

## NEW RECORDS OF THE GENUS *PYRUS* (ROSACEAE) FROM PAKISTAN AND AZAD KASHMIR

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This paper communicates the latest taxonomic status of the oriental *Pyrus* species, Rosaceae from the Northern Pakistan and Azad Kashmir. Extensive field surveys were conducted and many plant specimens were collected during 2008-2012. A total of 110 specimens were identified with the help of published literature, floras of the adjoining countries and the available herbarium specimens. GPS values, ecological notes, flowering & fruiting time and vernacular names of each taxon were recorded. Details of the 4 species viz. *Pyrus pashia*, *P. calleryana*, *P. bretschneideri* and *P. pyrifolia* have been given in this account. Of these, *P. calleryana*, *P. bretschneideri* and *P. pyrifolia* are new records for Pakistan.

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**Key Words:** *Pyrus*; Oriental pears; new records; Pakistan

گزارش گونه های جدید از جنس گلابی برای پاکستان و کشمیر آزاد

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در این مقاله در رابطه با جایگاه تاکسونومی گونه های جنس گلابی از خانواده گل سرخیان در شمال پاکستان و منطقه کشمیر آزاد مطالبی ارایه می گردد. مطالعات صحرایی زیادی انجام گردید و نمونه های زیادی طی سالهای ۲۰۰۸ تا ۲۰۱۲ جمع آوری گردید. تعداد ۱۱۰ نمونه با استفاده از منابع فلوری شناسایی گردیدند. مشخصات جغرافیایی، اکولوژیکی و زمان گلدهی و میوه دهی و نام محلی برای هر آرایه یادداشت گردید. مشخصات ۴ گونه به نام های *Pyrus pashia*, *P. calleryana*, *P. bretschneideri* و *P. pyrifolia* ارایه می گردد. که از میان آنها گونه های *Pyrus calleryana*, *P. bretschneideri* و *P. pyrifolia* برای اولین بار از پاکستان گزارش می گردند.

### INTRODUCTION

The term *Pyrus* has a Roman root referred to plants belonging to pear group (Maleev 1985). *Pyrus* belongs to the subfamily Spiraeoideae, tribe Maleae, subtribe Malineae of the family Rosaceae (Potter & al. 2007 and Zheng & al. 2014). It is believed that *Pyrus* has been originated in the mountainous areas of western and southwestern China (Rubstov 1944) and nearly all Asian pear species originated from five primitive

genepools (Jiang & al. 2016). Internationally, 22 widely recognized primary species have been reported (Bell & al. 1996; Bailey 1917). Only few species have been domesticated for commercial production (Bell 1990). The domestication has been originated from a wild species *P. pyrifolia* (Burm. f.) Nakai occurring in Japan (Kikuchi 1948). On the basis of geographical distribution and morphological characters, most cultivated pears are native to East Asia (Teng and

Tanabe 2004). The genus *Pyrus* is believed to have arisen during the tertiary period in the mountainous regions of western China and its dispersal and speciation have followed the mountain chains both east and west (Yamamoto & Chevreau 2009 and Bell & al. 1996). In Asia, *P. sinkiangensis* Yu has been introduced as a commercialized species (Peng and Iwahori 2000).

Review of the available literature shows that different authorities reported a number of species for the genus *Pyrus* (Rehder 1915; Yu 1963; Terpo and Franco 1968; Temesy 1969; Maleev 1985 and Cuizhi 2003). Only two species, *P. communis* and *P. pashia* have been reported in the Flora of British India (Hooker 1878). Later on, the previous two species and *P. lendley* were reported (Stewart 1972). The genus *Pyrus* and its associated species belonging to the oriental pears are not reported for the Flora of Pakistan (Landrein & al. 2009). Fortunately a large number of wild and cultivated species, varieties and cultivars belonging to the genus *Pyrus* are available in the temperate region of Pakistan, which are neither taxonomically evaluated nor genetically tagged. The objective of the present work is to provide data on nomenclature, occurrence, distribution and images of species belonging to the oriental pears, reported as new records for the flora of Pakistan.

## MATERIALS AND METHODS

Extensive field surveys were conducted in Khyber Pakhtunkhwa province and Azad Kashmir. An ample

material was collected along with relevant field information. Each specimen was properly tagged and collection number was allotted. During field collections, photographs of the important taxonomic traits were taken with the help of digital camera. Almost, all taxa were critically evaluated in their natural habitat. Geographical coordinates of each specimen were recorded at the spot by using GPS. Taxa were identified by using the type description in the literature, field and accessory note book and photographs. The voucher specimens and duplicate specimens are deposited in Herbarium Hazara University (HUP), Mansehra, KP, Pakistan.

## RESULTS AND DISCUSSION

*Pyrus pashia* Buch. - Ham. ex. D. Don (fig. 1)

Syn.: *P. variolosa* Wall., Cat. no 680 (1828), nom. nud.; *P. verruculosa* Bertol., Mem. Acad. Sci. Inst. Bologana, ser. 2, 4: 312 (1864); *P. nepalensis* Hook. f., Fl. Brt. India. 2: 374 (1878).

*Pyrus pashia* is wild type and commonly used as stock for grafting. Young and healthy plants possess spines on young branches.

*Vernacular Name:* Tangay (Pushto), Batangi (Hindko), Tangi, Tang.

*Pyrus pashia* occurs throughout the Himalayan extending towards China and Iran with *Pinus wallichiana* A. B. Jacks, *Quercus incana* Roxb., *Quercus baloot* Griff. forest at altitude of 600-2500 m, very common on moist and rocky slopes, mostly in graveyards, land border or road sides.

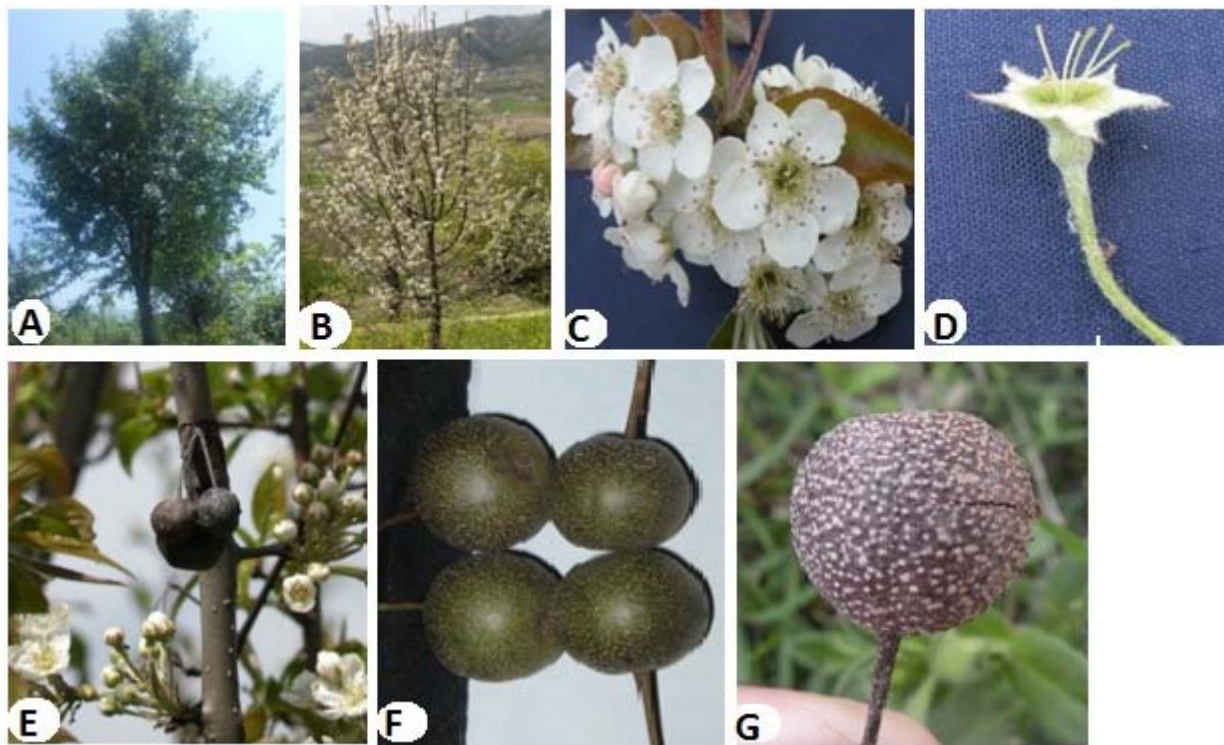


Fig. 1. *Pyrus pashia* Buch. –Ham. ex. D. Don. A, Habit; B, tree in flowering condition; C, inflorescence; D, thalamus with 5 styles; E, branch with young floral buds and old fruits; F, terminal and side view of fruits; G, mature fruit.

**Distribution:** Afghanistan, China, India, Iran, Bhutan, Myanmar and Nepal.

**Specimens examined:** Pakistan: B-7 Mansehra Dist., Batal, 4838 ft., 19.05. 2010, *Mohammad Islam* 27 (HUP); Batal, 5014 ft., 19. 05. 2010, *Mohammad Islam* 31 (HUP); Batal, 5010ft., 26. 03. 2011, *Mohammad Islam* 65 (HUP); Batal, 4950 ft., 34<sup>0</sup> 35. 270' N and 73<sup>0</sup> 09. 219' E, 26. 03. 2011, *Mohammad Islam* 97 (HUP); Abbottabad Dist., Shaiqqa, on way to Sherwan, 15. 4. 2010, *Sadia* 14 (HUP); Balakot (Sangar), 4401ft., 34<sup>0</sup> 34. 986' N and 73<sup>0</sup> 22. 301' E, 03. 04. 2011, *Mohammad Islam* 69 (HUP); Balakot, Sangar, 5100 ft., 03. 04. 2011, *Mohammad Islam* 70 (HUP); Balakot, Sangar, 5100ft., 03. 04. 2011, *Mohammad Islam* 71 (HUP); Swat Dist., Bagh, Koz Shawar 34°, 49. 044' N and 72°, 18. 661' E, 4650ft, 19. 04. 2010, *Mohammad Islam* 19-A (HUP); Madyan, Chail, 4785 ft., 35<sup>0</sup> 08. 423' N and 72<sup>0</sup> 33. 015' E, 19. 04. 2010, *Mohammad*

*Islam* 23-C (HUP); B-8 Azad Kashmir, Dir Kot, 6000 ft., 34<sup>00</sup>. 00' N and 073<sup>054</sup>. 325' E, 12. 10. 2010, *Mohammad Islam* 55 (HUP).

***Pyrus calleryana*** Decne. *Jard. Fruit.* [Decaisne] 1: sub t. 8. 1872, (fig. 2)

**Syn.:** *P. dimorphophylla*, Makino in *Tokyo Bot. Mag.* 22: 65 (1908).

*Pyrus calleryana* Decne. seem to be most closely related to *P. serotina* Rehder which differs in its serrulate, not setosely serrate, generally wider leaves and smaller flower having 3-4 styles, shorter sepals and smaller fruit.

Fl. Apr, fr. Aug-Sep

**Specimens examined:** Pakistan: B-8 Azad Kashmir, Neelum Valley, Punch Ghar, 3209 ft., 73<sup>036</sup>. 939' N and 34<sup>026</sup>. 675' E, 15. 10. 2010, *Mohammad Islam* 59 (HUP).



Fig. 2. *Pyrus calleryana* Decne. A, Branch with fruit and leaves; B, branch with fruits showing terminal part of fruits.

*Pyrus bretschneideri* Rehder, Proc. Amer. Acad. Arts and Sci. 50: 231(1915) (fig. 3).

**Distribution:** China and Pakistan.

**Specimens examined:** Pakistan: B-7 Swat Dist., Bagh, Kuz Shawar 34° 40. 014'N and 72° 19. 661' E, 4850 ft., 12. 04. 2011, *Mohammad Islam* 93 (HUP).

*Pyrus pyrifolia* (Burm. f.) Nakai, var. *culta* Nakai, Bot. Mag. (Tokyo) XL: 564(1926), (fig. 4).

Syn.: *Ficus pyrifolia* N. L. Burman, Fl. Ind. 226 (1768).

*Pyrus serotina* var. *culta* Rheder in l. c. 223 (1915).

Fl. April, Fr. August.

**Specimens examined:** Pakistan: B-7 Swat Dist., Bagh, Kuz Shawar 34°, 49. 044'N and 72°, 18. 661' E, 4830 ft., flower white, 11. 04. 2011, *Mohammad Islam*

81 (HUP); Bagh, Kuz Shawar 34°, 48. 034'N and 72°, 18. 561' E, 4810 ft., 11. 04. 2011, *Mohammad Islam* 82 (HUP). Bagh, Kuz Shawar, 34°, 49. 044'N and 72°, 18. 661' E, 4800 ft., 11. 04. 2011, *Mohammad Islam* 87 (HUP); Bagh, Kuz Shawar 34°, 49. 044'N and 72°, 18. 661' E, 4830 ft., 06. 2010 40, *Mohammad Islam* 16 (HUP); Bagh, Kuz Shawar 34°, 49. 044'N and 72°, 18. 661' E, 4870 ft., 16. 06. 2010, *Mohammad Islam* 41 (HUP); Bagh, Kuz Shawar 34°, 49. 044'N and 72°, 18. 661' E, 4830 ft., 17. 06. 2010, *Mohammad Islam* 43 (HUP).

**Distribution:** China: Anhui, Fujian, Guangxi, Hobei; Japan; Pakistan, Swat.

**Vernacular name:** Khan Tango (Pashto).



Fig. 3. *Pyrus bretschneideri* Rehder. A, Habit; B, inflorescence; C, inflorescence with front view of flowers.



Fig. 4. *Pyrus pyrifolia* (Burm. f.) Nakai. A, Habit; B, inflorescence; C, terminal view of fruits; D, basal view of fruits.

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