

# 西藏嵩草属(莎草科)的修订

张树仁

(中国科学院植物研究所系统与进化植物学重点实验室 北京 100093)

## Revision of *Kobresia* (Cyperaceae) in Xizang (Tibet)

ZHANG Shu-Ren

(Laboratory of Systematic and Evolutionary Botany, Institute of Botany, the Chinese Academy of Sciences, Beijing 100093, China)

**Abstract** The genus *Kobresia* in Xizang (Tibet) is revised taxonomically on the basis of both herbarium and field observations. Thirty-six species and one subspecies are recognized. The names of six taxa are corrected, and the six correct names are *K. esenbeckii*, *K. fissaniglutinis*, *K. gammiei*, *K. littledalei*, *K. myosuroides* ssp. *bistaminata* and *K. vaginosa*. Thirteen previously recognised taxa, *K. angusta*, *K. cercostachys* var. *capillacea*, *K. clarkeana*, *K. curticeps* var. *gyirongensis*, *K. deasyi*, *K. glaucifolia*, *K. hookeri*, *K. nudicarpa*, *K. prainii* var. *elliptica*, *K. seticulmis*, *K. stenocarpa*, *K. stenocarpa* var. *simplex* and *K. williamsii*, are treated as synonyms. *K. prainii* var. *elliptica*, *K. glaucifolia* and *K. stenocarpa* var. *simplex* are new synonyms. *K. handel-mazzettii* is a new record to Xizang. Two species newly published, *K. pseuduncinoides* and *K. woodii*, should be added to the flora of Xizang. A new key to species and subspecies, and the information of the distribution sites of each taxon in Xizang are given.

**Key words** *Kobresia*, Cyperaceae, revision, Xizang.

**摘要** 在标本观察和野外调查的基础上,对西藏的嵩草属 *Kobresia* 植物进行了分类学修订,共确认了 36 种和 1 亚种。更正了 6 个类群的学名,它们正确的名称是 *K. esenbeckii*, *K. fissaniglutinis*, *K. gammiei*, *K. littledalei*, *K. myosuroides* ssp. *bistaminata* 和 *K. vaginosa*。有 13 个名称,即 *K. angusta*, *K. cercostachys* var. *capillacea*, *K. clarkeana*, *K. curticeps* var. *gyirongensis*, *K. deasyi*, *K. glaucifolia*, *K. hookeri*, *K. nudicarpa*, *K. prainii* var. *elliptica*, *K. seticulmis*, *K. stenocarpa*, *K. stenocarpa* var. *simplex* 和 *K. williamsii* 处理为异名,其中 *K. prainii* var. *elliptica*, *K. glaucifolia* 和 *K. stenocarpa* var. *simplex* 为新异名。发现了西藏分布的一个新记录种密穗嵩草 *K. handel-mazzettii*。还收录了最近发表的假钩状嵩草 *K. pseuduncinoides* 和阔鳞嵩草 *K. woodii*。此外,重新编制了西藏嵩草属分种和亚种检索表,并较为详细地登记了各类群在西藏的分布地点。

**关键词** 嵩草属;莎草科;修订;西藏

嵩草属 *Kobresia* Willd. (莎草科) 主要分布于北半球温带,多数集中在喜马拉雅地区和中国西南部 (Kukkonen, 1998)。根据《中国植物志》记载,全世界有嵩草属植物 70 余种,中国产 59 种 4 变种,其中 38 种 3 变种在西藏有分布 (李沛琼, 2000)。《西藏植物志》收录嵩草属植物 34 种 2 变种 (杨永昌, 1987)。可见,中国是嵩草属植物的主要分布区,而西藏是其在主要产区。嵩草属植物是组成青藏高原高寒地区植被的主要成分,以该属一些植物为建群种的嵩草草甸是青藏高原一种主要的植被类型。嵩草属植物也是优良的

牧草。西藏地形复杂、生境多样、气候严酷,使嵩草属植物的外部形态受到环境的影响,在种间和种内产生复杂的变异,因此造成许多分类问题。《中国植物志》和《西藏植物志》对西藏产嵩草属植物的记载,无论是类群的划分,还是类群名称的应用,都有许多相互矛盾之处,而且在《中国植物志》和《西藏植物志》中,有个别分类群被遗漏。

因为可用于分类的形态性状较少,而且这少数性状在类群内和类群间存在复杂的变异,所以嵩草属的分类一直比较混乱。一些莎草科专家认为该属亟待进行世界性的分类学修订(Kukkonen, 1998; Rajbhandari & Ohba, 1991)。青藏高原是嵩草属的分布和分化中心(张树仁等, 1995),也是分类上疑难类群比较集中的地区,对西藏的嵩草属进行分类学修订,澄清其种及种下等级的分类学问题,是进行中国乃至世界嵩草属分类学修订的必不可少的一步。

作者在广泛深入地研究了国内外标本馆收藏的嵩草属标本,以及多次赴西藏进行野外实地考察之后,修订了西藏嵩草属植物的分类,确认了 36 种和 1 亚种,重新编制了西藏嵩草属分种和亚种检索表,并较为详细地登记了各类群在西藏县级的分布地点。

### 嵩草属

**Kobresia** Willd., Sp. Pl. 4:205. 1805; C. B. Clarke in Bull. Misc. Inform. Add. Ser. 8:136. 1908; Kükenth. in Engl., Pflanzenreich, 38(IV, 20):33. 1909 (as *Cobresia*); Ivan. in Bot. Žurn. SSSR 24:479. 1939; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:370. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:1. 2000. Type: *Kobresia caricina* Willd. (= *K. simpliciuscula* (Wahlenb.) Mackenzie).

多年生草本,丛生,稀散生。根状茎短缩,少数伸长而为匍匐状。秆三棱形至圆柱形,其基部宿存有干枯的叶鞘。叶基生或近基生,叶片扁平、对折或内卷。花序顶生,由小穗组成,穗状或圆锥状。小穗生于鳞片腋内,单性单花或两性多花而为雄雌顺序,雌性和两性小穗为一先出叶所包。先出叶边缘分离而为鳞片状,或合生而成囊状。小坚果双凸状至三棱状。柱头 3 枚,少 2 枚。退化小穗轴存在于雌性小穗中。

### 分种和亚种检索表

- 1. 植株散生,根状茎细长,匍匐状,柱头通常 2 枚。
  - 2. 叶片扁平,先出叶小,膜质,边缘分离,小坚果近圆形 ..... 1. 大花嵩草 *K. macrantha*
  - 2. 叶片边缘内卷,先出叶大,厚纸质或近革质,边缘相互叠压,小坚果矩形 ..... 2. 匍茎嵩草 *K. stolonifera*
- 1. 植株丛生,根状茎通常不为匍匐状(如为匍匐状则柱头 3 枚),柱头通常 3 枚,稀 2 枚。
  - 3. 花序通常为圆锥状,偶为穗状。
    - 4. 先出叶呈囊状,边缘完全合生或合生至中部以上。
      - 5. 先出叶较大,长 5 mm 以上。
        - 6. 花序圆锥状或穗状,先出叶厚纸质或革质,卵形 ..... 3. 膨囊嵩草 *K. inflata*
        - 6. 花序圆锥状,先出叶草质或膜质,长圆形、椭圆形、披针形或线形。
          - 7. 具短的匍匐根状茎 ..... 4. 根茎嵩草 *K. gammiei*
          - 7. 根状茎短缩,不为匍匐状。
            - 8. 秆较粗壮,苞片鳞片状,先出叶狭披针形,长 6-10.5 mm,表面常被毛 .....

- ..... 5. 钩状蒿草 *K. uncinoides*
8. 秆纤细;苞片叶状;先出叶长圆形、椭圆形或线形,长5-6 mm,表面无毛。
9. 先出叶狭长,线形,褐色至红褐色 ..... 6. 疏穗蒿草 *K. laxa*
9. 先出叶较宽,长圆形或椭圆形,淡绿色 ..... 7. 黑麦蒿草 *K. loliacea*
5. 先出叶较小,长4 mm以内。
10. 鳞片草质或厚膜质,褐色至淡褐色,先出叶具锈色点线 ..... 8. 囊状蒿草 *K. fragilis*
10. 鳞片膜质,黄绿色,先出叶无锈色点线 ..... 9. 弧形蒿草 *K. curvata*
4. 先出叶不为囊状,边缘完全分离或仅基部合生。
11. 秆粗1-2 mm,基部干枯叶鞘浅褐色无光泽,鳞片长3-4.5 mm,先出叶长3-4 mm .....  
..... 10. 喜马拉雅蒿草 *K. royleana*
11. 秆粗2-4 mm,基部干枯叶鞘褐色至黑褐色有光泽,鳞片长5-6.5 mm,先出叶长4.5-7 mm。
12. 花序分枝明显,鳞片通常具长芒 ..... 11. 假钩状蒿草 *K. pseuduncinoides*
12. 花序分枝不明显,鳞片通常无芒或具短芒 ..... 12. 甘肃蒿草 *K. kansuensis*
3. 花序通常为穗状。
13. 侧生小穗通常两性,基部具1枚雌花,上部具1至数枚雄花。
14. 先出叶囊状,边缘合生至中部以上。
15. 植株粗壮,秆粗1.5-3 mm,干枯叶鞘黄褐色有光泽,叶片边缘内卷,呈针状,先出叶宽椭圆形,长6.5-10 mm,小坚果长4-5 mm ..... 13. 粗壮蒿草 *K. robusta*
15. 植株较纤细,秆粗1 mm以下,干枯叶鞘红褐色、褐色或浅褐色,叶片扁平,先出叶狭长圆形,长2-4.5 mm,小坚果长2-2.5 mm ..... 14. 线形蒿草 *K. duthiei*
14. 先出叶不为囊状,边缘分离或1/3处以下合生。
16. 叶片扁平或有时对折,外层的干枯叶片宿存。
17. 植株柔软,秆粗0.5 mm以下,花序线形,小穗具2朵花,小坚果狭长圆形,三棱形,喙长,成熟时伸出先出叶之外,柱头3 ..... 15. 蕨状蒿草 *K. filicina*
17. 植株坚挺,秆粗约1 mm,花序长圆形,小穗具3-5朵花,小坚果倒卵形,扁,喙很短,成熟时不伸出先出叶,柱头2或3。
18. 柱头3 ..... 16. 矮生蒿草 *K. humilis*
18. 柱头2 ..... 17. 高原蒿草 *K. pusilla*
16. 叶片边缘内卷,呈针状或丝状,外层的干枯叶片脱落而叶鞘宿存。
19. 植株粗壮,秆粗1 mm以上。
20. 先出叶厚膜质,具2脊,脊明显而粗糙,脊间具数条脉 ..... 18. 截形蒿草 *K. cuneata*
20. 先出叶薄膜质,无脊或具不明显的脊,脊间无脉。
21. 先出叶从1/3处以下合生 ..... 19. 普兰蒿草 *K. burangensis*
21. 先出叶边缘完全分离或仅基部合生。
22. 秆基部干枯叶鞘黄褐色至红褐色,有光泽,不撕裂,先出叶不为透明膜质,小坚果倒卵形,三棱状 ..... 20. 赤箭蒿草 *K. schoenoides*
22. 秆基部干枯叶鞘暗褐色,无光泽,稍呈纤维状撕裂,先出叶透明膜质,小坚果长圆形,扁三棱状 ..... 21. 西藏蒿草 *K. tibetica*
19. 植株纤细,秆粗1 mm以下。
23. 叶鞘边缘红褐色膜质,穗状花序呈圆锥状,狭披针形,侧生小穗雄花达6枚以上 .....  
..... 22. 密穗蒿草 *K. handel-mazzettii*
23. 叶鞘边缘不为红褐色膜质,穗状花序棍棒状,线形,侧生小穗具雄花1-6枚。

24. 侧生小穗具 2 朵花, 鳞片小, 长 2-3 mm; 小坚果长圆形, 长 1.8-2.3 mm ..... 23. 二蕊高草 *K. myosuroides* ssp. *bistaminata*
24. 侧生小穗 3-6 朵花, 鳞片大, 长 3.5-6 mm; 小坚果倒卵形, 长 2.5-3.5 mm。
25. 秆基部干枯叶鞘浅褐色, 花序浅褐色, 基部鳞片通常具长芒 ..... 24. 四川高草 *K. setschwanensis*
25. 秆基部干枯叶鞘黑褐色, 花序暗褐色, 基部鳞片无芒或有时具短芒 ..... 25. 线叶高草 *K. capillifolia*
13. 侧生小穗通常单性, 仅具 1 枚雌花。
26. 先出叶不为囊状, 边缘分离或中部以下合生。
27. 植株矮小, 常为垫状, 秆高 1-6 cm; 花序短小, 长 1 cm 以下; 小坚果较小、较宽, 倒卵形, 长 1 mm ..... 26. 高山高草 *K. pygmaea*
27. 植株较高或高大, 秆高 3.5-50 cm; 花序长 1.5 cm 以上; 小坚果较大、较窄, 狭椭圆形、狭长圆形、倒披针形或线形, 长 3.5-5.5 mm。
28. 叶片扁平, 既不对折也不内卷。
29. 先出叶线形或线状长圆形, 包裹小坚果, 幼小的先出叶有时完全合生, 成熟时从顶部分裂至中部以下, 脊明显而粗糙; 小坚果的果柄不明显 ..... 27. 三脉高草 *K. esenbeckii*
29. 先出叶狭椭圆形或长圆形, 不包裹小坚果, 边缘完全分离, 无脊或具不明显的脊; 小坚果具明显的果柄 ..... 28. 柄果高草 *K. fissiglumis*
28. 叶片对折或部分对折, 或者边缘内卷而为丝状。
30. 花序两性, 雄雌顺序, 无雄花序 ..... 29. 尾穗高草 *K. cercostachys*
30. 花序通常单性, 雄雌花序常共存同一植株, 偶尔雌雄异株。
31. 植株和花序纤细 ..... 30. 发秆高草 *K. vaginosa*
31. 植株和花序粗壮。
32. 基部干枯叶鞘纤维状撕裂, 无光泽, 鳞片较小、较窄, 长 5-6 mm, 宽 1.5-2 mm; 先出叶小, 长 5-6 mm ..... 31. 禾叶高草 *K. graminifolia*
32. 基部干枯叶鞘不撕裂, 略有光泽, 鳞片较大、较宽, 长 6.5 mm, 宽 4 mm; 先出叶大, 长 7-9 mm ..... 32. 阔鳞高草 *K. woodii*
26. 先出叶囊状, 边缘合生至中部以上。
33. 先出叶大型, 长 5 mm 以上。
34. 先出叶狭长, 线状长圆形, 草质或膜质 ..... 33. 尼泊尔高草 *K. nepalensis*
34. 先出叶较宽, 三角状卵形或卵形, 厚纸质或近革质。
35. 叶片扁平或部分对折, 花序长 2-3 cm, 退化小穗轴较长, 长于小坚果, 有时顶端具雄花 ..... 3. 膨囊高草 *K. inflata*
35. 叶片边缘内卷成针状, 花序长约 1 mm, 退化小穗轴很短, 约为小坚果的 1/4 ..... 34. 亚东高草 *K. yadongensis*
33. 先出叶较小, 长 2-5 mm。
36. 基部干枯叶鞘褐色至暗褐色, 有光泽, 不撕裂, 鳞片的中肋明显, 绿色, 宽为鳞片的 1/3 左右 ..... 35. 短轴高草 *K. vidua*
36. 基部干枯叶鞘淡褐色, 无光泽, 纤维状撕裂, 鳞片的中肋不明显, 淡黄色或淡黄绿色, 宽不及鳞片的 1/3。
37. 植株较粗壮, 秆粗 1-1.5 mm; 花序较大, 雌花序长 1.5-4 cm, 宽 2-3 mm, 雄花序长

- 1.7–3 cm 宽 4–5 mm ..... 36. 康藏嵩草 *K. littledalei*  
 37. 植株较纤细 秆粗 1 mm 以内 花序较小 雌花序长 1–2 cm 宽 2–3 mm 雄花序长 0.6–1.3 cm 宽 2–5 mm ..... 37. 不丹嵩草 *K. prainii*

### Key to species and subspecies

1. Plants scattered ; rhizomes slender and elongate , stoloniferous ; stigmas 2.
  2. Leaf blades flat ; prophylls smaller , membranous , margin free ; nutlets nearly rounded ..... 1. *K. macrantha*
  2. Leaf blades involute ; prophylls larger , thickly chartaceous or nearly coriaceous , margin overlapped ; nutlets oblong ..... 2. *K. stolonifera*
1. Plants tufted ; rhizomes usually not stoloniferous ( if so , stigmas 3 ) ; stigmas usually 3 , rarely 2.
  3. Inflorescences usually paniculate , occasionally spicate.
    4. Prophylls utriculate , margin connate completely or connate more than halfway from base.
      5. Prophylls larger , more than 5 mm long.
        6. Inflorescences paniculate or spicate ; prophylls thickly chartaceous or coriaceous , ovate ..... 3. *K. inflata*
        6. Inflorescences paniculate ; prophylls herbaceous or membranous , oblong , elliptic , lanceolate or linear.
          7. Rhizomes elongate , shortly stoloniferous ..... 4. *K. gammiei*
          7. Rhizomes short , not stoloniferous.
            8. Culms robust ; bracts glumaceous ; prophylls narrowly lanceolate , 6–10.5 mm long , often hairy ..... 5. *K. uncinoides*
            8. Culms slender ; bracts leafy ; prophylls oblong , elliptic or linear , 5–6 mm long , glabrous.
              9. Prophylls narrower , linear , brown to reddish brown ..... 6. *K. laxa*
              9. Prophylls broader , oblong or elliptic , pale green ..... 7. *K. loliacea*
        5. Prophylls smaller , less than 4 mm long.
          10. Glumes herbaceous or thickly membranous , brown to pale brown ; prophylls with ferruginous spots and lines ..... 8. *K. fragilis*
          10. Glumes membranous , yellowish green ; prophylls without ferruginous spots and lines ..... 9. *K. curvata*
      4. Prophylls not utriculate , margin free or only connate at base.
        11. Culms 1–2 mm wide ; basal sheaths pale brown and dull ; glumes 3–4.5 mm ; prophylls 3–4 mm ... ..... 10. *K. royleana*
        11. Culms 2–4 mm ; basal sheaths brown to dark-brown and shiny ; glumes 5–6.5 mm ; prophylls 4.5–7 mm.
          12. Inflorescences obviously branched ; glumes usually long awned ..... 11. *K. pseuduncinoides*
          12. Branches of inflorescence not obvious ; glumes usually awnless or shortly awned ..... 12. *K. kansuensis*
    3. Inflorescences usually spicate.
      13. Lateral spikes usually bisexual with a basal female flower and 1 to several distal male flowers.
        14. Prophylls utriculate , margin connate from base to above halfway.
          15. Plants robust , culms 1.5–3 mm wide ; basal sheaths yellowish brown and shiny ; leaf blades involute , needle-like ; prophylls broadly elliptic , 6.5–10 mm long ; nutlets 4–5 mm long ..... 13. *K. robusta*
          15. Plants slender , culms less than 1 mm wide ; basal sheaths reddish brown , brown or pale brown ; leaf blades flat ; prophylls narrowly oblong , 2–4.5 mm ; nutlets 2–2.5 mm ..... 14. *K. duthiei*
        14. Prophylls not utriculate , margin free or connate in lower part.
          16. Leaf blades flat or sometimes folded , outer dry leaves persistent.
            17. Plants soft , culms less than 0.5 mm wide ; inflorescences linear ; spikes 2-flowered ; nutlets narrowly

- oblong, trigonous, long beaked, beak exerted when mature; stigmas 3 ..... 15. **K. filicina**
17. Plants rigid, culms ca. 1 mm wide; inflorescences oblong; spikes with 3–5-flowered; nutlets obovate, compressed, very shortly beaked, not exerted when mature; stigmas 2 or 3.
18. Stigmas usually 3 ..... 16. **K. humilis**
18. Stigmas usually 2 ..... 17. **K. pusilla**
16. Leaf blades involute, needle-like or filiform, outer dry sheaths persistent but without leaf blades.
19. Plants robust, culms more than 1 mm wide.
20. Prophylls thickly membranous, 2-keeled, keels prominent and scabrid, veined between the keels ..... 18. **K. cuneata**
20. Prophylls thinly membranous, without keels or keels inconspicuous, veinless.
21. Prophylls connate in lower 1/3 part ..... 19. **K. burangensis**
21. Prophylls open completely or connate only at base.
22. Basal dry sheaths yellowish brown to reddish brown, shiny, not split; prophylls not hyaline; nutlets obovate, trigonous ..... 20. **K. schoenoides**
22. Basal dry sheaths dark brown, dull, slightly split into fibers; prophylls hyaline; nutlets oblong, flatly trigonous ..... 21. **K. tibetica**
19. Plants slender, culms less than 1 mm wide.
23. Sheath margin reddish brown, membranous; spicate inflorescences panicle-like, narrowly lanceolate; lateral spikes with more than 6 male flowers ..... 22. **K. handel-mazzettii**
23. Sheath margin not reddish brown, not membranous; spicate inflorescences clavate, linear; lateral spikes with 1–6 male flowers.
24. Lateral spikes 2-flowered; glumes smaller, 2–3 mm long; nutlets oblong, 1.8–2.3 mm long ..... 23. **K. myosuroides** ssp. **bistaminata**
24. Lateral spikes with 3–6 flowers; glumes larger, 3.5–6 mm long; nutlets obovate, 2.5–3.5 mm long.
25. Basal dry sheaths pale brown; inflorescences pale brown; basal glume usually long awned ..... 24. **K. setschwanensis**
25. Basal dry sheaths blackish brown; inflorescences dark brown; basal glume awnless or shortly awned ..... 25. **K. capillifolia**
13. Lateral spikes usually unisexual, only with a female flower.
26. Prophylls not utriculate, margin free or connate below middle part.
27. Plants short, often pulvinate, culms 1–6 cm long; inflorescences short, less than 1 cm long; nutlets small, broader, obovate, 1 mm long ..... 26. **K. pygmaea**
27. Plants taller, culms 3.5–50 cm; inflorescences more than 1.5 cm long; nutlets bigger, narrower, narrowly oblong to linear, 3.5–5.5 mm long.
28. Leaf blades flat, neither folded nor involute.
29. Prophylls linear or linear-oblong, wrapping nutlets, sometimes completely connate when young, when mature split from top to lower part, 2 keels obvious and scabrid; stalk of nutlet inconspicuous ..... 27. **K. esenbeckii**
29. Prophylls narrowly elliptic or oblong, not wrapping nutlets, margin free, without keels or keels inconspicuous; stalk of nutlet obvious ..... 28. **K. fissiglumis**
28. Leaf blades folded or partly folded, or filiform and margin involute.
30. Inflorescences bisexual, androgynous, without male inflorescence ..... 29. **K. cercostachys**
30. Inflorescences usually unisexual, often monoecious, occasionally dioecious.
31. Plants and inflorescences slender ..... 30. **K. vaginosa**
31. Plants and inflorescences robust.
32. Basal dry sheaths split into fibers, dull; glumes smaller and narrower, 5–6 × 1.5–2 mm; prophylls smaller, 5–6 mm long ..... 31. **K. graminifolia**
32. Basal dry sheaths not split, slightly shiny; glumes larger and broader, 6.5 × 4 mm;

- prophylls larger, 7–9 mm long ..... 32. **K. woodii**
26. Prophylls utriculate, margin connate from base to above middle part.
33. Prophylls larger, more than 5 mm long.
34. Prophylls narrow and long, linear-oblong, herbaceous or membranous ..... 33. **K. nepalensis**
34. Prophylls broader, triangular-ovate or ovate, thickly chartaceous or nearly coriaceous.
35. Leaf blades flat or partly folded; inflorescences 2–3 cm long; rachilla longer than nutlet and sometimes with male flowers at top ..... 3. **K. inflata**
35. Leaf blades needle-like, margin involute; inflorescences ca. 1 mm long; rachilla short, about as long as 1/4 of nutlet ..... 34. **K. yadongensis**
33. Prophylls smaller, 2–5 mm long.
36. Basal sheaths brown to dark brown, shiny, not split; glumes midrib obvious, green, as wide as 1/3 of glume ..... 35. **K. vidua**
36. Basal sheaths pale brown, dull, split into fibers; glumes midrib unobvious, pale yellow or pale yellowish green, less than 1/3 of glume width.
37. Plants a little robust, culm 1–1.5 mm thick; inflorescences larger, female one 15–40 × 2–3 mm, male one 17–30 × 4–5 mm ..... 36. **K. littledalei**
37. Plants slender, culm less than 1 mm thick; inflorescences smaller, female one 10–20 × 2–3 mm, male one 6–13 × 2–5 mm ..... 37. **K. prainii**

## 1. 大花嵩草

**Kobresia macrantha** Boeck., *Cyper. Nov.* 1:39. 1888; Y. C. Yang in C. Y. Wu, *Fl. Xizang.* 5:388. 1987, p. p.; P. C. Li in *Fl. Reip. Pop. Sin.* 12:25. 2000. — *Blysmocarex macrantha* (Boeck.) Ivan. in *Bot. Žurn. SSSR* 24:502. 1939. Type: China. Xizang (西藏): Without precise locality, Schlagintweit 1344 (K!).

*Kobresia nudicarpa* (Y. C. Yang) S. R. Zhang in *Acta Phytotax. Sin.* 33:160. 1995. — *K. macrantha* var. *nudicarpa* (Y. C. Yang) P. C. Li in *Fl. Reip. Pop. Sin.* 12:26. 2000. — *Blysmocarex nudicarpa* Y. C. Yang in *Acta Bot. Yunnan.* 4:325. 1982. Type: China. Qinghai (青海): Zhidoi (治多), L. H. Zhou (周立华) 436 (holotype, HNWP!).

Ivanova (1939) 认为该种具有匍匐根状茎、柱头 2 和具有果柄, 与嵩草属其他种类明显不同, 因而将其分出, 建立了扁穗嵩属 *Blysmocarex*。杨永昌和黄荣福(1982) 依据数量分类的结果, 支持扁穗嵩属的建立; 另外又在该属下发表一新种, 裸果扁穗嵩 *B. nudicarpa* Y. C. Yang。但是, 张树仁等(1995) 认为大花嵩草花序和小穗的特征与嵩草属一致, 而且嵩草属中并非仅仅该种具有匍匐根状茎、柱头 2 和具有果柄, 所以不应将其另立新属, 同时将裸果扁穗嵩组合到嵩草属中, 作出组合裸果嵩草 *K. nudicarpa* (Y. C. Yang) S. R. Zhang。裸果嵩草与大花嵩草的惟一区别便是鳞片脱落, 果实裸露, 根据作者对大花嵩草标本和活植物的观察, 鳞片脱落正是其果实成熟时的特性, 因此裸果嵩草应该作为大花嵩草的异名。

分布于喀拉昆仑和喜马拉雅地区及中国西藏、四川、青海、甘肃和新疆; 生于开阔沙地, 海拔 2500–4800 m。

**China. Xizang (西藏):** Coqên (措勤), K. Y. Lang (郎楷永) 10319 (NWP, KUN, PE); Gar (噶尔), *Inst. Biol. Xizang Exped.* (生物所西藏队) 3948 (HNWP); Gêrzê (改则), *Inst. Biol. Xizang Exped.* (生物所西藏队) 4343 (HNWP), K. Y. Lang (郎楷永) 10228 (HNWP); Jomda (江达), *Inst. Biol. Xizang Exped.* (生物所西藏队) 2204 (HNWP); Lhari

(嘉黎), D. D. Tao (陶德定) 10467 (KUN), 10485 (HNWP); Lhasa (拉萨), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1559, 1664, 1831, 2295, 2579 (PE); Lhazê (拉孜), J. W. Zhang (张经纬) 2712 (PE); Markam (芒康), Qinghai-Xizang Exped. (青藏队) 11724 (HNWP); Milha Pass (米拉山口), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1471 (PE); Nagarzê (浪卡子), G. X. Fu (傅国勋) 488 (PE); Ngamring (昂仁), J. W. Zhang (张经纬) 2615, 2654, 2704 (PE); Nubra, Schlagintweit 2018 (K); Nyingchi (林芝), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 13 (PE), Xizang Herb. Med. Exped. (西藏中草药普查队) 3066 (HNWP, PE); Qamdo (昌都), Inst. Biol. Xizang Exped. (生物所西藏队) 2174 (HNWP); Rutog (日土), Inst. Biol. Xizang Exped. (生物所西藏队) 3518 (HNWP); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 6775 (HNWP), Qinghai-Xizang Exped. (青藏队) 7270 (KUN, PE); SE Xizang, Ludlow et al. 4456 (BM); Sog Xian (索县), J. T. Wang (王金亭) 3207, 3393 (PE); Tingri (定日), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 151, 193 (XZ); Toba (妥坝), Y. W. Cui (崔友文) 5426 (PE); Xainza (申扎), D. D. Tao (陶德定) 10715 (KUN); Xigazê (日喀则), J. W. Zhang (张经纬) 2639 (PE); Yadong (亚东), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 81 (PE); Zanda (札达), Qinghai-Xizang Exped. (青藏队) 76-8071 (KUN); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 6416 (HNWP, PE).

## 2. 匍茎蒿草

**Kobresia stolonifera** Y. C. Tang ex P. C. Li in Acta Phytotax. Sin. 37: 154. 1999; P. C. Li in Fl. Reip. Pop. Sin. 12: 38. 2000. Type: China. Xizang (西藏): Baingoin (班戈), J. T. Wang (王金亭) 3665 (holotype, PE!).

*Kobresia macrantha* auct. non Boeck.: Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 388. 1987, p. p.

PE 和 HNWP 收藏的该种标本, 曾被定名为大花蒿草 *K. macrantha*, 而部分大花蒿草的标本定为 *Blysmocarex nudicarpa*。匍茎蒿草因叶片边缘内卷呈细丝状, 鳞片与先出叶较大, 先出叶质厚且包裹小坚果, 小坚果大而为矩圆形, 与大花蒿草明显不同。

分布于中国西藏、青海和甘肃, 生于沙地或沙砾地, 海拔 3200–4900 m。

**China. Xizang (西藏):** Baingoin (班戈), K. Y. Lang (郎楷永) 9436 (PE, KUN), 9444 (HNWP, KUN, PE), J. T. Wang (王金亭) 3544, 3537, 3665 (PE); Burang (普兰), Inst. Biol. Xizang Exped. (生物所西藏队) 4174 (HNWP, PE), Qinghai-Xizang Exped. (青藏队) 6482 (HNWP, KUN, PE); Coqên (措勤), K. Y. Lang (郎楷永) 10288 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12584 (PE); Gar (噶尔), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13209 (PE); Gê 'gyai (革吉), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13514 (PE); Gêzê (改则), K. Y. Lang (郎楷永) 10138 (HNWP, PE), 10187 (PE), 10288 (KUN, PE); Nyalam (聂拉木), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 103 (XZ); Sa 'gya (萨迦), J. T. Wang (王金亭) 3477, 3524 (PE); Shuanghu (双湖), K. Y. Lang (郎楷永) 9633, 9699 (KUN), 9824 (HNWP, KUN, PE); Xainza (申扎), K. Y. Lang (郎楷永) 10120 (HNWP, PE), J. T. Wang (王金亭) 3559



(PE); Zanda(札达), Qinghai-Xizang Veget. Exped. (青藏队植被组) 1271 (PE), Qinghai-Xizang Exped. (青藏队) 76-7832 (HNWP, KUN, PE); Zhongba(仲巴), Qinghai-Xizang Exped. (青藏队) 6424, 6446 (HNWP, KUN, PE), 6526 (HNWP, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5802 (PE).

### 3. 膨囊嵩草

**Kobresia inflata** P. C. Li in Acta Bot. Yunnan. 12: 16. 1990; P. C. Li in Fl. Reip. Pop. Sin. 12: 50. 2000. Type: China. Xizang(西藏): Zayü(察隅), Qinghai-Xizang Exped. (青藏队) 10703 (holotype, PE!).

分布于中国西南;生于高山沙砾坡地;海拔 3600–4600 m。

**China. Xizang(西藏):** Zayü(察隅), C. W. Wang(王启无) 66021 (KUN), Qinghai-Xizang Exped. (青藏队) 10703 (PE).

### 4. 根茎嵩草

**Kobresia gammiei** C. B. Clarke in Bull. Misc. Inform. Kew. Add. Ser. 8: 68. 1908; Ghildyal in J. Econ. Tax. Bot. 8: 469. 1982. Type: Sikkim. Without precise locality, Gammie s. n. (isosyntype, CAL).

*Kobresia williamsii* Koyama in Bot. Mag. Tokyo 86(1004): 279, t. 3. 1973; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 390. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 12. 2000. Type: Nepal. Above Seng Khola, Stainton et al. 3255 (holotype, BM!).

该种在《中国植物志》和《西藏植物志》中,都定名为 *K. williamsii* Koyama。但是 Noltie (1993)认为 *K. williamsii* 是 *K. gammiei* 的异名。作者研究了 *K. gammiei* 的原始文献 (Clarke, 1908)和 Ghildyal (1986)的补充描述,以及 *K. williamsii* 的模式标本 (Stainton, Sykes & Williams 3255, BM),二者确为同种植物,因而赞同 Noltie (1993)的观点。

分布于尼泊尔、不丹、锡金和中国西南;生于山坡、悬崖、水边、冷杉林中;海拔 3660–4420 m。

**China. Xizang(西藏):** Nyalam(聂拉木), Qinghai-Xizang Exped. (青藏队) 6159 (PE).

### 5. 钩状嵩草

**Kobresia uncinoides** (Boott) C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 698. 1894; et in Bull. Misc. Inform. Kew. Add. Ser. 8: 137. 1908; Kükenth. in Engl., Pflanzenreich, 38(IV, 20): 46. 1909; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 390, t. 221. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 15. 2000. — *Carex uncinoides* Boott, Illustr. Carex 1: 8, t. 23. 1858. Type: Sikkim. E. Himalaya, J. D. Hooker s. n. (holotype, K!).

分布于东喜马拉雅地区和横断山;生于高山草甸、灌丛、林缘;海拔 2900–4880 m。

**China. Xizang(西藏):** Cona(错那), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2692 (PE); Mainling(米林), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2675 (PE), Xizang Herb. Med. Exped. (西藏中草药普查队) 3881 (HNWP, PE); S Xizang, Kindon-Ward 11876 (BM); Yadong(亚东), Qinghai-Xizang Exped. (青藏队) 74-2367 (HNWP, PE), 750250 (HNWP), J. W. Zhang(张经纬) 2460 (PE); Zayü(察隅), Qinghai-Xizang Exped.

(青藏队) 10140, 10687 (PE), C. W. Wang (王启无) 65560, 65791 (PE).

## 6. 疏穗嵩草

**Kobresia laxa** Nees in Wight, Contrib. Bot. Ind. 119. 1834; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 391. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 11. 2000. Type: Nepal. Without precise locality, Royle 119 (unseen).

分布于克什米尔地区和喜马拉雅山西部到中部; 生于潮湿石壁上、沟边; 海拔 2650 – 3500 m。

**China. Xizang (西藏):** Gyirong (吉隆), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5300 (PE); Nyalam (聂拉木), S. R. Zhang (张树仁) 335 (PE).

## 7. 黑麦嵩草

**Kobresia loliacea** Wang & Tang ex P. C. Li in Acta Bot. Yunnan. 12: 13. 1990; P. C. Li in Fl. Reip. Pop. Sin. 12: 11. 2000. Type: China. Sichuan (四川): Yanyuan (盐源), Qinghai-Xizang Exped. (青藏队) 12065 (holotype, PE!).

分布于中国西南; 生于山坡、路边、草地; 海拔 3200 – 3400 m。

**China. Xizang (西藏):** Zayü (察隅), C. W. Wang (王启无) 65560b (PE).

## 8. 囊状嵩草

**Kobresia fragilis** C. B. Clarke in J. Linn. Soc. Bot. 36: 267. 1903; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 392. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 9. 2000. — *Schoenoxiphium fragilis* (C. B. Clarke) C. B. Clarke in Bull. Misc. Inform. Kew. Add. Ser. 8: 67. 1908. Type: China. Sichuan (四川): Kangding (康定), Soulié 731 (holotype, K!).

*K. clarkeana* (Kükenth.) Kükenth. in Engl., Pflanzenreich, 38 (IV, 20): 48. 1909; P. C. Li in Fl. Reip. Pop. Sin. 12: 9. 2000. — *Schoenoxiphium clarkeanum* Kükenth. in Bull. Herb. Boiss. ser. 2, 4: 49. 1904. Type: Sikkim. Cho-le-la, King's collector (K!).

*K. curticeps* (C. B. Clarke) Kükenth. var. *gyirongensis* Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 391. 1987. Type: China. Xizang (西藏): Gyirong (吉隆), Xizang Herb. Med. Exped. (西藏中草药普查队) 609 (holotype, HNWP!).

杂穗嵩草 *K. clarkeana* 和吉隆嵩草 *K. curticeps* var. *gyirongensis* 与囊状嵩草的形态性状没有明显的间断, 而它们小坚果的微形态特征也不存在明显的区别, 它们应该作为相同的种(张树仁 2002)。

分布于尼泊尔、锡金、不丹和中国西南、甘肃和青海; 生于山坡灌丛、草地、林下; 海拔 2590 – 4270 m。

**China. Xizang (西藏):** Gyirong (吉隆), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5339 (PE), Xizang Herb. Med. Exped. (西藏中草药普查队) 609 (HNWP); Kongbo, Ludlow et al. 4517 (BM); Lhasa (拉萨), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1697 (PE); Mainling (米林), Qinghai-Xizang Exped. (青藏队) 75832 (HNWP); Nyingchi (林芝), J. X. Yang (杨金祥) 2342 (HNWP), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) (PE); Yadong (亚东), G. X. Fu & J. W. Zhang (傅国勋, 张经纬) 1099 (PE); Zayü (察隅), C. W. Wang (王启无) 65560c (PE).

## 9. 弧形嵩草

**Kobresia curvata** C. B. Clarke in Bull. Misc. Inform. Kew. Add. Ser. 8:68. 1908; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:392. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:14. 2000. Type: Sikkim. Without precise locality, J. D. Hooker s. n. (lectotype, K!).

弧形嵩草曾被归并在囊状嵩草 *K. fragilis* 中(Noltie, 1993, 1994)。但其鳞片和先出叶无锈色点线而与后者不同,而且两者小坚果表皮的微形态性状截然不同,因此应该处理为两个独立的种(张树仁, 2002)。

分布于尼泊尔、锡金和中国西藏;生于山坡草地、灌丛、路边、溪边;海拔 2700–4270 m。

**China. Xizang (西藏):** Nyalam (聂拉木), S. R. Zhang (张树仁) 334 (PE); Yadong (亚东), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 69, 71a, 72 (PE), Qinghai-Xizang Exped. (青藏队) 74-2523 (PE), P. C. Tsoong (钟补求) 7354, 7349 (PE).

## 10. 喜马拉雅嵩草

**Kobresia royleana** (Nees) Boeck. in Linnaea 39:8. 1875; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:396, f. 225. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:18. 2000. — *Trilepis royleana* Nees in Linnaea 9:305. 1834. Type: Nepal. Without precise locality, Royle 119 (LIV).

*Kobresia stenocarpa* (Kar. & Kir.) Steud., Synop. Pl. Glum. 2:246. 1854; P. C. Li in Fl. Reip. Pop. Sin. 12:23. 2000. — *Elyna stenocarpa* Kar. & Kir. in Bull. Soc. Nat. Mosc. 15:526. 1842. Type: Kazakhstan. Alatau, Karelin & Kirilow 51 (holotype, LE).

*Kobresia stenocarpa* (Kar. & Kir.) Steud. var. *simplex* Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:395. 1987, syn. nov. Type: China. Xizang (西藏): Biru (比如), D. D. Tao (陶德定) 11377 (holotype, HNWP; isotypes, KUN!, PE!).

*Kobresia caricina* auct. non Willd.: P. C. Li in Fl. Reip. Pop. Sin. 12:23. 2000.

*Kobresia persica* auct. non Kükenth. & Bornm.: Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:379. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:35. 2000.

本种的形态性状变异很大,花序从大型而复杂到较小而简单,小穗从两性多花到单性单花,小坚果的喙从较短到较长,均呈现为具有一系列过渡类型的连续变异。窄果嵩草 *K. stenocarpa* 及其变种 var. *simplex* 均在喜马拉雅嵩草的变异幅度之内,应与后者合并。薹穗嵩草 *K. caricina* (= *K. simpliciuscula*), 为环北极分布,产于欧亚和北美的北部,我国没有其分布。《中国植物志》中收录的薹穗嵩草为错误鉴定,实际应为喜马拉雅嵩草小穗单性的类型。波斯嵩草 *K. persica* 分布于高加索地区、土耳其、伊朗、阿富汗和帕米尔地区,与矮生嵩草 *K. humilis* 为同种植物(Kükenthal, 1909; Sergievskaya, 1935; Dickoré, 1995; Kukkonen, 1998)。《西藏植物志》和《中国植物志》中记载的波斯嵩草应为喜马拉雅嵩草花序简单的变异类型。

分布于中亚至喜马拉雅山脉和中国西部;生于湿润处、高山或亚高山草甸、沼泽、灌丛中;海拔 2700–5200 m。

**China. Xizang (西藏):** Without precise locality, Anonymous 117 (PE), Inst. Biol. Xizang Exped. (生物所西藏队) 3447, 3719 (HNWP), P. C. Tsoong (钟补求) 5237, 5464 (PE);

Amdo (安多), Z. Y. Qin (秦志业) 10038, 10040 (HNWP), Qinghai-Xizang Frozen Soil Veget. Exped. (青藏冻土植被队) 19, 67 (HNWP), J. X. Yang (杨金祥) 1904, 1906 (HNWP, KUN); Baingoin (班戈), K. Y. Lang (郎楷永) 9420, 9517 (HNWP, KUN, PE), D. D. Tao (陶德定) 10587 (KUN, HNWP); Baxoi (八宿), Qinghai-Xizang Exped. (青藏队) 12227b (KUN), 12242a, 73-1319 (KUN, PE); Biru (比如), D. D. Tao (陶德定) 11377 (KUN, PE); Burang (普兰), Inst. Biol. Xizang Exped. (生物所西藏队) 4070, 4197 (HNWP, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13365 (PE); Comai (措美), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2022 (PE); Cona (错那), Qinghai-Xizang Exped. (青藏队) 920 (PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2336 (PE); Dagzê (达孜), Y. Z. Wang (汪永泽) 79086 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 2368, 2372 (KUN, PE); Dinggyê (定结), Xizang Exped. (西藏队) 1596, 1623 (PE); Gongbo 'gyamda (工布江达), C. C. Ni (倪志诚) 14 (PE); Gyaca (加查), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 52 (PE), Qinghai-Xizang Exped. (青藏队) 750729 (HNWP, KUN, PE); Gyirong (吉隆), Qinghai-Xizang Exped. (青藏队) 6221 (KUN); Lhari (嘉黎), D. D. Tao (陶德定) 10414, 10440 (KUN, PE), 10467 (PE); Lhasa (拉萨), Ludlow & Sherriff 8714 (BM), Qinghai-Xizang Veget. Exped. (青藏队植被组) 1891 (PE), Richardson 156 (BM), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 2650 (KUN, PE), P. C. Tsoong (钟补求) 7235 (PE); Lhazê (拉孜), G. X. Fu (傅国勋) 399 (PE); Lhünzê (隆子), J. W. Zhang (张经纬) 1194 (PE); Lhünzhub (林周), G. X. Fu (傅国勋) 214 (PE); Maizhokunggar (墨竹工卡), G. X. Fu (傅国勋) 126 (PE), Qinghai-Xizang Exped. (青藏队) 7378 (HNWP, KUN); Markam (芒康), Qinghai-Xizang Exped. (青藏队) 12009 (HNWP), C. Y. Wu et al. (吴征镒等) 4998b (KUN); Nagqu (那曲), D. D. Tao (陶德定) 10542 (KUN), C. Y. Wu et al. (吴征镒等) 75-287 (HNWP, KUN, PE); Namling (南木林), Qinghai-Xizang Exped. (青藏队) 7438, 7473 (HNWP, KUN); Ngamring (昂仁), J. W. Zhang (张经纬) 2697 (PE); N of Sringi Hewal, Gardner 696 (BM); Nyainrong (聂荣), D. D. Tao (陶德定) 10508 (HNWP, KUN), 10510, 10511 (KUN); Nyalam (聂拉木), C. C. Ni et al. (倪志诚等) 2073 (XZ), Qinghai-Xizang Exped. (青藏队) 5809 (HNWP, KUN, PE), 5867 (HNWP, KUN), 5879 (KUN), 6179, 6214 (KUN, PE), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 38, 41 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3913, 4035, 4598 (KUN, PE), 4006 (PE); Nyingchi (林芝), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 33, 25 (PE), Qinghai-Xizang Exped. (青藏队) 74-3559 (KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 1801 (PE), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1204 (PE); Mt. Qomolangma (珠穆朗玛峰), Anonymous 276 (PE); Rutog (日土), Qinghai-Xizang Exped. (青藏队) 76-8791 (HNWP, KUN, PE), 76-9070 (KUN, PE), 13173 (HNWP); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 7103 (HNWP, KUN, PE), 7276 (KUN); Shiquanhe (狮泉河), Y. H. Wu (吴玉虎) 1362 (HNWP); Tingri (定日), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 135, 144, 234 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3652 (PE); Shuanghu (双湖), K. Y. Lang (郎楷永) 9739, 9862 (HNWP, KUN, PE); Upper Manga Chu, Miede 1317

(BM); W Xizang, Thomson s. n. (K), Thomson s. n. (K); Xainza(申扎), Inst. Biol. Xizang Exped. (生物所西藏队) 4368 (PE), J. T. Wang(王金亭) 3586 (PE); Xigazê(日喀则), G. X. Fu(傅国勋) 1388 (PE), P. C. Tsoong(钟补求) 7274 (PE); Yadong(亚东), Y. B. Luo & S. R. Zhang(罗毅波, 张树仁) 77 (PE), Qinghai-Xizang Exped. (青藏队) 750326, 750347 (HNWP, KUN); Zanda(札达), Inst. Biol. Xizang Exped. (生物所西藏队) 3818 (HNWP, PE), 3821 (PE), Qinghai-Xizang Exped. (青藏队) 76-2238 (PE), 76-7738, 76-7870, 76-8003 (HNWP, KUN, PE), 76-7742 (HNWP, PE), 76-7829 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12735, 12783 (HNWP); Zayü(察隅), Qinghai-Xizang Exped. (青藏队) 10593 (PE), 73-463 (KUN, PE); Zhongba(仲巴), Qinghai-Xizang Exped. (青藏队) 6415, 6564 (HNWP, KUN, PE).

### 11. 假钩状嵩草

**Kobresia pseuduncinoides** Noltie in Edinb. J. Bot. 50(1): 47, f. 1A-G. 1993. Type: Bhutan. Shingbe, Me La, Ludlow et al. 20725 (holotype, BM!).

《中国植物志》中未收录本种。Noltie(1993)认为本种与钩状嵩草 *K. uncinoides* 近似,但通过对本种标本(包括模式标本, Ludlow et al. 20725, BM)的研究,发现其应与甘肃嵩草 *K. kansuensis* Kükenth. 最近缘。Noltie(个人通信)认为本种花序、鳞片与先出叶较大型,鳞片具芒,主要分布在喜马拉雅地区,而与主要分布在甘肃和青海的甘肃嵩草不同。但是,在四川和云南存在两种间的过渡类型,它们在形态变异和地理分布上,似乎都是连续的;这两个种究竟应该如何划分尚需进一步研究。

分布于尼泊尔、不丹和中国西藏东南;生于山坡灌丛草地、溪边、沼泽;海拔 3810-4420 m。

**China. Xizang(西藏):** Tsari Sama, Langong, SE Tibet, Ludlow et al. 5548 (BM).

### 12. 甘肃嵩草

**Kobresia kansuensis** Kükenth. in Acta Hort. Gothob. 5: 38. 1930; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 393, f. 223. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 21. 2000. Type: China. Sichuan(四川): Huang-ch'en-kuan, Harry Smith 4067 (NY!, K!).

分布于甘肃、青海、四川、云南和西藏;生于阴湿处、沼泽、灌丛、高山草甸、山坡、水边;海拔 3000-4700 m。

**China. Xizang(西藏):** P. C. Tsoong(钟补求) 313, 5194 (PE); Gongbo 'gyamda(工布江达), C. Y. Wu et al. (吴征镒等) 4994 (KUN); Sog Xian(索县), J. T. Wang(王金亭) 3426 (PE); Zayü(察隅), C. W. Wang(王启无) 65681, 65959 (PE), Y. W. Tsui(崔友文) 5271 (PE), S. X. Jia(贾慎修) 388 (PE).

### 13. 粗壮嵩草

**Kobresia robusta** Maxim. in Mel. Biol. 11: 863. 1883; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 373, f. 207. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 39. 2000. Type: China. Gansu(甘肃): Without precise locality, Przewalski s. n. (isotypes, K!, PE!).

*Kobresia sargentiana* Hemsl. in J. Linn. Soc. Bot. 30: 139. 1894; Noltie, Fl. Bhutan 3(1): 345, f. 33g. 1994. — *Kobresia robusta* Maxim. var. *sargentiana* (Hemsl.) Kükenth. in

Engl., Pflanzenreich, 38(IV, 20): 36. 1909. Type: China. Yangtzekiang head-water (33°53' N, 91°31' E), W. W. Rockhill s. n. (holotype, K!).

本种主要分布于青藏高原,与分布于西喜马拉雅地区的亮绿嵩草 *K. nitens* C. B. Clarke 最近缘。Ivanova (1939)报道西藏分布有亮绿嵩草,但未见到标本,本文暂不收录。分布于青藏高原;生于沙地、沙丘、山坡、灌丛;海拔 2890–5200 m。

**China. Xizang (西藏):** Without precise locality, Deasy's Exped. to Tibet 835A (K); Qinghai-Xizang Exped. (青藏队) 76-8670 (HNWP), P. C. Tsoong (钟补求) 7571 (PE); Amdo (安多), Z. Y. Qin (秦志业) 10073 (HNWP), Qinghai-Xizang Frozen Soil Veget. Exped. (青藏冻土植被队) 53 (HNWP), J. X. Yang (杨金祥) 1940 (HNWP, KUN); Baingoin (班戈), K. Y. Lang (郎楷永) 9533, 9576 (HNWP, KUN, PE), Qinghai-Xizang Exped. (青藏队) 88-2707 (HNWP), Qinghai-Xizang Veget. Exped. (青藏队植被组) 11703, 11787 (PE), J. T. Wang (王金亭) 3545, 3546, 3642 (PE); Burang (普兰), Inst. Biol. Xizang Exped. (生物所西藏队) 4270 (HNWP, PE), Qinghai-Xizang Exped. (青藏队) 76-8243, 76-8255, 76-8543 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13040, 13351 (PE); Gar (噶尔), Qinghai-Xizang Exped. (青藏队) 76-7962 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13204, 13212 (PE); Gê'gyai (革吉), Qinghai-Xizang Exped. (青藏队) 76-8570 (KUN), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13477 (PE); Gêrzê (改则), Inst. Biol. Xizang Exped. (生物所西藏队) 4345 (HNWP); Nagqu (那曲), D. D. Tao (陶德定) 10579 (KUN, PE); Pk. Qomolangma (珠穆朗玛峰), Anonymous 593 (PE); Rutog (日土), Qinghai-Xizang Exped. (青藏队) 76-9052 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13177 (HNWP, PE); Sa'gya (萨迦), J. T. Wang (王金亭) 3525 (PE); Shiquanhe (狮泉河), Y. H. Wu (吴玉虎) 1354 (HNWP); Shuanghu (双湖), K. Y. Lang (郎楷永) 10015, 9717, 9919, 9958 (HNWP, KUN, PE), 9668 (HNWP, KUN), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12259, 12284 (PE); Tingri (定日), Qinghai-Xizang Veget. Exped. (青藏队植被组) 4111, 4132, 4145, 4148 (PE); Tuna, Bor & Ram 20842 (K); Xainza (申扎), K. Y. Lang (郎楷永) 10129 (HNWP, KUN, PE); Zanda (札达), Inst. Biol. Xizang Exped. (生物所西藏队) 3785, 3897 (HNWP, PE), Qinghai-Xizang Exped. (青藏队) 76-7955 (HNWP, KUN), 76-8788 (PE); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 6422, 7233 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 7449 (PE).

#### 14. 线形嵩草

**Kobresia duthieii** C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 697. 1894; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 379. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 41. 2000. Type: India. Kumaon & Gurwhal, Duthie 3461, 6093, 6094, 5061 (syntypes, BM!, K!).

分布于喜马拉雅山至中国西南;生于岩石上,干燥、开阔的石质山坡;海拔 3900–4600 m。

**China. Xizang (西藏):** Nyalam (聂拉木), Qinghai-Xizang Exped. (青藏队) 429 (PE); Yadong (亚东), Qinghai-Xizang Exped. (青藏队) 74-2357 (KUN, PE); Zayü (察隅),

Qinghai-Xizang Exped. ( 青藏队 ) 10682 ( PE ), J. W. Zhang & D. Zheng ( 张经纬, 郑度 ) 1523 ( PE ).

### 15. 蕨状嵩草

**Kobresia filicina** ( C. B. Clarke ) C. B. Clarke in Hook. f. , Fl. Brit. Ind. 6 : 696. 1894 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 44. 2000. — *Hemicarex filicina* C. B. Clarke in J. Linn. Soc. Bot. 20 : 384. 1883. Type : NW Himalaya , T. Thomson s. n. ( holotype , K ! ).

分布于喜马拉雅山东部至中国西南 ; 生于林下、干河床、岩石上 ; 海拔 2900 – 4000 m。

**China. Xizang** ( 西藏 ) : Zayü ( 察隅 ), Qinghai-Xizang Exped. ( 青藏队 ) 10551 , 10552 , 10589 ( PE ).

### 16. 矮生嵩草

**Kobresia humilis** ( C. A. Mey. ex Trautv. ) Serg. in Kom. , Fl. USSR 3 : 111. 1935 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 35. 2000 ; Y. C. Yang in C. Y. Wu , Fl. Xizang. 5 : 378. 1987 , p. p. — *Kobresia royleana* ( Nees ) Boeck. var. *humilis* ( C. A. Mey. ex Trautv. ) Kükenth. in Engl. , Pflanzenreich , 38 ( IV , 20 ) : 46. 1909 , excl. pl. Himal. Type : Dschillkaragai , Schrenk s. n. ( lectotype and isolectotype , LE ).

分布于中亚和中国新疆 ; 生于阳坡、高山草甸 ; 海拔 2500 – 4000 m。

**China. Xizang** ( 西藏 ) : Shiquanhe ( 狮泉河 ), Y. H. Wu ( 吴玉虎 ) 1362 ( HNWP ).

### 17. 高原嵩草

**Kobresia pusilla** Ivan. in Bot. Žurn. SSSR 24 : 496. 1939 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 37. 2000. Type : China. E Xizang ( 西藏 ) : Without precise locality , Ladygin 10 ( holotype , LE ).

*Kobresia humilis* auct. non ( C. A. Mey. ex Trautv. ) Serg. ; Y. C. Yang in C. Y. Wu , Fl. Xizang. 5 : 378. 1987 , p. p.

杨永昌 ( 1976 ) 认为本种与矮生嵩草 *K. humilis* 很难区分 , 应为同种植物。在《西藏植物志》中 , 本种被定名为矮生嵩草 ( 杨永昌 , 1987 )。李沛琼 ( 2000 ) 在《中国植物志》中承认高原嵩草和矮生嵩草分别为独立的种 , 前者柱头 2 , 以青藏高原为分布中心 ; 后者柱头 3 , 以中亚为分布中心。在研究了国内外大量标本之后 , 作者同意李沛琼的观点。

分布于中国北部和西部 ; 生于开阔的干燥山坡、高山草甸、阴湿处、沼泽 ; 海拔 1300 – 5300 m。

**China. Xizang** ( 西藏 ) : Without precise locality , Y. W. Tsui ( 崔友文 ) 5298 , 5698 ( PE ), G. X. Fu ( 傅国勋 ) 190 ( PE ), J. T. Wang ( 王金亭 ) 3473 , 3780 ( PE ); Amdo ( 安多 ), Z. Y. Qin ( 秦志业 ) 10041 ( HNWP ); Baxoi ( 八宿 ), C. C. Ni et al. ( 倪志诚等 ) 1240b ( XZ ); Comai ( 措美 ), Qinghai-Xizang Veget. Exped. ( 青藏队植被组 ) 2012 ( PE ); Gongbo 'gyamda ( 工布江达 ), Qinghai-Xizang Exped. ( 青藏队 ) 74-2014 ( PE ); Lhasa ( 拉萨 ), Y. T. Chang & K. Y. Lang ( 张永田, 郎楷永 ) 1499 , 2068 , 2368 ( PE ); Markam ( 芒康 ), Qinghai-Xizang Exped. ( 青藏队 ) 11844b ( KUN ), 11845 ( HNWP , KUN , PE ); Nagqu ( 那曲 ), Qinghai-Xizang Exped. ( 青藏队 ) 10542 ( PE ); Nyainrong ( 聂荣 ), Qinghai-Xizang Exped. ( 青藏队 ) 10511 ( PE ); Nyalam ( 聂拉木 ), Y. T. Chang & K. Y. Lang ( 张永田, 郎楷永 ) 4141

(PE); Sa 'gya (萨迦), J. T. Wang (王金亭) 3494 (PE); Sog Xian (索县), J. T. Wang (王金亭) 3293b, 3208, 3238, 3367 (PE).

### 18. 截形嵩草

**Kobresia cuneata** Kükenth. in Acta Hort. Gothob. 5:39. 1930; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:375, f. 209. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:26. 2000. Type: China. Sichuan (四川): Songpan (松藩), Harry Smith 3727 (K!).

分布于中国西南;生于高山灌丛草甸、高山沼泽草甸、湿润山坡;海拔 3000–4750 m。

**China. Xizang (西藏):** Baxoi (八宿), Inst. Biol. Xizang Exped. (生物所西藏队) 1361, 1381 (HNWP); Bomi (波密), T. S. Ying & D. Y. Hong (应俊生, 洪德元) 650862 (PE); Yadong (亚东), Qinghai-Xizang Exped. (青藏队) 750335 (PE); Zayü (察隅), Qinghai-Xizang Exped. (青藏队) 10680, 10696 (PE), 73-401 (KUN, PE), C. W. Wang (王启无) 65960 (PE), 66055 (KUN, PE).

### 19. 普兰嵩草

**Kobresia burangensis** Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:374, f. 208. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:41. 2000. Type: China. Xizang (西藏): Burang (普兰), Qinghai-Xizang Exped. 76-8522 (holotype, PE!; isotypes, HNWP!, KUN!).

本种各形态性状与赤箭嵩草 *K. schoenoides* (C. A. Mey.) Steud. 相符, 但先出叶合生至 1/2 处而不同。其模式标本花序各部分均较幼嫩, 先出叶的性状是否可靠尚需要有成熟的标本来验证。

分布于西藏西部;生于山坡草地;海拔 5000 m。

**China. Xizang (西藏):** Burang (普兰), Qinghai-Xizang Exped. (青藏队) 76-8522 (PE, KUN, HNWP).

### 20. 赤箭嵩草

**Kobresia schoenoides** (C. A. Mey.) Steud., Synops. Cyper. 246. 1855; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:376. 1987, excl. syn.; P. C. Li in Fl. Reip. Pop. Sin. 12:18. 2000. — *Elyna schoenoides* C. A. Mey., Verzeichn. Pfl. Cauc. 29. 1831. Type: Caucasus, C. A. Meyer 43 (LE).

*Kobresia deasyi* C. B. Clarke in Bull. Misc. Inform. Add. Ser. 8:68. 1908; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:375. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12:28. 2000. Type: China. Xizang (西藏): Without precise locality, Deasy 839 (holotype, K!).

*Kobresia pamiroalaica* Ivan. in Bot. Žurn. SSSR 24:481. 1939. — *K. pamiroalaica* Ivan. in Schreder, Fl. Uzbek. 1:347, 540. 1941. Type: Without precise locality, S. Korshinsky 5374 (LE).

*Kobresia septatonodosa* Koyama in Acta Phytotax. Geobot. Kyoto 16:168. 1956. Type: Karakoram, S. Nakano s. n. (holotype, KYO!).

*Kobresia glaucifolia* Wang & Tang ex P. C. Li in Acta Phytotax. Sin. 37:153, fig. 1. 1999; P. C. Li in Fl. Reip. Pop. Sin. 12:28. 2000, syn. nov. Type: China. Xizang (西藏): Nyalam (聂拉木), Qinghai-Xizang Veget. Exped. (青藏队植被组) 4229 (holotype, PE!).



*Kobresia littledalei* auct. non C. B. Clarke : Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 377. 1986, p. p. ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 34. 2000, p. p.

赤箭蒿草及其近缘类群的分类是蒿草属中最困难、最复杂的问题之一。Ivanova (1939) 认为狭义的赤箭蒿草只局限于高加索, 而产于帕米尔高原至喜马拉雅山脉的植物则被命名为许多不同的种, 如 : *K. deasyi* C. B. Clarke, *K. glaucifolia* Wang & Tang ex P. C. Li, *K. pamiroalaica* Ivan., *K. septatonodosa* Koyama 等等, 青藏高原的有些植物还被错误地定为 *K. littledalei* (参看 Zhang, 1999a 及本文康藏蒿草 *K. littledalei* 下的讨论)。根据作者对标本的研究和野外的观察, 青藏高原的赤箭蒿草形态变异幅度极大, 株高可从 2-3 cm 到 1 m 以上, 花序从较宽而有分枝到较窄而简单穗状, 鳞片和先出叶从较宽大到较窄小等等。这些变异与气候条件、生长周期、生长环境及被牲畜啃食的程度等因素密切相关, 很难确定其分类学意义, 也无法用这些变异来区分不同的类群。最近一些学者对赤箭蒿草的处理, 均采用了广义的概念 (Noltie, 1994; Dickoré, 1995; Kukkonen, 1998)。

分布于高加索到青藏高原, 生于沼泽、高山沼泽草甸、水边、阴湿处, 海拔 2500-5790 m。

**China. Xizang (西藏):** Without precise locality, Anonymous 110, 11844 (PE), Deasy's Exped. to Tibet 839 (K), J. D. Hooker s. n. (K), Inst. Biol. Xizang Exped. (生物所西藏队) 3705 (HNWP), Qinghai-Xizang Exped. (青藏队) 6251, 75-0303 (HNWP), Thomson s. n. (K), Thomson s. n. (K), Thomson s. n. (K), Thomson s. n. (K), P. C. Tsoong (钟补求) 5321 (PE), C. Y. Wu et al. (吴征镒等) 6040 (KUN); Amdo (安多), J. X. Yang (杨金祥) 1905 (HNWP, KUN), 1928 (KUN); Baingoin (班戈), K. Y. Lang (郎楷永) 9402 (PE), 9403, 9516 (HNWP, KUN, PE), K. Y. Lang (郎楷永) 9602 (HNWP, KUN); Baxoi (八宿), Qinghai-Xizang Exped. (青藏队) 12227a (KUN, PE), 12242b (KUN); Burang (普兰), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13287 (HNWP); Comai (措美), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2028, 2073, 2090, 2100, 2171 (PE); Cona (错那), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2339 (PE); Damxung (当雄), R. F. Huang (黄荣福) 89-139 (HNWP), Qinghai-Xizang Veget. Exped. (青藏队植被组) 6197, 7412 (PE), Inst. Biol. Xizang Exped. (生物所西藏组) 3 (HNWP), Naito et al. 1386 (PE); Dinggyê (定结), Qinghai-Xizang Exped. (青藏队) 5714 (HNWP, KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 3919, 3923, 3940 (PE); Gê 'gyai (革吉), Qinghai-Xizang Exped. (青藏队) 76-8670 (PE); Gêzê (改则), Inst. Biol. Xizang Exped. (生物所西藏组) 4357 (HNWP), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12532 (PE); Gyirong (吉隆), Xizang Herb. Med. Exped. (西藏中草药普查队) 745 (HNWP, PE); Gyangzê (江孜), P. C. Tsoong (钟补求) 7234 (PE); Lhari (嘉黎), Qinghai-Xizang Exped. (青藏队) 10418 (PE), D. D. Tao (陶德定) 10492 (KUN, PE), 19418 (KUN); Lhazê (拉孜), Xizang Inst. Biol. (西藏生物所植物组) 356 (XZ); Lhünzê (隆子), Qinghai-Xizang Exped. (青藏队) 963 (PE), P. C. Kuo & W. Y. Wang (郭本兆, 王为义) 22424 (HNWP); Lhünzhub (林周), G. X. Fu (傅国勋) 224 (PE); Maizhokunggar (墨竹工卡), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 4 (PE); Markam (芒康), Qinghai-Xizang Exped. (青藏队) 11844a, 11903 (HNWP, KUN); Pk.

Qomolangma (珠穆朗玛峰), Anonymous 21 (PE), Humphreys 5061 (BM); Nagarzê (浪卡子), J. W. Zhang (张经纬) 2563 (PE); Nagqu (那曲), C. Y. Wu et al. (吴征镒等) 75-203 (PE), 75-286 (KUN, PE), 75-303 (HNWP, KUN); N of Parang Pass, Spiti, Schlagintweit s. n. (K); Nyalam (聂拉木), Anonymous Q39, Q40, Q41, Q45 (PE), Qinghai-Xizang Exped. (青藏队) 5878 (HNWP, KUN), 6215 (KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 4168 (PE), 4229 (PE), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 18, 107 (XZ), Y. T. Chang & K. Y. Lang (张永田 郎楷永) 3905, 3994, 4018, 4628 (PE), Y. T. Chang & K. Y. Lang (张永田 郎楷永) 4004, 4116 (KUN, PE); Qusum (曲松), Y. B. Luo & S. R. Zhang 57b, 60 (PE); Ranga (然嘎), C. Y. Wu et al. (吴征镒等) 75-724 (KUN, PE); Rutog (日土), Inst. Biol. Xizang Exped. (生物所西藏组) 3439 (HNWP), 3608 (HNWP, PE); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 7094 (HNWP, KUN); Sa'gya (萨迦), G. X. Fu (傅国勋) 820 (PE), J. T. Wang (王金亭) 3492 (PE); Shuanghu (双湖), K. Y. Lang (郎楷永) 9633 (HNWP, PE); Sog Xian (索县), J. T. Wang (王金亭) 3293, 3299 (PE); Tingri (定日), Mount Climbing Exped. (登山科考队) 238 (HNWP), Sino-Japanese Exped. (中日考察队) T585, T732, T850, T859, T863 (PE), R. F. Huang (黄荣福) 89-764 (HNWP), Y. T. Chang & K. Y. Lang (张永田 郎楷永) 3653 (PE); Xainza (申扎), Inst. Biol. Xizang Exped. (生物所西藏组) 4367 (HNWP), D. D. Tao (陶德定) 10744 (KUN, PE); Yadong (亚东), Bor & Ram 19314 (K), Qinghai-Xizang Exped. (青藏队) 750335 (HNWP), P. C. Tsoong (钟补求) 7360, 7284 (PE), G. X. Fu & J. W. Zhang (傅国勋 张经纬) 1052 (PE), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 76 (PE), Qinghai-Xizang Exped. (青藏队) 1458 (PE), 750232, 750235 (HNWP, KUN), 750335 (KUN); Zanda (札达), Qinghai-Xizang Exped. (青藏队) 76-7732, 76-7827, 76-7873 (HNWP, KUN, PE), 76-7781 (KUN, PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12739 (HNWP); Zayti (察隅), C. W. Wang (王启无) 65917 (PE); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 6700 (HNWP, KUN), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5425 (PE).

## 21. 西藏蒿草

***Kobresia tibetica*** Maxim. in Mel. Biol. 11: 864. 1883; Y. C. Yang in Acta Phytotax. Sin. 14(1): 45, f. 4. 1976; P. C. Li in Fl. Reip. Pop. Sin. 12: 33. 2000. — *Kobresia capillifolia* (Decne.) C. B. Clarke var. *tibetica* (Maxim.) Kükenth. in Engl., Pflanzenreich, 38 (IV, 20): 36. 1909. Type: China. Gansu (甘肃): Without precise locality, Przewalsky s. n. (isotypes, K!, PE!).

*Kobresia littledalei* auct. non C. B. Clarke: C. B. Clarke in Bull. Misc. Inform. Kew. Add. Ser. 8: 67. 1908, p. p., quoad spec. Younghusband 36.

*Kobresia schoenoides* auct. non Steud.: Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 376. 1987, p. p.

杨永昌(1987)曾将该种与赤箭蒿草 *K. schoenoides* 合并,但其干枯叶鞘无光泽,花序各部分均较小,先出叶透明膜质且无脉无脊,小坚果扁三棱状矩圆形,而与赤箭蒿草不同。分布于中国西部;生于高山沼泽草甸、沼泽、河边;海拔 2550 - 4600 m。

**China. Xizang (西藏):** Baxoi (八宿), Y. W. Tsui (崔友文) 5868, 5884, 5889 (PE), C. C. Ni et al. (倪志诚等) 1240a (PE, XZ); Gyaca (加查), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 55 (PE); Khamba Jong, Tibet Frontier, Younhusband 36 (BM); Markam (芒康), Qinghai-Xizang Exped. (青藏队) 11881B (KUN, PE); Qusum (曲松), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 58b (PE).

## 22. 密穗嵩草

**Kobresia handel-mazzettii** Ivan. in Bot. Žurn. SSSR 24 : 494. 1939.

*Kobresia kuekenthaliana* auct. non Hand.-Mazz. : P. C. Li in Fl. Reip. Pop. Sin. 12 : 20. 2000, p. p.

*Kobresia tunicata* auct. non Hand.-Mazz. : P. C. Li in Fl. Reip. Pop. Sin. 12 : 24. 2000, p. p.

本种在《中国植物志》中作为玉龙嵩草 *K. tunicata* Hand.-Mazz. 的异名。根据作者对玉龙嵩草模式标本 (Handel-Mazzetti 3525, W) 的研究, 其小穗单性, 叶片禾叶状, 与禾叶嵩草非常相似, 而与本种相去甚远。本种和宁远嵩草 *K. kuekenthaliana* 都不常见, 标本很少, 而且这两种在形态上也非常相似, 不同仅在于宁远嵩草的根状茎斜向伸长并被披针形鳞片 (宁远嵩草目前仅见到一份模式标本, Handel-Mazzetti 1375, W), 很可能为同种。

分布于横断山地区, 生于湖滨草甸, 海拔 3900 m。

**China. Xizang (西藏):** Baxoi (八宿), C. C. Ni et al. (倪志诚等) 1240c (XZ).

## 23. 二蕊嵩草

**Kobresia myosuroides** (Vill.) Fiori ssp. **bistaminata** (W. Z. Di & M. J. Zhong) S. R. Zhang in Novon 9 : 453. 1999. — *K. bistaminata* W. Z. Di & M. J. Zhong in Acta Bot. Bor.-Occid. Sin. 6(4) : 275. 1986. Type : China. Nei Mongol (内蒙古), Mt. Helanshan (贺兰山), Northwest Univ. Exped. to Helanshan 6051 (holotype, WNU!).

*Kobresia myosuroides* auct. non (Villas) Fiori : P. C. Li in Fl. Reip. Pop. Sin. 12 : 32. 2000, p. p.

*Kobresia bellardii* auct. non (All.) Degl. : Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 381. 1987.

嵩草 *K. myosuroides* ssp. *myosuroides* 从北极地区分布到欧洲和我国北部的高山及北美的落基山脉, 二蕊嵩草则主要分布于青藏高原的北缘 (甘肃、青海和新疆南部), 在四川、云南和西藏较少见 (Zhang, 1999b)。

分布于喀拉昆仑到中国西部, 生于高山草甸、高山灌丛中, 海拔 2100–4500 m。

**China. Xizang (西藏):** Amdo (安多), Z. Y. Qin (秦志业) 10175 (HNWP); Dinggyê (定结), Qinghai-Xizang Exped. (西藏队) 1624 (PE); Heihe Distr. (黑河区), J. T. Wang (王金亭) 3789 (PE); Nyalam (聂拉木), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 130 (XZ).

## 24. 四川嵩草

**Kobresia setschwanensis** Hand.-Mazz., Symb. Sin. 7 : 1254. 1936; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 379, f. 212. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12 : 29. 2000. Type :

China. Sichuan(四川): Yanyuan(盐源), Handel-Mazzetti 2542(W!).

分布于中国西部;生于山坡草地、高山草甸、沼泽草甸、疏林下;海拔 2300–4300 m。

**China. Xizang(西藏):** Gyirong(吉隆), Qinghai-Xizang Exped. (青藏队) 7204(KUN, PE), Qinghai-Xizang Exped. (青藏队) 750798(HNWP, KUN); Mainling(米林), Anonymous 3716(HNWP), Xizang Herb. Med. Exped. (西藏中草药普查队) 3144(HNWP), Xizang Herb. Med. Exped. (西藏中草药普查队) 3716(PE); Markam(芒康), Qinghai-Xizang Veget. Exped. (青藏队植被组) 8383(PE); Kongbo, Ludlow et al. 3807(BM, E), 5181(BM); Nyingchi(林芝), Xizang Herb. Med. Exped. (西藏中草药普查队) 3144(PE), Y. B. Luo & S. R. Zhang(罗毅波 张树仁) 17(PE); Tingri(定日), Qinghai-Xizang Veget. Exped. (青藏队植被组) (PE); Yadong(亚东), Y. B. Luo & S. R. Zhang(罗毅波 张树仁) 89(PE); Zayü(察隅), Qinghai-Xizang Exped. (青藏队) 10692(PE); Zogang(左贡), Qinghai-Xizang Exped. 11062(PE).

## 25. 线叶蒿草

**Kobresia capillifolia** (Decne.) C. B. Clarke in J. Linn. Soc. Bot. 20: 378. 1883; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 379, f. 213. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 31. 2000. — *Elyna capillifolia* Decne. in Jacquem. Voy. Bot. 4: 173. 1844. Type: ? Kunawur, Jacquem 1598.

*Kobresia capilliformis* Ivan. in Bot. Žurn. SSSR 24: 484. 1939. Type: Kirghizia, distr. Osch., O. Knorring 733(LE).

分布于高加索至中国西部;生于干燥的开阔山坡、草地、林间草地;海拔 2000–4800 m。

**China. Xizang(西藏):** Amdo(安多), Qinghai-Xizang Frozen Soil Veget. Exped. (青藏冻土植被队) 4, 76(HNWP), J. T. Wang(王金亭) 3707(PE), J. X. Yang(杨金祥) 2245(HNWP); Bara Latsa Pass to Tsala, Spiti, Schlagintweit 2472(BM); Biru(比如), J. T. Wang(王金亭) 3454(PE); Gongbo 'gyamda(工布江达), Y. B. Luo & S. R. Zhang(罗毅波 张树仁) 12(PE); Nyainrong(聂荣), D. D. Tao(陶德定) 10512(KUN); Nyingchi(林芝), Xizang Herb. Med. Exped. (西藏中草药普查队) 3110(PE); Saga(萨嘎), Qinghai-Xizang Exped. (青藏队) 7100(HNWP, KUN); Sog Xian(索县), J. T. Wang 3213, 3428(PE); W Tibet, Thomson s. n. (BM), Thomson s. n. (K), Thomson s. n. (K); Zayü(察隅), Qinghai-Xizang Exped. (青藏队) 73-450(KUN, PE); Zanda(札达), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12849(HNWP); Zhongba(仲巴), Qinghai-Xizang Exped. (青藏队) 6468(HNWP, KUN, PE).

## 26. 高山蒿草

**Kobresia pygmaea** (C. B. Clarke) C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 696. 1894; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 382, f. 214. 1987; P. C. Li in Fl. Reip. Pop. Sin. 12: 47. 2000. — *Hemicarex pygmaea* C. B. Clarke in J. Linn. Soc. Bot. 20: 383. 1883. Type: China. W Xizang(西藏西部): Thomson s. n. (holotype, K!).

分布于喜马拉雅山地区到中国西部和北方;生于干燥开阔的草地、高山草甸;海拔

1100 - 5600 m.

**China. Xizang (西藏):** Without precise locality, G. X. Fu (傅国勋) 191 (PE); Amdo (安多), Z. Y. Qin (秦志业) 10092 (HNWP), Qinghai-Xizang Frozen Soil Veget. Exped. (青藏冻土植被队) 52 (HNWP), J. T. Wang (王金亭) 3728 (PE), J. X. Yang (杨金祥) 1940a (KUN), 1959 (HNWP, KUN); Bainang (白朗), Xizang Exped. (西藏队) 1590 (PE); Baingoin (班戈), K. Y. Lang (郎楷永) 9402 (KUN, PE), 9518 (PE), D. D. Tao (陶德定) 10719 (KUN), J. T. Wang (王金亭) 3472, 3517 (PE); Baxoi (八宿), C. Y. Wu et al. (吴征镒等) 4627 (KUN), Inst. Biol. Xizang Exped. (生物所西藏队) 1356 (HNWP); Boqing Lake (博清湖), Xizang Exped. (西藏队) 1487 (PE); Burang (普兰), Qinghai-Xizang Exped. (青藏队) 6427 (KUN, HNWP, PE), 76-8208 (KUN, PE); Coqên (措勤), K. Y. Lang (郎楷永) 10325 (KUN, PE); Dagzê (达孜), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 2411 (PE); Dinggyê (定结), Qinghai-Xizang Exped. (青藏队) 5717 (HNWP, KUN, PE), Xizang Exped. (西藏队) 1627, 1642 (PE); Foot of Nyainqêntanglha Shan: Naito et al. 1371 (PE); Gê 'gyai (革吉), Qinghai-Xizang Exped. (青藏队) 76-8628 (PE); Gêrzê (改则), Inst. Biol. Xizang Exped. (生物所西藏队) 4355 (HNWP), K. Y. Lang (郎楷永) 10249 (KUN, PE); Gyaca (加查), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 54 (PE); Gyangzê to Nagarzê (江孜至浪卡子), J. W. Zhang (张经纬) 2606 (PE); Pk. Qomolangma (珠穆朗玛峰), Humphreys 5012 (BM, K), Nanjing Univ. (南京大学) 575 (PE); Lhari (嘉黎), D. D. Tao (陶德定) 10479 (HNWP, KUN, PE), 10496 (HNWP, KUN); Lhasa (拉萨), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 2003, 2134, 2136 (PE); Maizhokunggar (墨竹工卡), C. Y. Wu et al. (吴征镒等) 4999 (KUN), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 8 (PE), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 2736 (PE); Namling (南木林), J. W. Zhang (张经纬) 2607 (PE); Nang Xian (朗县), Xizang Herb. Med. Exped. (西藏中草药普查队) 4483 (HNWP, PE); Ngamring (昂仁), J. W. Zhang (张经纬) 2653, 2661 (PE); Nyalam (聂拉木), Miehe 1428 (BM), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3911, 4023 (PE); Nyingchi (林芝), Xizang Herb. Med. Exped. (西藏中草药普查队) 3110 (PE); Paugwa, S Xizang, Miehe 1528, 1670, 1729 (BM); Qamdo (昌都), P. C. Tsoong (钟补求) 5218 (PE); Qusum (曲松), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 58c (PE); Ranga (然嘎), C. Y. Wu et al. (吴征镒等) 75-721 (KUN, HNWP, PE); Rinbung (仁布), Xizang Exped. (西藏队) 1494 (PE), Inst. Biol. Xizang Exped. (生物所西藏队) 3546 (HNWP); Sa 'gya (萨迦), J. T. Wang (王金亭) 3472 (PE); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 7264 (HNWP, KUN, PE), J. T. Wang (王金亭) 3517 (PE); Sog Xian (索县), D. D. Tao (陶德定) 10915 (HNWP, PE), 10916 (KUN), J. T. Wang (王金亭) 3237 (PE); W Xizang, Thomson s. n. (K); Tingri (定日), Sino-Japanese Exped. (中日考察队) T736, T869 (PE), Xizang Inst. Biol. (西藏生物所植物组) 192, 205, 219, 267 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3662, 3664, 3782 (PE), 3775 (KUN, PE); Yadong (亚东), Dungboo s. n. (K), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 83 (PE), Qinghai-Xizang Exped. (青藏队) 74-2610 (KUN, PE), 74-2677, 750349 (HNWP, KUN, PE); Zanda (札

达), Inst. Biol. Xizang Exped. (生物所西藏队) 3811 (HNWP, PE), Qinghai-Xizang Exped. (青藏队) 76-7736 (PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 12784 (HNWP); Zayü (察隅), C. W. Wang (王启无) 66046 (KUN, PE); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 6555 (HNWP, KUN, PE).

### 27. 三脉嵩草

**Kobresia esenbeckii** (Kunth) Noltie in Edinb. J. Bot. 50 (1): 43. 1993. — *Kobresia esenbeckii* (Kunth) Wang & Tang ex P. C. Li in W. T. Wang, Vasc. Pl. Hengduan Mount. 2: 2352. 1994; P. C. Li in Fl. Reip. Pop. Sin. 12: 53. 2000. — *Carex esenbeckii* Kunth, Enum. Pl. 2: 522. 1837. — *Kobresia trinervis* (Nees) Boeck. in Linnaea 39: 4. 1875; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 382. 1987. — *Hemicarex trinervis* (Nees) C. B. Clarke in J. Linn. Soc. Bot. 20: 382. 1883, excl. syn. *Carex linearis* Boott et C. *vidua* Boott ex C. B. Clarke — *Carex trinervis* Nees in Wight, Contrib. Bot. Ind. 120. 1834, non Degl. 1807. Type: Without precise locality, Royle 138 p. p. (isotype, LIV).

*Kobresia seticulmis* Boeck. in Linnaea 39: 3. 1875; P. C. Li in Fl. Reip. Pop. Sin. 12: 45. 2000, p. p. Type: Sikkim. Lachen, J. D. Hooker s. n. (lectotype, K!).

*Kobresia hookeri* Boeck. in Linnaea 39: 4. 1875; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 382. 1987. Type: Sikkim. Lachen, J. D. Hooker s. n. (lectotype, K!).

*Kobresia angusta* C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 695. 1894; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 382. 1987, p. p.; P. C. Li in Fl. Reip. Pop. Sin. 12: 52. 2000, p. p. Type: Sikkim. Sundukphoo, C. B. Clarke 34991 (syntype, K!).

该种的形态变异幅度很大, 所以分类一直比较混乱。Noltie (1993) 比较详细地研究了该种及相关类群, 认为前人所依据的分类性状, 如花序单性或雄雌顺序、雌雄异株或同株等, 在各类群中均有较大变异, 不能作为分种的区别性状; 同时 Noltie 还澄清了一些命名和命名模式的混乱。他将挺茎嵩草 *K. seticulmis*、细序嵩草 *K. angusta* 和露果嵩草 *K. hookeri* 都合并在该种中。作者根据对大量标本的研究及野外的观察, 同意 Noltie 的处理意见。

分布于喜马拉雅地区至中国西南; 生于潮湿岩石上、石壁缝中、山坡草地、湖边和树上; 海拔 2800 - 4300 m。

**China. Xizang (西藏):** Cona (错那), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2678 (PE); Dinggyê (定结), Qinghai-Xizang Exped. (青藏队) 5472 (KUN); Gyirong (吉隆), Qinghai-Xizang Exped. (青藏队) 6367 (PE), 6369 (KUN); Kongbo, Ludlow et al. 4727, 5204 (BM); Nyalam (聂拉木), Qinghai-Xizang Exped. (青藏队) 5777 (KUN, PE), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 4223 (PE); Tingri (定日), Sino-Japanese Exped. (中日考察队) T730 (PE); Yadong (亚东), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 64, 80 (PE); Zayü (察隅), Qinghai-Xizang Exped. (青藏队) 10307 (PE).

### 28. 柄果嵩草

**Kobresia fissiglumis** C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 696. 1894. — *Kobresia esenbeckii* (Kunth) Noltie var. *fissiglumis* (C. B. Clarke) Noltie in Edinb. J. Bot. 50 (1): 43. 1993. Type: W Nepal. Without precise locality, Duthie 6092 (holotype, K!).

*K. angusta* auct. non C. B. Clarke : P. C. Li in Fl. Reip. Pop. Sin. 12 : 52. 2000 , p. p.

*K. seticulmis* auct. non Boeck. : P. C. Li in Fl. Reip. Pop. Sin. 12 : 45. 2000 , p. p.

Noltie (1993) 将该种降为三脉嵩草 *K. esenbeckii* 的变种 , 但该种鳞片钝 , 先出叶边缘完全分离且无脉无脊 , 具有明显的果柄 , 而不同于三脉嵩草 , 应为一独立的种。

分布于喜马拉雅中部至横断山地区 ; 生于山坡、石上和石壁上 ; 海拔 3200 – 4300 m。

**China. Xizang (西藏) :** Without precise locality , B. S. Li et al. (李勃生等) 6621 (PE) ; Nyalam (聂拉木) , Qinghai-Xizang Exped. (青藏队) 6130 (KUN, PE).

## 29. 尾穗嵩草

***Kobresia cercostachys*** (Franch.) C. B. Clarke in J. Linn. Soc. Bot. 36 : 267. 1903 , p. p. , excl. specim. Pratt 741 ; Y. C. Yang in C. Y. Wu , Fl. Xizang. 5 : 383. 1987 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 48. 2000. — *Carex cercostachys* Franch. in Bull. Soc. Philom. Paris 8 , 7 : 27. 1895. Type : China. Yunnan (云南) : Eryuan (洱源) , Delavay 3403 (K!).

*Kobresia stiebritziana* Hand.-Mazz. in Sitzungsab. Akad. Wiss. Wien. Math.-Nat. 57 : 54. 1920. Type : China. Yunnan (云南) : Zhongdian (中甸) , Handel-Mazzetti 4734 (W!).

该种植株高矮粗细、花序和小穗等都有较大变异。花序基部有时具分枝 , 基部小穗有时具退化的雄花 , 发育良好的植株花序较粗壮 , 发育较差的植株花序较细弱。

分布于喜马拉雅东部和中国西南 ; 生于流石滩、高山灌丛、岩石上和高山草甸 ; 海拔 3600 – 5000 m。

**China. Xizang (西藏) :** Bomi (波密) , Xizang Inst. Biol. Pl. Resource Exped. (西藏生物所植物资源队) 3638 (XZ) ; Cona (错那) , Qinghai-Xizang Veget. Exped. (青藏队植被组) 2583 (PE) ; Gyaca (加查) , Qinghai-Xizang Exped. (青藏队) 751423 (HNWP, PE) , 751432 (KUN) ; Kongbo , Ludlow et al. 4612 (BM) ; Zayü (察隅) , Qinghai-Xizang Exped. (青藏队) 10679 (PE) , C. W. Wang (王启无) 65669 , 65675 , 65682 , 65946 , 65948 (PE) , C. W. Wang (王启无) 65948 (KUN) , 66026 (KUN, PE) ; Zogang (左贡) , Qinghai-Xizang Exped. (青藏队) 11045 (PE).

## 30. 发秆嵩草

***Kobresia vaginosa*** C. B. Clarke in Hook. f. , Fl. Brit. Ind. 6 : 695. 1894. — *Kobresia nepalensis* (Nees) Kükenth. var. *vaginosa* (C. B. Clarke) Kükenth. in Engl. , Pflanzenreich , 38 (IV, 20) : 40. 1909 , p. p. , excl. pl. Kashmir. — *Kobresia nepalensis* (Nees) Kükenth. ssp. *vaginosa* (C. B. Clarke) Koyama in Hara et al. , Enum. Fl. Pl. Nepal 1 : 113. 1978. Type : Sikkim. Momay , J. D. Hooker s. n. (holotype, K!).

*Kobresia cercostachys* (Franch.) C. B. Clarke var. *capillacea* P. C. Li in Acta Bot. Yunnan. 12 : 17. 1990 ; et in Fl. Reip. Pop. Sin. 12 : 49. 2000. Type : China. Xizang (西藏) : Zayü (察隅) , Qinghai-Xizang Exped. 10239 (holotype, PE!).

本种与尾穗嵩草 *K. cercostachys* 最接近 , 但以花序通常单性 , 雌雄花序同株或异株而不同。

分布于喜马拉雅东部至横断山中部 ; 生于干燥山坡、高山草甸中的岩石上 ; 海拔 4000

- 4800 m。

**China. Xizang (西藏):** Mainling ( 米林 ), B. S. Li et al. ( 李勃生等 ) 5608, 5611, 5525, 5526 ( PE ); Zayü ( 察隅 ), Qinghai-Xizang Exped. ( 青藏队 ) 10239 ( PE ).

### 31. 禾叶嵩草

**Kobresia graminifolia** C. B. Clarke in J. Linn. Soc. Bot. 36 : 268. 1903 ; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 383. 1987 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 50. 2000. Type : China. Shaanxi ( 陕西 ): Mt. Miaowangshan ( 庙王山 ), Hugh s. n. ( holotype, BM ! ).

分布于中国西南和西北的部分省区 ; 生于山坡草地、灌丛、石上和高山草甸 ; 海拔 3100 - 4700 m。

**China. Xizang (西藏):** Mêdog ( 墨脱 ), Inst. Biol. Xizang Exped. ( 生物所西藏队 ) 1839 ( HNWP ).

### 32. 阔鳞嵩草

**Kobresia woodii** Noltie in Edinb. J. Bot. 50 ( 1 ): 48, f. 1H - L. 1993. Type : Bhutan. Thimphu District, Wood 5534a ( holotype, E ! ).

《中国植物志》未收录本种, 近于禾叶嵩草 *K. graminifolia*, 但鳞片和先出叶较宽大。英国邱皇家植物园标本馆有一份标本采自 Chumbi valley, 应在我国西藏亚东境内。

分布于喜马拉雅山脉中部南麓 ; 生于高山草甸 ; 海拔 3300 - 4800 m。

**China. Xizang (西藏):** Chumbi valley, foot of Natula, Bor & Ram 20564 ( K ).

### 33. 尼泊尔嵩草

**Kobresia nepalensis** ( Nees ) Kükenth. in Engl., Pflanzenreich, 38 ( IV, 20 ): 40, f. 9. 1909 ; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 384. 1987 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 49. 2000. — *Uncinia nepalensis* Nees in Wight, Contrib. Bot. Ind. 129. 1834. Type : Nepal. Without precise locality, Royle 147 ( unseen ).

本种植株的高矮粗细和花序的大小也有较大变异。

分布于西喜马拉雅至中国西南 ; 生于高山流石滩、湿润石壁和高山灌丛草甸 ; 海拔 3600 - 4600 m。

**China. Xizang (西藏):** Without precise locality, P. C. Tsoong ( 钟补求 ) 5945, 6899 ( PE ); Cona ( 错那 ), Qinghai-Xizang Veget. Exped. ( 青藏队植被组 ) 2335, 2338, 2376 ( PE ); Damxung ( 当雄 ), G. X. Fu ( 傅国勋 ) 164 ( PE ); Gyirong ( 吉隆 ), Xizang Herb. Med. Exped. ( 西藏中草药普查队 ) 598 ( HNWP ); Nyalam ( 聂拉木 ), Qinghai-Xizang Exped. ( 青藏队 ) 5827 ( KUN, PE ), Qinghai-Xizang Veget. Exped. ( 青藏队植被组 ) 4234 ( PE ); Yadong ( 亚东 ), Y. B. Luo & S. R. Zhang ( 罗毅波, 张树仁 ) 63 ( PE ), Qinghai-Xizang Exped. ( 青藏队 ) 74-2386 ( HNWP, PE ), 750255 ( KUN ); Zayü ( 察隅 ), Qinghai-Xizang Exped. ( 青藏队 ) 10505, 10589, 10591, 10680 ( PE ), C. W. Wang ( 王启无 ) 65607 ( PE ); Zogang ( 左贡 ), Qinghai-Xizang Exped. ( 青藏队 ) 11061 ( PE ).

### 34. 亚东嵩草

**Kobresia yadongensis** Y. C. Yang in C. Y. Wu, Fl. Xizang. 5 : 388, f. 219. 1987 ; P. C. Li in Fl. Reip. Pop. Sin. 12 : 53. 2000. Type : China. Xizang ( 西藏 ): Yadong ( 亚东 ),



Qinghai-Xizang Exped. (青藏队) 7340 (holotype, HNWP; isotype, KUN!).

作者仅见到包括模式标本在内的3号该种标本。其中采自聂拉木的标本(西藏生物所植物组, 78号)与模式标本稍有差异, 花序与粗壮嵩草 *K. robusta* 几无区别, 而且具有两性的小穗。尽管观察到的标本植株极度矮化, 花序很小, 但它们营养器官和生殖器官的一些特征与粗壮嵩草近似, 应与其近缘, 也可能是其在高海拔恶劣环境中发育不完全的类型。

分布于中国西藏南部; 生于高山草甸, 海拔 4750–5150 m。

**China. Xizang (西藏):** Nyalam (聂拉木), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 78 (XZ); Tingri (定日), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 273 (XZ); Yadong (亚东), Qinghai-Xizang Exped. (青藏队) 7340 (KUN).

### 35. 短轴嵩草

***Kobresia vidua*** (Boott ex C. B. Clarke) Kükenth. in Engl., Pflanzenreich, 38 (IV, 20): 40. 1909; P. C. Li in Fl. Reip. Pop. Sin. 12: 54. 2000. — *Carex vidua* Boott ex C. B. Clarke in Hook. f., Fl. Brit. Ind. 6: 713. 1894. Type: Sikkim, Lachen, J. D. Hooker s. n. (holotype, K!).

*Kobresia prattii* C. B. Clarke in J. Linn. Soc. Bot. 36: 268. 1903; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5: 385, f. 217. 1987. Type: China. Sichuan (四川): Kangding (康定), Pratt 744 (holotype, K!).

Noltie (1993) 曾比较详细地讨论了 *K. prattii* 和 *K. vidua* 的关系, 认为它们为同种植物。根据对其模式标本和其他标本的研究, 作者同意 Noltie 的意见, 将 *K. prattii* 作为 *K. vidua* 的异名。

分布于喜马拉雅地区至中国西部; 生于山坡草地、高山草甸、岩石上和灌丛中; 海拔 3000–5100 m。

**China. Xizang (西藏):** Burang (普兰), Qinghai-Xizang Exped. (青藏队) 76-8264 (KUN); Chumbithang, Bor & Ram 19662 (K); Gongbo 'gyamda (工布江达), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 11 (PE); Gyaca (加查), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 53 (PE); Markam (芒康), Qinghai-Xizang Exped. (青藏队) 11881A (PE); Milha Pass (米拉山口), Z. Y. Wu et al. (吴征镒等) 4998a (KUN), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 10 (PE); Nyalam (聂拉木), Qinghai-Xizang Veget. Exped. (青藏队植被组) 4297 (PE); Nyingchi (林芝), Qinghai-Xizang Exped. (青藏队) 74-3558 (PE); Pagri (帕里), Dungbo s. n. (K); Qamdo (昌都), Qinghai-Xizang Exped. (青藏队) 74-3597 (KUN, PE); Qusum (曲松), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 58a (PE); Saga (萨嘎), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5668 (PE); Sa 'gya (萨迦), J. T. Wang (王金亭) 3493 (PE); Sog Xian (索县), J. T. Wang (王金亭) 3305 (PE); Tingri (定日), Sino-Japanese Exped. (中日考察队) T729, T590 (PE); Yadong (亚东), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 78 (PE), Qinghai-Xizang Exped. (青藏队) 750256, 750257 (HNWP, KUN).

## 36. 康藏嵩草

**Kobresia littledalei** C. B. Clarke in Bull. Misc. Inform. Kew. Add. Ser. 8:67. 1908; S. R. Zhang in Taxon 48:16. 1999. Type: China. C Xizang (西藏): Littledale s. n. (lectotype, K!).

*Kobresia prainii* auct. non Kükenth.: Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:386. 1987, p. p.; P. C. Li in Fl. Reip. Pop. Sin. 12:55. 2000, p. p.

Clarke (1908) 发表该种时引证了两号标本, 未指定主模式。根据对原始文献和模式标本的研究, Zhang (1999a) 选定 Littledale (无号) 采自西藏中部的标本作为本种的后选模式, 而 Clarke 引证的另一号标本 (Youngusband 36) 应该为西藏嵩草 *K. tibetica*。Ivanova (1939) 曾把 *K. littledalei* 这一名称作为西藏嵩草的异名, 而我国有的植物学家将这一名称错误地用于赤箭嵩草 *K. schoenoides* 秆粗壮、叶坚挺的类型 (杨永昌, 1987; 李沛琼, 2000)。本种花序单性, 小穗单性单花, 先出叶囊状, 与西藏嵩草和赤箭嵩草差异显著, 而与不丹嵩草 *K. prainii* Kükenth. 最近缘, 但植株较高而粗壮, 花序各部分较大而不同。

分布于中国的四川(道孚)和西藏; 生于高山草甸和高山灌丛草甸; 海拔 4300 - 5300 m。

**China. Xizang (西藏):** Without precise locality, Xizang Exped. (西藏队) 1479 (PE); Burang (普兰), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13333 (HNWP); Gooning Valley, central Xizang, Littledale s. n. (K); Gyirong (吉隆), Qinghai-Xizang Exped. (青藏队) 6237 (HNWP, KUN, PE); Lhasa (拉萨), Miehe 1229 (BM), Qinghai-Xizang Exped. (青藏队) 1848 (PE); Lhasa to Nyingchi (拉萨至林芝), Qinghai-Xizang Exped. (青藏队) 74-3699 (PE); Maizhokunggar (墨竹工卡), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1447 (PE); Namling (南木林), Qinghai-Xizang Veget. Exped. (青藏队植被组) 6061 (PE); Nyalam (聂拉木), Miehe 1381 (BM), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 108, 109 (XZ); Qusum (曲松), Y. B. Luo & S. R. Zhang (罗毅波, 张树仁) 57a (PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 2213 (PE); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 7301 (HNWP, KUN), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5658 (PE); Tingri (定日), Anonymous 094 (PE), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 271 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3707, 3736 (PE); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 6234 (PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 5815, 7535 (PE)。

## 37. 不丹嵩草

**Kobresia prainii** Kükenth. in Bull. Herb. Boiss. sér. 2, 4:50. 1903; Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:386. 1987, p. p.; P. C. Li in Fl. Reip. Pop. Sin. 12:55. 2000, p. p. Type: Bhutan. Kyoo La, Dungboo 224 (K!).

*Kobresia prainii* Kükenth. var. *elliptica* Y. C. Yang in C. Y. Wu, Fl. Xizang. 5:387, f. 217. 1987, syn. nov. Type: China. Xizang (西藏): Namling (南木林), Qinghai-Xizang Exped. (青藏队) 7437 (holotype, HNWP; isotype, KUN!).

南木林嵩草 *K. prainii* var. *elliptica* 除了植株较高, 其他性状均与不丹嵩草一致, 因此

这里将其归并在不丹嵩草中。

分布于喜马拉雅山地区;生于高山草甸和多石的山坡草地 海拔 3350 – 5600 m。

**China. Xizang (西藏):** Burang (普兰), Qinghai-Xizang Exped. (青藏队) 76-8624 (PE), Qinghai-Xizang Veget. Exped. (青藏队植被组) 13358 (HNWP, PE); Coqên (措勤), K. Y. Lang (郎楷永) 10316 (KUN, PE); Daglung to Chigu Co (打隆至哲古错), J. W. Zhang (张经纬) 2582 (PE); Gyirong (吉隆), Qinghai-Xizang Exped. (青藏队) 7206 (KUN); Lhasa (拉萨), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 1665, 2138, 2562 (PE); Lhasa to Nyingchi (拉萨至林芝), Qinghai-Xizang Exped. (青藏队) 74-3699 (KUN); Lhazê (拉孜), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 328, 333 (XZ); Linmatang, Chumbi valley, Bor & Ram 20789 (K); Namling (南木林), Qinghai-Xizang Exped. (青藏队) 7437, 7450, 7467, 7471 (KUN), Qinghai-Xizang Veget. Exped. (青藏队植被组) 6132 (PE); Nyalam (聂拉木), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 114 (XZ), Y. T. Chang & K. Y. Lang (张永田, 郎楷永) 3907 (PE); Pagri (帕里), Lepcha s. n. (K), Qinghai-Xizang Exped. (青藏队) 74-2614 (HNWP, KUN, PE), P. C. Tsoong (钟补求) 5762, 7283 (PE); Saga (萨嘎), Qinghai-Xizang Exped. (青藏队) 7272 (HNWP, PE); Tingri (定日), Xizang Inst. Biol. Pl. Exped. (西藏生物所植物组) 191, 207, 218 (XZ); Xainza (申扎), Qinghai-Xizang Exped. (青藏队) 7523 (HNWP, KUN); Yadong (亚东), G. X. Fu (傅国勋) 963 (PE); Zhongba (仲巴), Qinghai-Xizang Exped. (青藏队) 2657 (PE), 6417 (HNWP, KUN, PE), 6570, 6716, 7237 (HNWP, KUN, PE).

### 排除的种 Species Excluded

1. 长轴嵩草 *Kobresia microglochis* (Wahlenb.) Tang & Wang ex Y. C. Yang = *Carex microglochis* Wahlenb.
2. 小嵩草 *Kobresia parva* (Nees) Tang & Wang ex Y. C. Yang = *Carex parva* Nees.

《西藏植物志》中记载的上述 2 种应该归属于藁草属, 详见 Ohba et al. (1991) 和张树仁等 (1995)。

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