**Phaseolus albicarminus**, a new and rare wild bean species from Costa Rica

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On December 10, 2012, in an attempt to sample all wild common bean populations in central Costa Rica, we did the transect across Cerro Caraíres from Monterrey to La Legua and then San Francisco and San Rafael Arriba, in the southwestern part of San José province, district of Tarrazú, and found a new *Phaseolus* species (#3242). At collection site already at twilight, it was tentatively identified as *Phaseolus hygrophilus* Debouck (Salcedo-Castaño et al. 2011). During the growing out of this plant in Colombia at CIAT Popayán experimental station, it became evident that it is different from the former and deserves a new name; the main distinctive characteristics are described below.

![Image](image-url)

**Figure 1**– Front view of flowers of *P. albicarminus* (left) and *P. hygrophilus* (right).

**Figure 2**– Racemes of *P. albicarminus* (left) and *P. hygrophilus* (right).

<table>
<thead>
<tr>
<th>Traits</th>
<th><em>P. albicarminus</em></th>
<th><em>P. hygrophilus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>total length of raceme (cm)</td>
<td>4-7</td>
<td>11-17</td>
</tr>
<tr>
<td>no. of primary bracts</td>
<td>3-5</td>
<td>9-18</td>
</tr>
<tr>
<td>shape and length (mm) of 1+1 bracts</td>
<td>triangular lanceolate, 4</td>
<td>cupped, rounded, 5</td>
</tr>
<tr>
<td>shape and length of bracteoles</td>
<td>triangular, 1/6 calyx length</td>
<td>cupped, ½ calyx length</td>
</tr>
<tr>
<td>shape and length (mm) of lower calyx lobes</td>
<td>pointed, 1.5</td>
<td>conspicuous, rounded, 3</td>
</tr>
<tr>
<td>color of inner face of standard</td>
<td>light carmine</td>
<td>white pinkish</td>
</tr>
<tr>
<td>margins of blade of standard</td>
<td>both sides reflexed</td>
<td>only left side reflexed</td>
</tr>
</tbody>
</table>

**Results**

Vegetative parts

Although the leaves are of the same size and shape as those of *P. hygrophilus*, they lack the variegation present on all leaflets of the latter taxon. The auxiliary guides at the lower nodes of main stem in *P. hygrophilus* usually display a prostrate growth habit, while they are climbing in *P. albicarminus* Debouck. As compared to the former taxon, stems reach 2-3 m and more in the new one.

Reproductive parts

The major differences between these taxa are summarized in Table 1. The flowers are shown in Figure 1, where the contrast of inner faces of standards can be seen. The differences in bracts and bracteoles can be seen in Figure 2.

**Discussion**

The aforementioned facts elicit the following points for discussion. First, all morphological characteristics point to the new taxon belonging to the section Brevelegumina, together with *P. campanulatus* Freytag & Debouck, *P. hygrophilus* Debouck, *P. oligospermus* Piper and *P. tuerckheimii* Donnell-Smith (Freytag & Debouck 2002; Salcedo-Castaño et al. 2011). Second, although the new taxon shares some traits with *P. hygrophilus*, the differences summed up in Table 1 are thought to be strong enough as to deserve the specific rank, not the varietal one. Interestingly, the amount of rainfall (in mm/year) at the collection sites have been estimated at 5,000 for *P. hygrophilus* and 2,000 for *P. albicarminus*, respectively (Colin Khoury, personal communication, 2013). Third, one should mention that *P. albicarminus* has been found first during a field exploration, since the study of 82 Herbaria by one of us (DGD) since 1977 has not revealed this taxon. It has been found without GIS models that have been useful for disclosing additional populations of other taxa (Javis et al. 2002, 2005), since there were no data to build the GIS models on. Finally, although the core of distribution of Phaseolus species seems to be in western Mexico (Ramírez-Villeagas et al. 2010), field work in Costa Rica continues to be rewarding with the addition of several endemic species.

**Acknowledgments**

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**Literature cited**


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