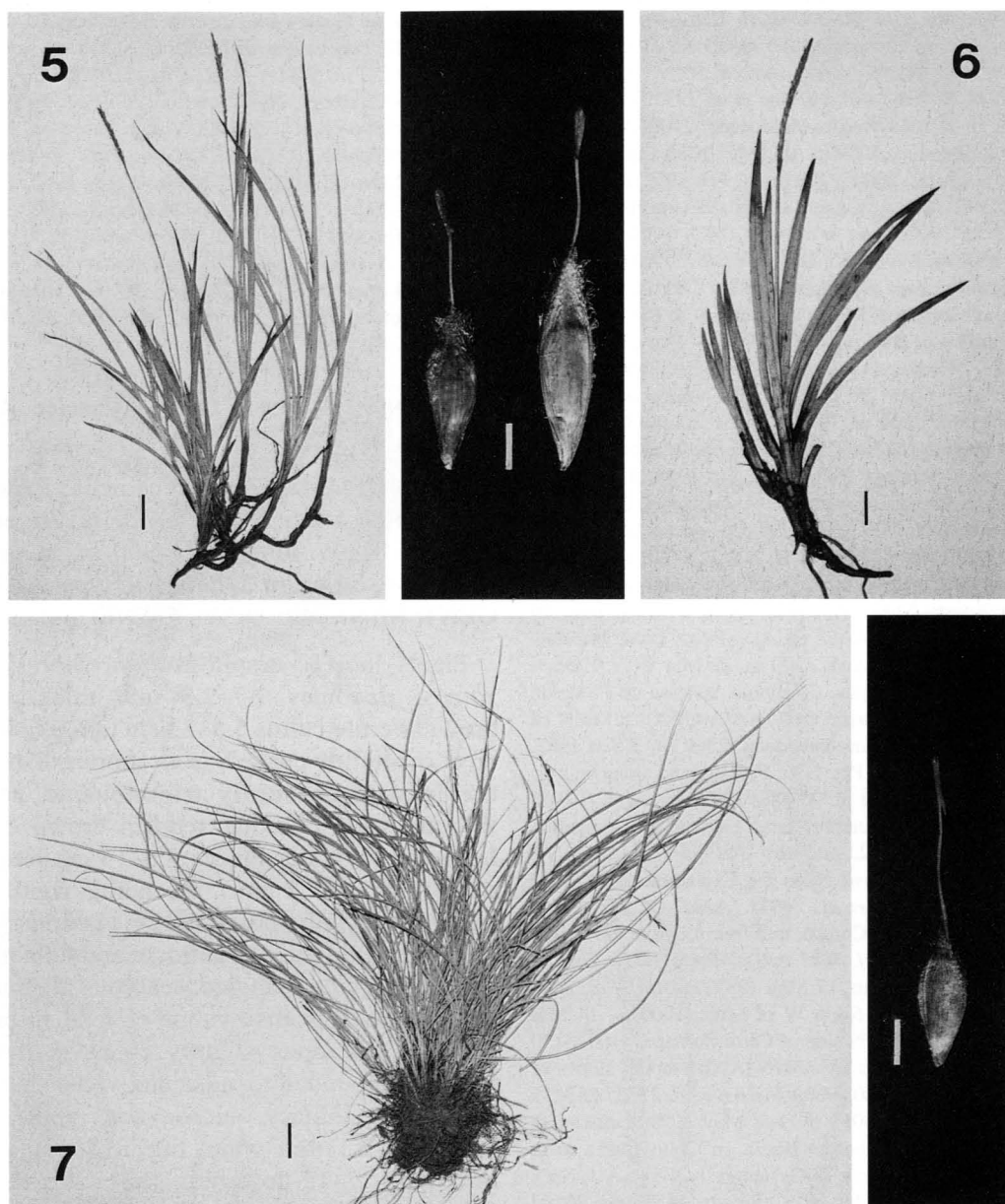


Fig. 5–7. 5. *Uncinia lacustris*, from Lægaard 51887 (MIN), isotype. Habit and perigynium (dextral side of plant).—6. *Uncinia paludosa*, from Lægaard 71014 (MIN), isotype. Habit and perigynium (sinistral side of plant).—7. *Uncinia tenuifolia*, from øllgaard *et al.* 90884 (MIN), isotype. Habit and perigynium (dextral side of plant). (Bars = 1 cm [plant habit] and 1 mm [perigynium].)

base with the longest hairs distally, stramineous to reddish brown, 2 veins prominent and the rest faint, tapered to the base; perigynium beak conical, appressed hispid, the margins densely ciliate. Achenes 1.9–2.3 mm long, 0.9–1.1 mm wide, compressed-trigonus with more or less flat, oblong sides, tightly enveloped by the perigynium, brownish, sessile. Rachilla 4–5.4 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 1.5–2.7 mm long, smooth, stramineous or pale brown, the hook 0.9–1.2 mm long and stramineous or pale brown (particularly the descending part). Stigmas 3; style base little thickened. Anthers 3, 0.9–1.2 mm long, ca. 0.2 mm wide; fila-

ments linear, dilated (ca. 0.2 mm wide), as wide as or wider than the anthers.

Uncinia lacustris is known only from two sites in north-central Ecuador (Fig. 14), where it grows in páramo at elevations from about 3900–4100 m (Wheeler and Goetghebeur 1995). At the type locality, it was growing on the margins of a small lake with other cyperaceous plants, such as *Carex* and *Rhynchospora*. At Volcán Cotacachi (see Fig. 15) it grows in pajonal with the rarity *U. ecuadorensis*. Plants with ripe fruit have been collected in late March and early June. The epithet refers to the occurrence of this species on the wet margins of lakes.

This species (Fig. 5) resembles *U. paludosa* but differs by having smaller perigynia (cf. Fig. 5 and 6) and achenes as well as shorter rachillae and pistillate scales. Furthermore, although both species have stiff, ascending leaves, those of *U. lacustris* are distinctly narrower than those of *U. paludosa* (cf. Fig. 5 and 6). Based on characteristics of its stamens and perigynia, this species belongs in section *Platyandrae*.

Additional Specimen Examined.—PROV. IMBABURA: Volcán Coto-cachi, 3900–4100 m, 6 Jun 1985, *Lægaard 54497B* (AAU, paratype).

4. *UNCINIA MACROLEPIS* Decaisne in Dumont D'Urville, *Voy. Pôle Sud* 2:13. 1853. Fig. 1, 2, 14

TYPE.—CHILE. [XII Región Magallanes y Antártica Chilena, Prov.] Magallanes, 1837–1840, *Hombroen et Jacquinet s.n.* (holotype: P!).

Uncinia meridensis Steyermark, *Feldiana*, Bot. 28: 61. 1951.

TYPE.—VENEZUELA. State of Mérida: at El Aguila above Páramo de Mucuhies, alt. 4025 m, margin of alpine lake, 6 Jul 1944, *Steyermark 57039* (holotype: F!; isotypes: MICH!, MO!, NY!).

Uncinia smithii Philcox, *Kew Bull.* 15:229. 1961.

TYPE.—SOUTH GEORGIA. Moraine Fjord, between Harker and Hamberg Glaciers, on 15° slope, alt. 12 m, 10 Feb 1957, *Smith M. 1019* (holotype: K!; isotype: K!).

Plant rhizomatous; rhizomes long-creeping, slender (0.5–0.9 mm thick), fibrillose. Fertile culms 2.5–15 cm tall, 0.8–1.4 mm thick, erect or nearly so, from shorter than to exceeding the inflorescence, obscurely trigonous, smooth except for beneath the inflorescence where it is scaberrulent to scabrous, brownish at the base. Leaves 9–13, basal; blades 2.5–9 cm long, 1.5–4 mm wide, ascending or more often widely spreading and frequently curved, subcoriaceous, stiff, flat or channeled (especially proximally), glabrous, the margins scabrous (a mixture of antrorse, retrorse, and doliabriform hairs), terminating in a 3-angled, scabrous attenuate tip; inner band of leaf sheaths hyaline or pale brown, glabrous, the apex slightly concave; ligules 0.5–1.5 mm long, rounded, wider than long. Inflorescence a solitary, androgynous spike, 0.8–2.2 cm long, 2–4.5 mm wide, linear to oblong. Staminate part 3.5–6 mm long, ca. 3–7-flowered; scales 2.5–4 mm long, 1.2–1.8 mm wide, oblong or ovate, obtuse, glabrous, stramineous or brownish, 3-veined, the tips hyaline and entire. Pistillate part more or less tightly flowered with 5–18-perigynia; scales persistent, slightly shorter than to exceeding the perigynia, 3.5–5.5 mm long, 1.8–3 mm wide, broadly ovate or oblong-ovate, obtuse, glabrous, stramineous or pale brown center with broad, hyaline or brown to dark brown margins, 3–7(–9)-veined, the tips hyaline and entire but the lower-

most one sometimes with a scabrous-ciliate awn up to 2 mm long. Perigynia (3.3–)4–5.5 mm long, 1.3–1.8 mm wide, elliptical, sparingly hispid in the distal half, glabrous in the proximal half, the margins ciliate above the middle, stramineous or brownish, 2 prominent veins and 13–19-veined at least in the proximal half, tapered to a stipitatelike base; perigynium beak conical, hispidulous, sparingly ciliate along the margins. Achenes 2.8–3.5 mm long, 1.3–1.5 mm wide, oblong, brownish. Rachilla 6.6–8.5 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 3.5–4.1 mm long, smooth, whitish green to stramineous, the hook 1.6–2.1 mm long and stramineous or brownish. Stigmas 3; style base conspicuously thickened. Anthers 1.4–1.7 mm long, 0.2–0.3 mm wide, wider than the staminal filaments (about 0.1 mm wide).

Uncinia macrolepis occurs in northern South America, in Patagonia and Tierra del Fuego, and on the south-Atlantic islands of South Georgia and Tristan da Cunha (Wheeler 1994, 1995, in press). The northern plants (i.e., those from Bolivia, Colombia, Ecuador, Peru, and Venezuela) had previously been called *U. meridensis* Steyermark. (Steyermark 1951), and in 1968 Hooper considered similar-appearing plants from South Georgia (originally called *U. smithii* Philcox) and Tristan da Cunha to be conspecific with *U. meridensis*. More recently, Wheeler (1995) has demonstrated that the populations from northern South America, South Georgia, and Tristan da Cunha are morphologically indistinct from the Patagonian-Fuegian populations of *U. macrolepis*, whose name has priority.

In Ecuador (Fig. 14), this species occurs near the upper limit of páramo, at elevations between 4000 and 4600 m, where it grows on wet rocks and with cushion plants, particularly along rocky lake shores and on rock ledges. It is probably best known from Cerro Antisana (see Fig. 15) on the border between Pichincha and Napo provinces. Plants with mature fruit have been collected essentially throughout the year. The epithet refers to the broad scales of this species (Fig. 2).

Because páramo plants are typically dwarfed and compact, different species may physiognomically look very similar. For instance, *Uncinia macrolepis* (Fig. 1) resembles *U. paludosa* and somewhat less so *U. lacustris*, but differs from both of them in several morphological features. Indeed, *U. macrolepis* belongs in section *Uncinia* (Wheeler 1995), whereas the other two species belong in section *Platyandrae*. In regard to differences that can be observed in the field (with the aid of a hand-lens), the culms of *U. macrolepis* are typically roughened (i.e., scaberrulent) beneath the inflorescence, whereas those of *U. lacustris* and *U. paludosa* are smooth throughout. However, in post-mature culms of *U. macrolepis* this character is sometimes

difficult to observe. Also, *U. macrolepis* has slender rhizomes and short leaves that are wide spreading and often strongly curved, whereas both *U. lacustris* and *U. paludosa* have thickish rhizomes and leaves that are longer and mostly erect and little curved. It is also noteworthy that *U. macrolepis* is the only Ecuadorian *Uncinia* with a conspicuously enlarged style base, though that of *U. hamata* is somewhat thickened.

Additional Specimens Examined.—PROV. AZUAY: Páramo de las Cajas, 4200 m, 27 Aug 1985, *Lægaard* 55069 (AAU, GENT).—PROV. BOLIVAR: Ambato—Guaranda, W of Crus de los Arenales, 4150 m, 24 Aug 1985, *Lægaard* 54995 (AAU, GENT).—PROV. COTOPAXI: Par. Nac. Cotopaxi, 4280 m, 5 Jul 1986, *Ehrenburg* 85 (QCA).—PROV. PICHINCHA/NAPO: falda W de Cerro Antisana, 4200 m, 27–28 Jan 1983, *Balslev* 3928 (F, QCA), 3995 (QCA); 4131 (QCA); falda WSW de Cerro Antisana, 4380 m, 11 Sep 1986, *Ehrenburg* 114 (QCA); falda WSW de Cerro Antisana, 4580 m, 14 Sep 1986, *Ehrenburg* 146 (QCA); falda W de Cerro Antisana, 4200 m, 15 Sep 1986, *Ehrenburg* 184 (QCA); NW slope of Cerro Antisana, Lago Mauca-Machay, 4350 m, 2 Nov 1979, *Holm-Nielsen et al.* 20717 (AAU); Volcán Antisana, between Campamento IMAP and Laguna Micacocha, 3850–3950 m, 7 Mar 1992, *Lægaard* 101580 (AAU, GENT).—PROV. PICHINCHA: 2 km S of Paso de la Virgen on road Quito–Baeza, 4100 m, 19–20 May 1984, *Lægaard* 52173 (AAU); Pito-Pintag, in valley 2.5 hours horseride above Inga Monserat, 3950 m, 12 Apr 1992, *Lægaard* 102272 (AAU, GENT).—LOCALITY UNKNOWN: *Ramsay & Merrow-Smith* 359 (K).

5. *UNCINIA PALUDOSA* G. A. Wheeler & Goetghebeur, *Aliso* 14:142. 1995. Fig. 6, 14

TYPE.—ECUADOR. Prov. Chimborazo: páramo above Azul along road to Osogochi, 02° 18' S. lat., 78° 42' W. long., alt. 4200 m, swamp, 26 Apr 1988, *Lægaard* 71014 (holotype: AAU!; isotypes: GENT, MIN!, NY, QCNE!).

Plants loosely caespitose from short, creeping rhizomes; rhizomes 1.8–3 mm thick, dark reddish brown. Fertile culms 10–80 cm tall, 0.7–1.4 mm thick, erect or slightly curved, usually exceeding the leaves, obscurely trigonous, smooth, with glabrous, dark reddish brown basal sheaths. Leaves 6–10, usually basal; blades 5–29 cm long, 3–5.5 mm wide (average 4 mm), ascending, rigid, flat or channeled (at least proximally), coriaceous, glabrous, the margins antrorsely scabrous, terminating in a 3-angled, scabrous attenuate tip; inner band of leaf sheaths hyaline or pale reddish brown, glabrous, slightly thickened at the usually reddish brown-tinged mouth, the apex concave; ligules 1–2 mm long, rounded, wider than long. Inflorescence a solitary, androgynous spike, 3.4–8.4 cm long, 1.8–3 mm wide, linear. Staminate part 7–12 mm long, 9–17-flowered; scales 2.2–3.5 mm long, 1–1.6 mm wide, oblong to ovate, obtuse, glabrous, stramineous or pale brown to brown, 1-veined, the tips with narrow hyaline margins and ciliolate. Pistillate part more or less tightly flowered with ca. 25–50 perigynia; scales persistent, 4–6.2 mm long, 1.2–2 mm wide, about equal-

ing to slightly exceeding the perigynia, oblong to ovate, obtuse, coriaceous, glabrous, pale brown to brown and stramineous center, 1-veined, the tips with narrow hyaline margins and ciliolate, the lowermost one sometimes with a scabrous-ciliate awn up to 3 cm long. Perigynia 4.5–5.4 mm long, 1–1.3 mm wide, narrowly elliptical, appressed hispid distally, smooth or sparsely hispid proximally, the margins ciliate from apex to near the base with the longest hairs distally, stramineous or pale reddish brown to castaneous, 2 veins prominent and 9–13 faint veins in the proximal half, tapered to a stipitatelike base; perigynium beak conical, appressed hispid, the margins densely ciliate. Achenes 2.2–2.6 mm long, 0.8–1 mm wide, compressed-trigonous with more or less flat, oblong sides, tightly enveloped by the perigynium, brownish, sessile. Rachilla 6.4–7.8 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 2.4–4.2 mm long, smooth, whitish green or stramineous, the hook 1–1.4 mm long and stramineous or reddish brown (particularly the descending part). Stigmas 3; style base little thickened. Anthers 3, 1.1–1.7 mm long, ca. 0.2 mm wide; filaments linear, dilated (0.2–0.3 mm wide), as wide as or wider than the anthers.

Uncinia paludosa is known from many sites in Ecuador (Fig. 14) and several specimens have been seen from Arauca and Boyacá provinces in northeastern Colombia (Wheeler in press); a single collection is also known from Río Abiesco National Park in Peru (*León & Young* 1663 [NY]). This species occurs in páramo, at elevations from about 3500 to 4400 m (Wheeler and Goetghebeur 1995), growing primarily in bogs and swamps dominated by low shrubs and herbs, particularly grasses and sedges. Flowering plants have been collected in February and those with mature fruit from April through early September. The epithet refers to the occurrence of this species in marshy habitats.

This species (Fig. 6) is closely related to *Uncinia macloviana* Gaudich., which grows in Patagonia and on the Falkland Islands (Wheeler 1994), but differs by having smaller perigynia and achenes and pistillate scales that are about equal to or slightly exceed the perigynia. It is also related to *U. lacustris* (cf. Fig. 5 and 6) but differs by having wider leaves, longer rachillae, and slightly larger perigynia and achenes. Physiognomically, *U. paludosa* also somewhat resembles *U. macrolepis*, but the two species are in different sections, the former in section *Platyandrae* and the latter in section *Uncinia*. In addition to differences given in the keys, the style base of *U. macrolepis* is conspicuously enlarged, whereas that of *U. paludosa* is little thickened.

Additional Specimens Examined.—PROV. AZUAY: Páramo de las Cajas, W of Cuenca, 4000–4150 m, 2 Sep 1984, *Lægaard* 52840

(AAU, GENT, QCNE).—PROV. BOLIVAR/CHIMBORAZO: at pass on road Guaranda—Riobamba, 4050–4150 m, 10 Jul 1990, *Lægaard 71745* (AAU, GENT).—PROV. CARCHI: Páramo del Angel, 3500 m, 21 Jun 1939, *Asplund 7108* (K, LD, S, US).—PROV. COTOPAXI: Quebrada de la Río Blanco, Páramo de la Cooperativo Cotopilalau, 4000 m, 2 Feb 1984, *Lægaard 51301A* (AAU, QCA); Zumbahua-Pujilí km 39, 3750–3800 m, 4 Apr 1992, *Lægaard 102081* (AAU, GENT, MIN).—PROV. NAPO: N side of Volcán Los Puntos, 4150–4200 m, 26 Jul 1985, *Lægaard 54733* (AAU, QCA); Llanganati, SE of Chosa Aucacocha, between Aucacocha and Pan de Azucar, 3800–3900 m, 15 May 1982, *Øllgaard et al. 38475* (AAU, GENT, MICH, MIN); Llanganati, N-facing slope towards Río Golpe, just N of Chosa Aucacocha, 3600 m, 16 May 1982, *Øllgaard et al. 38666* (AAU, GENT, MIN).—PROV. IMBABURA: Yahuarcocha-Mariano Acosta km 20, Páramo de Mariano Acosta, 3600–3650, 7–8 Feb 1992, *Lægaard 101154* (AAU, MIN).—PROV. PICHINCHA: Pichincha, 11 Jun 1931, *Benoist 4370* (K, P, US); Páramo de Guamani, close to Paso de la Virgen, 4050 m, 8 Feb 1984, *Lægaard 51308* (AAU), *51310* (AAU, GENT, MIN, QCNE); Páramo de Guamani, 2 km W of Paso de la Virgen, 4000 m, 8 Feb 1984, *Lægaard 51347* (AAU, GENT, QCA, QCNE); Páramo de Guamani, 5 km W of Paso de la Virgen, 3700–3800 m, 19–20 May 1984, *Lægaard 52185* (AAU, GENT, QCA); road Pifo—Papallacta, 3 km W of Paso de la Virgen, 3700–3900 m, *Lægaard 54897* (AAU); road Olmedo—Laguna San Marcos, 3600 m, 10 Jul 1980, *Øllgaard et al. 34404* (AAU, GENT, MIN, NY), *34412* (AAU); Laguna de Hoyas, Páramo de Papallacta, 4050 m, 8 Aug 1987; *Ramsay & Merrow-Smith 162* (K, QCA, QCNE).—PROV. TUNGURAHUA: Mount Carihuayrazo, 4400 m, 22 Aug 1939, *Asplund 8476* (S, US).—LOCALITY UNKNOWN: *Ramsay & Merrow-Smith 378* (K).

6. *UNCINIA PHLEOIDES* (Cavanilles) Persoon, *Syn.* 2: 534. 1807. Fig. 8, 9, 15

TYPE.—CHILE. [VIII Región Bío-Bío, Prov. Concepción:] Concepción, s.d., *Née s.n.* (syntype: MA, photograph of MA at GENT!, MIN!); Talcahuano, s.d., *Née s.n.* (syntype: MA [*partim*], photograph of MA at GENT!, MIN!).

Uncinia phleoides (Cav.) Pers. var. *nux-nigra* C. B. Clarke, *J. Linn. Soc. Bot.* 20:399. 1883.

TYPE.—ECUADOR. [Prov. Pichincha:] Pichincha, *Jameson s.n.* (holotype: K!).

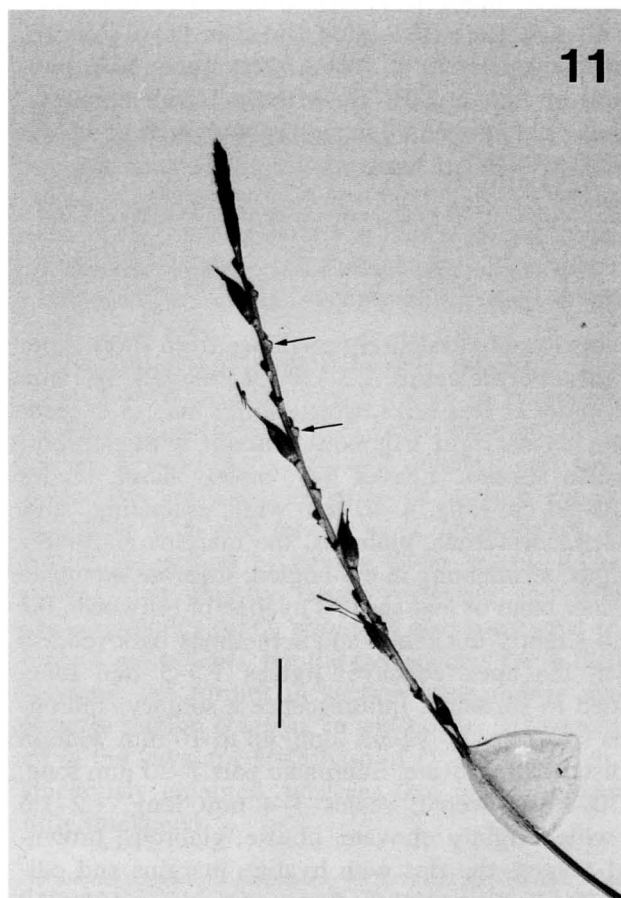
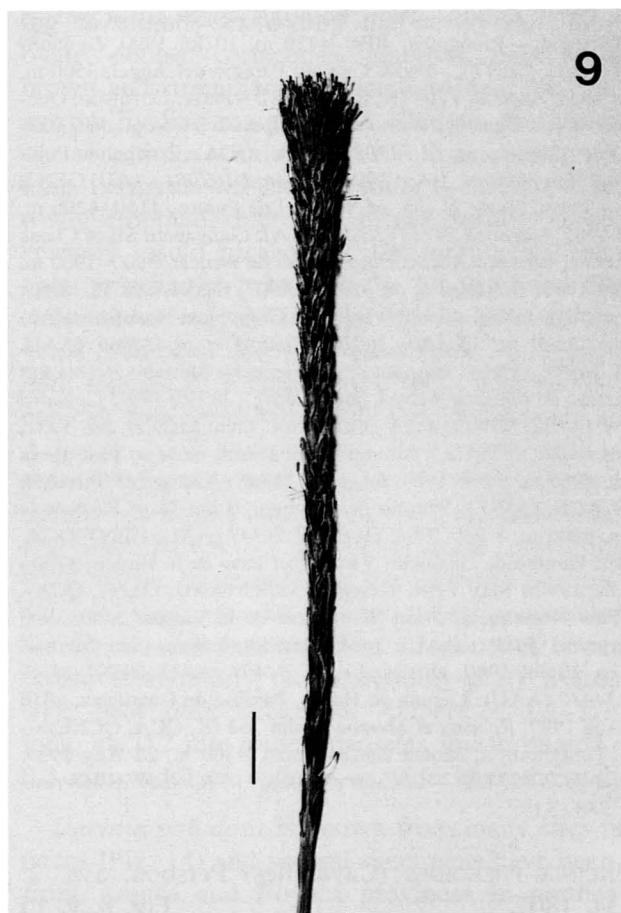
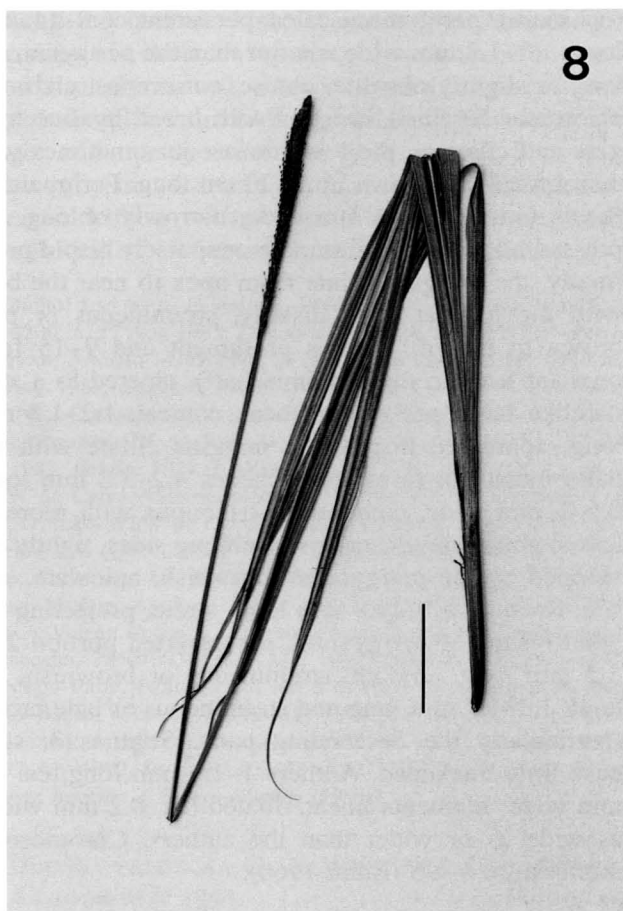
Plants loosely to densely cespitose from short, stout rhizomes. Fertile culms (22–)30–115 cm tall, 1–2 mm thick, more or less erect, from shorter than to exceeding the leaves, rigid, trigonous, smooth, with glabrous, brownish sheaths. Leaves 5–9, mostly basal; blades (5–)10–80 cm long, 4–10 mm wide, ascending, stiff, flat, semicoriaceous, glabrous, the margins antrorsely scabrous, terminating in a 3-angled, scabrous attenuate tip; inner band of leaf sheaths hyaline or brownish, the mouth slightly thickened and sometimes dark reddish brown, the apex concave; ligules 1.5–5 mm long, rounded to subacute. Inflorescence a solitary, androgynous spike, (6–)8–19 cm long, up to 10 mm wide in the distal half, clavate. Staminate part 7–20 mm long, ca. 30–100-flowered; scales 3–4 mm long, 1.2–1.6 mm wide, slightly obovate, obtuse, glabrous, brownish, 1-veined, the tips with hyaline margins and ciliate. Pistillate part tightly flowered, with ca. 100–250

(or more) perigynia; scales persistent, 6.8–14 mm long, 1.3–1.8 mm wide, shorter than the perigynia, oblong to slightly obovate, obtuse, coriaceous, glabrous, brownish, 1-veined, the tips with broad hyaline margins and ciliate, the lowermost one sometimes with a scabrous-ciliate awn up to 20 cm long. Perigynia 6–8 mm long, 0.9–1.4 mm wide, narrowly oblong, appressed hispid distally, smooth or sparsely hispid proximally, the margins ciliate from apex to near the base with the longest hairs distally, stramineous or pale brown to brown, 2 veins prominent and 9–15 faint ones (at least in the proximal half), tapered to a stipitate-like base; perigynium beak conical, 1.2–1.8 mm long, appressed hispid, the margins ciliate with the hairs mostly in fascicles. Achenes 4.2–5.2 mm long, 0.6–1 mm wide, compressed-trigonous with more or less slightly convex, narrowly oblong sides, tightly enveloped by the perigynium, brownish, apiculate, sessile. Rachilla 8.8–11.8 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 2.7–5.2 mm long, smooth, stramineous or brownish, the hook 1.2–1.7 mm long and stramineous or pale brown (particularly the descending part). Stigmas 3; style base little thickened. Anthers 1–1.6 mm long, ca. 0.2 mm wide; filaments linear, dilated (ca. 0.2 mm wide), as wide as or wider than the anthers. Chromosome number: $2n = 96$ (Rahn 1960).

Uncinia phleoides (Fig. 8) ranges from northern Patagonia (Barros 1947) northward to Colombia (Kükenthal 1909; Foster 1965; Wheeler in press) and is also reported from Mexico (González 1983). In Ecuador (Fig. 15), where it is common, it occurs at elevations from about 2500 to 4200 m and grows in large, dense tufts in scrub forest and clearings and in disturbed sites (e.g., in roadside ditches and along trails). Among other localities, this species is well known from the slopes and environs of Chimborazo, Cotopaxi, Pascocha, and Pichincha volcanoes (see Fig. 15). Specimens with ripe fruit have been collected essentially throughout the year. The epithet, which means “phleumlike,” refers to the timothylike spikes of this species (Fig. 9).

No close relative of *Uncinia phleoides* occurs in Ecuador, though farther south on the continent it can be confused with other species. Clarke (1883) described var. *nux-nigra* from plants collected on the slopes of Cerro Pichincha (Ecuador), and Kükenthal (1909) subsequently recognized this variety in his worldwide treatment of the *Cariceae*. In the present treatment, however, these plants are not considered to be distinct from those of typical *U. phleoides*. Based on characteristics of its stamens and perigynia, this species belongs in section *Platyandrae*. The published chromosome count given above was based on Argentine material.

Additional Specimens Examined.—PROV. AZUAY: road Cuenca—



Loja, ca. 8 km S of Cumbe, ca. 3000 m, 5 Nov 1977, *Harling et al.* 15041 (GB); vicinity of Toreador, between Molleturo and Quinoas, 3810–3930, 15 Jun 1943, *Steyermark* 53231 (F, NY, US), 53232 (F).—PROV. BOLIVAR/CHIMBORAZO: at pass on road Guaranda–Riobamba, 4050–4150 m, 10 Jul 1990, *Lægaard* 71746 (AAU).—PROV. CAÑAR: Virgin Corral, 4 km SW of Taday, 3000 m, 13 Dec 1980, *Holm-Nielsen et al.* 29188 (AAU).—PROV. CARCHI: Páramo El Angel, just before pass on road El Angel–Tulcán, 3450–3500 m, 14 May 1973, *Holm-Nielsen et al.* 5307 (AAU, F, MO, NY); El Carmelo–Tulcán road, ca. 10 km NW of El Carmelo, 3150–3300 m, 15 Apr 1979, *Løjtnant et al.* 12533 (AAU).—PROV. CHIMBORAZO: vicinity of Nevado El Altar, near Río Blanco, 3370–3400 m, 31 Mar 1983, *Juncosa* 876 (MO, NY, QCA); road ca. 4 km E of Alao, 3350–3500 m, 5 May 1982, *Øllgaard et al.* 37945 (QCA), 38025 (AAU).—PROV. COTOPAXI: near railway station Cotopaxi, 3600 m, 6 Jul 1955, *Asplund* 16808 (G, K, LD, NY, S, US); Par. Nac. Cotopaxi, 3200 m, 13 Nov 1982, *Balslev & de Vries* 3474 (NY, QCA); Par. Nac. Cotopaxi, 3400 m, 27 May 1988, *Balslev* 69278 (AAU, F, NY); highway to Laguna Pisayambo, 3295 m, 21 Dec 1976, *Boeke* 585 (AAU, MO, NY, QCA); road to Nasa station, 26 Oct 1981, *Brandt* 71852 (AAU, MIN); Par. Nac. Cotopaxi, 4200 m, 28 Nov 1987, *Freire-Fierro et al.* 909 (AAU, QCA); road to Volcán Cotopaxi, 3600 m, 14 Jan 1984, *Lægaard* 51064 (AAU, GENT, QCA, QCNE); Par. Nac. Cotopaxi, Quebrada de Agualongo, 2 Feb 1992, *Montesdora* 316 (AAU); antes de la entrada, Par. Nac. Cotopaxi, 3500 m, 15 May 1982, *Quintana & Bastidas* 78 (QCA), 110 (QCA).—PROV. IMBABURA: Cordillera Occidental, Islotes de la Laguna de Cuicocha, 2900–3000 m, 8 Sep 1945, *Acosta-Solis* 11038 (US; however, this number at F is *U. hamata*); Shanshipamba, 2500 m, 10 Nov 1949, *Acosta-Solis* 14101 (US); Lake Cuicocha, Isote Chica, 3150 m, 23 Jun 1939, *Asplund* 7143 (LD, S); Páramo de Cazco Valenzuela, 3200–3300 m, 8 Mar 1984, *Brandbyge* 42562 (AAU, NY); Cotacachi Canton, Reserva Ecologica Cotacachi-Cayapas, Laguna de Cuicocha, Isote Yerovi, 2900–3100 m, 21 Jun 1991, *Peñafiel & Varela* 129 (GENT, MO); Laguna de Cuicocha, Isote Teodoro Wolff, 3100–3300 m, 30 Aug 1991, *Peñafiel et al.* 333 (QCNE); alrededores de la Laguna de Cuicocha, Quebrada Chumabi, 3300–3350 m, 2 Mar 1992, *Peñafiel et al.* 1076 (MO, QCNE); Volcán Cotacochi, island in Laguna Cuicocha, 12300 ft., 24 Jan 1953, *Prescott* 222 (NY); Mojanda, on road Otavalo–Minas, at the cross road to Cerro Blanco, 3200 m, 3 Jun 1967, *Sparre* 16845 (LD, S).—PROV. NAPO: 4 km W of Papallacta on road Quito–Papallacta, 3400–3600 m, 5 Jun 1973, *Holm-Nielsen et al.* 6782 (AAU, F, MO, NY); Páramo de la Pappallacta, E of Paso de la Virgen, 3750 m, 29 Mar 1984, *Lægaard* 51896 (AAU, GENT, MIN, QCA, QCNE); N of Volcán Los Puntos, 3850–3900 m, 28 Jul 1985, *Lægaard* 54772 (AAU); road San Miguel–Puerto Nuevo, km 54 from San Miguel, 3200–3300 m, 29 Sep 1976, *Øllgaard & Balslev* 9810 (AAU, F, MO, NY, U).—PROV. PICHINCHA: slope of Pichincha above Lloa, 3400 m, 5 Jul 1939, *Asplund* 7546 (S, US); camino Yanacocha al lado noroccidental del Cerro Pichincha, 3200 m, 3 Oct 1981, *Balslev* 2036 (QCA, QCNE); Cotopaxi Nature Reserve, near entrance to Limpio Pongo, 3850 m, 11 Dec 1982, *Barfod et al.* 41314 (AAU, GENT, MIN, QCA, QCNE); Cerro Atacazo, 3800 m, 6 Sep 1983, *Espinosa* 222 (QCA); pie S del Unqui, 2900 m, Mar 1928, *Firmin* 340 (F, NY, US); camino de Chilibuto a Fataras, 2850 m, Mar 1929, *Firmin* 402 (F, NY, US); Antisana, Río de la Rinconada, cerca de la Quebrada Puca Guaico (Quebrada Roja), 11 Apr 1992, *Freire-Fierro et al.* 2112 (NY); Pasochoa, 30 km SE de Quito, 2850–3900 m, 22 Oct 1988, *Granda* 41 (NY, QCA); W slope of Volcán Atacazo 17 km from San Juan, 2850 m, 25 Aug 1980, *Holm-Nielsen & Azan-*

za 25145 (AAU); Páramo de Guamani, 5 km W of Paso de la Virgen, 3750 m, 8 Feb 1984, *Lægaard* 51366 (AAU, QCA); N side of Volcán Pichincha above Hacienda Yanacocha, 3800 m, 4 Jun 1985, *Lægaard* 54468 (AAU, GENT, MIN, QCA, QCNE); Reserva Geobotanical Pasochoa, 3100–3400 m, 23 Feb 1992, *Lægaard* 101408 (AAU, QCA); road Pifo–Papallacta, 3 km W of Paso de la Virgen, 3700–3900 m, 7 Aug 1985, *Lægaard* 54896 (AAU, GENT, MIN); Volcán Pichincha, s.d., *Mille* 330 (US); Pasochoa, 3250 m, 10 Oct 1980, *Raza* 259 (AAU); Quebrada Violetas, about 4 km W of Aloag on road Aloag–Santo Domingo, 3000 m, 25 Mar 1967, *Sparre* 14952 (LD, S); Pichincha, ? 1848, *Jameson* 627 (BM, P).—PROV. TUNGURAHUA: Tungurahua, 1 Dec 1981, *Brandt* 71879 (AAU, GENT, MIN).—LOCALITY UNKNOWN: *Jameson* 881 (K); *Ramsay & Merrow-Smith* 739 (K); *Sodiolo* 59 (? P, n.v.), 199/57 (? P, n.v.); in Andes, 1857–59, *Spruce* 5140 (BM, G, K, NY).

7. UNCINIA SUBSACCULATA G. A. Wheeler & Goetghebeur, *Aliso* 14:145. 1995. Fig. 12, 15

TYPE.—ECUADOR. Prov. Pichincha: N side of Volcán Pichincha above Hacienda Yanacocha, 00° 07' S. lat., 78° 34' W. long., alt. 3800 m, *Polylepis* forest, loose mats in shade, 4 Jun 1985, *Lægaard* 54469A (holotype: AAU!; isotypes: GENT, K, MIN!, NY, QCA!).

Plants rhizomatous; rhizomes slender (0.7–1 mm thick), long-creeping, brownish. Fertile culms 15–25 cm tall, 0.7–1 mm thick, more or less erect, obscurely trigonous, smooth, with glabrous, pale brown to brown basal sheaths. Leaves 7–9, mostly basal; blades 5–21 cm long, (1.5–)2–3.4 mm wide, somewhat spreading, flat, membranaceous, glabrous, the margins antorsely scabrous distally and smooth below the middle except near the base where sometimes sparingly serrulate, terminating in a scabrous attenuate tip; inner band of leaf sheaths hyaline, glabrous, the apex concave; ligules 1.5–2.5 mm long, subacute to acute. Inflorescence a solitary, androgynous spike, 2.5–4 cm long, 2–3.5 mm wide, linear or narrowly cylindric. Staminate part 6–8 mm long, 7–11-flowered; scales 3.5–4 mm long, 0.6–1.2 mm wide, lanceolate, subacute to acute, membranaceous, glabrous, green center with broad, hyaline margins and sometimes reddish brown-tinged distally, 1-veined, the tips entire. Pistillate part more or less tightly flowered, with ca. 10–30 perigynia; scales deciduous, but the basal one-fourth (or less) persisting as a conspicuous greenish or pale brown saccate structure less than 0.5 mm long, 4.2–6 mm long, 0.8–1.6 mm wide, from shorter than to about equaling the perigynia, membranaceous, lanceolate, subacute to acute, glabrous, green center with broad, hyaline margins and sometimes pale reddish brown-tinged distally, 1-veined, the tips entire, but the lowermost one frequently with a scabrous-ciliate awn up to 2.5 cm long. Perigynia

Fig. 8–11. 8–9. *Uncinia phleoides*, from *Lægaard* 51896 (MIN).—8. Habit.—9. Inflorescence.—10–11. *Uncinia tenuis*, from *Holm-Nielsen & Jaramillo* 28340 (MIN).—10. Habit.—11. Inflorescence (arrows point to persistent appendages of deciduous pistillate scales). (Bars = 1 cm in Figs. 9, 10; bar = 5 cm in Fig. 8; bar = 5 mm in Fig. 11.)

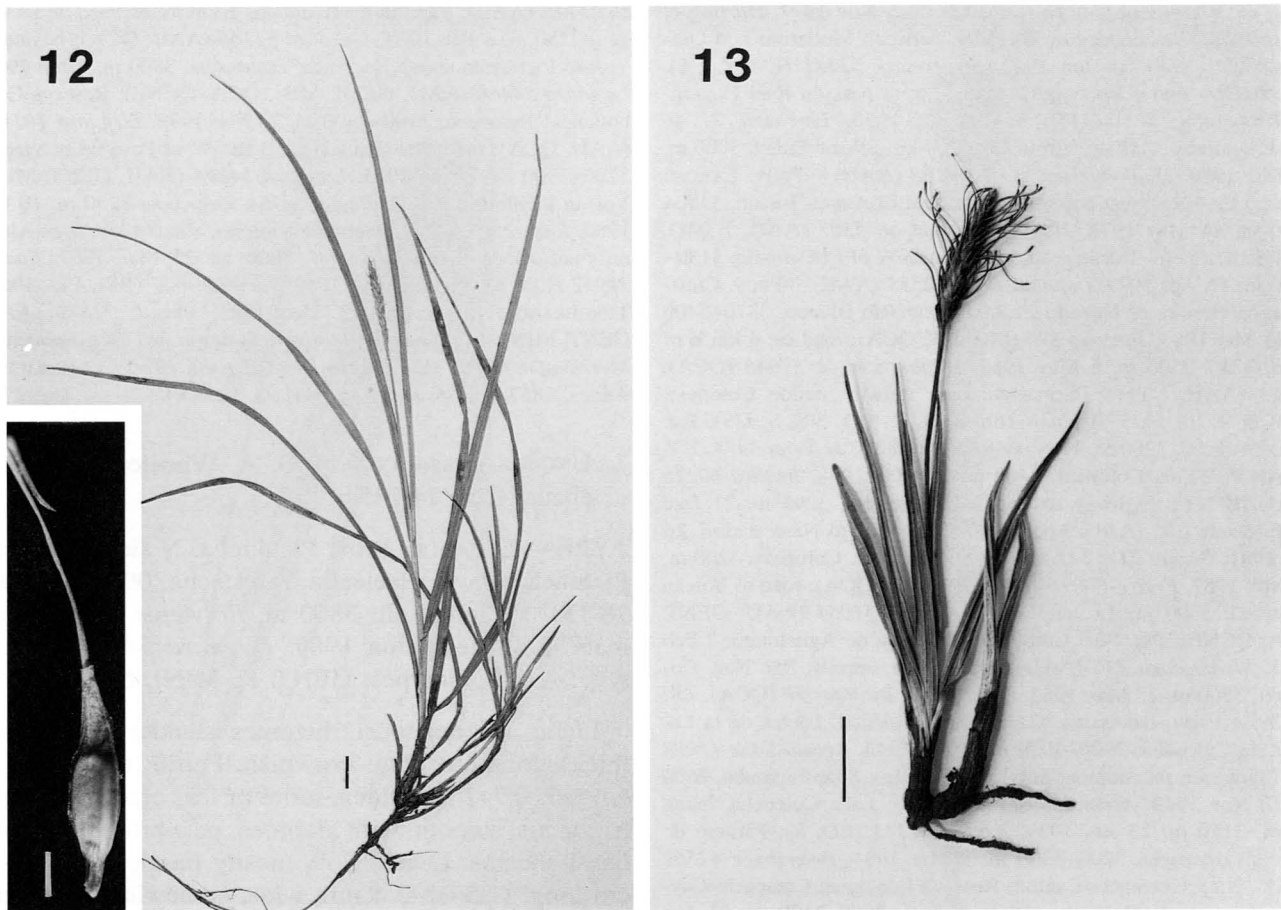


Fig. 12–13. 12. *Uncinia subsacculata*, from Lægaard 54469A (MIN), isotype. Habit and perigynium (sinistral side of plant).—13. *Uncinia ecuadorensis*, from Lægaard 54497A (AAU), holotype. Habit. (Bars = 1 cm [plant habit] and 1 mm [perigynium].)

4.8–5.6 mm long, 0.9–1.2 mm wide, fusiform, glabrous, the margins smooth, whitish green to pale greenish brown, 2 prominent veins and the rest faint, abruptly contracted to a stipitate base, the stipe 0.8–1.2 mm long; perigynium beak narrowly conical, 1.5–2 mm long, glabrous, the margins smooth. Achenes 2.4–2.6 mm long, 0.8–1.1 mm wide, compressed-triangular with more or less concave, oblong sides, yellowish (immature). Rachilla 8.5–10.2 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 4.5–6 mm long, smooth, whitish green or pale greenish brown, the hook 1.8–2.2 mm long and stramineous or pale brown (particularly the descending part). Stigmas 3; style base little thickened. Anthers 3, 1.3–1.8 mm long, ca. 0.2 mm wide, wider than the filiform filaments (ca. 0.1 mm wide).

Uncinia subsacculata is known only from the type locality (Fig. 15). It seemingly is a scotophilous (shade-loving) species that grows in *Polylepis* forest, at about 3800 m. Plants with well-developed perigynia have been collected in early June. The epithet refers to the very short, saccate appendages that persist after the deciduous scales have fallen.

This species (Fig. 12) resembles *Uncinia tenuis* but

differs in several features, the most salient of which are given in the keys. It is noteworthy that these two South American uncinias are readily identified by their distinctive inflorescences, which, although greatly (or entirely) divested of perigynia, continue to display few to numerous saccate appendages, structures which are persistent portions of the otherwise deciduous scales (Wheeler and Goetghebeur 1995). However, in *U. tenuis* the proximal one-third of the scale persists as a conspicuous appendage (about 1 mm long), whereas in *U. subsacculata* the saccate appendage is appreciably shorter (less than 0.5 mm long). This species clearly belongs in section *Uncinia*.

8. *UNCINIA TENUIFOLIA* G. A. Wheeler & Goetghebeur,
Aliso 14:144. 1995. Fig. 7, 15

TYPE.—ECUADOR. Prov. Zamora-Chinchipe: road between Loja and Zamora, about 13 km E of the pass, just before junction with old road, 03° 58' S. lat., 79° 05' W. long., alt. ca. 2030 m, vertical dry cliff, 8 Mar 1989, Øllgaard *et al.* 90884 (holotype: AAU!; isotypes: GENT, K, MIN!, NY, QCA!, QCNE!).

Plants densely caespitose. Fertile culms 7–21 cm tall,

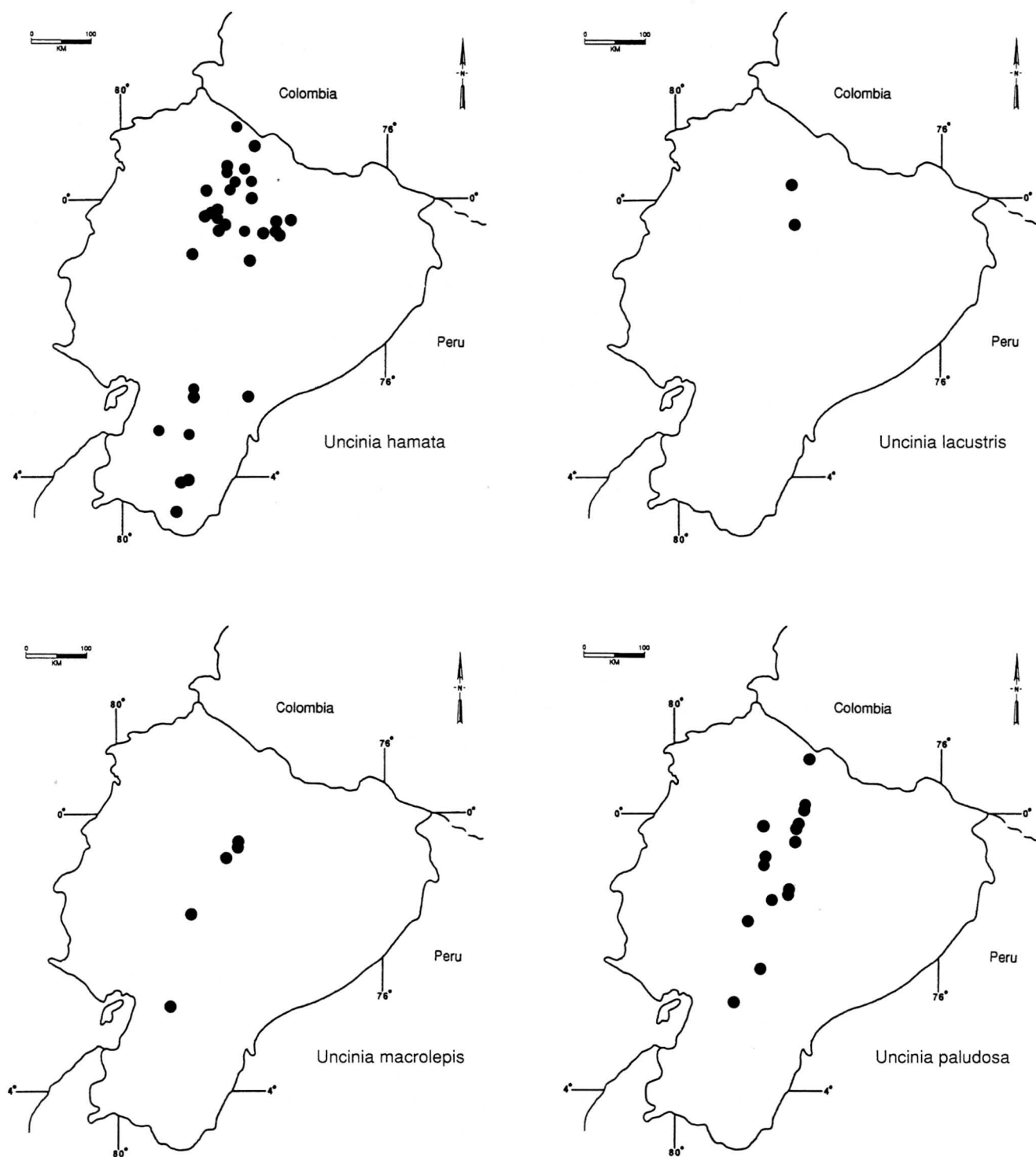


Fig. 14. Distributions of *Uncinia hamata*, *U. lacustris*, *U. macrolepis*, and *U. paludosa* in Ecuador.

0.3–0.5 mm thick, erect or slightly curved, from shorter than to exceeding the leaves, obscurely trigonous, smooth, with glabrous, brown basal sheaths. Leaves 3–7, basal; blades 4–17 cm long, 0.6–1.5 mm wide, more or less spreading, flat or channeled (especially in the proximal half), membranaceous, glabrous, the margins antrorsely scabrous distally, terminating in a long, scabrous attenuate tip; inner band of leaf sheaths hy-

aline or pale brown, glabrous, the apex concave; ligules 0.4–0.8 mm long, rounded. Inflorescence a solitary, androgynous spike, (7–)12–22 mm long, 1.5–2 mm wide, narrowly linear. Staminate part 4.5–8 mm long, 3–11-flowered; scales 2–2.8 mm long, 0.8–1.6 mm wide, obovate, obtuse to subacute, glabrous, brownish, 1(–3)-veined, the tips with hyaline margins and ciliolate. Pistillate part more or less tightly flow-

ered with 3–15 perigynia; scales persistent, 2.5–3.4 mm long, 1.2–2 mm wide, from shorter than to about equaling the perigynia, oblong to obovate, obtuse to acute, subcoriaceous, glabrous, pale brown to brown, 5–7-veined, the tips with hyaline margins and ciliate, the lowermost one infrequently with a scaberulent awn up to 9 mm long. Perigynia 2.5–3.3 mm long, 0.8–1.2 mm wide, elliptical, appressed hispid distally, smooth or sparsely hispid proximally, the margins ciliate from apex to near the base with the longest hairs distally, stramineous or brownish, 2 veins prominent and the rest faint, tapered to the base; perigynium beak conical, appressed hispid, the margins densely ciliate. Achenes 1.8–2.2 mm long, 0.9–1.1 mm wide, compressed-trigonus with slightly convex, oblong sides, tightly enveloped by the perigynium, brownish, sessile. Rachilla 5–7.6 mm long, terete, projecting beyond orifice of perigynium, the exerted portion (1.8–)2.5–4.6 mm long, smooth, stramineous or pale brown, the hook 0.7–1.3 mm long and stramineous or brownish (particularly the descending part). Stigmas 3; style base little thickened. Anthers 3, 1–1.4 mm long, ca. 0.2 mm wide; filaments linear, dilated (ca. 0.2 mm wide), as wide as or wider than the anthers.

This scopulicolous (or cliff-growing) species is known only from the type locality in southern Ecuador (Fig. 15). It seemingly requires special edaphic conditions, growing in very thin soils on precipitous cliffs, where it forms small, dense cespitose clumps. The type collection was made from a calcareous rock face near a cave. Plants with mature fruit have been collected in early March. The epithet refers to the narrow leaves of this species.

Uncinia tenuifolia (Fig. 7) differs in aspect from all other South American uncinias by having a combination of small spikes, filiform culms, narrow leaves, and dense cespitose habit (Wheeler and Goetghebeur 1995). Based on characteristics of its stamens and perigynia, it belongs in section *Platyandrae*.

9. *UNCINIA TENUIS* Poeppig ex Kunth, Enum. Pl. 2: 525. 1837. Fig. 10, 11, 15

TYPE.—CHILE. [VIII Region Bío-Bío, Prov. Bío-Bío:] Antuco, [Valle de Quilai-Leuvu, Feb 1827–29], *Poeppig* 243 (LECTOTYPE [here designated]: BM!). [The holotype at Berlin (B) was destroyed during the Second World War.]

Plants rhizomatous; rhizomes slender (0.7–1.2 mm thick), short- to long-creeping, brownish. Fertile culms 5–47.5 cm tall, 0.5–1 mm thick, erect or slightly to strongly curved, more or less trigonus, smooth, with glabrous, pale brown to brown basal sheaths. Leaves 5–10, mostly basal; blades 2.5–25 cm long, (0.7–)1.5–3.5 mm wide, ascending to widely spreading, flat,

membranaceous, glabrous, the margins antrorsely scabrous from apex to base though sometimes sparingly so near the middle, terminating in a scabrous attenuate tip; inner band of leaf sheaths hyaline, glabrous, the apex concave; ligules 0.8–3.8 mm long, rounded to subacute. Inflorescence a solitary, androgynous spike, 1.7–6.3 cm long, 2–3 mm wide, linear. Staminate part 4.5–10.5 mm long, 4–12-flowered; scales 2–2.5 mm long, 0.6–1.2 mm wide, oblong to lanceolate, obtuse to subacute, membranaceous, glabrous, green center with broad, hyaline margins and sometimes pale reddish-brown-tinged distally, 1-veined, the tips entire. Pistillate part more or less tightly flowered, with ca. 8–40 perigynia; scales deciduous, but the basal one-third persisting as a conspicuous whitish green or pale brown saccate structure about 1 mm long, 2.4–4 mm long, 0.8–1.3 mm wide, oblong to lanceolate, obtuse to subacute, membranaceous, glabrous, green center with broad, hyaline margins and sometimes pale reddish-brown-tinged distally, 1-veined, the tips entire. Perigynia 3.6–4.5 mm long, 0.8–1.2 mm wide, narrowly elliptical, glabrous, the margins smooth, whitish green to greenish brown, 2 prominent veins and the rest faint, tapered to a stipitatelike base; perigynium beak conical, 0.8–1.2 mm long, glabrous, the margins smooth. Achenes 2.2–2.8 mm long, 0.8–1.1 mm wide, compressed-trigonus with more or less concave, oblong sides, brownish. Rachilla 5.4–7 mm long, terete, projecting beyond orifice of perigynium, the exerted portion 2.4–3.6 mm long, smooth, whitish green or stramineous to pale brown, the hook 1.2–1.7 mm long and stramineous or pale brown (particularly the descending part). Stigmas 3; style base little thickened. Anthers 3, 0.8–1.2 mm long, ca. 0.2 mm wide, wider than the filiform filaments (ca. 0.1 mm wide).

Uncinia tenuis ranges from Cape Horn in Tierra del Fuego (Wheeler 1994) northward to west-central Argentina and central Chile (Barros 1969; Muñoz-Schick 1980) and is disjunct on the Juan Fernández Islands (Skottsberg 1922); further north it occurs in Ecuador (Fig. 15) and Colombia (Wheeler in press) and is also reported from Costa Rica in Central America (Chater 1994). In Ecuador, this species (Fig. 10) grows at elevations from about 3100 to 4000 m with several collections seen from Cerro Sumaco (see Fig. 15) in Napo Province. It grows in loose mats in moist, shaded places on the forest floor and also grows epiphytically on fallen trees. Specimens with ripe fruit have been collected from April through November, though by late November the majority have been shed. Even then, however, this species is easily identified by its distinctive inflorescence axes (Fig. 11), which although greatly (or entirely) divested of perigynia continue to display whitish or pale brown saccate appendages, structures which are the persistent portions of otherwise

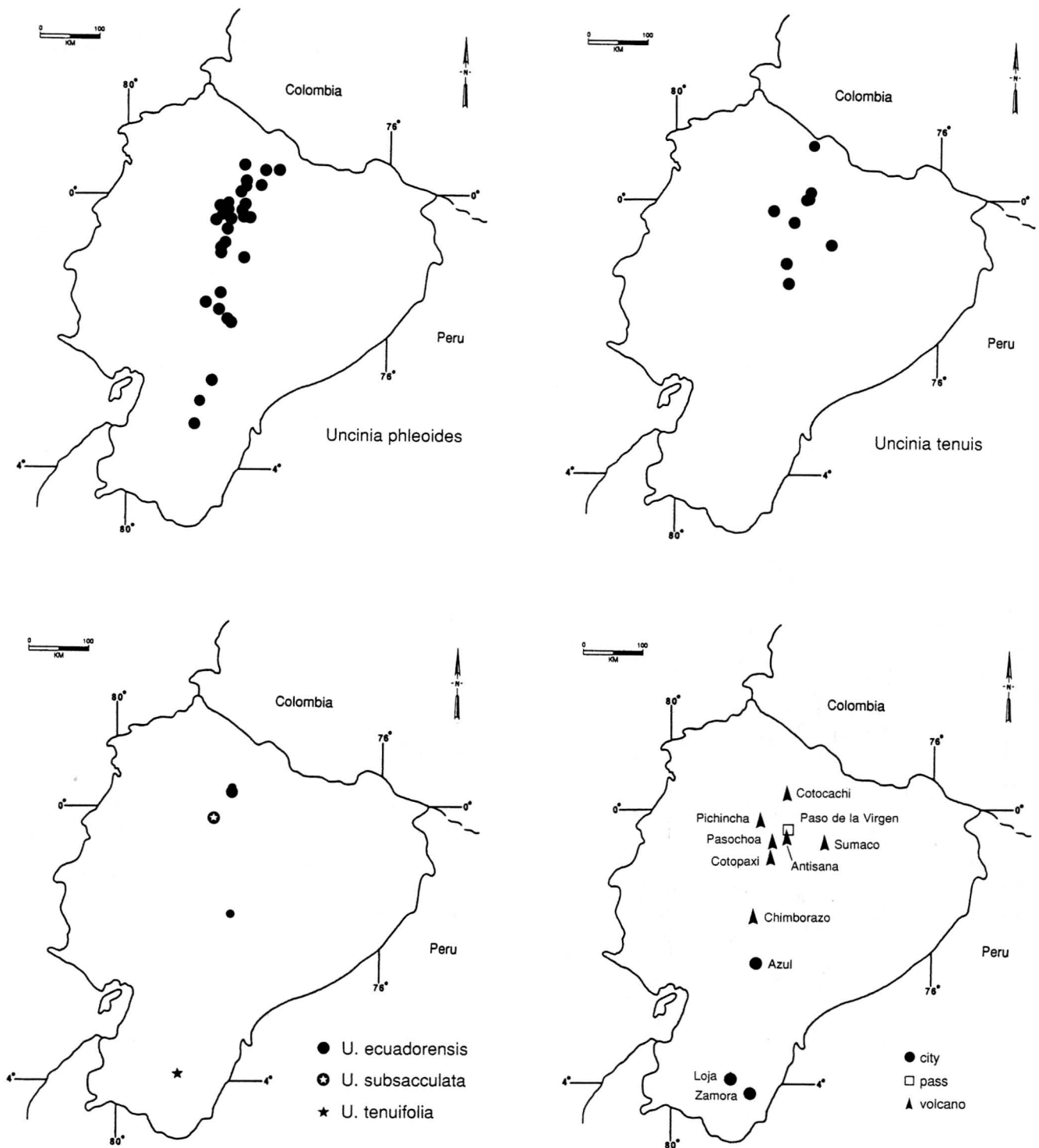


Fig. 15. Distributions of *Uncinia ecuadorensis*, *U. phleoides*, *U. subsacculata*, *U. tenuifolia*, and *U. tenuis* in Ecuador; selected localities in Ecuador mentioned in the text. (The two paratypes of *Uncinia ecuadorensis* [small closed circles] were examined and mapped after the maps were originally constructed.)

deciduous scales (Wheeler 1994). The epithet, which means "slender" or "thin," refers to several features of this species (e.g., its narrow rhizomes, culms, and spikes).

This species resembles *U. subsacculata* but differs by having shorter perigynia, achenes, rachillae, anthers, and scales. Also, the perigynium beak of *U. ten-*

uis is shorter and broader than the beak of *U. subsacculata*. Notably, these are the only two South American unciniads that have deciduous scales and persistent saccate appendages. Like *U. subsacculata*, this species belongs in section *Uncinia*.

Additional Specimens Examined.—PROV. CARCHI: 9 km W of Tufiño,

Volcán Los Chiles, 3800 m, 10 Mar 1992, *Lægaard 101664* (AAU, MIN).—PROV. IMBABURA: Yahuarcocha–Mariano Acosta 20 km, Páramo de Mariano Acosta, 3600–3650 m, 7–8 Feb 1992, *Lægaard 101173* (AAU, MIN); Cerro Blanco, ca. 8 km (by air) WSW of Atavalo (road towards Antenas from road toward San Jose de Minas, S of Atavalo–Selva Alegre road), 3400–3460 m, 23 Sep 1990, *Øllgaard 90625* (AAU, QCA, QCNE); Cerro Blanco, ca. 8 km WSW of Otavalo, 3400–3460 m, 23 Sep 1990, *Øllgaard 98225* (AAU, MIN).—PROV. NAPO: N side of Cerro Sumaco, 3700 m, 24 Apr 1979, *Holm-Nielsen et al. 17121* (AAU, GENT, MIN, NY); Cerro Sumaco, 3750–3800 m, 1 May 1979, *Holm-Nielsen et al. 17548* (AAU); Cerro Sumaco, 3350–3550 m, s.d., *Holm-Nielsen et al. 17740* (NY); ca. 6 km NE of km 45 on road Salcedo–Napó, 3600 m, 16–18 Nov 1984, *Lægaard 53363* (AAU, QCA); inside main crater of Cerro Sumaco, 3750–3800 m, 26 Apr 1979, *Løjtnant & Molau 12823* (AAU); NE side of Cerro Sumaco, 3100–3300 m, 27 Apr 1979, *Løjtnant & Molau 12888* (AAU); S side of Cerro Sumaco, 100–200 m S of main crater, 3700–3800 m, 29 Apr 1979, *Løjtnant & Molau 12947* (AAU, NY, QCA); N side of Cerro Sumaco, 3650 m, 4–6 May 1979, *Løjtnant & Molau 13167* (AAU).—PROV. PICHINCHA: N side of Volcán Pichincha above Hacienda Yanacocha, 3800 m, 4 Jun 1985, *Lægaard 54469B* (AAU, GENT, MIN, QCA, QCNE).—PROV. TUNGURAHUA: Cordillera Llanganates, between Río Topo and Río Verde Grande on W slope of Cerro Hermoso, 3950 m, 10 Nov 1980, *Holm-Nielsen & Jaramillo 28340* (AAU, GENT, MIN).

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NUMERICAL LIST OF UNCINIA SPECIES

1. *U. ecuadorensis*
2. *U. hamata*
3. *U. lacustris*
4. *U. macrolepis*
5. *U. paludosa*
6. *U. phleoides*
7. *U. subsacculata*
8. *U. tenuifolia*
9. *U. tenuis*

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