New species of *Euonymus* (Celastraceae): *E. baekdusanensis* M. Kim

Yong Hwang, Soonku So and Muyeol Kim*

1Department of Biological Sciences, Chonbuk National University, Jeonju 561-756, Korea
(Received 29 July 2013; Accepted 10 September 2013)

화살나무속(노박덩굴과)의 신종: 백두산회나무
(*Euonymus baekdusanensis* M. Kim)

황 용·소순구·김무열*
전북대학교 자연과학대학 생명과학과

ABSTRACT: A new species, *Euonymus baekdusanensis* M. Kim (Celastraceae), has been named and described from Mt. Baekdu of the Korean peninsula. *Euonymus baekdusanensis* shares several characteristics (4-merous flowers, 4-angled capsule, warty branches and twigs, etc.) with its related species *E. verrucosus* Scopoli. It is, however, distinct from *E. verrucosus* which have small oblong leaves (6-7 cm), short petioles (1-2 mm), and small capsules (6-8 mm) by having large elliptical leaves (11-13 cm), long petioles (6-8 mm), and large capsules (12-15 mm).

Keywords: *Euonymus baekdusanensis*, Celastraceae, Mt. Baekdu

적 요: 백두산에서 화살나무속의 신종인 백두산회나무(*Euonymus baekdusanensis* M. Kim)를 새로이 발견하여 기재하였다. 백두산회나무는 4수성 꽃구조를 가지고 4개로 작아 진 식과를 가지며 사마귀 같은 혹이 가지와 소지에 있어 회목나무(*E. verrucosus* Scopoli)와 유사하다. 그러나 백두산회나무는 커다란 장타원형의 잎(11-13 cm)을 가지고 잎병이 두عت이며(6-8 mm) 과실이 대형(12-15 mm)인 반면에, 회목나무는 작은 도란형의 잎(6-7 cm)를 가지고 잎병이 거의 없으며(1-2 mm) 과실이 소형(6-8 mm)인 점에서 두 종이 두ػ하게 차이가 난다.

주요어: 백두산회나무, 노박덩굴과, 백두산

The genus *Euonymus* L. (Celastraceae) consists of approximately 130 species and is distributed from Asia through Europe to North America (Ma and Funston, 2008). The genus *Euonymus* is characterized by shrubs, opposite leaves, cyme inflorescence, 4- or 5-merous flowers, and dehiscent capsules (Kim, 2007). Ten taxa of *Euonymus* are reported from Korea (Lee, 1980; Kim, 2007). Almost all taxa have a popular occurrence in Korea.

Baekdu mountain (2,744 m) on the Korean peninsula and in Manchuria (Lee, 1991; Lee et al., 2013). Mt. Baekdu contains about 1,500 species of vascular plants, of which 11 angiosperms are endemic (Kim, 2004).

In 2011, the authors first discovered *Euonymus baekdusanensis* M. Kim on Mt. Baekdu. It forms a small population of twenty individuals at 1,800 m altitude in the Geumgang Grand Canyon area of Mt. Baekdu. The species shares several characteristics with its related taxa *E. verrucosus* Scopoli, but it can be distinguished based on large elliptical leaves, long petioles, large capsules, etc.

*Euonymus baekdusanensis* M. Kim sp. nov. (Figs. 1-3)
New species of *Euonymus* (Celastraceae): *E. baekdusanensis* M. Kim

**Korean name**: Baek-du-san-hoe-na-mu 白두산회나무

Deciduous shrubs, 2-3 m tall; branches and twig warts. Petiole 6-8 mm long, pubescent; leaf blade elliptic, 11-13 × 3-4 cm, pubescent on veins of abaxial surface, base cuneate, margin crenulate, apex acuminate; lateral veins 7-8 pairs. Inflorescence cyme; peduncle 3-4 cm, glabrous; pedicel 15-15 mm, glabrous. Flowers 4-merous. Sepals 4, semi-rounded, green, 1 × 1 mm. Petals 4, rounded, purple, 2 × 2 mm. Stamens 4, anther 2-celled. Pistil 1, ovary tetragonal, style absent, stigma globose. Capsule 4-angled. Seeds ovoid, covered by orange aril. Flowering June.


**Distribution**: Mt. Baekdu

**Etymology**: The specific epithet is derived from Mt. Baekdu where this new species is located.

**Habitats**: The natural habitat of *Euonymus baekdusanensis* M. Kim was found in the woodlands of the Keumgang Grand Canyon area on Mt. Baekdu. This species occurs under trees in forests dominated by *Larix olgensis*, *Picea jezoensis*, *Acer ukurunduense* and *Sorbus pohuashanensi*. The species also occurs with principal shrub and herbaceous species dominated by *Euonymus verrucosus*, *Lonicera caerulea*, *Rosa davurica*, and *Maianthemum bifolium*.
Table 1. Comparison of morphological characters between *Euonymus baekdusanensis* M. Kim and *E. verrucosus* Scopoli.

<table>
<thead>
<tr>
<th>Characters</th>
<th><em>E. baekdusanensis</em></th>
<th><em>E. verrucosus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant height</td>
<td>2-3 m</td>
<td>2-3 m</td>
</tr>
<tr>
<td>Altitude</td>
<td>1,800 m</td>
<td>900-1,800 m</td>
</tr>
<tr>
<td>Twig internode</td>
<td>3-4 cm</td>
<td>2-4 cm</td>
</tr>
<tr>
<td>Leaf petiole</td>
<td>6-8 mm</td>
<td>1-2 mm</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>elliptic</td>
<td>oblong</td>
</tr>
<tr>
<td>Leaf blade length</td>
<td>11-13 cm</td>
<td>6-7 cm</td>
</tr>
<tr>
<td>Leaf blade width</td>
<td>3-4 cm</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>Leaf margin</td>
<td>crenulate</td>
<td>crenulate</td>
</tr>
<tr>
<td>Leaf apex</td>
<td>acuminate</td>
<td>acute</td>
</tr>
<tr>
<td>Peduncle</td>
<td>3-4 cm</td>
<td>1.5-2.0 cm</td>
</tr>
<tr>
<td>Pedicel</td>
<td>15-25 mm</td>
<td>2-3 mm</td>
</tr>
<tr>
<td>Petal color</td>
<td>purple</td>
<td>purple</td>
</tr>
<tr>
<td>Fruit length</td>
<td>12-15 mm</td>
<td>6-8 mm</td>
</tr>
</tbody>
</table>

Key to *Euonymus baekdusanensis* and its related taxa.

1. Winter bud large; stamens sessile, anther 1-celled; capsule winged
2. Flowers 4-merous .......... *E. macropterus* 나래회나무
6. Branches and twigs smooth
7. Petiole 6-8 mm, blade 11-13 cm and elliptic; fruit 12-15 mm .......... *E. baekdusanensis* 백두산회나무

By applying the IUCN Red List criteria (IUCN, 2011), *Euonymus baekdusanensis* M. Kim will be evaluated as the category of Endangered (EN) species, because of its small population of twenty individuals found in Mt. Baekdu.

Acknowledgement

We are deeply indebted to Dr. Jungsim Lee and Hyun-Sook Choi for their kindly help.

Literature Cited


