



Weed flora of district rudraprayag, Uttarakhand India

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Abstract

Weeds are undesirable plants that are known for the decline of biodiversity and threat to native ecosystem stability. The present study deals to assess the diversity of weed species in different habitats of district Rudraprayag of Uttarakhand. The study resulted in the documentation of a total of 187 weed species belonging to 140 genera and 44 families based on field collections and observations. The maximum number of weed species were reported from wastelands followed by crop fields, roadsides and forests/ forest edges based on their distribution in different habitats. The study on the distribution of weed species is significant for effective planning and management of the ecosystem. Innovative and integrated weed management strategies must be adopted to overcome the threats imposed by the weeds.

Keywords: Weeds, ecosystem, biodiversity, rudraprayag, habitats, management

Introduction

Weeds are pernicious plants that grow luxuriantly and chokes out other plants that have valuable nutritive properties. Weeds are major biotic stress to agricultural systems causing a substantial loss in the crop production and quality. In India, loss of Rs. 900 billion per annum in crop yield occurs due to insect pests, diseases and weeds. Approximately one-third of the reduction in crop production is caused by weeds in which the role of invasive/noxious weeds is major ^[9]. Beside croplands, they are also distributed in other ecosystems such as forests, wastelands, grasslands, waterbodies, etc., destroying these natural habitats. They adversely affect crop production, biodiversity, and ecosystem services thus they are a threat to human health, food and environmental security.

All weeds are not native in nature and these non-native plants are known as exotic/invasive species. Non-native weed species are rapidly spreading in all ecosystems, mainly in those which are directly under anthropogenic threats. Almost one-sixth of the global land surface is highly prone to invasion from exotic species, including significant areas of developing economies and biodiversity hotspots ^[1]. They are imparting direct influence on the survival rate, productivity and activity of native biota. Globalization (travel, trade and tourism) increases risk of introduction of invasive weeds in native ecosystem. The total estimated loss to the world economy due to invasive non-native species is 5% of annual production ^[7]. The total yearly expense for managing invasive weeds worldwide is assessed to be in the hundreds of billions of dollars, including costs of control, harmful effects on human health, losses in crop yields and ecosystem services ^[11].

Climate change provide an opportunity for invasive species to establish themselves in native ecosystem and if climate change and invasive species act together, they are key

factors of biodiversity loss, possess serious adverse impact on native biodiversity and ecosystems ^[5]. Invasive noxious weeds show larger growth in increased atmospheric CO₂ concentration in relation to other plant species ^[15]. Global efforts are required for the control of these weeds. Earlier, the basic steps used for management of weed control are prevention, control and eradication. Integrated and effective weed management strategies are needed to cope up the challenges faced due to weeds. The various aspects of weed management include mechanical and manual, cultural/ecological/cropping and competition, biological, chemical and allelopathy ^[9]. The present study was aimed to record the weed flora of district Rudraprayag, Uttarakhand.

Materials and Methods

The Rudraprayag district is located in Uttarakhand state of northern India between 30.2844°N latitude and 78.9811°E longitude occupying an area of 2439 km². The Mandakini River is the main glacial-fed river flowing through this district, originating from Chaurabari glacier as Dudhganga and joins Basuki Ganga at Sonprayag. The altitudinal gradient of the study area follows the ascending range from 700 m to 8000m. The area offers stunning Himalayan peaks and lush green alpine meadows. The district is enriched with floral and faunal diversity providing opportunities for research.

Extensive field survey was conducted to the study area for the collection of weed species from different habitats during different seasons from 2016-2018. Field notes on morphology, local names, habitat and distribution were prepared during the survey. The nativity of the species was confirmed from the available and recently published literature. The identification of collected weed species were done by regional flora ^[2] and Garhwal University Herbarium.

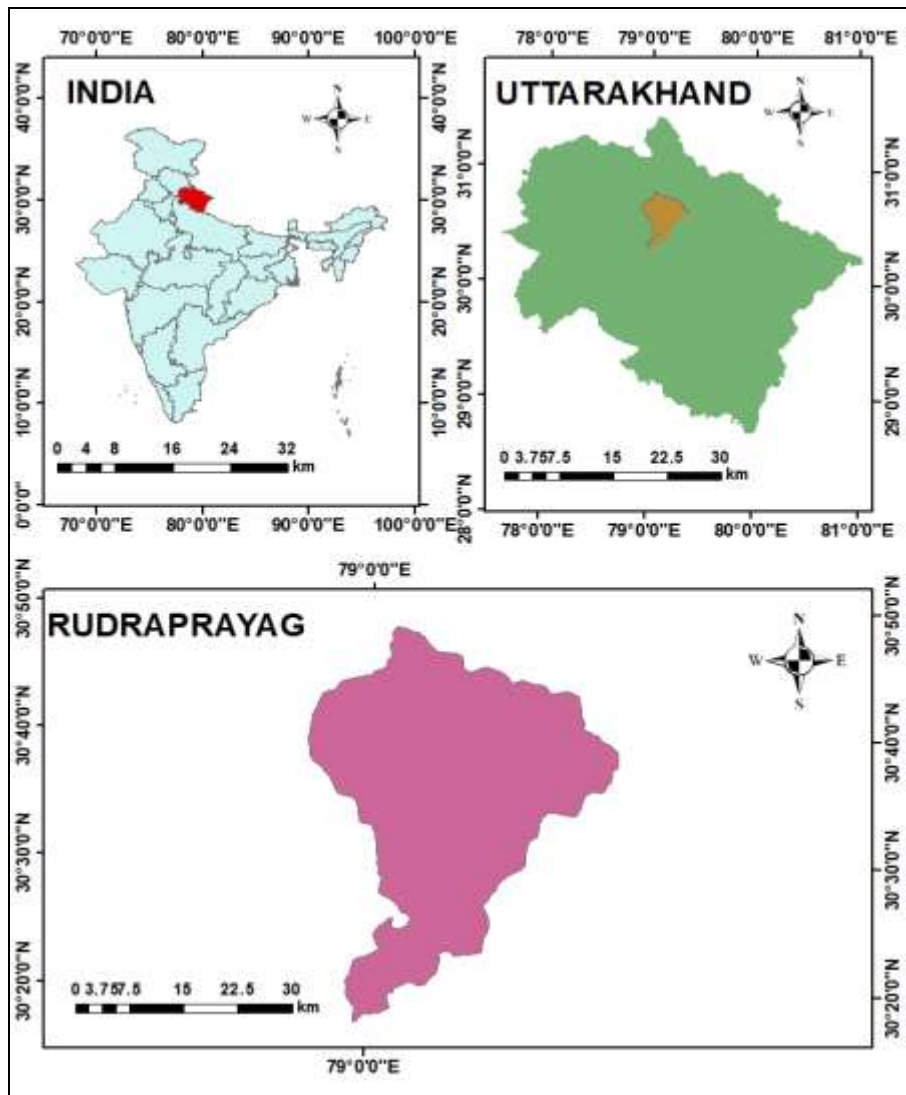


Fig 1: Location Map of the Study Area

Results and Discussions

In the present study, a total of 187 weed species belonging to 140 genera and 44 families were recorded from the district Rudraprayag of Uttarakhand (Table 1). Dicots include 149 weed species under 111 genera and 39 families followed by monocots which include 38 weed species under 29 genera and 5 families. Majority of the weeds are herbs (85.56%), followed by undershrubs (9.09%), climbers (3.74%) and shrubs (1.6%). The maximum number of weed species were recorded from wastelands followed by agricultural fields, roadsides and forests/ forest edges based on their distribution in different habitats.

Nativity of weed species reported from the study area are represented in Table 1. The noxious alien weeds have Tropical America, S. America, N. America, Europe and Asia (excluding Indian subcontinent) as native region.

Asteraceae is the dominating family with maximum number of weed species (28) followed by Poaceae (22 species); Fabaceae (12 species); Cyperaceae (10 species); Amaranthaceae, Scrophulariaceae (each with 9 species); Euphorbiaceae, Lamiaceae, Solanaceae, Polygonaceae (each with 7 species); Convolvulaceae (6 species); Malvaceae (5 species); Acanthaceae, Brassicaceae, Commelinaceae (each with 4 species); Caesalpiniaceae, Caryophyllaceae, Rubiaceae, Tiliaceae (each with 3 species); Boraginaceae, Chenopodiaceae, Lythraceae, Nyctaginaceae, Oxalidaceae,

Portulacaceae, Primulaceae, Ranunculaceae, Urticaceae (each with 2 species); Apiaceae, Asclepiadaceae, Cannabinaceae, Cleomaceae, Cuscutaceae, Dioscoreaceae, Eriocaulaceae, Fumariaceae, Geraniaceae, Martyniaceae, Onagraceae, Papaveraceae, Plantaginaceae, Plumbaginaceae, Sapindaceae and Verbenaceae (each with one species).

Upreti *et al.*, 2010^[4] studied diversity and distribution of weeds and documented 168 weed species from eastern kumaun region of Uttarakhand. Gupta, 2008^[3] studied the dynamics of weeds in rice, wheat and maize crop fields from Doon Valley of Uttarakhand. Invasion and propagation by exotics like *Ageratum conyzoides*, *Eupatorium adenophorum* and *Parthenium hysterophorus* is a menace for indigenous flora and have harmful health hazards to mankind causing serious allergic problems and respiratory problems^[6]. The rapid propagation of these noxious weeds in native ecosystem occur due to anthropogenic disturbances such as road construction and forest fragmentation^[8]. *Polygonum polystachyum* is native to Himalaya but it is considered as local invader in alpine ecosystem where it is spreading rapidly and forming dense colonies. Kedarnath, Tungnath and other alpine areas of Uttarakhand are highly invaded and support high density of *Polygonum polystachyum* resulting into decline and depletion of many highly valuable medicinal plants^[8]. Sekar *et al.*, 2012^[12]

reported that invasive species show maximum distribution in waste land (48%) followed by agricultural fields (20%). Majority of weeds recorded from the study area belongs to Asteraceae followed by Poaceae and this result is comparable to the reports of Jaryan *et al.*, 2012^[4] and Singh *et al.*, 2010^[13] who reported similar pattern of family

dominance in alien flora. This is attributed due to the fact that these families are largest in term of species richness^[10]. The noxious weeds should be controlled on time and must be removed before flowering and fruiting to reduce the seed production which will remain in soil seed banks for years.

Table 1: Weed flora of District Rudraprayag, Uttarakhand

Family/Botanical Name	Nativity	Habitat	Habit
Acanthaceae			
<i>Barleria cristata</i> L.	Asia	GS, RS	US
<i>Dicliptera bupleuroides</i> Nees	Not Clear	F,GS	H
<i>Justicia procumbens</i> L.	E. Asia, I. Subcont.	CF, WL, RS	H
<i>Peristrophe paniculata</i> (Forsk.) Brumitt	Trop. America	WL, RS	H
Amaranthaceae			
<i>Achyranthes aspera</i> L.	SE Asia, Africa	WL, RS, CF	US
<i>Achyranthes bidentata</i> Blume	Asia	FE,RS	US
<i>Aerva sanguinolenta</i> (L.) Blume	S. China, I. Subcont.	RS, WL, FE	US
<i>Alternanthera sessilis</i> (L.) DC.	Trop. America	CF, RS, WL	H
<i>Amaranthus spinosus</i> L.	Trop. America	CF, RS, WL	H
<i>Amaranthus viridis</i> L.	Trop. America	CF, RS, WL	H
<i>Celosia argentea</i> L.	Trop. Africa	CF, RS	H
<i>Digera muricata</i> (L.) Mart.	SW Asia	CF	H
<i>Gomphrena celosioides</i> Mart.	S. America	CF, RS, WL	H
Apiaceae			
<i>Centella asiatica</i> (L.) Urban	Asia	RS, FE	H
Asclepiadaceae			
<i>Calotropis gigantea</i> (L.) Dryander	Trop. Africa	RS, WL	S
Asteraceae			
<i>Ageratum conyzoides</i> L.	Trop. America	F, RS, WL, CF	H
<i>Ageratum houstonianum</i> Mill.	Trop. America	F, RS, WL, CF	H
<i>Anaphalis contorta</i> (D. Don) Hook f.	Asia	F, GS	H
<i>Anaphalis nepalensis</i> (Spreng.) Hand.-Mazz.	Himalaya, China	F, GS	H
<i>Artemisia nilagirica</i> (Clarke) Pamp.	Europe, Asia	RS, FE, WL	US
<i>Bidens pilosa</i> L.	Trop. America	CF, WL	H
<i>Cichorium intybus</i> L.	Europe	CF, RS, WL	H
<i>Cirsium wallichii</i> DC.	Not Clear	F, WL	H
<i>Conyza bonariensis</i> (L.) Cronq.	S. America	CF, RS, WL	H
<i>Conyza canadensis</i> (L.) Cronq.	S. America	CF, RS, WL	H
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Trop. America	F, WL, RS	H
<i>Eclipta prostrata</i> (L.) L.	Trop. America	CF, WL	H
<i>Emilia sonchifolia</i> (L.) DC.	Asia	CF, RS, WL	H
<i>Erigeron karvinskianus</i> DC.	Mexico, C. America	RS, ML	H
<i>Eupatorium adenophorum</i> Sprengel	Mexico	RS, F, WL	US
<i>Galinsoga parviflora</i> Cav.	Trop. America	CF, RS, WL	H
<i>Gnaphalium hypoleucum</i> DC.	Not Clear	WL, RS, F, FE	H
<i>Gnaphalium luteo-album</i> L.	Not Clear	CF, WL, FE	H
<i>Lactuca dissecta</i> D. Don	Asia	WL, CF	H
<i>Parthenium hysterophorus</i> L.	Trop. N. America	CF, WL, RS, F	H
<i>Saussurea heteromalla</i> (D. Don) Hand.-Mazz.	Asia	RS, WL, CF	H
<i>Siegesbeckia orientalis</i> L.	Africa, Asia, Australia	RS, WL, CF	H
<i>Sonchus asper</i> (L.) Hill.	Mediterranean	RS, WL, CF	H
<i>Sonchus oleraceus</i> L.	Mediterranean	RS, WL, CF	H
<i>Tagetes minuta</i> L.	S. America	RS, WL, FM	H
<i>Tridax procumbens</i> L.	Trop. C. America	RS, WL, CF	H
<i>Xanthium indicum</i> Koenig in Roxb.	Trop. America	WL, RS, CF	H
<i>Youngia japonica</i> (L.) DC.	Trop. S. America	RS, WL, CF	H
Boraginaceae			
<i>Cynoglossum lanceolatum</i> Forsk.	Asia, Africa	RS, WL, FE	H
<i>Cynoglossum zeylanicum</i> (Vahl ex Hornem.) Thunb. ex Lehm.	Asia	WL, FE, GS	H
Brassicaceae			
<i>Capsella bursa-pastoris</i> (L.) Medik.	Europe	WL, RS, CF	H
<i>Cardamine impatiens</i> L.	Europe, Asia	WL, CF	H
<i>Coronopus didymus</i> (L.) J. Smith	S. America	WL, CF, FE	H
<i>Thlaspi arvense</i> L.	Europe, Asia	CF, RS, WL	H
Caesalpiniaceae			
<i>Cassia occidentalis</i> L.	Trop. America	WL, RS, CF	US

<i>Cassia pumila</i> Lam.	Trop. America	CF, RS, WL	H
<i>Cassia tora</i> L.	Trop. America	CF, RS, WL	US
Cannabinaceae			
<i>Cannabis sativa</i> L.	Central Asia	WL, RS, CF	H
Caryophyllaceae			
<i>Drymaria cordata</i> (L.) Willd. ex Roem. & Schult.	Trop. Africa & America	CF, ML	H
<i>Silene conoidea</i> L.	Europe, Asia	CF	H
<i>Stellaria media</i> (L.) Vill.	Europe, Asia	CF, WL	H
Chenopodiaceae			
<i>Chenopodium album</i> L.	Europe	CF, RS, WL	H
<i>Chenopodium ambrosioides</i> L.	Trop. America	RS, WL	H
Cleomaceae			
<i>Cleome viscosa</i> L.	Trop. America	CF, RS, WL	H
Commelinaceae			
<i>Commelina benghalensis</i> L.	Trop. Asia & Africa	CF, RS, WL	H
<i>Cyanotis vaga</i> (Lour.) J.A. & J.H. Schult.	Trop. Africa, E Asia	WL, CF	H
<i>Murdannia nudiflora</i> (L.) Brenan	Trop. & Subtrop. Asia	RS, GL, CF	H
<i>Murdannia spirata</i> (L.) Bruckn.	China, India, SE Asia,	CF, RS	H
Convolvulaceae			
<i>Convolvulus arvensis</i> L.	Europe	CF, RS, WL	C
<i>Evolvulus alsinoides</i> (L.) L.	S. America	WL, F, FM	H
<i>Ipomoea nil</i> (L.) Roth.	N. America	SF, WL, FE	C
<i>Ipomoea pes-tigridis</i> L.	Trop. Asia & Africa	WL, CF, F, RS	C
<i>Ipomoea purpurea</i> (L.) Roth.	S. America	WL, CF	C
<i>Ipomoea quamoclit</i> L.	Trop. America	WL, F, FM	C
Cuscutaceae			
<i>Cuscuta europaea</i> L.	Europe	P	C
Cyperaceae			
<i>Cyperus alulatus</i> Kern	Asia	CF	H
<i>Cyperus compressus</i> L.	Tropics	CF	H
<i>Cyperus difformis</i> L.	Trop. America	CF	H
<i>Cyperus iria</i> L.	Trop. America	CF, WL	H
<i>Cyperus niveus</i> Retz.	Trop. Africa	CF, GS	H
<i>Cyperus rotundus</i> L.	Africa, Europe, S. Asia	CF, WL	H
<i>Eleocharis atropurpurea</i> (Retz.) J. Presl & C. Presl	Pantropic	CF	H
<i>Fimbristylis dichotoma</i> (L.) Vahl	Asia, Africa	CF	H
<i>Fimbristylis miliacea</i> (L.) Vahl	Trop. Asia	CF	H
<i>Kyllinga nemoralis</i> (J.R. & G. Forst.) Dandy ex Hutch. & Dalziel	Not Clear	CF, RS	H
Dioscoreaceae			
<i>Dioscorea bulbifera</i> L.	Asia, Africa, Australia	WL, FE, SF	C
Eriocaulaceae			
<i>Eriocaulon cinereum</i> R. Br.	Asia	CF	H
Euphorbiaceae			
<i>Euphorbia helioscopia</i> L.	Europe, Asia	CF, WL	H
<i>Euphorbia heterophylla</i> L.	America	CF, WL	H
<i>Euphorbia hirta</i> L.	Trop. America	CF, RS, WL	H
<i>Euphorbia hypericifolia</i> L.	Trop. America	WL, CF	H
<i>Euphorbia prostrata</i> Aiton	S. America	WL, CF	H
<i>Phyllanthus niruri</i> L.	Tropics	WL, RS, CF	H
<i>Phyllanthus urinaria</i> L.	Trop. Asia	WL, RS, CF	H
Fabaceae			
<i>Aeschynomene indica</i> L.	Not Clear	CF, SF, GL	H
<i>Crotalaria spectabilis</i> Roth	Trop. Asia	FE, CF, RS	US
<i>Desmodium microphyllum</i> (Thumb.) DC.	Tropics	CF, FE	H
<i>Desmodium triflorum</i> (L.) DC.	Tropics	RS, CF, GL	H
<i>Lathyrus aphaca</i> L.	Europe, Africa	CF, RS	H
<i>Lathyrus sphaericus</i> Retz.	Europe, Asia, Africa	CF, WL	H
<i>Medicago polymorpha</i> L.	Mediterranean, Asia	RS, CF, WL	H
<i>Melilotus indica</i> (L.) Allioni	N. Africa, Europe, Asia	RS, CF, WL	H
<i>Trifolium repens</i> L.	Europe & Asia	CF, WL	H
<i>Trifolium tomentosum</i> L.	Europe	CF, WL, RS	H
<i>Vicia hirsuta</i> (L.) Gray	Europe, Asia	CF, WL	H
<i>Vicia sativa</i> L.	Europe	CF, WL	H
Fumariaceae			
<i>Fumaria indica</i> (Hausskn.) Pugsley	Asia	CF, RS, WL	H
Geraniaceae			
<i>Geranium nepalense</i> Sweet	I. Subcont., S. China	F	H
Lamiaceae			

<i>Ajuga bracteosa</i> Wallich ex Benth	Asia	RS, GS, CF	H
<i>Ajuga parviflora</i> Benth.	Afghanistan, C. Himalaya	CF, FE, GS	H
<i>Anisomeles indica</i> (L.) Kuntze	E. Asia	RS, WL, SF	US
<i>Clinopodium umbrosum</i> (M.Bieb.) C. Koch	Asia	CF, WL	H
<i>Lamium amplexicaule</i> L.	Asia, Europe, Africa	CF	H
<i>Leucas lanata</i> Benth.	Not Clear	GS, CF, RS	H
<i>Micromeria biflora</i> (Buch.-Ham. ex D.Don) Benth.	Not Clear	WL, GS	H
Lythraceae			
<i>Ammannia baccifera</i> L.	Africa, Asia, Australia	CF	H
<i>Rotala indica</i> (Willd.) Koehne	SE Asia	CF	H
Malvaceae			
<i>Abuliton indicum</i> (L.) Sweet	Asia	RS	US
<i>Sida acuta</i> Burm. f.	Trop. America	WL, RS, SF	H
<i>Sida cordifolia</i> L.	India	WL, RS, FE	US
<i>Sida rhombifolia</i> L.	New World Tropics	WL, RS, FE	H
<i>Urena lobata</i> L.	Trop. Africa	RS, WL, FE	US
Martyniaceae			
<i>Martynia annua</i> L.	Trop. America	WL, RS	H
Nyctaginaceae			
<i>Boerhavia diffusa</i> L.	Not Clear	WL, RS, FM	H
<i>Mirabilis jalapa</i> L.	Trop. America	WL, RS	H
Onagraceae			
<i>Oenothera rosea</i> L' Herit ex Aiton	Mexico	WL, RS	H
Oxalidaceae			
<i>Oxalis corniculata</i> L.	Europe	CF, WL	H
<i>Oxalis dehradunensis</i> Raizada	S. America	CF, WL	H
Papaveraceae			
<i>Argemone mexicana</i> L.	S. America	RS, WL	H
Plantaginaceae			
<i>Plantago major</i> L.	Europe, Asia	WL, RS	H
Plumbaginaceae			
<i>Plumbago zeylanica</i> L.	Asia, Africa, Australia	FE, SF, GS	H
Poaceae			
<i>Apluda mutica</i> L.	Asia	SF, F, RS	H
<i>Avena fatua</i> L.	Europe	CF, RS, WL	H
<i>Cynadon dactylon</i> (L.) Persoon	Africa	WL, CF, RS, F	H
<i>Dactyloctenium aegypticum</i> (L.) P. Beauv.	Africa	RS, WL, CF	H
<i>Dichanthium annulatum</i> (Forsk.) Stapf	Trop. Asia, Africa	WL, CF, GS	H
<i>Digitaria ciliaris</i> (Retz.) Koeler	Trop. Old World	RS, WL, CF	H
<i>Echinochloa colona</i> (L.) Link	Trop. S. America	CF	H
<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Trop. S. America	CF	H
<i>Eleusine indica</i> (L.) Gaertner	Asia, Africa	CF, RS, WL	H
<i>Eragrostis unioides</i> (Retz.) Nees ex Steudel	China, I. Subcont.	CF, RS, WL	H
<i>Imperata cylindrica</i> (L.) P. Beauv.	Trop. America	FE, GS, WL	H
<i>Ischaemum rugosum</i> Salisb.	Trop. Asia	CF, RS	H
<i>Oplismenus compositus</i> (L.) P. Beauv.	Not Clear	F, RS	H
<i>Panicum psilopodium</i> Trinius	Asia	CF, FE	H
<i>Paspalidium flavidum</i> (Retz.) A. Camus	Not Clear	CF, WL, RS	H
<i>Paspalum distichum</i> L.	N. America	CF, RS	H
<i>Phalaris minor</i> Retz.	N. Africa, Europe, S. Asia	RS, CF	H
<i>Poa annua</i> L.	Europe, Asia	CF, WL	H
<i>Polypogon fugax</i> Nees ex Steudel	Asia	CF	H
<i>Saccharum spontaneum</i> L.	Trop. W. Asia	RS, FM	H
<i>Setaria glauca</i> (L.) P. Beauv.	Europe	RS, WL, CF	H
<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Europe	RS, WL, CF	H
Polygonaceae			
<i>Persicaria capitata</i> (Buch.-Ham. ex D.Don) H. Gross	Asia	ML, WL	H
<i>Persicaria nepalensis</i> (Meisn.) H. Gross	E. Africa & Asia	CF, RS	H
<i>Polygonum barbatum</i> L.	Asia	WL, CF	H
<i>Polygonum plebeium</i> R. Br.	Asia, N. Africa	WL, CF, RS	H
<i>Polygonum polystachyum</i> Wallich ex Meisn.	Asia, India	F	US
<i>Rumex dentatus</i> L.	Europe, Asia, N. Africa	WL, RS	H
<i>Rumex nepalensis</i> Sprengel	Europe & Africa	WL, RS	H
Portulacaceae			
<i>Portulaca oleracea</i> L.	Trop. S. America	CF, WL	H
<i>Portulaca pilosa</i> L.	Trop. America	RS, WL, FM	H
Primulaceae			
<i>Anagallis arvensis</i> L.	Europe	CF, RS, WL	H

<i>Androsace umbellata</i> (Lour.) Merr.	N. India, Japan	FM, RS	H
Ranunculaceae			
<i>Ranunculus arvensis</i> L.	Europe	CF	H
<i>Ranunculus sceleratus</i> L.	Europe, SE Asia	CF	H
Rubiaceae			
<i>Galium aparine</i> L.	Europe, Africa	WL, CF, ML	H
<i>Hedyotis corymbosa</i> (L.) Lam.	Not Clear	WL, CF, ML	H
<i>Oldenlandia diffusa</i> (Willd.) Roxb.	Not Clear	CF, WL	H
Sapindaceae			
<i>Cardiospermum halicacabum</i> L.	Neotropics	RS, WL	H
Scrophulariaceae			
<i>Lindenbergia indica</i> (L.) Vatke	I. Subcont.	GS, RC	H
<i>Lindernia ciliata</i> (Colsm.) Pennell	Trop. Asia, Australia	CF, RS, WL	H
<i>Lindernia crustacea</i> (L.) F. Muell.	Trop. Asia	RS, CF	H
<i>Lindernia nummulariifolia</i> (D.Don) Wetts.	Not Clear	RS, GS, CF	H
<i>Mazus pumilus</i> (Burm. f.) Steenis	S. & E. Asia	GS, WL, CF	H
<i>Misopates orontium</i> (L.) Raf.	Europe	CF, WL, GS	H
<i>Torenia cordifolia</i> Roxb.	SW India, China	WL, CF, ML	H
<i>Verbascum thapsus</i> L.	Europe, Africa, Asia	WL, RS, GS	H
<i>Veronica persica</i> Poir.	Europe, Asia	CF, WL	H
Solanaceae			
<i>Datura innoxia</i> Mill.	Trop. America	WL, RS	H
<i>Datura stramonium</i> L.	Trop. America	WL, RS	H
<i>Nicandra physalodes</i> (L.) Gaertner	Peru	RS, WL	H
<i>Nicotiana plumbaginifolia</i> Viv.	Trop. America	RS, WL	H
<i>Physalis minima</i> L.	Trop. America	WL, CF, RS	H
<i>Solanum nigrum</i> L.	Trop. America	RS, WL, CF	H
<i>Solanum surattense</i> Burm. f.	SE Asia	RS, WL	US
Tiliaceae			
<i>Corchorus aestuans</i> L.	Trop. America	SF, RS, WL	H
<i>Triumfetta pilosa</i> Roth.	Trop. Africa	RS, WL, SF	US
<i>Triumfetta rhomboidea</i> Jacq.	Trop. America	RS, WL, FE	US
Urticaceae			
<i>Pouzolzia zeylanica</i> (L.) J. Benn. & Br.	Asia & Australia	CF, FM	H
<i>Urtica dioica</i> L.	Europe, Asia & Africa	WL, RS	S
Verbenaceae			
<i>Lantana camara</i> L.	Trop. America	F, RS, WL	S

Abbreviations: Habitats: WL- Wasteland, RS- Roadside, CF- Crop field, F- Forest, FE- Forest edges, SF- Scrub forest, GS- Grassy slopes, GL- Grass localities, ML- Moist localities, FM- Field margin, P- Parasite, RC- Rock crevices Habit: H- Herb, US- Under Shrub, S- Shrub, C- Climber

Conclusion

The documentation of weed flora is important for developing conservation strategy. A total of 187 weed species belonging to 140 genera and 44 families were documented from the different habitats of the study area. Majority of the weed species were reported from wastelands followed by agricultural fields. Asteraceae is the dominating family with maximum number of weed species recorded. The present study may provide information on weed flora, thus help in their identification and nature which will be significant for designing management strategies for weeds.

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Fig 2: Weed Species in the Study Area: A) *Sida acuta*; B) *Nicandra physalodes*; C) *Vicia sativa*; D) *Veronica persica*; E) *Eupatorium adenophorum*; F) *Youngia japonica*; G) *Anagallis arvensis*; H) *Lantana camara*; I) *Oxalis corniculata*; J) *Phalaris minor*; K) *Cirsium wallichii*; L) *Ageratum conyzoides*; M) *Lathyrus aphaca*; N) *Eclipta prostrata*; O) *Fumaria indica*; P) *Urena lobata*; Q) *Stellaria media*; R) *Crassocephalum crepidioides*; S) *Silene conoidea*; T) *Bidens pilosa*; U) *Melilotus indica*; V) *Misopates orontium*; W) *Tagetes minuta*; X) *Lindernia ciliata*

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