A REVISION OF POLYGONUM L. SENSI LATO (POLYGONACEAE) IN IRAN

V. Moza’ffarian

Received 05.11.2011. Accepted for publication 21.02.2012.


The genus Polygonum L. is reviewed based on the literature and available herbarium materials. A. synopsis and identification key based on recently division of the Polygonum sensu lato to 3 different genera: Polygonum L. sensu stricto, Bistorta Adans. and Persicaria Mill. are provided to the ca. 45 accepted taxa. In addition, the checklist of accepted species and synonyms including selected studied specimens are given. Furthermore, Polygonum iranicum which has been collected from Fars province is described as a new species from Iran. Persicaria salicifolia which has been collected from Khuzestan province is reported as a new species record from Iran.

Vallilolah Moza’ffarian, Research Institute of Forests and Rangelands, P. O. Box; 13185-116, Tehran.

Key words. Bistorta, Persicaria, Polygonum, Polygonaceae, Revision, Iran.

بازنگری جنس علف هفت بند در ایران Polygonum L. sensu lato

ولی الله مظفریان. دانشیار پژوهش مؤسسه تحقیقات جنگلی و مرتع کشور.

در ایران جنس علف هفت بند در ایران براساس اطلاعات موجود در منابع گیاهشناسی و نمونه‌های موجود در هرباریوم مؤسسه تحقیقات جنگلی و مرتع کشور (TARI) و جمع آوری نمونه‌های تازه کشته شده این جنس در سه جنگل خاک ایران داده شده و ۴۵ گونه بذرهای شده از این جنس‌ها همراه با کلید شناسایی آن‌ها و شرح کوته‌های گیاهشناسی و با اشاره به تعدادی از نمونه‌های مطالعه شده مربوط به فاکتورهای مختلف آن گونه‌ها در این مقاله روند داده گردید. در ضمن یک گونه جدید از جنس علف هفت بنام Persicaria salicifolia و یک گزارش تازه برای ایران تبادل Polygonum iranicum می‌شود.

INTRODUCTION

The author has been revising the genus Polygonum L. sensu lato in Iran for the draft of Flora of Iran (in Persian Language). Polygonum (L.) sensu lato is the largest genus of Polygonaceae and has about 430 cosmopolitan, but especially temperate, some xerophytes (Polygonum sensu stricto), with loose and mostly axillary and rarely spike-like leafy inflorescence. Some water plants with dense leafless spike-like inflorescence (Bistorta Adans. and Persicaria Mill.), which may however be found almost as often on land. The genus Polygonum after Rechinger and Schiman-Czeika (1968) draft of Fl. Iricana has been subject of several studies, partly circumscription of the genus have been changed (Flora of Pakistan no. 205). Based on the inflorescence character, species with spike-like dense and approximate flowers have been transferred to the genus Bistorta and Persicaria. In a comprehensive study, the author has used different available references including Floras and papers (Komarov 1936); (Webb & Chater 1964); (Zohary 1966); (Coode & Cullen 1967); (Assadi 1988); Moza’ffarian (1988); Aghabeigi (2001); Qaiser (2001); Khosarvi & Porrmahdi (2008); Mosafi et al. (2010).

In this paper the genera Polygonum L. sensu stricto, Bistorta Adans. and Persicaria Mill. have been subject of studies. The majority of the species of Polygonum are found in Irano-Turanian region and species of Persicaria in Hyrcanian province of Euro-Siberian region. Some species are aquatic and cosmopolitan plants. Some species of the genus Polygonum have more or less limited distribution in Iran and grow individually or in small isolated patches such as P. botuliforme Mozzaff., P. iranicum Mozzaff. But some species, such as P. arenastrum Boreau and P. patulum M. B. have widespread distribution in the country.

The aim of this paper is to revise the taxonomy of the genus Polygonum L. sensu stricto, Bistorta Adans and Persicaria Mill. in Iran, presenting an
identification key to the known taxa and reporting one new species of Polygonum and a new record of Persicaria.

MATERIAL AND METHODS
By using existing Floras about 590 herbarium specimens in the herbarium of Research Institute of Forests and Rangelands (TARI) were examined and determined based on morphological characters.

RESULTS
Polygonum L.
Key to the determination of accepted species of Polygonum
1. Plant climbing; leaves cordate-sagittate or cordate 2
   - Plants not climbing; leaves not as above 4
2. Perennial; stem trailing to many mers long scendent on trees, the lower part woody. A cultivated plant in Iran 1. P. baldschuanicum
   - Annual; stem trailing up to 3 m but not woody at base. Wild growing plants 3
3. Fruiting pedicels 1-3 mm, shorter than perianth; perianth segments wingless, bluntly keeled 2. P. convolvulus
   - Fruiting pedicels 5-8 mm, as long as or longer than perianth; perianth segments winged on the back 3. P. dumetorum
4. Inflorescence a branched panicle; perianth yellowish 4. P. alpinum
   - Inflorescence axillary, rarely spike-like, leafless or rarely leafy 5
5. Perennial herbs 6
   - Annual herbs 20
6. Stems long and virgate, up to 20-70 cm, with a hard woody stock 7
   - Stems short, often prostrate, up to 20 cm. high, with or without hard woody stocks 10
7. Basal and lower cauline leaves lanceolate or oblong-ovate, nerved, with carilaginous-crenulate margins 5. P. iranicum
   - Basal and lower cauline leaves lanceolate or narrowly linear, narrow cartilaginous. Inflorescence leafy. Perianth up to 3.5 mm 8
   - Nut up to 2 times longer than broad. Stems often erect or ascending 9
9. Leaves narrowly linear-lanceolate; lower ones up to 30x2 mm. Pedicels very short 7. P. setosum
   - Leaves linear-lanceolate; lower ones 30 (-50) x 3 mm. Pedicels equal with perianth 8. lzuoloides
10. Flower bearing branches prostrate, herbaceous, short or long. Plants only indurate at base or with hard woody stocks 11
   - Flower bearing branches long conspicuous. Plant at flowering time with broad leaves or leafless and often deciduous 13
11. Flower bearing branches prostrate, woody. Leaves small, up to 15 mm. long, with revolute margins. Stems and branches thick 9. P. alpestre
   - Flower bearing branches prostrate. Plant at the base woody or cushion shaped 2
13. Plants with woody stocks. Flower bearing branches prostrate 10. P. serpyllaceum
14. Plants with leafy flowering branches. Ochreae long and conspicuous 14
   - Plants with leafless flowering branches or often deciduous. Ochreae short 17
   - Branches non spiny 15
16. Leaves shorter than ochreae or lower leaves ± longer, with revolute margin 14. P. paronychoides
   - Leaves longer than ochreae 16
17. The entire plant except ochreae papillose. Leaves linear, flat or with revolute margin, aged branches often grayish-white. Flowers always single 16. P. afghanicum
   - The entire plant papillose or glabrous. Leaves ovate-lanceolate, with revolute margins. Aged branches often green or greenish-yellow or brown. Flower often in group of 3 12. P. thymifolium
   - Plant with abbreviated internodes, often ± up to 5 mm, rarely to 10 mm, branches short and indurated 17
18. P. salicornioides
   - Internodes often longer and branches long and herbaceous 18
19. Plant caespitose, with thick branches, relatively loose and few branched. Leaves ovate. Flowers 1
   - The entire plant except ochreae velutinuous or softly papillose. Branches short 19
20. The whole inflorescence leafless 21
   - The whole inflorescence consisting of leafy branches 24
21. Nuts 4-5 mm long 28. P. kitaebelioum
   - Nut not more than 3 mm long 22

www.SID.ir
22. Flowers approximate. Leaves soon deciduous, linear, linear-lanceolate - 29. P. argyrocoeleon
   - Flowers loose and distant, regularly interrupted. Leaves not soon deciduous, after flowering remained on the branches
   23. Stems long, striate, up to 25-80 cm, greenish-yellow. Flowers rather large and loose - 27. P. patulum
   - Stems short 10-20 cm long, thin, pale green, cernous. Flower small
   26. P. olivascens
   - Stems short, not more than 7 cm high, prostrate; upper internodes very short, thus the whole plant beset by rather large, silvery-white ochreae. Leaves setiform
   23. P. molliaeforme
   - Plants not as above
   25. Plant erect, ascending, or decumbent. Leaves variable in size; cauleine leaves larger, broadly lanceolate or obovate-lanceolate or narrowly lanceolate to almost linear; rameal leaves smaller; bracteal leaves much more smaller
   25. P. aviculare
   - Plants mostly prostrate. Leaves smaller and similar to each other (not variable)
   26. Plant profusely long branched. Cauleine and brachy leaves similar, narrowly to broadly elliptic
   24. P. arenastrum
   - Plants not as above
   27. Flowers 4-6 in the axil, pedicellate, approximate; pedicels 3-4 times the length of the perianth
   20. P. corrigioloides
   - Flowers 1-3 in the axil, sessile or nearly sessile, loose
   28. Flowers borne in fascicles of 1-2 in the axil of the upper leaves. Perianth subcampanulate, lobed up to middle. Nuts nearly equal with perianth
   21. P. polycnemoides
   - Flowers borne in fascicles of 1-3 in the axil of the upper leaves. Perianth tubular, perianth segments 3 times shorter than perianth. Nuts equal with perianth
   22. P. rotbboelloides

Sect. Pleuroperus (Turcz.) Bentham & Hooker, Genera plant. 3: 99 (1883).
Large perennial volubils plants with climbing flexuosus stems. Flowers numerous, disposed in terminal and axillary panicles.
1. P. baldschuanicum Regel, Acta Hort. Petrop. 8: 684 (1883)
   Studied specimens. Tehran: Damavand, 1800 m, Mozaflarian 45358 (TARI).
   - Cultivated as ornamental plant in different parks and in the Iran National Botanical Garden and many temperate cities in Iran.
   Typical characters. Perennial; stem trailing to many meters long, scendant on trees or walls, the lower parts woody, with brownish-gray bark and numerous lenticels. Ochreae pellucid, cylindric, appressed to stem. Leaves oblone-ovate, cordate at base, petiolate.
   Inflorescence paniculate, to 50 cm. long. Flowers white. Nut ca. 4 mm long, acute, with strongly concave faces.

Annual plants. Stems climbing, thin, flexuosus. Flowers disposed in racemes or spike-like inflorescence.
Studied specimens. Gorgan: Parke Golestan, S. of Tange Gol, 1850m, Wendelbo and Cobham 14406 (TARI); Gilan: Bandar-e Anzali, sea level, Mozaflarian & Maassoumi, 65247 (TARI); Azarbaijan: Arasbaran protected area, between Doghrun and Saigarm-Dagh, 2500–2700m, Assadi and Sardabi 24182 (TARI); 6 Km from Germi to Eni, west of Esmar village, 900-1200m, Mozaflarian and Nowroz 34964 (TARI); Yazd: Mehriz, Kuh e Lakheh, 1950–2650m, Mozaflarian 77706 (TARI); Khorasan: Mashhad, N. slope of Binalud mountains, above Zoshk village, Rudkhan Abdolah, 2100–3000m Mozaflarian 48872 (TARI); Tehran: Damavand, 12 Km S. of Damavand, Akhorbadin, 1750–2000m Mozaflarian 39652 (TARI)
Typical characters. Annual. Stem to lm long, climbing, sulcate. Leaves petiolate, rounded or oblong ovate, cordate at hasteate at base. The outer segments of perianth obtuse angular, without prominent wing. Pedicels shorter than 2mm long. This species growing as a weed in the field and forestry area.
Syn.: Fagopyrum membranaceum Moench, Meth. 290 (1794).
Studied specimens. Gorgan: Zarrin Gol, 900m, Riazi 7787 (TARI); Mazandaran: Nowshahr, Alamde, Manuchehr Kala, C. 20m, Mozaflarian 45533 (TARI); lowest part of Hezarcham in Chalus road, 1220m N. 36, 28, 55, E. 51, 14, 61 Mozaflarian 93797 (TARI).
Typical characters. Annual. Stem up to 3m long, climbing. Leaves cordate, acute, glabrous. Outer segments of perianth enlarging into membranaceous wings. Pedicels often longer than 2 mm.

from Korea 129 (1922); Pleuroperopyrum H. Gross, Bull. Geogr. Bot. XXIII (1913) 90.
Perennial plants. Flowers in a lax paniculate inflorescence. Perianth yellowish or white. Styles 3.
Achene trigonous, with sharp angles.


*Studied specimens.* Azarbaiejan: between khoy and Maku, Arab–Dizechi 2150m, Assadi and Mozaferian 30271 (TARI); Assraban protected area 2400-2700m, Assadi and Sardabi 24308 (TARI); Salmas, west of Salmas, Pereshkhanur border of Turkey, 2100m Mozaferian 69930 (TARI).

*Typical characters.* Stems erect, up to 100 cm. Leaves lanceolate–acuminate, pilose above and beneath. Inflorescence a broad panicle. Plant mostly growing in wet place and wood margins.


5. *P. iranicum* Moazz., sp. nov. (Fig. 1)

Planta multicaulis, basi ligiosa, glabra. Caules basi indurati 50–70 cm alti ± prostrati, virgati, in parte superiore parce ramosi, striati; ochreae ± tubuloses, in parte inferiore coriaceae brunneae opaceae, nervosae, in parte superiore hyaline, membranaceae, nervosae laceratae; glabrae; ochreae florales superioribus similes sed longiores. Folia caulina inferiore coriaceae, breviter petiolata, 25-35 ×10-12 mm, oblongo-ovata vel oblongo-lanceolata, basi cuneata, apice acuta, prominente nervosa, margine cartilagineo–crenulata; folia caulina mediana et superiore lanceolata, acuta, prominente nervosa, summa folia floralia inconspicua. Flores axillares singuli vel terni, inferiores remoti, superiores ± approximati, breviter pedicellati; pedicelli 0.5-1.5mm longi. Perigonium 2,2-5.5mm longum, basi herbaceum, apicem roseum. Nux. trigonus. Sytli 3.

*Type.* Iran, Fars, S. of Estahbanat, Kuhe Bash N 29,06 E 54,01, 1915m Mozaferian 97461 (holotypus TARI).

*Other studied specimens.* Fars, S. of Estahbanat, Kuhe Bash 1700–2200m Mozaferian 47025 (TARI); road from Fasa to Estahbanat; Runiz, Darre Morghak 1700m. Mozaferian 97462 (TARI).

Plant perennial, many–stemmed, glabrous, at the base woody. Stems at the base hardened, up to 50-70cm high, prostrate, virgati, non branched or in upper part loosely branched, striate. Ochrea tubular, in the lower part leafy mat brownish, nerve in the upper hyaline, nerved, lacerate, glabrous; ochrea in upper part of the stem similar to lower ones but longer. Lower cauline leaves leathery, shortly petiolate, 25-35cm long, 10-12cm wide, oblongo–ovate, cuneate, acute, prominently nervose, cartilagineous–crenulate margin; upper cauline leaves lanceolate, acute, prominently nervose; upper floriferous cauline leaves non conspicuous. Flowers axillary 1-3, lower ones remote, upper ones ± close to each other, shortly pedicellate; pedicels up to 0.5-1.5mm long. Perianth 2-2.5mm long, at the base herbaceous, in upper part rose colored. Nut trigonous. Styles 3.

The new species matches with perennial long virgately branched group of *Polygonum* in sect. *Polygonum* and ± close to *P. arianium* Grig, which differs with it by having shorter perianth up to 2.2.5 mm (not more than 5mm), entirely glabrous stem (not pappose–pilose in the upper part), oblong–ovate or oblong-lanceolate, lower cauline leaves (not lanceolate acute).


*Studied specimens.* Gorgan: between road to Almeh and Behkade, 1300m, Wendelbo and Cobham 14235 (TARI); 59km to Marave Tappe on the road from Gomishan, CH4, ca. zero m, Assadi & Abohramzeh 43297 (TARI); Mazandaran: Kanadan pass–Chalus, 850m Runemark and Mozaferian 25787 (TARI); 9km from Haraz road to Chalus road on the road to Balade, 1150m Mozaferian and Abohamzeh 42626 (TARI); Chalus road, between Duzdebon and Dalir, 1200m, N. 36, 20 E 51, 12 (WA2), Assadi 89351 (TARI); Gilan: Mordabe Anzali, ca.–25m, Mozaferian 66241 (TARI); Azarbaiejan: Dashte Moghan, Khodaafarin, 150m, Mozaferian 64263 (TARI).

*Typical characters.* Perennial. Stems many, often prostrate to ascending. Leaves lanceolate, acute, and attenuate toward petiole. Inflorescence spike-like, bracteate; flowers axillary 1 or 2, pedicellate; pedicels 1-2mm long. Nut trigonous, smooth, almost black.


*Studied specimens.* Azarbaiejan: 10 Km from Oshnavieh to Urumieh, 1700m, Zehzad and Siami 5805 (TARI); ca. 50 Km W. of khoy near the Turkish border, between the village Aland and Razi, 2330m, Assadi and Olfa 68862 (TARI); Kermanshah: between Kermanshah and Pave, before Shamsir, Mansur–Aghai village, Kuh–e Shahu, 1700-2300m N. 34,50 E. 46,35 (PDI) Assadi & Mehregan 89252 (TARI); Lorestan: Oshtorankuh, above the village Tilun, 2500-3200m, Assadi and Mozaferian 37151 (TARI), 37085 (TARI); Chaharmah–e Bakhtyari: road from Shahr–e kurd to Naghan, N. of Sulegan, kuh–e Shahpurmaz,
Fig. 1. *Polygonum iranicum* (× 0.5); flower (× 5).
2100m, Mozaffarian 57452 (TARI); Sabz kuh, kuh-e Hazardarreh, 2300-2500m, Mozaffarian 58182 (TARI).


8. P. luzuloides Jaub. & Spach, III. Pl. or. 2: 37 (1845).

*Studied specimens.* Hamadan–Asabad to Kuh e Gharavol Khaneh, 2500-2700m, Mozaffarian 64998 (TARI); ca. 20 Km S. of Nahavand, Kuh–e Garru, above Cheshmeh–Gamasab (TT3), 2600m, Assadi & Mozaffarian 36993 (TARI); Ganjname, slope of Alvand mountain, 2100m, Assadi 61057 (TARI); Kurdestan: ca. 50Km N.W. of Sanandaj, kuh–e Chehelcheshme, Duzak–darreh, 2000m Assadi 75326 (TARI); Tehran: Arak, Kuh–e Ravsdan, from Hesar, Morvarid Var, 2000–2500m Mozaffarian 63717 (TARI); E. slope of Kuh e Ravsdan, from Babakhodadad, 2100–2750m Mozaffarian 64205 (TARI); Shahzand, Souroneh, Kuh e Souroneh 2000–2650m, Mozaffarian 48271 (TARI).

Typical charaters. Very similar to *P. setosum*, but the leaves lanceolate, more than 5 mm broad. Stem branched below the inflorescence.


_Type._ Talesh Mountains.

*Studied specimens.* Mazandaran: Lar valley, 2450-2550m, Wendelbo & Assadi 13331 (TARI); Azarbaijan: 5km from Salavat to Golidaragh, 1500m Mozaffarian & Nowrozi 35080 (TARI); Arasbaran protected area, Doghrun, mountain, 2500m, Assadi & Sardabi 23954 (TARI); Hejardinost to Makidi, 1400-1750m, Assadi & Maassoumi 20138 (TARI); Kalan, mountain on the west side of guard station, 2470-2550m, Jamzad et al. 70274 (TARI); Urumieh, Razhan, 2000m, Sabeti 2909 (TARI); Lorestan: 21 km on road from Shulabad to Aligudarz, 2000m, Runemark & Lazari, 26387 (TARI); Tehran: 8 km from Tafresh on the road to Saveh, 2200m, Assadi & Shirdelpur 13156 (TARI).

Typical characters. Perennial, glabrous to minutely papillose plant. Stems prostrate, with indurated basal part and short internodes, mostly covered by flowers. Leaves ovate–lanceolate to elliptic, with revolute rough papillose margins. Ochreae hyaline, longer than internodes. Nut shorter than perianth, up to 3 mm, trigonous, smooth, nitens. Styles 3.


*Syn.: P. radicosum Boiss., Fl. Or. 4: 1039 (1879).*

*Studied specimens.* Mazandaran: S. of Ramsar 2950m. Runemark & Maassoumi 21663 (TARI); Lorestan: Aligudarz, Shulabad, Gihkluh, 2200-3500m, Mozaffarian & Sardabi 42533 (TARI); Kuhgiluyeh and Boirahmad: N. Side of Kuh–e Dena, above the village Noghol 3500–4000m, Assadi & Abouhamzeh 46168 (TARI); Chaharmahal–e Bakhtiari: N. Slope of Rocky Mountain of Kallar, S. of Khederabad, 2600–3200m, Mozaffarian 58129 (TARI) and Mozaffarian 96818 (TARI); Semnan: ca. 20 Km N. W. of Shahrud, above Nekarman, Kuh–e Shahvar, 3700–3950m, Assadi & Mozaffarian 40875 (TARI); Tehran: Shemshak, Dizin, 3000–3500m, Mozaffarian & Mohammadi 49071 (TARI).

Typical characters. Plant dense papillate–caespitose, glabrous. Stems many. Flowering branches up to 8 cm long, thin, flexuose, ± similar to *P. alpestre* but leaves much smaller, rarely similar but not roughly papillose at the margin. Ochreae shorter than internodes, without dense flowers.


*Studied specimens.* Tehran: Arak, Kumijan, Vafs Mountains, 2100–2500m, Mozaffarian 63722 (TARI); 12 Km from Vafs to Kumijan, 2500m, Mozaffarian 67753 (TARI).


*Syn.: P. kotschyanum Boiss., Fl. Or. 4: 1040 (1879).*

_Type._ Iran, between Shiraz and Fasa.

*Studied specimens.* Gorgan: Parke Golestan, Almeh, 1350–1700 m Mozaffarian and Abouhamzeh 59072 (TARI); Chaharmahal–e Bakhtiari: Shahre Kerd, Babbeidear, Sefid dane, Kuh e Kalak, opposite to Dashte Lagharak, 2750–2956 m, Mozaffarian 57739 (TARI); S. slope of Kuh e Jahanbin from Ghaleh Tak, 2350–2950 m, Mozaffarian 57510 (TARI); Khorassan: Esfaryen, N. slope of Kuh–e Shah–janan, from Darparchin–e bala village 1700–2500 m, Mozaffarian 48456 (TARI); Tandure National Park, between Shekarab and Chehelmehr, 1600–1900 m, Assadi & Maassoumi 50716 (TARI); Tehran: 35 km to Firouzkuh, on the road from Damavand, 2080m, Assadi & Mozaffarian 35205 (TARI).
Typical characters. Dense papillose-pubescent or glabrous small undershrub to 40 cm high. Rhizome strong, oblique, easily disintegrating; woody stems 12–18 cm long. Leaves lanceolate or lanceolate–oblong, reelate umarginate, attenuate at base, sessile, acuminate. Ochreae glabrous, oblong, often laminate. Inflorescence interrupted racemes. Nut lustrous, oval–trigonal.


Studied specimens. Fars: 20 Km from Estabhanat to Neyriz, S. of Bakhtegan lake, 1700m, Mozaffarian 47998 (TARI); S. of Estabhanat, Kuh e Bash, 1700–2200m, Mozaffarian 46994 (TARI); Hormozgan: Kuh e Genu, 1900–2000m, Mozaffarian 44711 (TARI); ca. 50 Km NE. of Senderk, Araghan, 1100–1600m, Mozaffarian 44581 (TARI); N slope Rocky Mts. of Bohkan, N. of Fareghan, 1500–2000m, Mozaffarian 44711 (TARI); Baluchestan: ca. 40km N. of Khash, Kuh e Taftan from Torsh-Ash, Assadi 22897 (TARI); 22880 (TARI); Khorassan: Esfereyan, Shahjalal, Mts. Region, Rocky soilly Mt. Tourkan, 1400–2500m, Mozaffarian 48635 (TARI); 18 km form Sabzevar to Esfereyan, 1600 m, Mozaffarian 48395 (TARI); Mashhad, between Shandiz and Zoshk, Aberdeh, 1500 m, Mozaffarian 48796 (TARI); 87 km from Neishabour to Kashmar, 1850–2000 m, Assadi & Mozaffarian 35522 (TARI); Semnan: Touran protected area, foot mountain of Kuh Pechghombar, Freitag & Jadi 29309 (TARI).

Typical characters. Perennial, dense caespitose to undershrub, except ochreae all part of the plant papillose-pubescent. Flowering branches ascending or prostrate, ± woody at base, and length end, branched at tip, densely leafy. Leaves linear, flat, and slightly revolute at margins. Ochreae glabrous, shorter than internodes. Nut trigonous, lustrous, black. Styles 3.

14. P. paronychoidei C. A. Mey. ex Hohen., Bull. Soc. Nat. Mosc. 4: 356 (1838), (Fig. 2).


Studied specimens. Azerbaijan: 2 Km N.E. of Khalhal, 1800–2050m, Mozaffarian & Nowrozi 34037 (TARI); Hamadan: ca. 8 Km E. of Ganjname, 2750m, Assadi & Mozaffarian 36854 (TARI); Assadabad, Khondab and Ghaseamab, NE slope Kuh–e Gharavul Khane, 2100–2500 m, Mozaffarian 64657 (TARI); Gardane-Asadabad to Kuh–e Gharavul Khane, 2500–2700 m, Mozaffarian 64995 (TARI); Lorestan: 55 Km from Arak to Malayer, 2100 m, Mozaffarian & Maassouni 48067 (TARI); Esfahan: Kashan, Ghamsar, kuh–e Ghebleh, 1900–2250m, Mozaffarian 41131 (TARI); Chaharmahale–Bakhtiyari: Shahr–e Kurd, N. slope of Kuh– e sefid, 2100–2300 m, Mozaffarian 57965 (TARI); Tehran: Mountains NW of Tehran, Suleghan valley, 1600 m, Assadi, Mozaffarian and Nowrozi 33672 (TARI); Karaj, Kuh–e Dashte, 2000–2500 m, Assadi and Mozaffarian 33347 (TARI).

Typical characters. Perennial herb with a very stout woody stock, minutely scabrous or glabrous. Stems prostrate, 5–15 cm long, densely leafy; leaves and ochreae often overlapping. Leaves linear, mucerinate. Ochreae hyaline, conspicuous. Nut trigonous, ntidius, black.

15. P. dumosum Boiss., Diagn. Pl. Or. Nov. Ser. 1, 7: 83 (1846), (Fig. 3).

Studied specimens. Chaharmahal–e Bakhtiyari: Shahr–e Kurd, Shalamzar, Aghasabz. 2400 m, Mozaffarian 54607 (TARI); road from Lordegan to Yassuj, Maymand, Margh–e Chenar, Kottuk, 1750 m, Mozaffarian 54467 (TARI); Fars: Shiraz, Park–e Bamu, 1750–2000 m, Mozaffarian 71501 (TARI); Dashte Arzhan, protected area, 1850 m, Mozaffarian 46914 (TARI).


Studied specimen. Fars: 10 Km SE. of Sarvestan, Post–e Chenar, 1650–1750m, Mozaffarian 46720 (TARI).

Typical characters. Similar to the preceding species, but branches thicker. Lower leaves ± persistent, ovate. Flower 1.

17. P. aridum Boiss. & Hausskn. in Boiss., Fl. Or. 4: 1042 (1879).

Studied specimens. Esfahan: Semiram, Ahmalak, Kuh e Dena, 1700 m, Mozaffarian 58244 (TARI); Chaharmahal–e Bakhtiyari: Sabzkuh, Kuh e Hezar darreh, 2300–2750 m, Mozaffarian 58190 (TARI); S. slope of Gardaneh Rohk, 2250 m, Mozaffarian 57980 (TARI); Fars: Nurabad, Doshman Ziary region, Abzalu village, Kuh e Tasak, 1900–2500 m, Mozaffarian 45803 (TARI); N. of Kuh e Dena, Ahmalak, 2000–2600 m, Assadi & Mozaffarian 31342 (TARI); 31546 (TARI); Shiraz, 40 Km on the road to Ardakan, 2130 m, Assadi & Mozaffarian 31052 (TARI); Egkli to Ardakan, around Kharestan and Saadatabad between Cherkas and Kakan, 2150m, V. Mozaffarian 71349 (TARI).

Typical characters. Shrubby plant; stems and branches glabrous or minutely papillose–scaber; median internodes more than 10mm long. Leaves shorter than 1-3mm long, linear–lanceolate, glabrous, and soon deciduous.
Fig. 2. *Polygonum paronychioides* (× 1); flower (× 15).
Fig. 3. *Polygonum dumosum* (× 0.7); flower (× 7).

*Studied specimens.* Chaharmahal-e-Bakhtiari: S. slope of Kuh-e Jahambin from Ghaleh Tak, 2350–2950 m, Mozafrarian 57509 (TARI); Kuhgileuye and Boirahmad: road from Yasuj to Kakan, N. slope of Kuh-e Kachian, 2500–2900 m, Mozafrarian 72165 (TARI); Fars: Shiraz, Bamu protected region, 1900 m Dehbozorgi 32779 (TARI); Bamu, protected region, Cheshme Fil to ridge of Kuhe-Bamu., 1900–2650 m, Wendelbo and Foroughi, 17615 (TARI); Hormozgan: Bokhon, Tashgerd and Boneh Mountains, 1800–2700 m, Mozafrarian 52464 (TARI)

*Typical characters.* Dense shrubby-caespitose; branches 15cm long, rigid, erect, ascending, many branched; internodes very short, striate-angular, tomentose-pubescent. Leaves oblanceolate, ± tomentose, soon deciduous. Nut trigonous. Styles 3.


*Studied specimens.* Kerman: S. slope of Kuh-e Khabr, 3500 m, Assadi & Miller 25197 (TARI); Above Lalezar village, Kuh e Lalezar, 3000–3500 m, Assadi 83168 (TARI); ca. 70 Km. NWW. of Ravar near the town Kuhbanan, Daveden mountain (DV1), 2400–3200m, Assadi & Bazgosa 56171(TARI); Yazd: Deh-e Bala, Shirkuh, 3000 m, Foroughi and Assadi 17945 (TARI).

*Typical characters.* Densely shrubby-caespitose, pubescent; old branches indurate, spinose-coriaceous, spines ± 5mm long; young branches prominently pubescent, with short internodes. Leaves linear-lanceolate.


*Studied specimens.* Kerman: Baf, 2200 m, Dini and Bazargan 30621 (TARI); 30617 (TARI); Sistan and Baluchestan: Zabol, Zehak, 500 m, Valizade and Ramak Maassoumi 1143 (TARI); 1141 (TARI); Zabol to Miankangi, Dust Mohammad Khan, 500 m, Mozafrarian 63442 (TARI).

*Typical characters.* Annual, rarely perennial, glabrous. Stems thin, prostrate, flexuous, at length ascending; lower internodes longer than leaves. Leaves linear-lanceolate, narrowed toward the base. Nut small, lustrous, black, trigonous, shorter to longer than perianth.


*Syn.: P. olivieri* Jaub. & Spach, l.c. 31 (1845).

*Studied specimens.* Azarbaijan: 2 km NE of Khalikh 1800-2050 m, Mozafrarian & Nowrozi 34059 (TARI); Hamadan: Kuh-e Alvand, 2700 m, Assadi & Mozafrarian 36834 (TARI); Lorestan: 61 km on the road from Aliqadar to Shulabad, valley after the pass, 2400 m, Runemark and Lazari, 26237 (TARI); Esfahan: Kuh-e Karkas, 2800 m, Foroughi 7808 (TARI); Chahrmahale Bakhtiary: Sabz kuh, Kuh-e Hezar darreh, 2300-2750 m, Mozafrarian 58187 (TARI); Lordegan, Sarkhon, Gandumkar, 2200 m, Mozafrarian 54892 (TARI); Hormozgan: Bandar-Abbas, Bokhon, Tashgerd and Boneh mountains, 1800-2700 m, Mozafrarian 52427 (TARI); Khorassan: Mashhad, N. slope of Binalud, above Zoshk, Rudkhane- e Abdullah, 2100-3000 m, Mozafrarian 48828 (TARI); Semnan: ca. 20 km N. W. of Shahrud, above Nekarman, Kuh-e Shahvar, 3000-3200 m, Assadi & Mozafrarian 40823 (TARI); Tehran: W. of Tehran, Sulehgan valley, 2000 m, Assadi & Mozafrarian 32739 (TARI); Firuzkuh, between Mahabad and Anzeha, 2000 m, Mozafrarian 54242 (TARI).


*Studied specimens.* Azarbaijan: 42 km to Nohour, Lisar protected area, 2450 m, Foroughi & Assadi 13768 A (TARI); Lorestan: 58 km from Aligodarz to Shulabad, the pass N. of Ghalikuh, 2900 m, Runemark and Lazari, 26157 (TARI); Fars: Firuzabad, Meimand, Kuh-e Sefidar from Tang-e Riz, 1750-2850 m, Mozafrarian 71434 (TARI); Khorassan: 20 km from Sobezv to Neyshabur, 1300 m, Assadi & Mozafrarian 35401 (TARI); Semnan: Shahrud, Turan protected area, neck mountain between Askheh and Bargh, Rechinger 51034 (TARI); Tehran: Chalus road, Karaj Dam, Kush-k-e Bala, 1800-2100 m, Mozafrarian 63500 (TARI); Firuzkuh, Simindasht, 1500 m, Mozafrarian 54340 (TARI).

*Typical chahrcrter.* Decumbent to ascending annual herbs, 3-18 cm. Stems and branches slender, usually papillose. Leaves linear-lanceolate, longer than internodes. Flowers 1-3 subsessile. Nut adherent to narrowly tubular perianth, narrowly oblong to ovate, black.

23. P. molliaeforme Boiss., Diagn. Pl. Or. Nov. Ser. 1, 7: 84 (1846), (Fig. 4).

*Syn.: P. acaule* Boiss. Fl. Or. 4: 1043 (1879) non Hook (1890).

*Type.* Iran, Kuh e Dena.

*Studied specimens:* Chaharmahal-e Bakhtiary:

Studied specimens. Gorgan: Gharagol, E of Hutan, Hewer 3765, 3743 (TARI), Esfahan: Kashan, 830 m, Babakhanlu & Amin 17533 (TARI). Khorassan: ca. 45 km N. of Shirvan, Golul-protected area, N. of the village Sarani, 1500 m, Assadi & Maassoumi 50553 (TARI); Semnan: Touran protected area, Shakhe Biat, 1160 m, Freitag & Mozaffarian 28833 (TARI); Shahrood, Shesh village, SW. of Razeh, 1260-1340 m, Freitag & Mozaffarian 28714 (TARI).

Typical characters. Annual herb. Stems usually procumbent or prostrate, rarely ascending. Leaves elliptic to ovate - lanceolate. Flowers 1 - 3 in fascicles; perianth ± 2 mm long. Nut trigonous, rugulose or smooth, brown or nearly black. Styles 3.

This is a widespread herb, usually growing in waste places and fields, and very similar to P. arenstrum Boreu.


Studied specimens. Buunchestan: 35 km from Iranshahr to Bazman, 570 m, Runemark and al. 22588 (TARI); Khorassan: neck Mt. 15-20 km S. of Ghaen, 1800-1900 m, Runemark & Sardabi 23702 (TARI).

Typical characters. Annual herb. Stems divaricately branched, ascending, thin flacid, fragile, usually drooping. Perianth white 2.5 - 3 mm long. Nut trigonous, smooth, dark brown.

Very similar to P. aviculare, but nut smooth. Stem and branches drooping.


Studied specimens. Azarbaijan: 2 km NE. of Khalkhal, 1800-2050 m, Mozaffarian & Nowrozii 34053 (TARI); Kurdestan: N. of Sanandaj, Dashte Obato, 2000 m, Tavakoli & Khaledian 1419 (TARI); Hamadan: Ca. 70 km from Bijar to Hamadan, before Ghahord village, 1800 m, Assadi 61024, 61030 (TARI); Chaharmahal-e Bakhtiyari: Sabzkuh, kuh-e Hezardarreh, 2300-2750 m, Mozaffarian 58189 (TARI); Brojen, 2200 m, Mozaffarian 57190 (TARI); Tehran: Damavand, 1800 m, Mozaffarian 32214 (TARI).

Typical characters. Annual herb. Stem with elongated internodes. Leaves long elliptic to lanceolate-linear,
acuminate. Inflorescence lax, terminal, with 1-2 flowers at each node; Flowers 3-4 cm. long, pedicellate; the pedicels as long as perianth. Nut trigonous –ovoid, acuminate, lustrous, punctuate.


Studied specimen. Tehran: The Iran National Botanical Garden, 1320 m, Salehi & Nowroozi 32073 (TARI).

Typical characters. Very similar to P. patulum M. B. but fruits larger. Nut 4-5 mm. long, trigonous, nearly black, completely covered by accrescent perianth.


Studied specimens. Mazandaran: by Lavij river, ca. 5 km S. of Nosratabad, 150 m, Wendelbo & Assadi 14505 (TARI); Kermanshah: road of Ravan sar to Pave, Hamzeh and Hatami 1850 (TARI); Hormozgan: Bandar Abbas, Fareghan, Meymand, 1100 m, V. Moazzafarian 52511 (TARI); Chaharmahal-e Bakhtiari: Sabzkuh, Moazzafarian 97418 (TARI); Tehran: 69 km from Save to Tehran, 1000 m, Assadi 61111 (TARI).

Typical characters. Annual glabrous herb or persisting through the winter; stems strongly branched, erect or ascending. Leaves few, lanceolate to linear-lanceolate, acute, flat, soon deciduous. Inflorescence branches virgate, with long internodes, with rather dense f lower.

Bistorta Adans.

This genus is separated from Polygonum L. sensu lato. with having thick rhizomes. Basal leaves with long sheathed petioles. Ochreae brown. Flowers in dense terminal spikes. Perianth pink. Styles 3 free.

1. B. major S. F. Gray, Nat. Arr. Brit. Plants II, 267 (1821). (Fig. 5).


Studied specimens. Mazendaran: 40 km S. of Ramsar, N. Slope of Kuh-e Khashechal, 2900-3600 m, Assadi & Maassoumi 51150 (TARI); Azarbaiejan: Kuh e Sahand, 2200-2900 m, Assadi & Moazzafarian 30661 (TARI); Hamadan: ca. 1 km E. of Ganjname, 2750 m, Assadi & Moazzafarian 36873 (TARI); Kuh e Alvand from Ebero and Simin, Kuh e Kolaghahzi, 2200-3100 m, Moazzafarian 65051 (TARI).

Typical characters. Perennial herb with stout woody rhizomes. Stems ± erect. Lower leaves large, lanceolate often truncate at base, borne on winged petioles, glabrous. Raceme a spike like head.

Persicaria Mill.

This genus is separated from Polygonum by being annual rarely perennial usually hydrophilous herbs. Ochreae brownish membranaceous, truncate, ciliate or non ciliate. Flowers in ebracteate spikes. Styles 2-3, united below.

Key to the accepted species of Persicaria
1. Inflorescence a dense oblong spike; the flowers contiguous
2. - Inflorescence lax, linear; the flowers non contiguous
3. Ochreae short ciliate or non ciliate; cilia up to 3 mm long
4. - Ochreae non ciliate. Stem thick, with thickened nodes
5. P. glabra
6. - Ochreae non ciliate; cilia up to 1 mm high
7. P. orientalis
8. - Leaves ovate or ovate-cordate, acuminate; median cauline leaves more than 40 mm broad, ± long petioled. Plants usually more than 1 m high
9. P. amphibia
10. - Annual herb. Leaves attenuate or cuneate at base, with a distinct violet or brown blotch
11. P. maculosa
12. - Annual herb. Ochreae ciliate. Perianth glabrous or bearing brown glands
13. P. salicifolia
14. - Annual herb. Ochreae patent, mostly glabrous, entire or shortly ciliate or ciliolate; cilia up to 1 mm
15. P. lapathifolia
16. - Ochreae brown, truncate, the nerves exserted as exerted aristae. Perianth eglandular, white
17. P. minus
18. - Ochreae tubular, tightly clasping the stem, appressed hairy, long ciliate; cilia more than 1 mm long
Studied specimens. Gilan: Bandar-e Anzali, ca. 25 m, Moazzafarian 66206 (TARI); Kerman: Jiroft road, 500

www.SID.ir
Fig. 5. Bistorta major (× 0.45); flower (× 4.5).
m, Manchehri & Heravi, 245 (TARI).

**Typical characters.** Perennial long rhizomatous herb. Stem glabrous. Leaves linear to linear-lanceolate, acuminate, glabrous except margin, midrib and veins ciliate. Ochreae 10-35 mm. long, conspicuously strigose, tubular, long fimbriate; fimbriae up to 20 mm long


**Studied specimens.** Mazandaran: Lar valley, 2420 m, Wendelbo & Assadi 13310 (TARI); Azarbajian: Mahabad lake, 1235m, Eizdpanah & Taheri 68350 (TARI); Chaharmahal-e Bakhtiari: Mordabe Chaghakhor, 2100 m, Moazzarian 57458 (TARI).

**Typical characters.** Perennial with creeping branched rhizome rootings at the nodes. Stems simple, to 1 m long or submersed. Leaves in land growing plants oblong-lanceolate, subsessile, appressed hairy; in floating lutosus, long-petioled, oblong. Ochreae elongated, truncate at summit.

3. **P. orientalis** (L.) Spach, Syst. Veg. 537 (1841).

Syn.: **Polygonum orientale** L., Sp. Pl. 362 (1753).

**Studied specimens.** Gilan: Bandar-e Anzali, Kanale Samzman Bekande, -20 m, Moazzarian. Tehran, Resalat street, in the riverbed, 1400 m, Moazzarian, Tehran-Karaj highway, in the river bed close to Eram Park, 1300 m, Moazzarian.

**Typical characters.** Annual herb. Stem erect, branched, to 1 m or even up to 2.5 m long. Leaves short, petioled, oval, more rarely orbicular or broadly lanceolate, gradually attenuate to a point, 3-25 cm long and 1-15 cm broad. Ochreae cup-shaped or cylindrical, with long bristles.


**Studied specimens.** Gilan: Bandare-e Anzali, ca. -25 m, Moazzarian 66251 (TARI), 94471 (TARI); Khuzestan: Ahvaz, between Albaji and pol-e Radkhane Shavor, ca. 80 m, Moazzarian 72233 (TARI); Shavor riverbed, ca. 80 m. Moazzarian 93985 (TARI); Ahvaz to Shush, Hur-e Bamdez, from Kaab-e Beiz e Abbud, ca. 50 m Moazzarian 83598 (TARI).

**Typical characters.** Annual or perennial herb. Stems erect, few branched, up to 130 cm long and at the base ± fissured. Ochreae non ciliate.


Syn.: **Polygonum lapathifolium** L., Sp. Pl. 360 (1753).

**Typical characters.** Tall annual. Stems ascending to erect, branched. Ochreae entire. Leaves lanceolate to very narrowly elliptic, cuneate at base, often with a blackish spot, usually glabrous, and always with pellucid yellowish glands or loosely pilose to densely tomentose beneath.

Very variable plant in size, indument and the degree to which the glands are developed. It may be devided to 4 subspecies as below.

1. Leaves glabrous or lax pilose
2. - Leaves densely woolly or tomentose below
3. 2. Stem in upper part punctuate-maculate. Leaves glabrous below, sometimes with yellow glands; petiole and leaf margins strigose **subsp. nodosa**
   - Stem in upper part non punctuate-maculate. Leaves glabrous below, often with red glands; petiole and leaf margins glabrous or plus minus strigose **subsp. lapathifolia**
   - Upper leaves large, more than 4-times longer than broad, usually acute **subsp. brittingeri**
   - Upper leaves large, more than 4-times longer than broad, usually acute **subsp. pallida**

**Studied specimens.** Azarbajian: Nowduz dam toward Miane, 2 km to Gavmish Goli, Ghale Huseinabad, 1200 m, Eizdpanah & Taheri 68376 (TARI); Urumieh to Ghasemlu, 12 km from Tumatar towards Ghasemlu, 1400 m, Eizdpanah & Taheri 68217 (TARI).

**Typical character.** Leaves glabrous, yellowish dotted below; petiole and leaf margins plus minus strigose. Penduncles glandulose. Stems in upper part punctuate-maculate.

Note. Our neighboring countries Floras do not separate *P. lapathifolia* **subsp. lapathifolia** from *P. lapathifolia* **subsp. nodosa** from each other except Flora of Pakistan (Qaiser,.2001). The two taxa are very close to each other and the most conspicuous character for separating these two subspecies is maculate-punctate stem in upper part and strigose petiole and leaf margins in

m, Manchehri & Heravi, 245 (TARI).

**Typical characters.** Perennial long rhizomatous herb. Stem glabrous. Leaves linear to linear-lanceolate, acuminate, glabrous except margin, midrib and veins ciliate. Ochreae 10-35 mm. long, conspicuously strigose, tubular, long fimbriate; fimbriae up to 20 mm long


**Studied specimens.** Mazandaran: Lar valley, 2420 m, Wendelbo & Assadi 13310 (TARI); Azarbajian: Mahabad lake, 1235m, Eizdpanah & Taheri 68350 (TARI); Chaharmahal-e Bakhtiari: Mordabe Chaghakhor, 2100 m, Moazzarian 57458 (TARI).

**Typical characters.** Perennial with creeping branched rhizome rootings at the nodes. Stems simple, to 1 m long or submersed. Leaves in land growing plants oblong-lanceolate, subsessile, appressed hairy; in floating lutosus, long-petioled, oblong. Ochreae elongated, truncate at summit.

3. **P. orientalis** (L.) Spach, Syst. Veg. 537 (1841).

Syn.: **Polygonum orientale** L., Sp. Pl. 362 (1753).

**Studied specimens.** Gilan: Bandar-e Anzali, Kanale Samzman Bekande, -20 m, Moazzarian. Tehran, Resalat street, in the riverbed, 1400 m, Moazzarian, Tehran-Karaj highway, in the river bed close to Eram Park, 1300 m, Moazzarian.

**Typical characters.** Annual herb. Stem erect, branched, to 1 m or even up to 2.5 m long. Leaves short, petioled, oval, more rarely orbicular or broadly lanceolate, gradually attenuate to a point, 3-25 cm long and 1-15 cm broad. Ochreae cup-shaped or cylindrical, with long bristles.


**Studied specimens.** Gilan: Bandare-e Anzali, ca. -25 m, Moazzarian 66251 (TARI), 94471 (TARI); Khuzestan: Ahvaz, between Albaji and pol-e Radkhane Shavor, ca. 80 m, Moazzarian 72233 (TARI); Shavor riverbed, ca. 80 m. Moazzarian 93985 (TARI); Ahvaz to Shush, Hur-e Bamdez, from Kaab-e Beiz e Abbud, ca. 50 m Moazzarian 83598 (TARI).

**Typical characters.** Annual or perennial herb. Stems erect, few branched, up to 130 cm long and at the base ± fissured. Ochreae non ciliate.


Syn.: **Polygonum lapathifolium** L., Sp. Pl. 360 (1753).
subsp. nodosa
Syn.: Polygonum brittingeri Opiz, Naturalientausch 874 (1824); Polygonum lapathifolium L. var. brittingeri (Opiz) Beck in Rechinb, Icon. Fl. Germ. 24: 76 (1909).

Studied specimens. Mazadaran: Haraz road, Kahrud, 2050 m, Foroughi 2449, 2484 (TARI); Gilan: 120 km from Rasht to Ghazvin, margin of Molla-Ali river 650-700 m, Zehzad et al. 67176 (TARI); Azarbaijan: 5 km from Ardabil to Astara, 1300 m, Assadi & Akhani, 61645 (TARI); Kermanshah: 30 km N. of Biston, Tang-e Ejdeha, 1300 m, Hamzheh and Lashkarbuluki, 1590 (TARI); Kuhgiluye and Boirahmad: Between Sisakht and Brujen, Meimand, 1600 m Assadi & Mozaffarian 31319 (TARI); Tehran: Ghazvin, Alamut, 1100 m, Babakhanlu 17532 (TARI).

Typical characters. Leaves densely tomentose to velutinous beneath; upper leaves 4 times longer than broad, usually obtuse to round at the apex, pale green.


Studied specimens. Azarbaijan: ca. 10 km SE, of Mahnesan, Ghezel Ozan river bed, 1300 m, Assadi & Akhani 61215 (TARI); Tehran: Firuzkuh, between Mahabad and Anzeha, close to Mahabad, 2000 m, Mozaffarian 54249 (TARI).

Typical characters. Leaves densely tomentose to velutinous beneath; upper leaves with more than 4 times longer than broad, acute at apex, grey or yellowish-green.


Studied specimens. Gorgan: Road to Chahar bagh, 2000 m, Mozaffarian 77842 (TARI); Mazadaran: Nowshahr, Manuchehrka, ca. 20 m, Mozaffarian 45550 (TARI); Chalus to Tunekabon, Kelardasht, ca. 6 m Mozaffarian 93799 (TARI); Gilan: Lahijan, Safrabaste, ca. 15 m, Assadi 89416 (TARI); Azarbaijan: Arasbarn protected area, Makidi, 1400 m Runemark & Assadi 22069, 31577 (TARI); Kermanshah: Sare-Pol-e Zahab, 550 m, Assadi & Nikcehre 76228 (TARI); Fars: 57 km from Shiraz to Kazerun, Dasht-e Arjan, Cheshme Salman, 1800 m, Zehzad et al. 67015 (TARI).

Typical characters. Very similar to P. lapathifolia, but ochreae ciliates, leaves bright pink, and the leaves and peduncles eglandular.


Studied specimens. Khuzestan: Dez protected area, a swamp close to Mianrud Environmental station 94272 (TARI).

Typical characters. Perennial. Stems ascending, branched. Ochreae brown, the nerves exerted as long arista, strigosus. Flowers white, in a group up to 6 in each node of the long spikes.


Subsp. hydropiper

Typical characters. Annual. Stems erect. Ochreae brown, fringed. Leaves lanceolate to very narrowly ovate, acuminate. Inflorescence a very lax spike; the flowers ± distant. Perianth pink or greenish, with yellowish or brownish glands.

Studied specimens. Mazadaran: 30 km from Abbasabad to Kelardasht, 1100 m, Runemark and Mozaffarian 25798 (TARI); 31 km. From Chalus to Karaj, ca.5.5 km. S of Marzanabad (WA2), 740 m, K.P. Buttlar and K. Fauler 31894 (TARI); Gilan: Bandare Anzali, -25 m, Mozaffarian 66258 (TARI); Khuzestan: 20 km from Andimeshk to Ahvaz, 150 m, Mozaffarian 58441 (TARI).


Syn.: Polygonum mite Schrank, Baier. Fl. : 668 (1789).

Studied specimens. Gilan: Bandar-e Anzali -25m, V. Mozaffarian 66258 (TARI); 24 km from Rudbar to Rasht, 150-200 m, Zehzad et al. 67209 (TARI); Mazadaran: ca. 5 km from Abbasabad to Kelardasht, 120 m, Mozaffarian 93779 (TARI); Azarbaijan: S. of Urumieh lake, Sumele canal, 1300 m, Assadi & Akhani 61342 (TARI).

Typical characters. Annual, similar to P. hydropiper, but smaller, 15-30 cm high. Leaves oblong-lanceolate, short petioled, 5-10 cm long, 1-2 cm broad; the margin and often the veins beneath, appressed hairy. Ochreae
covered with short hairs; the margin long-ciliate

10. P. minus (Hudson) Mozaffar., comb. nov.
Studied specimen. Tehran: Chitgar, 1320 m, Sabeti 7827 (TARI).

**Typical characters.** Annual. Stem slender, decumbent
or ascending, more rarely glabrous, 15-30 cm long.
Leaves linear-lanceolate, rounded or slightly narrowed
at base, 5-7 cm long, 3-5 mm broad, quite glabrous or +
hairy on the veins and on the margin. Ochreae long
ciliate on the margin.

**REFERENCES**
Aghabeigi, F. 2001: Polygonum glabrum
(Polygonaceae), a new record for the flora of Iran. -
Assadi, M. 1988: Plants of Arasbaran Protected area,
NW. Iran (Part II). -Iranian Journal of Botany 4 (1):
15-16.
Coode, M. J. G. & Cullen, J. 1967: Polygonum in P. H.
Davis Flora of Turkey vol. 2: 269-281. -Edinburgh
at the University Press.

Khosravi, A & Poormahdi, S. 2008: Polygonum
khajeh–Jamali (Polygonaceae), a new species from
Komarov, V. L. 1936: Polygonum in Flora of USSR
vol 5: 457-536. -Israel program for scientific
translations, Jerusalem.
Mosaferi S., Keshavarzi M. & Amini T. 2010: Persicaria
lapathifolia subsp. nodosa (Polygonaceae) is recorded for flora of Iran. -
Iranian Journal of Botany 16 (2): 254-257.
Mozafarian, V. 1988: New species and New plant
Records from Iran. -Iranian Journal of Botany 4 (1):
61-70.
no. 205.- Karachi
Rechinger, K. H. & Schiman-Czeika, H. 1968:
Polygonum in K. H. Rechinger Flora Iranica. no.
G. Tutin & al. Flora Europaea vol. 1: 76-80. -
Cambridge University Press.
1: 52-58. - Jerusalem.