

ART. XXXIII.—*Studies in the Cyperaceæ*; by THEO. HOLM.  
 XXIV. New or little known *Carices* from Northwest  
 America. (With 18 figures, drawn from nature by the  
 author.)

WITH the object of preparing a treatise of the genus *Carex* as represented in the northwestern part of this continent the writer has examined several very extensive collections, containing a vast number of specimens, among which some few have been observed as imperfectly understood or as hitherto undescribed. Inasmuch as the treatment of the genus in a subsequent paper will be from a geographical point of view, we prefer to publish the diagnoses of the new species separately with some remarks upon their affinities.

These species are :

*Carex limnæa* sp. n. (figs. 1-3).

Rhizome vertical with ascending shoots and light brown, fibrillose leaf-sheaths; leaves a little shorter than the culm, narrow, but flat, glaucous, scabrous along the margins; culm about 60<sup>cm</sup> in height, erect or slightly curved above, very slender, triangular, scabrous, phyllopodic; spikes 3 to 5, but mostly 4, the terminal staminate or, sometimes, androgynous, the lateral pistillate, the uppermost contiguous, the lowest remote, sessile to shortly peduncled, erect, not very dense-flowered, cylindric, about 2<sup>cm</sup> in length, subtended by sheathless, foliaceous bracts, the lowest one often exceeding the inflorescence; scale of staminate spike lanceolate, light purplish-brown with green midvein; scale of pistillate spike oblong, obtuse, black with hyaline apex and greenish midvein, shorter than the perigynium; perigynium stipitate, slightly spreading, narrowly elliptical, granular, plano-convex, prominently many-nerved on the outer (convex) face, three-nerved on the inner, pale green with a black, entire and very distinct beak; stigmata 2, style long and exerted.

Oregon: Crater Lake National Park, Cathedral spring, collected by Mr. F. V. Coville, September, 1902 (No. 1456); Four-mile Lake, Klamath County, in meadows, and between Diamond and Crescent Lakes, Cascade Mountains.

The graceful habit of this species reminds us more of *C. rhomboidea* than of *C. vulgaris*, but when we, nevertheless, prefer to place it nearer *C. vulgaris* it is on account of the structure of the perigynium, narrowly elliptical and prominently many-nerved.

*Carex brachypoda* sp. n. (figs. 4–6).

Rhizome short with ascending shoots and persisting, dark brown leaf-sheaths; leaves shorter than the culm, relatively broad (about 5<sup>mm</sup>) and flat, deep green, scabrous along the margins and lower face, glabrous above; culm about 35<sup>cm</sup> in height, erect, stiff, triangular, scabrous, phyllopodic; spikes 3 to 4, mostly 4, the terminal staminate, the lateral pistillate, somewhat remote, sessile or the lowest one short-peduncled, erect, dense-flowered, cylindrical, from 1 to 2<sup>cm</sup> in length, subtended by sheathless bracts with narrow blades much shorter than the inflorescence; scale of staminate spike lanceolate, reddish brown with pale midvein; scale of pistillate spike ovate, obtuse, black with green, not excurrent midvein, a little shorter than the perigynium; perigynium minutely stipitate, erect, almost orbicular, granular and denticulate along the margins above, compressed, nerveless, pale green, the minute beak dark purple with the orifice entire, papillose; stigmata 2.

Oregon: Crater Lake National Park, Cathedral spring, collected by Mr. F. V. Coville, September, 1902 (No. 1455).

The affinity of this species is with *C. gymnoclada*, but it differs from this by the perigynium for instance, which is more roundish, denticulate and very shortly beaked.

*Carex pachystoma* sp. n. (figs. 7–8).

Rhizome caespitose with strong roots and persisting, reddish leaf-sheaths; leaves almost as long as the culm, quite broad and flat (0.5<sup>cm</sup>), glabrous, light green; culm from 30 to 56<sup>cm</sup> in height, erect, somewhat slender, triangular, scabrous, phyllopodic; spikes 4 to 6, the terminal and uppermost lateral staminate, the others pistillate, remote or the uppermost contiguous, all, especially the lower ones, slenderly peduncled, erect or spreading, dense-flowered except at the base, from 3 to 5<sup>cm</sup> in length, subtended by sheathless, leafy bracts about as long as the inflorescence or a little longer; scale of staminate spike lanceolate, obtuse, purplish brown with green midvein; scale of pistillate spike lanceolate, mucronate, deep purple with broad, green midvein, narrower, but longer than the perigynium; perigynium sessile, slightly spreading, elliptical, granular, compressed, nerveless, green or purplish-spotted above, the beak short and thick, sparingly denticulate, the orifice very narrow, slightly emarginate on outer face; stigmata 2.

Oregon: Crater Lake National Park, Anna Creek Canyon, near the falls (No. 1362) and near Odell Lake, Klamath County (No. 520), collected by Messrs. Applegate and Coville.

Washington: Springy places, northern slope of Mt. Adams, and Falcon Valley, W. Klickitat County (No. 2959), by Mr. W. Suksdorf.

The species may be placed between *C. variabilis* and *C. lenticularis*, although it shows some approach to *C. acutina*, though merely in respect to its habit. We have examined a number of specimens and are unable to refer the plant to either of those mentioned above.

*Carex Nebraskensis* Dew.

Habitually and in several other respects this species seems inseparable from the *Microrhyncha*, but we have placed it\* as one of the most evolute types of these on account of the bidentate beak of the perigynium. It is excellently described by Boott,† and well marked by the strong stolons covered by brown scale-like leaves, which are never shining, by the pale, glaucous leaves and especially by the perigynium with its prominent ribs and bidentate beak. In the extensive collection of Mr. Suksdorf we found several specimens, which were somewhat like this species, but a careful examination of the spikes convinced us that these could not safely be referred to the species, nor ought they to be considered as simply varieties, hence we prefer to describe them as two distinct species: *C. eurycarpa* and *C. oxycarpa*.

*Carex eurycarpa* sp. n. (figs. 9–10).

Rhizome stoloniferous with persisting, brown leaf-sheaths and strong roots; leaves half as long as the culm, narrow (3<sup>mm</sup>), carinate, light green, scabrous along the keel and margins; culm 60<sup>cm</sup> in height, erect, slender but somewhat stiff, scabrous, triangular, phyllopodic; spikes 3 to 5, mostly 5, the terminal and, sometimes, the uppermost lateral staminate, the others purely pistillate, all remote; the pistillate short-peduncled, erect, dense-flowered except towards the base, until 5<sup>cm</sup> in length, cylindric, but relatively thin, subtended by narrow, sheathless bracts, about as long as the inflorescence; scale of staminate spike oblong, obtuse, light brown with pale midvein and narrow, hyaline margins; scale of pistillate spike lanceolate, acute, blackish with pale, not excurrent, midvein, narrower, but about as long as the perigynium; perigynium sessile or nearly so, erect, roundish, granular, slightly planoconvex, prominently many-nerved on both faces, brownish, the beak short, emarginate; stigmata 2.

Washington: W. Klickitat County, Falcon Valley, collected by Mr. W. Suksdorf, June, 1886 (Nos. 1284 and 2962).

*Carex oxycarpa* sp. n. (figs. 11–12).

Rhizome stoloniferous with strong roots and persisting, brown leaf-sheaths; leaves a little shorter than the culm, nar-

\* The author: Grege's Caricum. (This Journal, vol. xvi, p. 457, 1903.)

† Ill. gen. Carex, vol. iv, p. 175 and plate 592.

row (4<sup>mm</sup>), carinate, light green, scabrous; culm about 75<sup>cm</sup> in height, erect, slender, but somewhat stiff, triangular, scabrous, phyllopodic; spikes 4 to 5, the terminal staminate, long-peduncled, the lateral pistillate, contiguous, seldom remote, short-peduncled, erect, dense-flowered, cylindric, from 2 to 4<sup>cm</sup> in length, subtended by sheathless, narrow, foliaceous bracts, the lowest one exceeding the inflorescence; scale of staminate spike oblong, obtuse, light reddish-brown with pale midvein; scale of pistillate spike lanceolate, acute, blackish with pale, not excurrent midvein, narrower, but about as long as the perigynium; perigynium sessile, broadly elliptical, granular, compressed, prominently 3-nerved, brownish, prominently denticulate along the margins from near the base to the short, emarginate beak; stigmata 2.

Washington: W. Klickitat County, meadows near the Columbia, collected by Mr. W. Suksdorf, June, 1885 (No. 816).

Of these *C. eurycarpa* is a very slender plant and much more so than any of the numerous specimens of *C. Nebraskaensis*, which we have studied. The broad perigynium with the beak merely emarginate constitutes, also, a good distinction. In the other, *C. oxycarpa*, we have, also, a plant of slender habit, but the spikes are relatively heavy, and the perigynium is here merely 3-nerved and with the margins quite prominently denticulate from the base to the emarginate beak.

The affinity of these two species is unquestionably with *C. Nebraskaensis* Dew., next to which they should be placed in the system.

*Carex campylocarpa* sp. n. (figs. 13-15).

Rhizome with short stolons and purplish, persisting leaf-sheaths; leaves shorter than the culm, narrow, but flat, scabrous along the margins and on the lower face; culm about 40<sup>cm</sup> in height, erect, stiff, triangular, scabrous, phyllopodic; spikes 3 to 4, mostly 3, the terminal staminate, the lateral pistillate; remote, sessile or nearly so, erect, dense-flowered, short cylindric to ovoid, from  $\frac{1}{2}$  to 1<sup>cm</sup> in length, subtended by sheathless, foliaceous bracts, shorter than the inflorescence; scale of staminate spike lanceolate, obtuse, purplish brown with pale midvein; scale of pistillate spike ovate, obtuse, blackish with the midvein faintly visible and the margins narrow, hyaline, much shorter than the perigynium; perigynium shortly stipitate, spreading, elliptical-oblong, granular and prominently denticulate along the upper margins, turgid, nerveless, pale green with purplish spots and streaks, the beak quite prominent, excurved, the orifice entire; stigmata 2, style not exerted.

Oregon: Crater Lake National Park, Cathedral spring, collected by Mr. F. V. Coville, September, 1902 (No. 1457).

The systematic position of this species seems naturally to be among the *Microrhyncha*, but as a deviating type on account of the excurved beak of the perigynium, and if it were not for the distinct marginal denticulation of the perigynium and its slender shape the species would resemble *C. scopulorum* to some extent. A perigynium of this kind is somewhat unusual within the representatives of the grex, but is, as we remember, very characteristic of the *Spirostachya*; in these, however, the beak is generally bifid and more distinctly differentiated from the body. The species may be placed next to *C. scopulorum*.

*Carex cryptochlæna* sp. n. (fig. 16).

Rhizome caespitose with purplish, persisting leaf-sheaths; leaves about half as long as the culm, broad (about 1<sup>cm</sup>) and flat, glabrous except along the margins; culm from 70 to 90<sup>cm</sup> in height, erect and stiff, triangular, scabrous along the edges, phyllopodic; spikes from 4 to 7, the terminal and frequently the uppermost lateral staminate, the others pistillate or androgynous, contiguous or the lower ones remote, sessile or short-peduncled, erect or spreading, seldom nodding, dense-flowered, subtended by sheathless, foliaceous, broad bracts of which the lower ones exceed the inflorescence; scale of staminate spike elliptical-oblong, acute, light reddish-brown with pale midvein; scale of pistillate spike lanceolate, sharply pointed, deep purplish with broad, greenish midvein, exceeding the perigynium; perigynium almost sessile, erect, broadly elliptic to roundish, nerveless, pale green, granular, sparingly denticulate near the minute, entire beak; stigmata 2.

Alaska: Kussiloff, on sands with Elymus, collected by Dr. Walter H. Evans, July, 1898 (No. 618), and Seldovia near mouth of Cook inlet by Prof. C. V. Piper, August, 1904 (Nos. 4818 and 4819).

This species is somewhat remarkable on account of its resemblance to *Carex cryptocarpa*, so far as concerns the structure of the spikes, the deep-purplish, lanceolate scales and the broad pale-green perigynia. But it shows, on the other hand, a striking contrast to this species, *C. cryptocarpa*, not only by the almost sessile and mostly erect pistillate spikes, but also by its very broad leaves, the basal and the bracts. Habitually the species does not resemble *C. cryptocarpa*, but, to some extent, Drejer's *C. haematolepis* or certain very robust forms of *C. salina*; it appears, however, to be distinct from these, and as a type intermediate between the true *Salina* and *C. cryptocarpa* Mey.

*Carex luzulaefolia* W. Boott var. *strobilantha* nob. (fig. 18).

Taller and more robust than the typical plant; the spikes thick and very compact-flowered; scales of staminate and pistil-

late spikes mostly mucronate; perigynium glabrous throughout, faintly nerved on the inner face, nearly sessile, roundish in outline and terminated by a very distinct, bidentate beak.

California: Above Donner Pass in Placer County, in a subalpine meadow, where snow-drifts lie late, and usually near granite rocks, collected by Mr. A. A. Heller, August, 1903 (No. 7187).

In the specimens of this new variety the rhizome is densely matted with ascending shoots and covered by dark, brownish fibers from the old leaf-sheaths. The leaves are very broad, but much shorter than the culms. The heavy, deep-brown spikes remind of small cones, hence the name "*strobilantha*," and there is quite a variation in respect to their number, position and the distribution of the sexes. We noticed the following instances in 26 specimens:

2 staminate and 3 pistillate spikes in 14 specimens.						
1	"	"	3	"	"	5
2	"	"	4	"	"	2
1	"	"	4	"	"	2
2	"	"	2	"	"	1
3	"	"	3	"	"	1
3	"	"	1	androgynous	"	1

In some specimens the pistillate spikes were borne on very long peduncles overtopping the terminal, and several of these were observed to be more or less decompound.—The structure of the perigynium is very characteristic and differs essentially from that of the typical plant, which, as described by W. Boott,\* is: "oval to lanceolate," "slenderly nerved, slightly serrate on the upper margins, longer and broader than the scale." The accompanying figures of the perigynia show the distinction very plainly, a distinction, however, which appears to the writer as merely varietal.

Brookland, D. C., May, 1905.

\* S. Watson: Botany of California, vol. 2, p. 250, 1880.

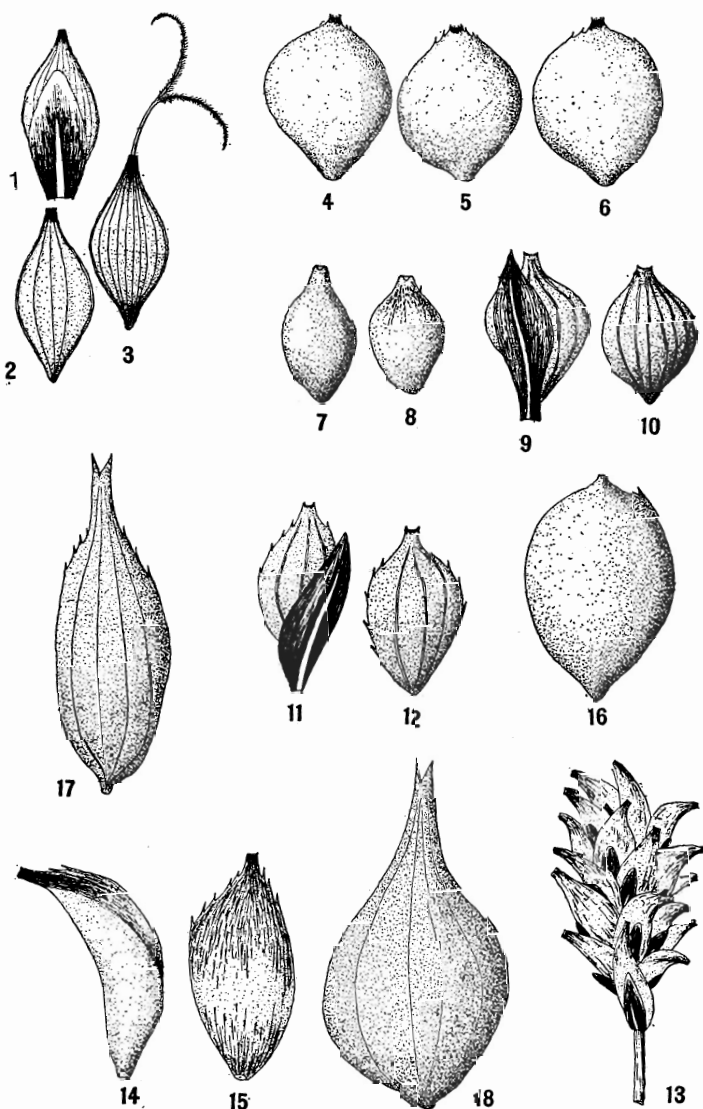


FIGURE 1. Perigynium and scale of *Carex limnæa*.  
 “ 2. Perigynium of same, inner face.  
 “ 3. Perigynium of same, outer face.  
 “ 4-6. Perigynium of *Carex brachypoda*, outer face.  
 “ 7, 8. Perigynium of *Carex pachystoma*, outer face.  
 “ 9. Perigynium and scale of *Carex eurycarpa*.  
 “ 10. Perigynium of same, outer face.  
 “ 11. Perigynium and scale of *Carex oxycarpa*.  
 “ 12. Perigynium of same, outer face.  
 “ 13. Pistillate spike of *Carex campylocarpa*.  
 “ 14. Perigynium of same, side view.  
 “ 15. Same, outer face.  
 “ 16. Perigynium of *Carex cryptochlæna*, outer face.  
 “ 17. Perigynium of *Carex luzulæfolia*, outer face.  
 “ 18. Perigynium of *C. luzulæfolia* var. *strobilantha*, inner face.

All figures magnified.