Centaurea regia subsp. javanroudense, a new subspecies of Centaurea sect. Cynaroides (Asteraceae), from flora of Iran

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Abstract

Centaurea regia Boiss. subsp. javanroudense Ranjbar & Negaresh (Asteraceae) is described and illustrated from Zagros mountain in W Iran as a new taxon. It is a distinct species among the other Iranian species belonging to Centaurea sect. Cynaroides, which contains plants have often capitula solitary or synflorescences racemose, upper stem leaf decurrent, involucre subglobose with pink or yellow flowers. The new taxon is closely related to C. regia Boiss., but differs by its stem indumentums (hirsute articulate vs. arachnoid tomentose), median stem leaf shape (oblong or elliptic vs. broadly lanceolate or oblong), and outer appendage shape (broadly cordate vs. ovate).

Key words: Cynaroides, Centaurea regia subsp. javanrousense, Iran

1. Introduction

Centaurea L. s.l. is one of the largest genera of the family Asteraceae. It is a taxonomically difficult genus and depending on the classification adopted comprises between 400 and 700 species (Boissier, 1875; Wagenitz, 1975; Dittrich, 1977; Bremer, 1994; Wagenitz and Hellwig, 1996). The taxonomic complexity of Centaurea, especially in the Near East, has stimulated in much recent research (Wagenitz, 1983; Kaya, 1986; Kaya, 1987; Hellwig, 1994; Kaya et al., 1996; Wagenitz and Hellwig, 1997; Wagenitz et al., 1998; Türkoglu et al., 2003). Cytological data, in particular, which are still inadequate for the Centaurea species of the Near East, should be considered to resolve taxonomic limits. Because of Centaurea s.l. is considered as a taxonomically unnatural group, recent approaches have separated this taxon into more natural genera, namely Centaurea s. str., Cyanus Mill., Psephellus Cass. and Rhaponticoides Vaill. (Wagenitz and Hellwig, 2000; Greuter, 2003a, 2003b). It is mainly distributed in Europe, Mediterranean region, and SW Asia, with introductions in other more or less distant region. It is also one of the largest genera of the family Asteraceae in Iran. In Flora Iranica, the genus is represented by 70 species in Iran, of which 32 are endemic (Wagenitz, 1980). Recently, 3 species and 2 records have been added to the genus in Iran (Mozaffarian, 1991; Mozaffarian, 1992; Mozaffarian, 2006; Mozaffarian, 2010; Ghahreman and Attar, 2000).

2. Materials and methods

During our field excursions in Iran, we collected some specimens belonging to the genus Centaurea and also the closely related genera from Taze Abad around Kermanshah Province, W Iran both in flowering and fruiting phases, from 2007 to 2011. In addition, several sheets were examined from the herbaria BASU, B, G and W. The collected Centaurea specimens were identified according to the Flora Iranica (Wagenitz, 1980). Two populations of a taxon that showed some important morphological differences with C. regia are described and illustrated as a new taxon from W Iran.
3. Results and discussion

3.1. Description of new subspecies

**Centaurea regia subsp. javanroudense** Ranjbar & Negaresh, subsp. nova. (Figure 1)

Differt ab *Centaurea regia* Boiss. Caulis in parte inferiori articulatus hispidus (ne arachnido-tomentosus), folia caulina media oblonga vel elliptica (ne late lanceolata vel oblonga), appendices laterales late cordate, decurrentia, (ne ovato, non decurrentia), ciliis utrinque 4 – 22 (ne 10 – 17), Achaenia 5.7 – 6 mm (ne ad 9 mm) longa distinguitur.

Type: Iran, Prov. Kermanshah, Javanroud to Taze Abad, 1350 m, 7. 5. 2008, Ranjbar & Negaresh 16105 (BASU)

Biennial with thick fleshy taproot, remains of stems and leaf bases of the previous year present. Stem erect, often branched from median or upper part, striate, up to 60 cm tall, above part glabrescent, below covered with loosely hisrtle-articulate hairs, up to 2 mm long, somewhat heteromorphic in length, and glandular hairs. Leaves rigid, papery (on drying), covered with loosely hirsute-articulate hairs, densely on veins, and glandular hairs, margin scabrous. Basal leaves unknown. Lower stem leaves simple, broadly lanceolate, 21.8 – 23.5 × 7.7 – 8.5 cm, acute at the apex, entire, rarely slightly dentate, petiole up to 12.5 cm long. Median stem leaves sessile, oblong, or elliptic, 14.4 – 17.2 × 6.3 – 7.3 cm, acute at the apex, entire, decurrent, up to 40 mm long. Upper stem leaves increasingly smaller, sessile, lanceolate, oblong, 1.7 – 10.6 × 0.25 – 5 cm, acuminate at the apex, sometimes mucronate, entire, narrowly decurrent, some of the leaves not decurrent. Capitula on each branch solitary, peduncles up to 16 cm long, sometimes with bracts similar to phyllaries (with large appendages). Involucres subglobose, 38 – 50 × 47 – 60 mm. Phyllaries multiserrate, grayish, imbricate, coriaceous-scarious, pubescent. Outer phyllaries ovate, 3 – 4 × 3.5 – 6.5 mm; appendage broadly cordate, 6.3 – 11 × 10.5 – 19 mm (included cilia and spines), white or straw-coloured to brownish, moderately imbricate, decurrent. Median phyllaries broadly oblong, 6.2 – 12.2 × 7.5 – 10 mm; appendage broadly ovate to oblong, 13 – 17 × 22 – 24 mm (included cilia and spines), brownish, or purple, moderately imbricate, not decurrent. Inner phyllaries oblong to narrowly oblong, 17.2 – 30 × 5 – 10 mm; appendage triangular, 6.6 – 14.2 × 4.5 – 17.2 mm (included cilia and spines), brownish, or purple, not decurrent. Appendages totally concealing basal part of phyllaries, chartaceous, some of the appendages are striate brown; cilia white or straw-colored to brownish, narrowly triangular, numerous, 4 – 22 on each side, 1 – 7.5 mm long, slightly scabrous; spines narrowly triangular, 1.8 – 8 (-10) mm long, slightly longer than the closet cilia or ± equa. Flowers pink lilac, central florets hermaphroditic, ca. 51 mm long, 5 lobed, lobes 9 mm long; peripheral florets staminodes, slightly radiant, ca. 45 mm long, 5 lobed, limb lobe narrowly lanceolate to linear, lobes 12.5 – 13 mm long. Achenes ovate, 5.7 – 6 mm long, 2.9 – 3.1 mm wide, smooth and shiny, yellow, rounded at the apex, glabrescent, hilum up to 0.8 mm long. Pappus persistent, double, plumose, white; outer pappus multiserrate, 10 – 10.7 mm long; inner pappus shorter, 2.2 – 3.3 mm long.

3.2. Key of subspecies of *C. regia*:

1a - Stem indumentums hirsute-articulate; median stem leaves oblong or elliptic; outer appendage broadly cordate and decurrent

1b - Stem indumentums arachnoid-tomentose; median stem leaves broadly lanceolate or oblong; outer appendage ovate and not decurrent

2a - Terminal spine of median phyllaries (8-) 9 – 14 mm long; median appendage white or straw–coloured rarely brownish

2b - Terminal spine of median phyllaries (3-) 4 – 8 mm long; median appendage brownish

3.3. Examined specimens

Known only from the type material.

3.4. Etymology

The specific epithet refers to Javanroud in Kermanshah Province, where the new taxon is found.

3.5. Taxonomic remarks, ecology and distribution

*Centaurea regia* Boiss. subsp. *javanroudense* is a rare endemic to W Iran and known only from the dry-steppe zone of the submountainous regions around Tazeh Abad in Kermanshah Province (Figure 2). It may still grow in on clay soils, at 1200 – 1350 m elevations. *C. regia* subsp. *javanroudense* is closely related to *C. regia* Boiss. (Aslan et al., 2011) especially because of similar shape of the habit, size and number of capitule (Figure 3). However, the new taxon differs from it by having some characters (Table 1 and figure 4) such as stem indumentums (vs. arachnoid-tomentose), median stem leaves oblong or elliptic (vs. broadly lanceolate or oblong), outer appendage broadly cordate and decurrent (vs. ovate and not decurrent), inner appendage brownish or purple (vs. brownish), cilia number on each side 4 – 22 (vs. 10 – 17), achenes 5.7 – 6 mm long (vs. up to 9 mm).
Figure 1. *Centaurea regia* Boiss. subsp. *javanroudense*. (A) habit, (B) outer phyllary with decurrent, (C-D) median phyllaries, (E) inner phyllary, (F) achenes with pappus, (G) peripheral floret, (H) central floret, scale bar: A = 2 cm; drawn after the type collection; photograph provided by Ranjbar & Negarest.

Table 1. Diagnostic morphological characters of subsp. *javanroudense*, subsp. *regia* and subsp. *cynarocephala*

<table>
<thead>
<tr>
<th>Character</th>
<th>subsp. <em>javanroudense</em></th>
<th>subsp. <em>Regia</em></th>
<th>subsp. <em>cynarocephala</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem indumentums</td>
<td>hirsute-articulate</td>
<td>arachnoid-tomentose</td>
<td>arachnoid-tomentose</td>
</tr>
<tr>
<td>Median stem leaf shape</td>
<td>oblong or elliptic</td>
<td>broadly lanceolate or oblong</td>
<td>broadly lanceolate or oblong</td>
</tr>
<tr>
<td>Outer appendage shape</td>
<td>broadly cordate</td>
<td>ovate</td>
<td>ovate</td>
</tr>
<tr>
<td>Median appendage colour</td>
<td>brownish or purple</td>
<td>white or straw-coloured</td>
<td>brownish</td>
</tr>
<tr>
<td>Cilia number on each side</td>
<td>4 – 22</td>
<td>10 – 17</td>
<td>10 – 17</td>
</tr>
<tr>
<td>Median phyllary spine length (mm)</td>
<td>3 – 6</td>
<td>(8) 9 – 14</td>
<td>(3) 4 – 8</td>
</tr>
</tbody>
</table>

Figure 2. Distribution of *Centaurea regia* Boiss. subsp. *javanroudense* in Iran
Figure 3. *Centaurea regia* (Kotschy 371); photograph provided by the G
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References


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