

**Řepka R., Veselá P. & Mráček J. (2014): Are there hybrids between *Carex flacca* and *C. tomentosa* in the Czech Republic and Slovakia? – *Preslia* 86: 367–379.**

**Electronic Appendix 1.** – Comparison of morphological characters of plants preliminarily identified as *C. ×danielis* and their putative parental species. The origins of the studied populations are given in Table 1. The data on total variations of *C. flacca* and *C. tomentosa* were based on specimens from the whole of the Czech Republic (see Materials and methods for details). The characters stem length and leaf width were measured in the central part of the organs.

Character/population	<i>C. flacca</i> 1a	<i>C. flacca</i> 1b	<i>C. flacca</i> 1c
Number of studied plants	7	11	10
<b>Rhizome</b>	creeping, shoots 40-75 mm long, strong	creeping, shoots 40 mm long, strong	creeping, shoots 20-30 mm long
<b>Stem length*</b>	33-69 cm	68-69 cm	39-56 cm
<b>Stem diameter</b>	0.8-1.3 mm	1.15-1.25 mm	1.0-1.3 mm
<b>Leaves (l × w)*</b>	28-47 cm x 2.4-4.1 mm	28-47 x 2.2-3.4 mm	20-39 x 2.2-4.0 mm
<b>Leaf colouring</b>	bicoloured matt: on obverse greenish grey, on reverse side glaucous	bicoloured matt: on obverse greenish grey, on reverse side glaucous	bicoloured matt: on obverse greenish grey, on reverse side glaucous
<b>Length of inflorescence</b>	54-115 mm	77-99 mm	48-111 mm
<b>Length of inflorescence lower bract</b>	shorter, as long as or slightly exceeding the inflorescence	as long as or exceeding inflorescence, 49-99 mm long	shorter than inflorescence, rarely as long
<b>Male spike size (l × w)</b>	12-30 x 1.8-2.6 mm	29-40 x 2.0-2.5 mm	19-36 x 2.0-3.4 mm
<b>Male spike – shape, colour</b>	narrow spindle-clavate, brown-purple brown	narrow clavate-strip-like, brownish purple	strip-like narrowly spindle-shaped, dark purple-dull reddish-brown
<b>Female spike – number, position</b>	(1-)2, both upright and pendulous	2, both the upright and pendulous	2(-3), both the upright and pendulous
<b>Female spike size (l × w)</b>	20-31 x 4.3-6.0 mm	20-27 x 5.5-6.0 mm	9-29 x 4-6 mm
<b>Female spike – length of peduncle</b>	9-23(-40) mm	7-20 mm	2-36 mm

<b>Female spike – glume length</b>	usually exceeds the perigynium, rarely as long as or shorter than it	as long as or slightly longer than the perigynium	slightly shorter than the perigynium or same length
<b>Perigynium shape and colour</b>	obovate, with 3-2 edges, green purple to dark purple	oblongly obovate, obtusely triangular, black purple	obovate-ovate, 2 ribs-indicated, inflated, purple with pale whitish eye or greenish with purple eye
<b>Perigynium size (l × w)</b>	(2.3–)2.8–3.3 × (1.3–)1.5–1.7 mm	(3.0–)3.2–3.6 × (1.3–)1.4–1.7(-1.8) mm	2.7–3.5 × 1.4–2.0 mm
<b>Perigynium hairs</b>	white hairs simple, erect, scattered only in the upper half, 0,1 mm long or covered with papillae only 0.02 mm long	almost without papillae or only sparsely scattered flattened white hairs in the upper half, up to 0.1 mm long	translucent hairs covering the upper 1/3 to 2/3 of perigynium, sparsely n. densely arranged in all directions, from 0.05 to 0.1 mm long
<b>Perigynium beak</b>	seeded, obtuse, truncate, as though two-toothed, from 0.1 to 0.2 mm long	seeded, obtuse, truncate, as though two-toothed, from 0.1 to 0.2 mm long	seeded, truncate, 0,1-0,3 mm long
<b>Fertility</b>	perigynium with fully developed achenes	perigynium with fully developed achenes	perigynium with fully developed achenes

<i>C. flacca</i> 3	<i>total variation of C. flacca</i>	<i>C. "xdanielis" 1</i>	<i>C. "xdanielis" 2</i>
1	93	6	4
creeping, shoots 20-70 mm long	creeping, shoots 20–150 mm long, with brown scales disintegrating into gross segments	similar to <i>C. flacca</i> , but some plants resemble <i>C. tomentosa</i>	identical with <i>C. flacca</i> , shoots 30-50 mm long
46-52 cm	(25–)32–75(–90)	33-40(-53)	43-54 cm
1.15-1.2 mm	1.0–1.5 mm	0.5-1.5 mm	0.95-1.15 mm
14-26 cm x 3.8-4.3 mm	(8–)18–52(–65) cm dl.. (2.0–)2.6–5.4(–6.5) mm šir	13-43 cm x 1.9-3.8 mm	37-48 cm x 2.5-4.2 mm
bicoloured matt: on obverse greenish grey, on reverse side glaucous	bicoloured matt: on obverse greenish grey, on reverse side glaucous	on obverse greenish grey or green, on reverse side greenish grey or glaucous	on obverse greyish green or glaucous-greenish, on reverse side glaucous
95-101 mm	(65-)73-147(-243) mm	45-122 mm	53-74 mm
a little shorter than inflorescence, 80-89 mm long	shorter, as long as or slightly exceeding the inflorescence, (56-)61-177(-205) mm long	shorter or as long as inflorescence	shorter than inflorescence
25-36 x 2-3 mm	(8–)11–33(–50) mm x 2–4 mm	14-26 x 2.0-3.5 mm	20-28 x 2.0-2.5 mm
strip-like, dark purple to redish brown	narrow spindle-shaped to lanceolate, brown-reddish brown	narrow clavate-shaped to narrow spindle-shaped, dark purple to brownish purple	narrow clavate-shape to narrow lanceolate
2, both the upright and pendulous	(1–)2–3(–4), pendulous at least for ripeness	1-2, upright and shortened	1-2, upright and shortened
33-36 x 3.5-4.0 mm	(14–)19–50(–65) mm x 4.0–6.0(–8.5) mm	7-24 x 3.5-5.5 mm	16-22 x 5-6 mm
14-22 mm	(7–)22–85(–260) mm	3-14 mm	5-10 mm

as long as or longer than the perigynium	shorter, as long as or slightly longer than the perigynium	shorter, as long as or slightly longer than the perigynium	variable in its length - shorter, as long or longer than the perigynium
obovate, dark purple, with 2 green ribs	oval to obovate, purple or light brown to gray-brown, paler below the beak, matt, slightly inflated, with 2 significant lateral edges	flattened obovate to oblongly obovate, obtusely triangular	oblongly obovate, biconvex, edges with light strips
2.1-2.3 x 1.5-1.6 mm	(2.3-)2.6-3.0(-3.2) mm x (1.3-)1.4-1.7(-2.0) mm	2.5-3.1 x 1.4-1.8 mm	3.3-3.5 x 1.7-2.0
in the upper part of perigynium sparsely covered erect papillae 0.05 mm long	in the upper half covered with papillae or very short hairs	perigynium entirely glabrous or only in the upper half having highly dispersed tiny papillae or hairs to 0.5mm long	very variable: some almost without papillae, some in the middle and upper parts with scattered short whitish papillae to 0.05 mm long
seeded, obtuse, truncate, 0,15-0,25 mm long	seeded, narrow, without teeth, 0,1-0,3 mm long	without beak with a sketch of teeth or 0.1 to 0.3 mm long, beak with small teeth or no teeth	seeded and perigynium continuous narrowing into the beak, length 0.15 to 0.3 mm
perigynium with fully developed achenes	perigynium with fully developed achenes	fully developed or poorly developed achene, rarely missing	2 plants with fully developed achenes, 1 plant with imperfectly developed achenes and 1 sterile plant

<i>C. "×danielis" 3</i>	<i>C. "×danielis" 4</i>	<i>C. tomentosa 1a</i>	<i>C. tomentosa 1b</i>
1	3	3	7
shortly creeping, shoots 15-40 mm long	creeping, identically with <i>C. flacca</i>	creeping, with thin shoots 35-90 mm long	creeping, with thin shoots 30-120 mm long
27-32 cm	40-50 cm	38-45 cm	29-58 cm
0.65 mm	1.2-1.3 mm	0.65-0.7 mm	0.6-0.8 mm
11-18 cm x 2.3-2.9 mm	36-44 cm x 4.1-4.5 mm	25-40 cm x 1.3-1.8 mm	16-40 (-61) cm x 2.0-2.08 mm
bicoloured, matt: on obverse greenish grey, on reverse side glaucous	bicoloured, matt: on obverse greenish grey, on reverse side glaucous	green, matt	dark green to greyish green, matt
37-40 mm	70-112 mm	32-37 mm	33-49 mm
shorter than inflorescence, 28-30 mm long	shorter than or slightly exceeding inflorescence	always shorter than inflorescence	always shorter than inflorescence, 21-43 mm long
15-19 x 1.2-1.7 mm	14-20 x 2.2 mm	17-23 x 1.9-2.0 mm	16-25 x 2.1-3.0 mm
lanceolate, brownish purple	clavate-shaped to lanceolate, light brown	strip-shaped to narrow lanceolate, brownish purple	clavate-shaped to stripe-shaped, purple/greenish
2, upright with short stalk	2-3, upright with short stalk	1-2, upright and sessile	1-2, upright and almost sessile
10-11 x 4.4-4.7 mm	10-15 x 5.5-6.0 mm	9-11 x 4.2-5.0 mm	8-16 x 3.5-5.0 mm
3-9 mm	3-11(-28) mm	1.5-2.5 mm	3.0-5.0 mm

shorter than the perigynium or the same length at most	shorter than the perigynium or the same length at most	significantly shorter than the perigynium, go back to 1/2 to 2/3 of their length	shorter than the perigynium or the same length at most
obovate, 3-sideways, green, purple-based	obovate, with 3-2 edges, pale and deep brownish-purple, based on a lighter, whitish to greenish background	broad obovate, oval in diameter, yellowish, later grey	obovate, obtusely triangular, greenish grey, later pale brownish
2.2-2.4 x 1.2-1.3 mm	2.8-2.9 x 1.7-2.0 mm	1.9-2.5 x 1.4-1.8 mm	1.8-2.1 x 1.2-1.4 mm
covered the entire surface of the papillae ca 0.01 to 0.02 mm long	densely covered with whitish hairs with enlarged bases (most in its upper half), up to 0.05 mm long	the entire surface thickly covered with translucent simple curved upward or straight hairs, from 0.08 to 0.15 mm long	over the entire surface covered densely whitish papillae 0.05, or rarely by hairs to 0.15 mm long
seeded, truncate, with 2 small blunt teeth, low, green, 0.15 to 0.2 mm long	seeded, truncate, toothless or two small low obtuse teeth, dark purple to darker, from 0.1 to 0.2 mm long	seeded, broadly conical, obtuse 0.05 to 0.1 mm long	broad, with 2 triangular teeth, 0.05 to 0.2 mm long, or almost absent
perigynium with maturing achenes (cannot decide)	perigynium mostly sterile, some form achenes, but do not mature, dries	perigynium with fully developed achenes	perigynium with fully developed achenes

<i>C. tomentosa 1c</i>	<i>C. tomentosa 2</i>	<i>total variation of C. tomentosa</i>
8	1	40
horizontally creeping with shoots 60-120 mm long	creeping with shoots 40-113 mm long	with long, creeping shoots, covered with dark purple matte or shiny not-disintegrating scales
28-46 cm	17-24	(12-)17-62(-85)
0.6-0.7 mm	0.4-0.6 mm	0.5-0.8(-1.0) mm
20-35 cm x 2.2-2.7 mm	9-14 cm x 1.5-1.9 mm	(13-)17-53(-65) cm x (1.6-)2.0-3.8(-4.5) mm
dark green to greyish green, matt	dark green to slightly greyish green	bright green to dark green, matt
24-35 mm	16-26 mm	(14-)20-58(-90) mm
always shorter than inflorescence	always shorter than inflorescence, 15-20 mm long	always shorter than inflorescence, (1-)7-46(-70) mm long
13-17 x 1.8-3.0 mm	12 x 2.3 mm	(10-)13-28(-36) mm x 2-3 mm
clavate-shaped to narrow spindle-shaped, later stripe-shaped, light brown to light redishbrown	narrow clavate-shaped, dark purple	cylindrical to clavate-shaped, purple to dark redishbrown, rare light brown
1-2, vertically or obliquely upright, almost sessile	2, upright, sessile	1-2(-3), vertically or obliquely upright, almost sessile or with short stalk
7-11 x 3.5-4.0 mm	6 x 3.5-4.0 mm	6-25 x 4.0-6.5 mm
1.5-4.0 mm	1-3 mm	3-8 mm



always shorter than the perigynium (about one third)	significantly shorter than the perigynium, go back to 1/2 to 2/3 of their length	shorter than the perigynium or the same length at most, 2.3–3.0 mm long
obovate with three blunt edges, brownish above, the rest of the body pale grey-greenish	obovate, with obtusely lateral ribs, pale greyish green	obovate, with two prominent lateral ribs, pale greenish gray to brown later
1.9-2.4 x 1.3-1.6 mm	2.2 -2.3 x 1.4-1.5 mm	(2.1–)2.3–2.5 mm x (1.3–)1.5–1.8(–2.0) mm
whitish-translucent, slightly xiphoid, down broad, flattened, directed in all directions, densely arranged in all directions, in the top third most dense	across densely covered with yellowish-white 0.1 mm long and the hairs directed in all directions	densely covered with 0.1 mm long, white to greyish, up-pointing hairs
missing or with wide triangular 2 teeth, 0.1 to 0.3 mm long	seeded, wide, with wide short dark purple-colored teeth, 0.15 mm long	seeded, wide, from 0.05 to 0.15 mm long, wide and sharp teeth
perigynium with fully developed achenes	perigynium with fully developed achenes	perigynium with fully developed achenes