

## THE FLORA OF PANJAR AND KAROT VALLEYS, KAHUTA TEHSIL RAWALPINDI DISTRICT.

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There is a small area in Kahuta Tehsil sloping down to the Jehlum River which is largely covered with *Pinus roxburghii* forest because it is mostly too steep for cultivation. The altitudes are between c. 400 and 800 m. Until recently it was off the beaten track and I had lived in Rawalpindi City for many years before I found out how interesting the area was. Now that the Pakistan atomic reactor has been built in Kahuta I am afraid that this forest may be cut down for timber. This will be a great pity for it is the least spoiled area I know in the Punjab and I wish that it could be kept as a Nature Reserve.

The Punjab has been inhabited for a very long time and so the original flora of most of the region has long since disappeared because of cultivation and the grazing of herbivores. During most of the year there is not enough herbage for the grazing animals and so most trees with edible leaves are lopped for fodder and the others by the woodcutters. There are here and there 'rakhs' or preserves but this small area is the richest I know about with a good many species I have not found elsewhere in the Jhelum or Rawalpindi Districts. Some of the rarities are or were found in Poonch across the river but Poonch has suffered greatly in recent years from deforestation.

It is 19 years since I visited the little Panjar Valley which could be reached by a chartered bus from Rawalpindi or by car. Several times I visited the Valley with Prof. Nasir and I also went there with students. I never visited the adjacent Karot Valley in which parties from Gordon College have more recently found some species, including three Jasmynes which I never found.

All of the species growing in this small area belong to the Himalayan foothill flora and the ferns and most of the rare herbs, including the orchids grow in the pine forest. When I collected in the area I had no idea that I would ever want to write about it and only looked for the unfamiliar species and did not list or collect many of the common Rawalpindi plants which I knew well and did not try to make a complete list of the

plants to be found there. It will therefore be noticed that many common species at similar altitudes in the Rawalpindi Hills are missing in the list which follows.

As I worked on my 'Annotated Catalogue' of 1972 I noted the distribution of the species as given in Hooker's Flora of British India 1872-1897, Parker's Forest Flora, Ed. 2 (1924) and my own notes. I soon found out that as one moved from the east to the west that the number of species decreased along with a decrease in rainfall. The political line between India and Pakistan, is a floristic line also, as east of the Chamba-Kashmir line there is enough rainfall to permit epiphytic ferns, orchids, aroids etc. while on the west side of this line they are all terrestrial.

A study of (Lambert, 1933) trees and shrubs of Kashmir shows that quite a large number are only to be found in Jammu Province. They are the most tropical. Going westward species gradually drop out. Quite a few have their last station in Panjar, Poonch and Rawalpindi Dt. and quite a few more have their last station in Hazara Dt., and so do not cross the Indus.

When I was working on the flora of Swat which is across the Indus from Hazara I found that quite a few species that were not supposed to cross the Indus grow in Swat and now that we know something of the flora of Dir in Pakistan and of Nuristan on the Afghan side of the Pakistan boundary there are quite a few Himalayan plants growing hundreds of miles further west than Hooker and Parker realized. When the complete floras of Pakistan and Afghanistan are published we will be able to have more complete lists but there is no doubt in my mind that quite a few genera and species drop out between the Ravi and Chenab, others between the Chenab and the Jehlum and still others between the Jehlum and Indus while many hardy species can grow as far to the west as the Indian monsoon reaches, that is to the Nuristan Province of Afghanistan and to the Safed Koh Range which is visible from the Kurram Valley with quite a few species which have travelled along the branch of the Hindu Kush ranges which form the boundary between Pakistan and Afghanistan through Wasiristan to N.E. Baluchistan. Most of the trees and quite a few shrubs there are Himalayan and not Afghan. They are growing many hundreds of miles from the Himalayas.

As one goes from east to west there are well known species which find fewer and fewer suitable habitats and their distribution becomes disjunct. Examples are *Rhododendron arboreum*, *Pinus gerardiana*, *Balanophora involucreta*, and *Clematis barbellata*. Some fern species in Pakistan are hundreds of miles west of their nearest congeners and so is *Cardiocrinum giganteum* which does not seem to have been found between the Banihal Pass in Jammu and the Karnah Valley in Muzaffarabad Tehsil in Kashmir. A few Kashmir species seem to have their nearest relatives in western China. Plant distribution is an interesting subject which has had little study in Pakistan and India.

It will be noticed as one studies the following list that as far as we know at present there are quite a few rare species in Panjar and Karot which are not found further west. I have starred those which are at or near the western edge of their range. As might be expected many of these rarities are found across the Jhelum River in Poonch, Kotli or Mirpur but strangely there are a number of rare species on each side of the Jhelum which are not on the other. After Partition so much forest was cut down in Poonch that I feel sure that quite a few rare species must have disappeared and many small streams silted up and filled with boulders. One of the westernmost stands of *Cinnamomum tamala*, for example, which was in the Nawal Nadi had been cut down before I left Pakistan. Nature Conservancy organizations need to be started and efforts made to save valuable threatened species.

Geologists seem to be agreed that the Himalayas are young geologically and that between the Central Asian plate and the plate bearing the peninsula of India there was the Tethys Sea. As the peninsular plate floated northward the Himalayas rose from the sea. This is borne out by the fact that marine fossils are now found on Himalayan mountain tops. Where did the plants come from that now cover the new mountains? It seems clear that most of them came from the east rather than from the west or north. The foot hill zone of the Himalayas is tropical or sub-tropical during the monsoon and has been colonized by large numbers of shrubs and trees whose ranges are to China, Japan, the Philippines and even further afield. *Mallotus philippinensis* is one example out of many. Only a few of the woody plants have reached the Panjar Valley from the west as a part of the Sudano-Sindian flora. Examples are *Pistacia integerrima*, *Myrsine africana*, *Nerium indicum*, *Calotropis procera* and *Otostegia limbata*. The novelties in the Panjar area all seem to have come from the east rather than from the west. In the list which follows there are more rarities among the legumes than in any other group.

Note: Plants starred seem to be at or near the western end of their range.

#### Pteridophyta

- Adiantum capillus veneris* L.
- A. incisum* Forssk.
- Ceterach dalhousiae* (Hk.) C. Chr.
- Cheilanthes farinosa* (Forssk.) Kaulf.
- Diplazium squamigerum* (Mett.) Christ\*
- Hypodematium crenatum* (Forssk.) Kuhn
- Ophioglossum capense* Sw.\*
- O. vulgatum* L.\*
- Equisetum ramosissimum* Desf.
- Marsilea minuta* L.
- Selaginella chrysozoides* (Hk. & Grev.) Spring.

## Gymnospermae

*Pinus roxburghii* Sargent. The dominant forest tree.

## Monocotyledonae

The order of listing is that of my Annotated Catalogue. The names of the families are omitted.

*Typha angustifolia* L. (*T. angustata* auct.)

*Potamogeton indicus* Roxb.

*P. pectinatus* L.

*P. perfoliatus* L.

*Zannichellia palustris* L. ssp. *pedicellata* Wahl.

*Sauromatum venosum* (Ait.) Schott, *Samp ki buti*

*Commelina benghalense* L.

*C. paludosa* Pl.

*Gloriosa superba* L. Kahuta.

*Iphigenia indica* A. Gray

*Curculigo orchioides* Gaertn. Extension of range.\*

*Tulipa stellata* Hk. f.

*Dioscorea belophylla* Voigt\*

*Diphylax griffithii* (Hk. f.) Kraenzl. (*Cheirostylis*).

*Habenaria digitata* Lindl. Also Samli below, Muree\*

*H. furcifera* Lindl. Also Nawal Nadi, Poonch\*

*H. marginata* Colebr. Also in Mirpur\*

*H. pectinata* D. Don. Also at Samli, 1070 m.\*

*H. susannae* (L.) R. Br. also Bani, below Murree\*

*Nervilea gammieana* (Hk. f.) Schlechter, also in Nawal Nadi, Poonch\*

*Cyperus alulatus* Kern (*C. iria* auct. p.p.)

*C. bulbosus* Vahl.

*C. compressus* L.

*C. niveus* Retz.

*Fimbristylis dichotoma* (L.) Vahl

*F. falcata* (Vahl) Kunth

*F. monostachya* (L.) Hassk., Ling River, Kahuta

*F. schoenoides* (Retz.) Vahl, Kahuta swamp.

*Aphuda mutica* L. var. *aristata* (L.) Hack. et Baker

*Arthraxon hispidus* (Thunb.) Makino. Near western edge of range.

*A. lancifolius* Trin.

*A. ristida cyanantha* (Nees.) Steud.

*A. funiculata* Trin. & Rupr.

- A. royleana* Trin. & Rupr. Kahuta  
*Arundinella nepalensis* Trin.  
*Bothriochloa bladhii* (Retz.) S. T. Blake  
*Capillipedium parviflorum* (R. Br.) Stapf.  
*Chionachne koenigii* (Spreng.) Thw.\*  
*Chrysopogon fulvus* (Spreng.) Chiov.  
*C. serrulatus* Trin.  
*Cymbopogon jwarancusa* (Jones) Schult.  
*C. martinii* (Roxb.) Wats.  
*C. olivieri* (Boiss.) Bor  
*Cynodon dactylon* (L.) Pers.  
*Dactyloctenium aegyptium* (L.) Aschers.  
*Digitaria stricta* Roth ex Roem.  
*Echinochloa colonum* (L.) Link  
*E. crus-galli* (L.) P. Beauv.  
*Eleusine verticillata* Roxb.  
*Eremopogon foveolatus* (Del.) Stapf  
*Erianthus griffithii* (Munro) Hook. f.  
*Haekelochloa granularis* (L.) O. Ktze.  
*Hemarthria compressa* (L. f.) R. Br.  
*Heteropogon contortus* (L.) P. Beauv.  
*Imperata cylindrica* (L.) P. Beauv. var. *major* (Nees) C. E. Hubb.  
*Isachne himalaica* Hook. f.  
*Ischaemum rugosum* Salisb.\*  
*Mnesithea laevis* (Retz.) Kunth  
*Neyraudia arundinacea* (L.) Henr.  
*Oplismenus compositus* (L.) P. Beauv.  
*Panicum antidotale* Retz.  
*P. atrosanguineum* Hochst. ex A. Rich.  
*P. austroasiaticum* Ohwi vel aff.  
*P. paludosum* Roxb.\*  
*Paspalidium flavidum* (Retz.) A. Camus.  
*Paspalum distichum* L., Kahuta swamp.  
*P. paspaloides* (Michx.) Scribner  
*Pennisetum americanum* (L.) Schum., (*P. typhoides* Stapf).  
*P. orientale* L. C. Rich.  
*Phragmites karka* (Retz.) Trin.  
*Pogonatherum paniceum* (Lamk.) Hook. f.  
*Rottboellia exaltata* L.f.  
*Sorghum halepense* (L.) Pers., Kahuta

- S. nitidum* (Vahl) Pers.\*  
*Sporobolus diander* (Retz.) P. Beauv.  
*Themeda anathera* (Nees) Hack.  
*Thysanolaena maxima* (Roxb.) O. Ktze. Extension of range\*  
*Tripogon filiformis* Nees ex Steud.  
*Tragus biflorus* Schult.

#### Dicotyledonae

- Salix aegyptiaca* L. Kahuta (Parker).  
*Engelhardtia colebrookeana* Lindl.\*  
*Trema politoria* Planch.  
*Broussonetia papyrifera* Vent. Introduced.  
*Ficus auriculata* Lour.  
*F. cunia* Ham.  
*F. laducca* Roxb. (*F. foveolata* Wall. ex Miq.)  
*F. virens* Dryand.  
*Achyranthes aspera* L.  
*Digera muricata* (L.) Murr.  
*Boerhaavia procumbens* Banks ex Roxb.  
*B. rubicunda* Steud. (*B. elegans* Choisy). Kahuta (Duthie).  
*Stellaria media* (L.) Cyr.  
*Clematis grata* Wall.  
*C. graveolens* Lindl.  
*Holboellia latifolia* Wall. Sterile. Probably correct.  
*Persea odoratissima* (Nees.) Kostermans, Kahuta  
*Brassica campestris* L. var. *sarson* Prain = *B. rapa* ssp. *campestris* (L.) Clapham.  
 Sarson is the most valuable mustard crop.  
*Eruca sativa* Miller, Tara mira is also in important spring crop in the Punjab. It is planted on poor, stony soils.  
*Moringa oleifera* Lamk., Horse Radish Tree, cult. Kahuta.  
*Tillaea pharnaceoides* Hochst. ex Britt. Kahuta.  
*Itea nutans* Royle, Rare.\*  
*Pittosporum napaulense* (DC.) Rehder var. *rawalpindiense* Gowda  
 J. Arn. Arb. 32: 332. 1951, Kulthea Reserve, Rajgharah reservoir  
 (Parker s.n., 4-12. 1909, type); Lehtrar, nr. Panjar, 4000' (Nasir 23174).\*  
*Duchesnea indica* (Andr.) Focke  
*Pyrus pashia* Ham. ex D. Don  
*Rubus anatolicus* (Focke) Focke ex Hausskn. (*R. fruticosus* auct.)  
*R. ellipticus* Sm.  
*Bauhinia variegata* L., Kachnar.  
*Caesalpinia decapetala* (Roth) Alston  
*Cassia absus* L. Chakra.

- C. fistula* L., Amaltas.  
*C. pumila* Lamk.\*  
*C. wallichiana* DC., (*C. dimidiata* Ham.)..  
*Acacia catechu* (L.) Willd., Khair  
*A. hydaspica* J. R. Drum.  
*A. modesta* Wall. Phulahi  
*Albizzia lebbeck* (L.) Benth., *Siris, Shirim*, to be expected.  
*Mimosa himalayana* Gamble, *Ral.*  
*Alysicarpus bupleurifolius* (L.) DC.  
*A. ovalifolius* (Schum.) J. Leonard  
*Argyrobium roseum* (Camb.) Jaub. & Spach  
*Astragalus psilocentros* Fisch. var. *pilosus* Baker  
*Atylosia mollis* Bth., Karot, south of Panjar (Mc Vean).  
*A. platycarpa* Benth.  
*A. scarabaeoides* (L.) Baker  
*Butea monosperma* (Lamk.) O. Ktze., Kahuta. W. edge of range.  
*Crotalaria albida* (Heyne) ex Roth  
*C. calycina* Schrank.  
*C. sessiliflora* L. ssp. *hazarensis* Ali.  
*Desmodium gangeticum* (L.) DC., Karot, Panjar.\*  
*D. triflorum* (L.) DC.  
*D. laxiflorum* DC.\*  
*D. microphyllum* (Thunb.) DC.  
*Dumasia villosa* DC. vel aff., sterile.  
*Flemingia bracteata* (Roxb.) Wight (RRS & Mc Vean). Also in Mirpur.\*  
*F. congesta* Roxb. ex Aiton, Panjar (RRS 28536).\*  
*F. semialata* Roxb. ex Aiton (RRS 28535). Also in Mirpur.\*  
*Indigofera cordifolia* Heyne, Kahuta (Douie).\*  
*I. linifolia* (L. f.) Retz., Kahuta (RRS), Panjar (RRS 28531).  
*I. trita* L. f. var. *maffei* (Chiov.) Ali, (RRS s.n.).\*  
*Lespedeza juncea* (L. f.) Pers. var. *variegata* (Camb.) Ali (RRS 28,574; 28,594).  
*Medicago laciniata* (L.) Mill. var. *brachyantha* Boiss. Lehtrar (M. Nath),  
near Panjar; to be expected in Kahuta.  
*Pueraria tuberosa* (Roxb. ex Willd.) DC. Kahuta-Karor (Y. Nasir- & Zaffar Ali;  
Kahuta-Kotli Rd. (Y. Nasir, RRS).\*  
*Rhynchosia capitata* (Heyne ex Roth) DC. Panjar & Kahuta (RRS).  
*R. minima* (L.) DC., Panjar (RRS).  
*R. pseudo-cajan* Camb., (RRS et al 288).  
*Tephrosia strigosa* (Dalz.) Santa. & Mahesh., Rwp. & Jhelum Dts. Kahuta (RRS).\*  
*Uraria picta* L., (RRS 29,030); Kotli, Azad Kashmir (Siddiqi).  
*Vigna aconitifolia* (Jacq.) Marechal (*Phaseolus* auct.). Panjar (RRS 28,580),  
also in 1959.

- V. radiata* (L.) Wilczek, \* apparently wild.  
*V. vexillata* (L.) A. Rich. (RRS s.n., 15-9-1959).  
*V. dalzelliana* (O. Ktze.) Verdc. (*Phaseolus* auct.) (RRS 28,529). Edge of range.  
*V. mungo* (L.) Hepper, Kahuta cult. (RRS, 18-10-1958).  
*Geranium lucidum* L. (RRS).  
*G. ocellatum* Camb. var., *himalaicum* R.Kn.  
*Oxalis corniculata* L., very common (RRS).  
*Reinwardtia indica* Dumort. (RRS).  
*Fagonia arabica* L. In March (RRS).  
*Zanthoxylum armatum* DC. (Siddiqi & Y. Nasir 7241) Karot nr. Panjar.  
*Melia azadarech* L., Drek. Planted.  
  
*Polygala abyssinica* R. Br. Sept. (RRS).  
*P. arvensis* Willd. Sept. (RRS 28, 525), Karot (Siddiqi & Y. Nasir).  
*P. erioptera* DC. (RRS 10-10-59), RRS & E. Nasir, 18-10-1958)  
*P. tatarinovii* Regel (RRS 28, 524), also Hegira, Poonch (M.A. Siddiqi.)\* A Chinese species.  
 How did it get to this area ?  
*Croton sparsiflorus* Morong, Panjar, roadside (RRS). New introduction  
*Emblica officinalis* Gaertn. (*Phyllanthus* auct.). Panjar (RRS).  
*Euphorbia granulata* Forssk. var. *glabrata* Boiss. (RRS).  
*E. hypercifolia* L. (RRS).  
*Glochidion velutinum* Wight, (RRS).  
*Mallotus philippinensis* (Lamk.) Muell, common (RRS).  
*Phyllanthus fraternus* Webster, (RRS).  
*P. simplex* Retz., (RRS).  
*P. urinaria* L., (RRS)\*.  
*Cotinus cogyria* Scop., (RRS). Not common.  
*Lannea coromandelica* (Houtt.) Merrill, (RRS).  
*Pistacia integerrima* J. L. Stewart ex Brandis, kakkar singhi (RRS).  
*Cassine glauca* (Rottb.) O. Ktze. (*Elaeodendron* Pers.), (RRS 25, 495).\*  
*Maytenus royleanus* (Wall. ex Lawson) Cufod.; Rwp. Dist. & Poonch; to be expected in Panjar.  
*M. wallichiana* (Spreng.) Raju & Babu. Lehtrar Rd., Rwp.; to be expected in Panjar.  
*Zizipus oxyphylla* Edgew., Phitni (RRS).  
*Z. hysudrica* Hole, Seo Ber (RRS).  
*Vitis trifolia* L. Panjar & Kahuta. A wild grape.  
*Corchorus aestuans* L. Karot, Kahuta Tehsil.  
*C. trilocularis* L. (RRS).  
*Grewia optiva* J. R. Drum. ex Burret. (RRS).  
*Triumfetta pentandra* A. Rich. (RRS).\*  
*Abelmoschus crinitus* (Wall.) G. Don (RRS.)  
*Fioria vitifolia* (L.) Mattei. (*Hibiscus* auct.), (RRS 28,532).\*



- Kydia calycina* Roxb. (RRS), Lehtrar, Rwp. Dt. (Jabbar Ali), Karot (Siddiqi & Y. Nasir), Pulla.
- Sida alba* L. (*S. rhombifolia* var. *obovata* auct.). (RRS 28, 652).
- S. cordata* (Burm. f.) Boiss. (RRS).
- S. yunnanensis* Hu, (RRS 28, 251). *S. alba* auct.
- Note: There are probably many more *Malvaceae* in the Panjar area.
- Bombax ceiba* L., Kahuta & Panjar (RRS). Simbal.
- Sterculia villosa* Roxb. (RRS 28, 583).
- Viola canescens* Wall. ex Roxb. with runners (RRS).
- Flacourtia indica* (Burm. f.) Merrill, (RRS).
- Xylosma longifolium* Clos. in ravines (RRS). Rwp. Dt. eastwards.
- Begonia picta* Sm. (RRS).\* At western edge of range.
- B. tenella* D. Don, (RRS).\*
- Woodfordia fruticosa* (L.) S. Kurz, in pine forest (RRS).
- Punica granatum* L., Anar, Daruna, (RRS). Cult.
- Terminalia belerica* Roxb., Bahera, Panjar; down to the Jhelum River.\* Rwp. eastward.
- Syzygium cumini* (L.) Skeels var. *caryophyllifolia* (Du.; RRS), Rwp.
- Scaligeria stewartiana* (Nasir) Nasir. Kahuta Rd. (E. Nasir, 29131). Endemic.
- Seseli diffusum* (Roxb. ex Sm.) Santapau & Wagh. Kahuta fide Bamber.
- Embelia robusta* Roxb., Panjar (Parker), Karot (Mc Vean)\*
- Myrsine africana* L., Baybring, (RRS).
- Jasminum arborescens* Roxb., Karot forest near Panjar (Grohmann).\*
- J. latifolium* Roxb., Karot (M. A. Siddiqi. & E. Nasir).\*
- J. roxburghianum* Wall. ex C. B. Clarke, Karot (M. A. Siddiqi & Y. Nasir 6341 and 6345).\* Grohmann (1974) states that these three taxa are closely related and that further study is needed in order to determine how the three should be treated.
- J. grandiflorum* L., Karot (M. A. Siddiqi., Y. Nasir & F. Grohmann 6344).\*
- Olea glandulifera* Wall. ex DC., Karot (Siddiqi. & Y. Nasir).
- Buddleja asiatica* Lour., on earth bank in ravine (RRS).
- Gentiana aprica* Dcne., Kahuta (M. Nath), Panjar (RRS & E. Nasir).
- G. decemfida* Ham., Kahuta in March (M. Nath).\*
- Carissa opaca* Stapf ex Haines. Very common with *Dodonaea*. Garna Garaunda. Ripe fruit in March.
- Nerium indicum* Mill., growing in stream beds, Kaner, Ganhira.
- Calotropis procera* (Willd.) R. Br., Ak, Kahuta (RRS).
- Tylophora hirsuta* Wight.
- Ipomoea arachnosperma* Welw. (RRS) at Kahuta Ziarat.\*
- Pharbitis (Ipomoea) nil* (L.) Choisy, Kahuta (RRS).
- Porana paniculata* Roxb., Karot near Kahuta (Siddiqi & Y. Nasir).
- Cynoglossum lanceolatum* Forssk., (RRS).
- Heliotropium brevifolium* Wall. (RRS 2853) (E).
- H. strigosum* Willd., (RRS).

- Trichodesma indicum* (L.) R. Br., Rawalpindi-Kahuta Rd. (Burt 1110).  
*Callicarpa macrophylla* Vahl, (RRS).  
*Caryopteris odorata* (Ham.) Robinson, (RRS).  
*Premna barbata* Wall. ex Schauer, Karot (Siddiqi & Y. Nasir, 26-4-73).  
*Vitex negundo* L. (RRS).  
*Ajuga bracteosa* Wall., Kahuta (RRS).  
*A. macrosperma* Wall. ex Bth., in pine forest (RRS). \* Extension of range.  
*Colebrookea oppositifolia* Sm., common in forest (RRS).  
*Leucas capitata* Desf. (RRS). Field weed.  
*L. mollissima* Wall. ex Benth. (RRS).  
*L. nutans* Spreng., (Burt). Monsoon weed.  
*Plectranthus rugosus* Wall., Kahuta (RRS).  
*Micromeria biflora* Wall., in pine forest (RRS).  
*Otostegia limbata* Benth. Kahuta, steep sunny banks (RRS).  
*Datura innoxia* Mill., Kahuta (RRS).  
*Physalis minima* L., (RRS).  
*Solanum incanum* L., Kahuta & Panjar.  
*S. miniatum* Bernh. ex Willd. (*S. nigrum* auct.).  
*Misopates orontium* (L.) Raffin. (= *Antirrhinum orontium* L., Kahuta Douie).  
*Kickxia incana* (Wall.) Pennell. March (RRS).  
*K. ramosissima* (Wall.) Janch. (RRS).  
*Lindernia nummularifolia* (D. Don) Wettst., (RRS).  
*Verbascum chinense* (L.) Santapau; (RRS).  
*Lindernia ciliata* (Colsm). Penn., Karot Vy. near Panjar (E. Nasir).  
*Incarvillea emodi* Royle ex Chatterji, Kahuta Tehsil (Parker).  
*Adhatoda vasica* Nees, Kahuta (RRS). Bhaikar.  
*Barleria cristata* L., in forest Sept-Nov.  
*Dicliptera roxburghiana* Nees, steep banks.  
*Eranthemum nervosum* (Vahl) R. Br. (RRS & E. Nasir). Planted ?  
*Justicia pubigera* (Nees) C. B. Clarke, to be expected.  
*J. simplex* D. Don, Sept. & Oct. (RRS).  
*Argostemma sarmentosum* Wall. in Roxb., (Burt; RRS). \*  
*Borreria stricta* (L. f.) G. F. N. Meyer (RRS).  
*Galium asperuloides* Edgew. var *hoffmeisteri* Hand.-Mazz, near Kahuta (RRS).  
*G. boreale* L., sometimes large, suggesting a *Rubia*.  
*Oldenlandia corymbosa* L., Oct. (RRS).  
*O. nudicaulis* Roth, pine forest, (RRS). Extension of range. \*  
*Randia spinosa* (Thunb.) Poir., Karot nr. Panjar (E. Nasir). \*  
*Wendlandia exserta* (Roxb.) DC., (RRS).  
*Diplocyclos palmatus* (L.) C. Jeffrey, Kahuta in graveyard (RRS). \* Extension of range.  
*Momordica dioica* Roxb. ex Willd., Sept. (RRS).

- Bidens chinensis* (L.) Willd. (*biternata* auct.) RRS.  
*Blumea membranacea* DC. April (RRS). Extension of range.\*  
*B. mollis* (D. Don) Merrill.  
*Conyza japonica* Less. (RRS).  
*C. stricta* Willd. (RRS).  
*Echinops echinatus* Roxb. (RRS).  
*Inula cappa* (Ham.) DC., flos. Oct., Nov. (RRS).  
*I. indica* L. (RRS), on Oct. 3.  
*Ixeris sagittarioides* (Clarke) Stebbins, in pine forest (RRS).\*  
*Saussurea heteromalla* (D. Don) Hand.-Mazz. (RRS).  
*Serratula pallida* DC.  
*Tagetes minuta* L. Cult.  
*Vernonia cinerea* (L.) Less.  
*Youngia japonica* (L.) DC.

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