RARE AND ENDANGERED PLANT SPECIES

The present survey carried out in the western Kachchh for a period of 3½ years, yielded a total of 518 angiosperm plant species. The area is under constant pressure from different angles such as biotic pressure, severe drought conditions, and industrialization. The cumulative effect of all these factors resulted in the deterioration of habitat of number of wild plant species. The population of such species are very limited in the area and are at present localized in some unique spots. A few selected plant species of this sort have been given with detailed description, their habitat, range and status.

*Capparis cartilaginea* Decne. (Capparaceae)

Prostrate or scrambling shrubs, sometimes hanging from the rocks, glabrous, often fleshy with short crooked branches. Leaves petiolate; blade ovate, broadly elliptic or orbicular, 2-6 cm long, 1.5-6 cm broad, entire, more or less fleshy, drying sub coriaceous; apex entire or slightly emarginate with usually hooked-yellowish brown spine inserted below the apex. Flowers axillary and solitary asymmetrical, large, usually white; pedicel stout, 4-5 cm long, increasing up to 9 cm and thickened in fruit. Sepals asymmetrical, posterior one about twice as large as the rest, deeply galeate, upto 4 cm long. Petals unequal, not
Pavonia arabica  Hochst & Steud.

PLATE-18A
exceeding the largest sepal, posterior pair somewhat hooded and enclosed in the hooded posterior sepal. Stamens many, about 3.4 cm long. Gynophore 4 cm long, increasing up to 6 cm in fruit and becoming stout. Fruits ovoid or ellipsoidal, 35 cm long, often reddish and ribbed, many seeded and pulpy. (Plate 15B)

Habitat: Restricted to rocks and hillocks. (old walls)

Range: Nalia and Narayansarovar

Status: Rare; In India, the plant is found in Saurashtra and Kachchh only.

_Pavonia arabica_ Hochst & Steud. (Malvaceae)

An erect dichotomously branched stellately pubescent, large herb or under shrub; about 30-80 cm high. Stem greenish yellow, turns brown on maturity, basal portion woody and apical herbaceous, cylindrical; internodes 2-4 cm long, branches slender. Leaves simple, opposite/subopposite, petiolate, stipulate densely pubescent on both surfaces, paler beneath; 1.5-2.5 cm; petiole - sometimes ridged hairy, .75-1.5 cm long; stipule linear caducous 4-7 mm long; lamina ovate-elliptic, cordate, entire obtuse with 1-3 short dentation at the apex, prominent veins on lower side, lower surface paler than upper one. Flowers solitary, axillary aggregated towards apex, actinomorphic pedicellate, hermaphrodite, hypogynous; pedicel 11.5 cm jointed at the
tip, pubescent; epicalyx 10-14 linear hairy, persistent longer than corolla, 1.5-2 cm; calyx - gamosepalous, green, hairy persistent 7-10 mm long 5-lobed, lobes ½ the length of calyx, lanceolate acute; Corolla polypetalous pink ovate hairy at the base, 1-1.5 cm across; androecium - stamens many monadelphous. Staminal tube reddish pink; filaments arising throughout the tube, pink filiform 1-2 mm; anthers dorsifixed, reniform 1 celled pink 2-3 mm across; gynoecium - carpels 5, 3-4 mm across, ovary syncarpous 5 celled 1-ovuled; style terminal villose; stigma pink, capitate. Fruits loculicidal capsule oblong globose 5-valved 5-8 mm in dia. Seeds pale brown glabrous, 1 in each mericarp oblong slightly winged at the apex, 2-3 mm long. (Plate 1yeB)

**Habitat:** Hillocks and hard gravelly soils

**Range:** Meva Rakhal (Nakhtrana & Dhinodhar)

**Status:** Rare

In India, this plant is restricted to Rajasthan and Kachchh only.

_Fagonia indica_ Burm.f. (*Zygophyllaceae*)

An erect or prostrate profusely branched glabrous, spiny shrublet about 20-35 cm high. Stem green turns brown at maturity, woody at the base cylindrical glabrous; branches slender, erect or prostrate, terete with 2-4 cm long internodes. Leaves compound, trifoliate on lower part and simple unifoliate at the apex, opposite decussate,
petiolate stipulate, glabrous or glandular 2-3.5 cm long; petioles - glabrous, terete, 10-15 mm long (in mature); stipules - 2 pairs of sharp thorns, aculeate, shorter than leaves, 6-7 mm long; leaflets - linear lanceolate or oblong, middle one largest, entire, acute, reticulately veined. Flowers solitary axillary arising among the stipules, actinomorphic pedicellate, hermaphrodite, hypogynous; pedicel - glabrous, 6-8 mm long; calyx polypetalous, green glabrous, deciduous, ovate-oblong, mucronate 3-4 mm long; corolla - polypetalous, pink or pink-purple, ovate-spathulate, clawed, obtuse, twice as long as sepals, 7-9 mm long; androecium - stamens -10, free inserted on disc; filaments filiform, naked 3-4 cm long; anthers oblong, basifixed, white 1-2 mm long; gynoecium, carpels-5 ovary syncarpous, 1-1.5 mm across hairy, 5-celled, 2-ovules in each cells; style tapering, sometimes angular, stigma simple. Fruits septicidal capsule, globular, villous, dehiscing into 5, one seeded cocci from the base, 5 mm across. Seeds orbicular, compressed and mucilagenous 1-2 mm in dia. (Plate 218)

Habitat: Gravelly to sandy-clayey soils.

Range: Throughout western Kachchh

Status: Locally abundant but, found in Kachchh, Saurashtra, North Gujarat & Rajasthan.
Tribulus rajasthanensis

Bhandari et Sharma
Tribulus rajasthanensis Bhandari et Sharma. (Zygophyllaceae)

A much branched, diffusely prostrate or somewhat ascending hairy annual herb; about 30-40 cm long. Stem green turns yellowish-brown on maturity, pubescent, striated; branches somewhat prostrate; internodes 3-4 cm long. Leaves compound opposite or sometimes alternate, stipulate, equal or unequal at the nodes; stiuples – subulate, persistent, 6 mm long; leaflets petiolulate, oblique, oblong-ovate or lanceolate-ovate, densely pubescent on both surfaces, villose on lower side, 8-13 x 5-7 mm. Flowers solitary axillary, actinomorphic, pedicellate, hermaphrodite, hypogynous; pedicel – usually shorter than subtending leaf, pubescent, 1-1.5 cm long; calyx – polysepalous, green sepals-5, linear-lanceolate, margin scarious, villose, outside slightly pubescent inside, acute, 6-8 x 1-3 mm; corolla – polypetalous, yellow; petals-5, obovate, cuneate, with truncate apex, 1-1.2 x 0.5-0.7 cm; androecium-stamens-10, yellow, in 2 whorls, inserted at the base of the disc; filaments unappendaged, 3-5 mm long; anthers basifixed, oblong-ovate, subequal 2-2.5 mm long; gynoecium – carpels 5; syncarpous, ovary 2-4 mm across, 5-celled, cells 2-ovuled, ovoid surrounded by silky hairs; style terminal stout, stigma pyramidal. Fruits schizocarpic, spiny, pubescent, dehiscing into 5 triangular mericarps, 1.4-1.6 cm wide at maturity (two main spines are long). (Plate ZZ)
**Habitat**: Sandy-gravelly soil

**Range**: Nakhtrana

**Status**: Rare

In India this plant is restricted to kachchh and Rajasthan only.

*Zygophyllum simplex* Linn. (*Zygophyllaceae*)

An erect to procumbent much branched herb, about 10-15 cm high. Stem pale-green or brown in colour, cylindrical, minutely striate, glabrous branches prostrate or sometimes suberect with internodes at 2-4 cm long. Leaves simple, opposite, generally unifoliate, sometimes bifoliate, succulent, sessile stipulate; stipules, lanceolate, acute, 2-3 cm long; oblong, cylindrical, fleshy, obtuse, .5-1.75 cm long. Flowers solitary axillary, pedicellate, actinomorphic, hermaphrodite, hypogynous; pedicel-glabrous, 4-6 mm long; calyx polysepalous, green, sepals-5, broadly ovate-ovate, glabrous, persistent, 4-6 x 13 mm; corolla polypetalous yellow, petals-5, spatulate, truncate at apex, 4-6 mm across; androecium, stamens -10, inserted at the base of the disc; filaments filiform, longer than petals, usually membranous, scaly at the base; anthers oblong-ovate, dorsifixed, 2-celled, 1-2 mm across; gynoecium - carpels-5, ovary syncarpous 1-3 mm across; 5-celled with many ovules; style angular, persistent, stigma minute; Fruits septicidal capsule, globose, dehiscent into 5-cocci, each cocci 3
Mondonia Senegalensis Gull. & Pier.

Plate 24.
seeded. Seeds pale brown, oblong, glabrous 1-1.5 mm long.

(Plate 239)

**Habitat:** Sandy saline soils.

**Range:** Narayan Sarovar

**Status:** Rare

In India, this plant is restricted to Kachchh and Rajasthan.

**Monsonia senegalensis** Guill & Pers. (Geraniaceae)

An erect, much branched hairy annual herb, about 10-20 cm high. Stem yellow green, woody at the base cylindrical with diffuse to procumbent branches, arising from nodes, internodes 3-4 cm long. Leaves simple, opposite, petiolate, stipulate, glabrous above, the softly pubescent beneath; petioles long, slender, hairy, 2-3.5 cm; stipules lanceolate subulate, acute, hairy 3-6 cm long; lamina ovate, cordate at the base, repand, denticulate, acute-mucronate at apex, villose on lower side, 2-3.5 x 1.2-2 cm. Flowers solitary axillary bracteate pedicellate, hermaphroditic, hypogynous; pedicel long, slender, hairy about 1-2 cm long; bract subulate, 4-7 mm; calyx, gamosepalous, green, persistent, sepals-3, elliptic-oblong, pubescent, 4-8 mm long; corolla polypetalous, pink, obovate, veined below. 1.2-1.8 cm long, glands alternate with petals; androecium - stamens 15 penta-delphous forming a ring at the base and higher 5-bundles of 5-stamens each, filaments broad and
flattened at base, anthers oblong, dorsifixed, dithecous 2-4.5 mm across, gynoeicum- ovary pentacarpellary, syncarpous, 5-celled, cells 2-ovuled, 1-2 mm across beaked, beak ending in style, style stigmatose, stipitate, obconical hairy about 3-4 cm long, stigma superposed. Fruits septicidal capsule, oblong, somewhat pyramidal, separating in 5-lobes, separating septifragally from placentiferous axis, the tails roll up elastically from base to the apex. Seeds oblong wrinkled, hairy 1.5-3 mm long. (Plate 24)

Habitat: Rocky gravel

Range: Nakhtrana, Dhinodhar & Nalia

Status: Not common.

Heliotropium bacciferum Forsk. Var Suberosum (Clarke) Bhandari (Boraginaceae)

An erect, much branched hairy woody herb, about 30-40 cm in height. Stem greyish-white, woody at base scabrous, cylindrical internodes 4-6cm long, hairy. Leaves simple alternate, pubescent sessile; lamina - lanceolate, entire acute, pubescent, densely clothed with white hairs, reticulately veined. Inflorescence scorpioid cyme arranged in acropetal succession sometimes axillary. Flowers actinomorphic, subsessile, hermaphrodite, hypogynous; calyx - gamosepalous, green, tubular, hairy, lobes-5, lobes linear-lanceolate, 3-5 mm long; corolla - gamopetalous, tubular - cylindrical tube slightly swollen in the middle,
Heliotropium bacciferum
Vet. Rubrosum

Plate 36a.

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No. 36 93
distinctly lobed, lobes-5, usually spreading, 5-7 mm long;
androecium - stamens-5, epipetalous, inserted above the
middle corolla tube, subsessile; anthers linear-lanceolate
1-1.5 mm long; gynoecium - ovary bicarpellary, 4-celled,
4-ovuled; style terminal, short; usually depressed stigmatic
ring at apex, stigma conical, bifid. Fruits capsule,
depressed globose slightly hairy 4-5 mm long, Seeds nutlet,
rounded black, glabrous2-3 mm.(Plate36A)

Habitat : Coastal sandy soils.

Range: So far observed only at Narayan sarovar. In
India, the plant is confined to N.W. Rajasthan and
kachchh.

Status : Rare.

Ipomoea kotschyana Hochst.ex.Choisy (Convolvulaceae)

A prostrate, diffusely branched annual hairy herb,
about 25-50 cm long. Stem greenish yellow, turns brown on
maturity, herbaceous, cylindrical, somewhat ridged, hairy.
Internodes 2-3 cm long. Leaves simple, alternate,
petiolated, stipulate, hairy, 3-5 x 2-4 cm; petiole -
hairy, 10-15 mm long, stipules - filiform 1-2 mm hairy;
lamina - pinnatifid, giving trilobed appearance, hairy,
margin somewhat wavy, apex obtuse, reticulated veined.
Flowers solitary, axillary actinomorphic, pedicellate,
hermaphrodite, hypogynous; pedicel - short cylindrical, 2-4
mm hairy, calyx - polysepalous, green, unequal,
oblong-ovate, apex-acute, hairy, 2-3.5 mm long prostrate, corolla - gamopetalous, light purple, infundibuliform, 8-10 mm long; lobes-5, equal, mostly hairy inside; androecium stamens-5, equal, epipetalous, alternate to petals, filaments long, inserted deep into corolla tubes, somewhat flattended at base, anthers white-purple, basifixed, dithecous, 1-2 mm across; gynoecium - ovary syncarpous, ovoid, 0.7-1.5 mm in dia. glabrous; 4 celled one ovule in each cell, 2 ovules per locule, style terminal, slender; stigma-discoid. Fruits capsule, ovoid, light brown, glabrous, 2-4 mm in dia. Seeds rounded furred, light yellow-brown, 2mm in dia.(Plate 39)

Habitat: Sandy and gravelly soils.

Range: Nakhtrana (KACHCHH DISTRICT)

Status: Though the plant is common in the area, it is not so far reported from any locality outside this range.

Seddera latifolia Hochst.ex.Steud. (Convolvulaceae)

A low much branched, erect, shrub, about 25-30 cm tall, with slender woody branches, fully clothed with silky grey pubescence. Stem grey in colour, woody at the base, herbaceous at apex, cylindrical internodes 2-4 cm long, hairy when young. Leaves simple, alternate, petiolate, stipulate, pubescent, 1.5-2.5 x 1-1.5 cm; petiole - hairy rigid, 5-7 mm long; stipules - filiform, 1-2 mm long; lamina
- oblong ovate, base rounded-truncate, entire rounded or sometimes mucronate, silky-grey pubescent, reticulately veined. Flowers solitary, axillary sometimes aggregated at the apex forming short spike, actinomorphic, subsessile, bracteolate, hermaphrodite, hypogynous; pedicel-short, 1-1.5 mm when present, hairy, bracteoles-2, linear-lanceolate; calyx-gamosepalous, greenish-white, hairy 4-5 mm long; lobes-5, subequal, ovate, acute, 1-1.5 mm; corolla - gamopetalous, infundibuliform, white, equal or slightly exceeding the calyx, 5-lobed, tips reaching upto 1/4th total length of corolla 2-2.5 mm; androecium - stamens-5, equal, filaments dilated at the base, anthers dirty white, basifixed, dit hecou, 1-2 mm across; gynoecium - bicarpellary, syncarpous, ovoid, 0.5-1 mm long, hairy, 2 ovules per locule; style terminal, bifid, stigma peltate. Fruits capsule, ovoid, 4.5 mm long light brown, acute, pubescent. Seeds 2, oblong brown or black in colour, glabrous, 2-3 mm long. (Plate 40A)

**Habitat:** Rocky slopes

**Range:** Throughout western kachchh but confined only to Rajasthan and kachchh in India.

**Status:** Not very common, but abundant wherever it occurs.

**Solanum albicaule** Kotschy ex Dunal (Solanaceae)

A perennial, prickly undershrub. Stem terete, slender, covered when young with white stellate tomentum; pric'dles
Solanum albicaule Kotschy ex Duna
numerous compressed, from broad base, tip recurved. Leaves simple, alternate, variable in shape, ovate or ovate-oblong, obtuse, entire or slightly lobate, sparsely stellately hairy above and densely so beneath, subcordate at base. Flowers cymes, racemose, actinomorphic, hermaphrodite, hypogynous in extra-axillary. Calyx gamosepalous, green, woody, lobes triangular, acute, 3-4 mm long. Corolla gamopetalous, purple, stellately pubescent outside; lobes lanceolate-oblong, acute, with a strong mid-nerved, 10-12 mm long. Androecium- stamens-5, filaments very short, anthers oblong-lanceolate 5 mm long, opening by small apical pores. Gynoecium-ovary bicarpellary syncarpous, globose, glabrous, 2-celled; style smooth curved at the apex, 3-5 mm long; globose. Fruits berry, 4-6 mm in dia. Seeds black, subreniform, slightly pitted 3 mm in dia. (Plate 41).

**Habitat:** Rocky-gravel area

**Range:** Nakhrtrana only

**Status:** Rare

In India, this plant is found in Rajasthan, North Gujarat and kachchh only. It is very common in Rajasthan but in Gujarat, it occurs only in North Gujarat and Kachchh.

**Campylanthus ramosissimus** Wight (Scrophulariaceae)

A low much-branched shrub; branches slender, stiff, divericate, spinescent. Leaves 6-12 mm long, alternate,
Camphoranthus zaraeissimus Night
Plate - 43.

Chascanum massubidolium Fendel ex Wolp.
Plate - 43 B.
subfleshy, linear-oblong, obtuse, villous. Flowers in subcorymbose terminal few-flowered racemes; pedicel shorter than the calyx; bracts at the base of the pedicels broadly lanceolate, acute, 1-2 mm long. Calyx 3-4 mm long narrowly campanulate, 5-partite almost to the base; segments lanceolate, acute. Corolla 12.5 mm long; tube 9.3 mm long curved; lobes ovate, acute, veined. Capsule 5 mm in dia. orbicular, compressed, glabrous; valves 2-partite. (Plate 43)

**Habitat:** Restricted to sand-stone formations.

**Range:** Along the river bank at Nalia

**Status:** Very rare; In India the plant is found only in Kachchh.

*Chascanum marrubifolium* Fenzel ex. Walp. (Verbenaceae)

A much branched woody perennial herb, about 30-70 cm high. Stem greyish brown, puberulous woody at the base and herbaceous at the apex, cylindrical with fissured bark, branches erect or suberect, pubescent; internodes 4-5 cm long. Leaves simple, opposite to subopposite, petiolate, hirsute, upper surface darker than lower one; lower one more pubescent, petioles - ribbed, hairy, 1.2-2.5 cm long; hairy on both surfaces, apex obtuse-acute, rugously reticulately veined, prominent vein 1 on lower side. Inflorescence terminal spike, 15-20 cm long. Flowers sessile or subsessile, bracteate, zygomorphic, hermaphrodite,
hypogynous; bract-lanceolate, puberulous, acute, persistent 4-6 cm calyx - gamosepalous, green, persistent, tubular, pubescent, exceeding the bracts, 5-8 mm long, 5-toothed, teeth minute, acute, carolla-gamopetalous, white or cream coloured ovate, ditheceous, 1-2 mm across, gynoecium - ovary bicarpellary, syncarpous, ovary 2-celled; cells 1 ovuled, 1-1.5 mm long; style terminal filiform, oblique; stigma slightly bilobed. Fruits dry dehiscent, enclosed within the calyx tube 4-5 mm long. Seeds oblong, black, glabrous somewhat ribbed, pyrenes 3-5 mm long. (Plate 49, B)

**Habitat:** Hard gravelly soils.

**Range:** Nakhrana only

**Status:** Very Rare:

In India the plant is restricted to arid areas of N.W. Rajasthan and Kachchh.

*Aeluropus lagopoides* (Linn.) Trin. (Poaceae)

A tufted, rigid perennial. Leaves 0.4-2.5 cm long, narrowly lanceolate, acuminate, flat or convolute, subulate, glabrous or sparsely ciliate. Heads of spikelets shortly pedunculate, oblong or subglobose. Spikelets 3-3.5 mm long, 4-8 flowered, crowded, sessile, villous with soft hairs, pale-green or white. Glumes 3; lower involucral glume 2-5 mm long, ovate-oblong, sub-acute, hairy. Upper involucrular glume, 3.2 mm long, floral glume 3.2 mm long ovate, subobtuse, apiculate, many nerved, hairy and ciliate; palea
broad, 3-lobed. Grain 0.6 mm long, ovoid, oblong dorsally compressed. (Plate 55)

**Habitat:** Sandy sea-shore

**Range:** Jakhao to Narayansarovar

**Status:** Common,

In India it occurs in W. Peninsula, Rajasthan and Gujarat.

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**Urochondra setulosa** (Trin.) Hubb. (Poaceae)

A tufted, pubescent, rhizomatous grass, 25-30 cm high. Leaves 5-15.5 x 0.5-0.8 cm, convolute, acute; sheaths 6-9 cm long, terete. Inflorescence a dense, spiciform, cylindrical panicle, 9 x 0.5 cm. straw coloured. Spikelets homomorphic 1-flowered, spikelets densely imbricate; 2-5 mm long. Glumes 3, all 1-nerved and with ciliate keels; lower invol. glume 1.5 mm long, linear-oblanceolate, apiculate; floral glume 2.5 mm long, elliptic-oblong, obtuse, mucronate; palea 2 mm long, 2-fid with obtuse, ciliate lobes, 2-nerved.

Stamens 3; filaments very long thickened at the base; anthers short. Caryopsis conspicuously beaked. (Plate 56)

**Habitat:** Moist saline soils

**Range:** Jakhao to Narayan sarovar.

**Status:** Common on sea-coast.

In India, the plant found in Maharashtra, Rajasthan and Gujarat.