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浙江蓟属(菊科)二新种

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摘要: 描述了产于浙江的菊科(Asteraceae)蓟属(*Cirsium* Mill.)2 个新种:浙江垂头蓟(*C. zhejiangense* Z. H. Chen et X. F. Jin)和沼生垂头蓟(*C. paludigenum* Y. F. Lu, Z. H. Chen et X. F. Jin),并给出了新种与近缘种的区别特征。浙江垂头蓟与 *C. yezoense* (Maxim.) Makino 最接近,区别主要在于本种总苞片 5 或 6 层,外层总苞片较内层总苞片短,叶片较小,长 15~32 cm,宽 6~15 cm,上面疏被长柔毛,下面疏被短柔毛。沼生垂头蓟与 *C. tashiroi* Kitam. 和 *C. sieboldii* Miq. 接近,与前者的区别在于本种总苞片 5 或 6 层,先端直立,茎中上部疏被白色长柔毛,基生叶披针形、椭圆状披针形或椭圆形,羽状中裂或不裂;与后者的区别在于本种总苞钟形,直径 2.0~3.5 cm,总苞片 5 或 6 层,基生叶披针形、椭圆状披针形或椭圆形,羽状中裂或不裂。

关键词: 菊科; 蓟属; 浙江垂头蓟; 沼生垂头蓟; 新种; 浙江

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Two new species in *Cirsium* (Asteraceae) from Zhejiang LU Yifei[1,2], CHEN Zhenghai[3], SUN Wenyan[2], JIN Xiaofeng[2,①] (1. College of Life Sciences, Zhejiang University, Hangzhou 310058, China; 2. Zhejiang Provincial Key Laboratory for Genetic Improvement and Quality Control of Medicinal Plants, College of Life and Environment Sciences, Hangzhou Normal University, Hangzhou 311121, China; 3. Monitoring Center for Forest Resources in Zhejiang, Hangzhou 310020, China), *J. Plant Resour. & Environ.*, 2021, **30**(1): 1-8

Abstract: *Cirsium zhejiangense* Z. H. Chen et X. F. Jin and *C. paludigenum* Y. F. Lu, Z. H. Chen et X. F. Jin, two new species in *Cirsium* Mill. (Asteraceae) from Zhejiang in China, were described and illustrated. The diagnostic characters between two new species and their alliced species were given. *C. zhejiangense* mostly resembles *C. yezoense* (Maxim.) Makino, but differs in its phyllaries in 5 or 6 rows, outer phyllaries shorter than inner ones, leaf blades smaller (15-32 cm long, 6-15 cm wide), adaxially sparsely villose, abaxially sparsely pubescent. *C. paludigenum* is morphologically similar to *C. tashiroi* Kitam. and *C. sieboldii* Miq., but it differs from the former in its phyllaries in 5 or 6 rows, apex erect, stems sparsely white villose on upper part, basal leaves lanceolate, elliptic-lanceolate or elliptic, pinnatifid or undivided; it differs from the latter in involucre campanulate, 2.0-3.5 cm in diameter, phyllaries in 5 or 6 rows, basal leaves lanceolate, elliptic-lanceolate or elliptic, pinnatifid or undivided.

Key words: Asteraceae; *Cirsium* Mill.; *Cirsium zhejiangense* Z. H. Chen et X. F. Jin; *Cirsium paludigenum* Y. F. Lu, Z. H. Chen et X. F. Jin; new species; Zhejiang

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菊科(Asteraceae)是有花植物种类最多的科,全世界有1 600多属24 000多种[1]1-2。中国分布的菊科植物有2 336种,隶属于15族248属[1]1-8,[2]。全世界蓟属(*Cirsium* Mill.)植物有250~300种,广布于北温带及亚热带地区[1]160-175,[3-5]。中国分布的蓟属植物有46种,其中近一半为中国特有种[1]1-2,[5]。本属用于种类鉴定的形态性状主要包括叶片形状和质地、花期时基生叶存在与否、头状花序直立或下垂、总苞片层数以及外层总苞片是否密被细小黏质腺体[3-4,6]。

作者所在课题组在承担《浙江植物志》(新编)菊科的编研过程中,对浙江及邻近地区的菊科植物进行了调查、采集和鉴定以及相关标本的查阅,从中发现了蓟属2个新种,这2个新种的花均于秋季至初冬开放,开花时头状花序下垂,二者具体的形态特征描述如下:

浙江垂头蓟 新种(图1,图2)

Cirsium zhejiangense Z. H. Chen et X. F. Jin, sp. nov. (Fig. 1, Fig. 2)

Haec species nova *C. yezoenso* (Maxim.) Makino affinis est, sed a qua involucri phyllis 5- vel 6-seriatis, exterioribus interioribus brevioribus, laminis minoribus, 15-32 cm longis, 6-15 cm latis, supra sparse villosis, subtus sparse pubescentibus differt.

Type: China. Zhejiang (浙江), Pan'an (磐安), Weixin (维新), Lingjiangyuan (灵江源), E120°39′38.03″, N28°57′49.32″, by stream under forest, alt. 550 m, 26 Nov. 2013, X. F. Jin & T. T. Yu (金孝锋和余婷婷) 3202 (holotype, ZM; isotypes, HTC, PE).

A: 生境 Habitat; B: 基生叶 Basal leaves; C: 叶片上面,示颜色及毛被 Upper surface of leaf, showing color and indumentum; D,E: 头状花序排列式样 Arranging pattern of capitula; F: 叶片下面,示颜色及毛被 Lower surface of leaf, showing color and indumentum; G: 头状花序,示总苞及总苞片 Capitulum, showing involucre and phyllaries; H: 瘦果 Achenes.

图1 浙江垂头蓟的生境及形态特征

Fig. 1 Habitat and morphological characteristics of *Cirsium zhejiangense* Z. H. Chen et X. F. Jin

Perennial herbs. Roots tuberous, fusiform, 0.8–1.0 cm in diameter, obliquely ascending. Stems erect, 40–70 cm tall, slightly ribbed, simplex or branched on upper part, nearly glabrous, or sparsely to densely white villose under capitula. Basal leaves rosulate; blade ovate-elliptic, elliptic or long-elliptic, 15–32 cm long, 6–15 cm wide, adaxially dark green, sparsely brown villose, abaxially pale green, sparsely pubescent and rather densely along veins, pinnatilobate to pinnatifid, sometimes pinnatipartite, base narrowed into a long winged petiole; lateral lobes 3–6 pairs, ovate, ovate-elliptic, elliptic or long-triangular, margin irregularly lobed or incised, lobe margin unequal toothed, with an apical spinule 3.0 – 5.0 mm long; terminal lobes lanceolate or ovate-lanceolate, margin unequal teeth with a ca. 1.0 mm apical spinule. Cauline leaves alternate; blade ovate, ovate-elliptic, elliptic or oblong-elliptic, 8–20 cm long, 4–12 cm wide, adaxially dark green, sparsely brown villose, abaxially pale green, sparsely pubescent and rather densely along veins, pinnatilobate, pinnatifid to pinnatipartite, base auriculate. Capitula 3 – 5, racemose, rarely solitary, nodding. Involucre bowl-like or broadly campanulate, 1.5–3.0 cm in diameter. Phyllaries in 5 or 6 rows, obliquely patent, outer ones shorter than inner ones; outer phyllaries lanceolate or ovate-lanceolate, 6.0–7.0 mm long, 1.5–2.0 mm wide, upper margin ciliate, with densely minute glands on outside surfaces, apex with a ca. 1.0 mm long spinule; middle phyllaries ovate-lanceolate or lanceolate, 11.0–17.0 mm long, 2.5–3.0 mm wide, upper margin ciliate or entire, with densely minute glands on outside surfaces, apex with a ca. 1.0 mm long spinule; inner phyllaries lanceolate, 17.0–19.0 mm long, 1.5–2.0 mm wide, upper margin ciliate or entire, with densely minute glands on outside surfaces, apex with a ca. 1.0 mm long spinule. Achenes slightly compressed, long-obovoid, brown, 5.0–5.5 mm long, 2.0 – 2.5 mm wide, apex obliquely truncate. Florets bisexual; corolla purplish-pink or purple, 18.0–20.0 mm long, limb 9.0–11.0 mm long, 5-lobed, tube 9.0–10.0 mm long. Pappus pale brown, base connate; bristles pinnate, 14.0–17.0 mm long.

多年生草本。块根纺锤形,直径 0.8~1.0 cm,斜伸。茎直立,高 40~70 cm,微具棱,不分枝或上部分枝,近无毛,或疏被白色长柔毛,至头状花序下密被白色长柔毛。基生叶莲座状;叶片卵状椭圆形、椭圆形或长椭圆形,长 15~32 cm,宽 6~15 cm,上面深绿色,疏被褐色长柔毛,下面淡绿色,疏被短柔毛,沿脉较密,羽状浅裂至中裂,有时羽状深裂,基部渐狭成具翼长柄;侧裂片 3~6 对,卵形、卵状椭圆形、椭圆形或长三角形,边缘不等浅裂或缺刻状齿裂,小裂片或裂齿边缘具大小不等的锯齿,齿端具针刺,针刺长 3.0~5.0 mm;顶裂片披针形或卵状披针形,边缘疏具大小不等的锯齿,齿端具短针刺,针刺长约 1.0 mm。茎生叶互生;叶片卵形、卵状椭圆形、椭圆形或长圆状椭圆形,长 8~20 cm,宽 4~12 cm,上面深绿色,疏被褐色长柔毛,下面淡绿色,疏被短柔毛,沿脉较密,羽状浅裂、中裂至深裂,基部耳形。头状花序 3~5 个排列呈总状,稀单一顶生,下垂。总苞碗形或广钟形,直径 1.5~3.0 cm。总苞片 5 或 6 层,向外斜展,外层短而向内渐变长;外层总苞片披针形或卵状披针形,长 6.0~7.0 mm,宽 1.5~2.0 mm,上部边缘具睫毛,背面密被细腺毛,顶端具长约 1.0 mm 的针刺;中层总苞片卵状披针形或披针形,长 11.0~17.0 mm,宽 2.5~3.0 mm,上部边缘具睫毛或无,背面密被细腺毛,顶端具长约 1.0 mm 的针刺;内层总苞片披针形,长 17.0~19.0 mm,宽1.5~2.0 mm,上部边缘具睫毛或无,背面密被细腺毛,顶端具长约 1.0 mm 的针刺。瘦果稍压扁,倒长卵形,褐色,长 5.0~5.5 mm,宽 2.0~2.5 mm,顶端斜截。小花两性;花冠粉紫色或紫色,长 18.0~20.0 mm,檐部长 9.0~11.0 mm,5 裂,细管部长 9.0~10.0 mm。冠毛浅褐色,基部联合成环;冠毛刚毛羽毛状,长 14.0~17.0 mm。

其他标本:China. Zhejiang (浙江), Lin'an (临安), West Tianmushan (西天目山), on slope under forest, alt. 1 000 m, 15 Nov. 2013, X. F. Jin & T. T. Yu (金孝锋和余婷婷) 3207 (HTC), alt. 1 100 m, 10 Oct. 2011, S. Z. Yang & Z. H. Chen (杨淑贞和陈征海) TMS20111010 (HTC), 3 Aug. 1957, X. Y. He (贺贤育) 25203 (HHBG), 16 Oct. 1951, X. Y. He (贺贤育) 0031 (HHBG), X. Y. He (贺贤育) 1716 (HHBG), 5 Nov. 1958, anonymous 31363 (HHBG), Qingliangfeng (清凉峰), at forest margin, alt. 900 m, 2 Nov. 2011, Z. H. Chen & G. Y. Li (陈征海和李根

A：植株下部 Lower part of plant；B：植株上部 Upper part of plant；C：外层总苞片 Outer phyllary；D：中间总苞片 Middle phyllary；E：内层总苞片 Inner phyllary；F：小花 Floret；G：瘦果 Achene.

图 2 浙江垂头蓟(据主模式标本)
Fig. 2 *Cirsium zhejiangense* Z. H. Chen et X. F. Jin (from holotype)

有) QLF20111103 (HTC, ZM), QLF20111104 (HTC, ZM), 16 Nov. 2013, X. F. Jin & T. T. Yu (金孝锋和余婷婷) 3208 (HTC); Ningbo (宁波), Fenghua (奉化), Dayan (大雁), 9 Nov. 2013, Z. H. Chen (陈征海) s.n. (HTC), Yinzhou (鄞州), 10 Nov. 2013, Z. H. Chen (陈征海) s.n. (HTC, ZM); Pan'an (磐安), Weixin (维新), Lingjiangyuan (灵江源), under forest, alt. 600 m, 30 Oct. 2014, Z. L.

Chen（陈子林） s. n.（HTC），Tianwang（田王），Pingtou（平头），in grasses，alt. 700 m，8 Nov. 1988，L. Hong（洪林） 2644（HHBG）；Taishun（泰顺），Sankui（三魁），25 Jun. 1962，on slope，Zhejiang Bot. Res. Exped.（浙江植物资源普查队） 8344（NAS）；Xinchang（新昌），Xiaojiang Forestry Farm（小将林场），by stream under forest，alt. 520 m，6 Oct. 2011，G. Y. Li & Z. H. Chen（李根有和陈征海） XC20111002（HTC）；Wencheng（文成），Tonglingshan（铜铃山），Houwanggu（猴王谷），2 Nov. 2013，Z. H. Chen（陈征海） WCT-001（HTC），WCT-002（ZM），WCT-003（ZM）.

本种与 *Cirsium yezoense*（Maxim.）Makino 最接近，区别主要在于本种总苞片 5 或 6 层，外层总苞片较内层总苞片短，叶片较小，长 15~32 cm，宽 6~15 cm，上面疏被长柔毛，下面疏被短柔毛。而 *C. yezoense* 的总苞片 9 或 10 层，外层总苞片与内层总苞片近等长，叶片长 30~65 cm，宽 10~30 cm，近无毛。

在中国产的蓟属植物中，浙江垂头蓟略接近蓟（*C. japonicum* Fisch. ex DC.）和野蓟（*C. maackii* Maxim.）。但蓟的头状花序下垂直立，茎中下部密被多节柔毛，叶片羽状深裂至近全裂，两面同色为绿色，下面密被多节柔毛，外层和中层总苞片卵状三角形至长三角形，常春季开花；野蓟头状花序下垂直立，叶片下面密被柔毛，总苞钟形，春季开花。

沼生垂头蓟　新种（图 3，图 4）

Cirsium paludigenum Y. F. Lu，Z. H. Chen et X. F. Jin，sp. nov.（Fig. 3，Fig. 4）

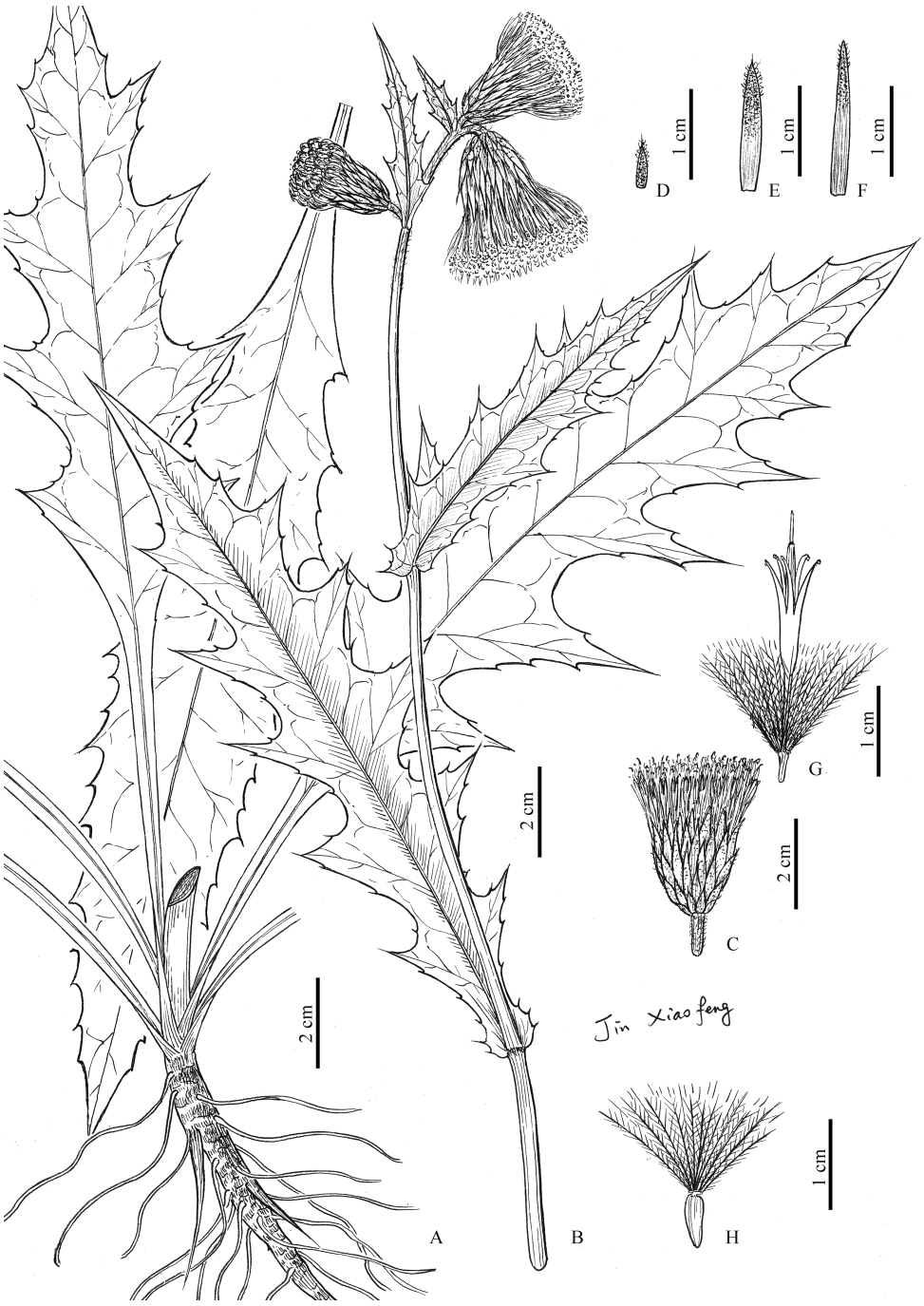
Species nova *C. tashiroi* Kitam. et *C. sieboldii* Miq. affinis est，ab illa involucri phyllis 5- vel 6-seriatis，apice erectis，extus dense gladulosis minutis，caulibus a medio ad apicem sparse villosis，foliis basalibus lanceolatis，elliptico-lanceolatis vel ellipticis，pinnatifidis vel non divisis recedit；ab hac involucris campanulatis，2.0-3.5 cm diameter，phyllis 5- vel 6-seriatis，foliis basalibus lanceolatis，elliptico-lanceolatis vel ellipticis，pinnatifidis vel non divisis differt.

Type：China. Zhejiang（浙江），Wencheng（文成），Jinzhu Forestry Farm（金珠林场），E120°01′36.01″，N27°52′37.05″，in wetland，alt. 1 030 m，7 Sep. 2018，

A：生境 Habitat；B，C：基生叶 Basal leaves；D：叶片上面，示颜色及毛被 Upper surface of leaf，showing color and indumentum；E：叶片下面，示颜色及毛被 Lower surface of leaf，showing color and indumentums；F：头状花序排列式样 Arranging pattern of capitula；G：头状花序，示总苞及总苞片 Capitulum，showing involucre and phyllaries；H：瘦果 Achenes.

图 3　沼生垂头蓟的生境及形态特征

Fig. 3　Habitat and morphological characteristics of *Cirsium paludigenum* Y. F. Lu，Z. H. Chen et X. F. Jin



A：植株下部 Lower part of plant；B：植株上部 Upper part of plant；C：头状花序 Capitulum；D：外层总苞片 Outer phyllary；E：中间总苞片 Middle phyllary；F：内层总苞片 Inner phyllary；G：小花 Floret；H：瘦果 Achene.

图4 沼生垂头蓟(据主模式标本)

Fig. 4 *Cirsium paludigenum* Y. F. Lu, Z. H. Chen et X. F. Jin (from holotype)

Z. H. Chen et al. (陈征海等) WC2018090707 (holotype, ZM; isotypes, HTC, PE).

Perennial herbs. Roots tuberous, fusiform, 1.0–1.2 cm in diameter, erect or obliquely ascending. Stems erect, 45–110 cm tall, slightly ribbed, simplex, rarely branched on upper part, nearly glabrous or sparsely to densely white villose under capitula. Basal leaves rosulate; blade lanceolate, elliptic-lanceolate or

elliptic, 10–30 cm long, 3–10 cm wide, adaxially dark green, glabrous, abaxially pale green or gray-green, glabrous, pinnatifid or undivided, base narrowed into a long winged petiole; lateral lobes 4–6 pairs, lanceolate, ovate-lanceolate, triangular or long-triangular, margin unequal teeth with an apical spinule 3.0–5.0 mm long; terminal lobes lanceolate or ovate-lanceolate, margin unequal teeth with an apical spinule 3.0–5.0 mm long. Cauline leaves smaller than basal leaves; blade lanceolate or elliptic-lanceolate, 6.0–15.0 cm long, 0.7–4.5 cm wide, adaxially dark green, glabrous, abaxially pale green or gray-green, glabrous, pinnatilobate to pinnatipartite, base auriculate. Capitula 2–4, racemose, rarely solitary, nodding. Involucre campanulate, 2.0–3.5 cm in diameter. Phyllaries in 5 or 6 rows, erect, outer ones shorter than inner ones; outer phyllaries lanceolate, ovate-lanceolate or long-ovate, 4.0–6.0 mm long, 1.0–2.0 mm wide, upper margin long-ciliate, with densely minute glands on outside surfaces, apex with a ca. 1.0 mm long spinule; middle phyllaries ovate-lanceolate or lanceolate, 9.0–15.0 mm long, 2.0–2.5 mm wide, upper margin long-ciliate, with densely minute glands on outside surfaces, apex with a ca. 1.0 mm long spinule; inner phyllaries linear-lanceolate, 17.0–19.0 mm long, ca. 1.5 mm wide, upper margin ciliate, with densely minute glands on outside surfaces. Achenes slightly compressed, long-obovoid, brown, ca. 5.0 mm long, 2.0–2.5 mm wide, apex obliquely truncate. Florets bisexual; corolla purplish-pink or purple, 19.0–22.0 mm long, limb 10.0–12.0 mm long, 5-lobed, tube 9.0–10.0 mm long. Pappus pale brown, base connate; bristles pinnate, 12.0–15.0 mm long.

多年生草本。块根纺锤形，直径 1.0～1.2 cm，直或斜伸。茎直立，高 45～110 cm，微具棱，不分枝，极少上部分枝，近无毛，或疏被白色长柔毛，至头状花序下密被白色长柔毛。基生叶莲座状；叶片披针形、椭圆状披针形或椭圆形，长 10～30 cm，宽 3～10 cm，上面深绿色，下面淡绿色或灰绿色，两面无毛，羽状中裂或不裂，基部渐狭成具翼长柄；分裂者侧裂片 4～6 对，披针形、卵状披针形、三角形或长三角形，边缘疏具大小不等的锯齿，齿端具针刺，针刺长 3.0～5.0 mm；顶裂片披针形或卵状披针形，边缘疏具大小不等的锯齿，齿端具针刺，针刺长 3.0～5.0 mm。茎生叶较基生叶小；叶片披针形或椭圆状披针形，长 6.0～15.0 cm，宽 0.7～4.5 cm，上面深绿色，下面淡绿色或灰绿色，两面无毛，羽状浅裂至深裂，基部抱茎。头状花序 2～4 个排列成总状，稀单一顶生，下垂。总苞钟形，直径 2.0～3.5 cm。总苞片 5 或 6 层，直立，外层短而向内渐变长；外层总苞片披针形、卵状披针形或长卵形，长 4.0～6.0 mm，宽 1.0～2.0 mm，上部边缘具长睫毛，背面密被细腺毛，顶端具长约 1.0 mm 的针刺；中层总苞片卵状披针形或披针形，长 9.0～15.0 mm，宽 2.0～2.5 mm，上部边缘具长睫毛，背面密被细腺毛，顶端具长约 1.0 mm 的针刺；内层总苞片条状披针形，长17.0～19.0 mm，宽约 1.5 mm，上部边缘具睫毛，背面密被细腺毛。瘦果稍压扁，倒长卵形，褐色，长约 5.0 mm，宽 2.0～2.5 mm，顶端斜截。小花两性；花冠粉紫色或紫色，长 19.0～22.0 cm，檐部长 10.0～12.0 cm，5 裂，细管部长 9.0～10.0 mm。冠毛浅褐色，基部联合成环；冠毛刚毛羽毛状，长 12.0～15.0 mm。

其他标本：China. Zhejiang (浙江), Wencheng (文成), Jinzhu Forestry Farm (金珠林场), in wetland, alt. 1 030 m, 7 Sep. 2018, Z. H. Chen et al. (陈征海等) WC2018090709 (HTC, ZM).

本种接近 *Cirsium tashiroi* Kitam. 和 *C. sieboldii* Miq.，与前者的区别为：本种总苞片 5 或 6 层，先端直立，茎中上部疏被白色长柔毛，基生叶披针形、椭圆状披针形或椭圆形，羽状中裂或不裂，而 *C. tashiroi* 的总苞片 8 或 9 层，先端外展，茎被褐色多节柔毛，基生叶狭倒卵形或狭椭圆形，羽状深裂至全裂，裂片 8～10 对；与后者的区别为：本种总苞钟形，直径 2.0～3.5 cm，总苞片 5 或 6 层，基生叶披针形、椭圆状披针形或椭圆形，羽状中裂或不裂，而 *C. sieboldii* 的总苞钟形至筒形，直径 1.1～1.9 cm，总苞片 8～10 层，基生叶狭倒卵形，羽状中裂。

据目前采集的标本来看，浙江垂头蓟在浙江西北部、中部、东部和南部均有分布，沼生垂头蓟仅分布于浙江南部。

经标本查阅和鉴定，浙江现有蓟属植物 9 种，分类检索表如下：

浙江蓟属植物的分类检索表

1. 雌雄异株;果期冠毛通常长于花冠…… 刺儿菜 *Cirsium arvense* var. *integrifolium*
1. 雌雄同株,全部小花两性;果期冠毛短于或近等长于花冠。
2. 茎中部叶片不裂,边缘具细密的针刺。
3. 叶片椭圆形、卵状椭圆形至卵形,宽在5.0 cm以上,两面同色 …… 钟观光蓟 *Cirsium tsoongianum*
3. 叶片长椭圆形、披针形或倒披针形,宽在2.5 cm以内,两面异色…… 线叶蓟 *Cirsium lineare*
2. 茎中部叶片羽状分裂,边缘疏具发达外张的针刺。
4. 内层总苞片先端膜质扩大 …… 绿蓟 *Cirsium chinense*
4. 全部总苞片先端急尖或渐尖,无膜质扩大。
5. 花期秋季至初冬;头状花序下垂。
6. 茎生叶叶片两面疏被短柔毛,卵形至长圆状椭圆形,羽状浅裂、中裂至深裂;总苞片斜展
…… 浙江垂头蓟 *Cirsium zhejiangense*
6. 茎生叶叶片两面无毛,披针形或椭圆状披针形,羽状浅裂至深裂;总苞片直立 …沼生垂头蓟 *Cirsium paludigenum*
5. 花期春夏季;头状花序直立。
7. 叶片两面同色,疏被多节柔毛…… 蓟 *Cirsium japonicum*
7. 叶片两面异色,上面绿色,被多节柔毛,下面灰白色,密被蛛丝状毛及长柔毛。
8. 头状花序排成伞房状;总苞宽约2.0 cm …… 野蓟 *Cirsium maackii*
8. 头状花序排成明显的总状;总苞宽2.3~3.0 cm …… 总序蓟 *Cirsium racemiforme*

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