

Research paper

Pyrrhopappus DC. (Asteraceae), a new-recorded genus and its naturalized species to the Flora of Taiwan

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【【Abstract】 A newly recorded genus: *Pyrrhopappus* DC. (Asteraceae) and its newly naturalized species at coastal regions in northern Taiwan: *P. carolinianus* (Walter) DC is described and illustrated. This species is characterized by its habit, morphological characters on the capitulum and achene.

【Key words】 Asteraceae; new-recorded; *Pyrrhopappus*; Taiwan

研究報告

蒲公英舅屬(菊科, *Pyrrhopappus* DC.) , 台灣新紀錄屬及其歸化種

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【摘要】 本文描述原產北美洲的台灣菊科新紀錄屬：蒲公英舅屬(*Pyrrhopappus* DC.)及該屬一新歸化北台灣濱海種類：大蒲公英舅(*P. carolinianus* (Walter) DC.)，並提供本種生長型、頭花與瘦果的形態特徵有助區別。

【關鍵詞】 菊科、新紀錄、蒲公英舅屬、台灣

Introduction

Members of Asteraceae are one of the main contributors to the flora and naturalized plants of Taiwan (Peng et al. 1998; Chou et al. 2015). For example, there are eight alien species of thirty-one Cichorieae spp. in Taiwan (Peng et al. 1998; Boufford et al 2003; Wang & Chen 2010).

Recently, a strange Cichorieae sp. similar to *Ixeris* spp. was discovered at coastal region, northern Taiwan, but with rosette basal leaves, erect scape, larger capitulum in diameter, 5-ribbed achene with elongated beak and pappus with minute bristle strange to known species recorded in Taiwan (Peng et al. 1998; Boufford et al. 2003; Wang &

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Chen 2010; Chou et al. 2015). Based on further comparison (Bogler 2006), we confirmed this strange Asteraceae sp. belongs to *Pyrrhopappus carolinianus* (Walter) DC. Phylogeny of *Pyrrhopappus* and its allies had been confirmed (Turner & Kim 1990; Whitton et al. 1995; Lee et al. 2003). This genus is native to America, represents in three to five species (Bogler 2006). Herein, we described this annual or biennial, self-compatible herb (Estes & Thorp 1975; Barber & Estes 1978) and its naturalized event in coastal grassland, northern Taiwan (Figure 1), and offered diagnosable characters benefit to identification.

☆: *Pyrrhopappus carolinianus*

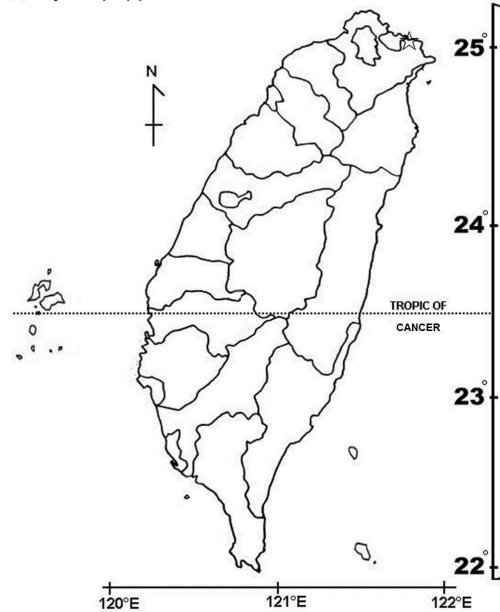


Figure 1. Distribution map of *Pyrrhopappus carolinianus* (Walter) DC.

Key to Cichorieae (Asteraceae) in Taiwan

- 1. Pappus wanted or scale-like.
 - 2. Pappus scale-like. *Cichorium*
 - 2. Pappus wanted. *Lapsanastrum*
- 1. Pappus well-developed.
 - 3. Pappus of feathery bristles.
 - 4. Receptacle scaly; achenes long-beaked. *Hypochaeris*
 - 4. Receptacle not scaly; achenes slightly contracted at apex. *Picris*
 - 3. Pappus of simple setose bristles, not feathery.
 - 5. Heads solitary on hollow scapes; plants acaulescent. *Taraxacum*
 - 5. Heads many, on solid and leafless, leafy or bracteates stems.
 - 6. Achenes narrowed or beaked at apex.
 - 7. Involucre of centrifugally decreasing imbricate bracts.
 - 8. Achenes beaked.
 - 9. Achenes distinctly flattened and winged, carpopodium inconspicuous or wanted. ... *Lactuca*
 - 9. Achenes elongated fusiform, 4- or 5-grooved, carpopodium conspicuous. *Pyrrhopappus*
 - 8. Achenes narrowed at apex, slightly flattened, not winged. *Sonchus*
 - 7. Involucral bracts in 2 series, outer bracts tiny, calyculate.
 - 10. Subshrub; main axis bearing only radical leaves, flowering stems lateral. *Crepidiastrum*

- 10. Herbs; main axis bearing inflorescence.
 - 11. Achenes long-beaked.
 - 12. Ligules 5-12 per head; pappus yellow or dirty-white.*Ixeridium*
 - 12. Ligules 15-41 per head; pappus snow-swhite.*Ixeris*
 - 11. Achenes short-beaked or not beaked.
 - 13. Corolla yellow; stems scape-like, 5-40 cm tall, naked or with 1- or 2 leaves. .*Youngia*
 - 13. Corolla purplish; stems 70-10 cm tall, leafy throughout.*Paraprenanthes*
- 6. Achenes truncate at apex.
 - 14. Heads many-flowered; involucre subcampanulate; achenes not flattened. *Hieracium*
 - 14. Heads 5-flowered; involucre narrowly tubular; achenes slightly flattened. *Notoseris*

Taxonomic treatment

Pyrrhopappus DC. Prodr. 7(1): 144–145, 1838. Bogler. Fl. N Amer 19: 376, 2006.

蒲公英舅屬

Annuals or perennials, 5–100 cm; taprooted or rhizomatous. Stems usually 1, sometimes 2–5, erect, unbranched or branched proximally and/or distally, glabrous or pilosulous. Leaves basal or basal and cauline; basal petiolate, distal usually sessile; blades oblong, elliptic, or ovate to lanceolate or linear, margins entire or dentate to pinnately lobed, faces usually glabrous, sometimes pilosulous near margins. Heads borne singly or in loose, corymbiform arrays. Peduncles not inflated distally, sometimes bracteate. Calyculi of 3–13, deltate to subulate or filiform bractlets. Involucres cylindric, 4–5 mm diam. Phyllaries 8–21 in 2 series, reflexed in fruit, linear, equal, margins often scarious, apices acute, often thickened or bearing keel-like flaps near tips. Receptacles convex, pitted, glabrous, epaleate. Florets 20–150; corollas yellow to whitish. Cypselae reddish brown to stramineous, bodies fusiform, beaks concolorous with bodies, filiform, fragile, grooves or broad ribs 5, faces transversely rugulose, glabrous; pappi borne on discs at tips of beaks, persistent, double: outer coroniform of whitish, relatively short, spreading, sometimes curly, hairs, inner of 80–120, rufous to

stramineous, subequal, barbellulate bristles in 2–3 series. x = 6. (Northington 1974)

Pyrrhopappus carolinianus (Walter) DC. Prodr. 7 (1): 144. 1838; Bogler. Fl. N Amer 19: 378, 2006.

大蒲公英舅 Figure5 2-3

Annual or biennial rosette herb. Basal leaves ellipte to lanceolate, 5-12 cm long, glabrous or with large sparse hairs on upper surface, base attenuate, apex acute, margin toothed to lobed, sparse elongated teeth, or pinnate, lobes 1-5 cm; midrib prominent. Inflorescence scapiform, solitary or sparse 3-5-branched, with 0~2 leaves. Involucre 2-rowed, outers lanceolate, apex acute to acuminate, purplish or not; inners oblong, apex acute, subapical margin with an acute protruding. Capitulum composed by ray florets in 3~4 rows, 2.5~3 cm in diameter when blooming, corolla creamy yellow, apex dentate; anther dark-grayed, apex acute, base membranous; Pistil 1, yellow, stigma 0.2~0.3 mm long. Achene elongated fusiform, carpopodium cup-shaped, conspicuous, upper surface with bristle, 4~5-grooved, apex with a slender beak; puppi straight, unbranched, with minute bristle.

Phenology: May - October.

Specimens examined: TAIWAN. New Taipei City, Ruifang District, Shen-Ao, 25 Jun 2014,

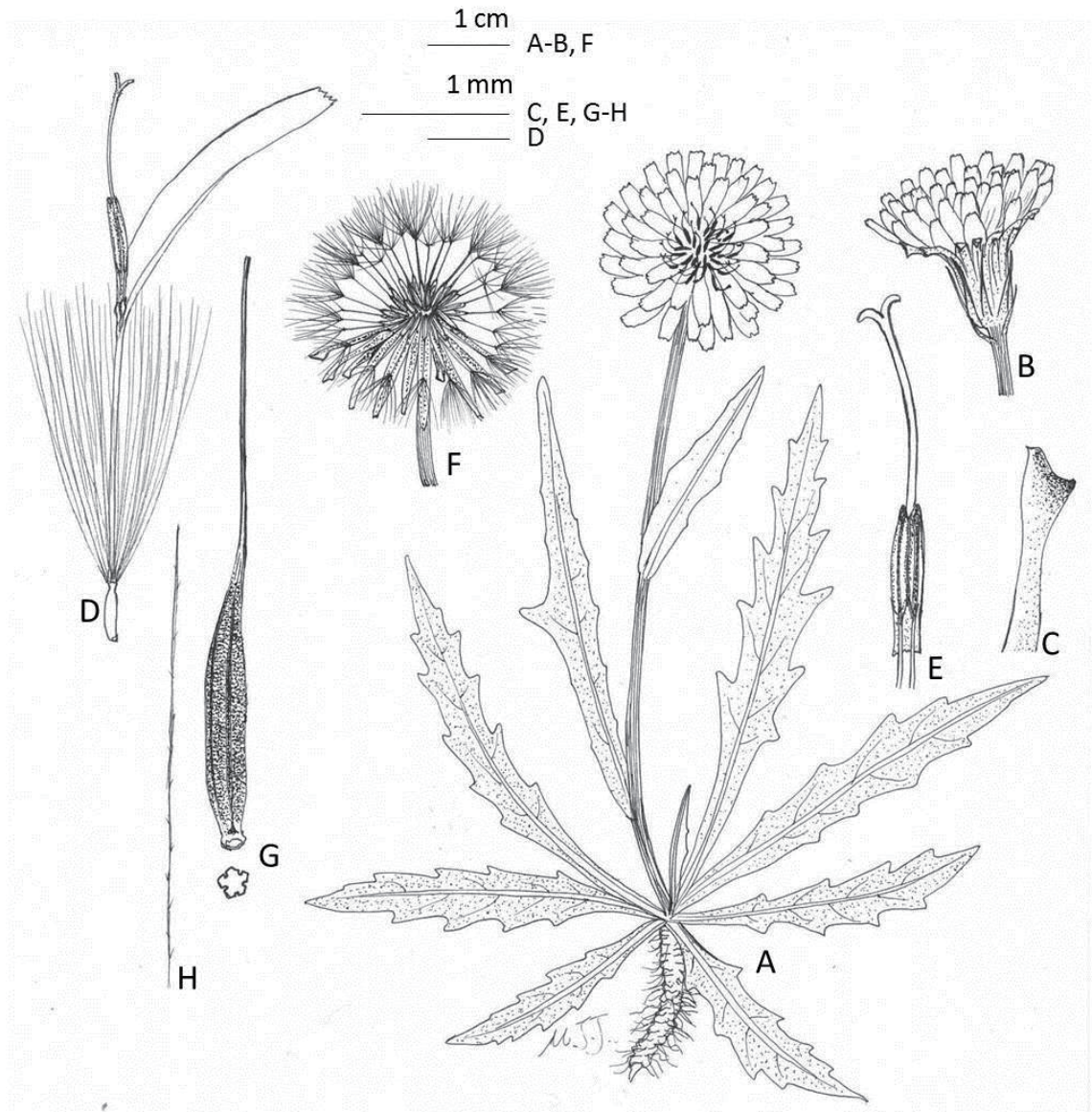


Figure 2. *Pyrrhopappus carolinianus* (Walter) DC. A, habit; B, capitulum, lateral view; C, acute protruding on submarginal apex of inner involucre, lateral view; D, floret; E, anthers and pistil; F, fruiting capitulum; G, achene, pappi removed; H, pappus.

Ming-Jer Jung 6058 (TAIF); same loc., 3 May 2015, *Ming-Jer Jung 6078* (TAIF); same loc., 29 April 2016, *Ming-Jer Jung 6101* (TAIF); same loc., 3 May 2018, *Ming-Jer Jung 6132* (TAIF).

Notes: Vernacular name of *Pyrrhopappus carolinianus* is Carolina-false dandelion, Carolina desert-chicory, Texas dandelion, which is very common throughout southeast and western coasts

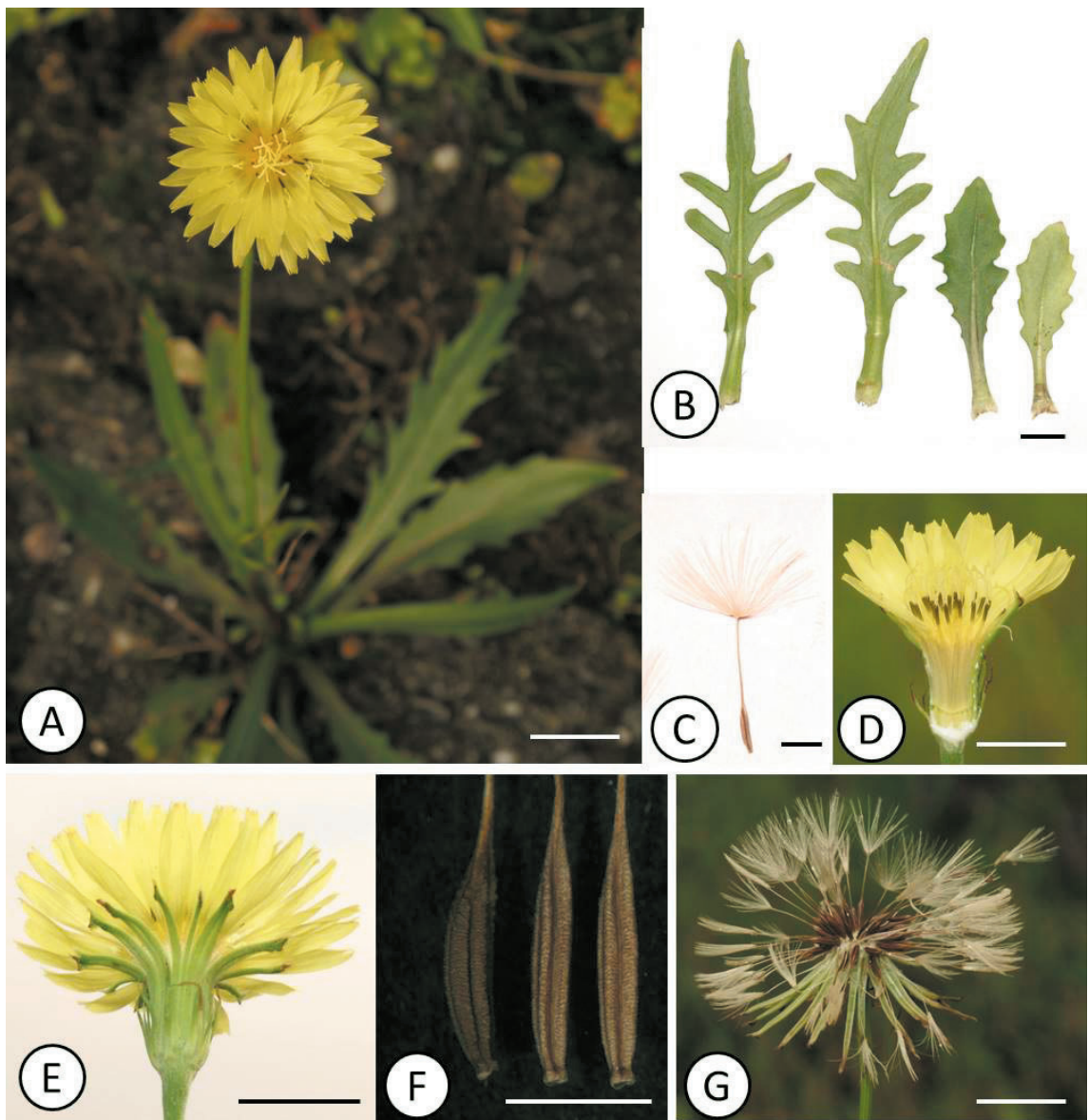


Figure 3. *Pyrrhopappus carolinianus* (Walter) DC. A, habit; B, rosette leaves, from left first and third: adaxial side, left second and fourth: abaxial side; C, achene, showing reddish pappi; D, capitulum, cross section; E, capitulum, showing involucre; F, achenes, showing longitudinal grooves and carpodiums; G, fruiting capitulum.

of the United States (Bogler 2006). Locally, this alien weed is naturalized at full-sunny coastal grassland, northern Taiwan, and coexists with other Cichorieae spp., including: *Ixeris chinensis*,

Sonchus arvensis, and *Youngia japonica*. In outline, however, this alien weed has wider capitulum (ca. 2.5~3 cm) than *S. arvensis* (2~2.5 cm), *I. chinensis* (1.5~2 cm) and *Y. japonica* (ca.

1 cm) when blooming. In second, achenes of *P. carolinianus* are elongated-fusiformed with elongated beak at apex, 4- or 5-longitudinal grooves on body surface, and dominant carpophodium at base, differed from the others. Thirdly, *P. carolinianus* has 3-4 rows of ray florets per capitulum, which is similar to *S. arvensis* but only 1 row in *I. chineisis* and *Y. japonica*.

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