

Full Length Research Paper

Ecologically important and life supporting plants of little Rann of Kachchh, Gujarat

Kalpesh Ishnava¹, V. Ramarao², J. S. S. Mohan^{3*} and I. L. Kothari³

¹Ashok and Rita Patel Institute of Integrated studies and Research in Biotechnology and Allied Sciences (ARIBAS), New Vallabh Vidynager-388121, Gujarat, India.

²Departemnt of Genetic and Plant Breeding, University of Agricultural Sciences, G. K. V. K Campus, Bangalore-560065, Karnataka, India.

³Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar-388120, Gujarat, India.

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Since historic times, human beings were basically in need of plants for satisfying their daily requirements like food, shelter, clothes and medicine. Due to close relationship with environment they established a distinctive system of knowledge concerning the utilization of plants. The human and animal life depends on the life supporting plant species surrounding the area. It has now become a concern of the modern world to preserve and gather all information and utility of these plant species. This paper highlights the study of ecologically important and life supporting plant species growing in Little Rann of Kachchh, a unique ecosystem and natural heritage site for wild ass. During this study about 108 plant species (44-herbs, 35- grasses, 12-shrubs, 10-trees and 7-climbers) have been observed in the study area. The most common species belong to dominant families like Poaceae, Cucurbitaceae, Papilionaceae, Cyperaceae and Chenopodiaceae. The fringe area is covered mainly with *Prosopis juliflora*. However, islands (bets) are mostly covered with *Suaeda fruticosa* and *Suaeda nudiflora*. The plants species like *Salvadora persica*, *Salvadora oleoides*, *P. juliflora*, *Tamarix aphyll*, *Urochondra setulosa* are ecologically important. The plant species like *Crotolaria burhia*, *Capparis decidua*, *Commiphora wightii*, *S. persica*, *S. oleoides*, *Cyperus bulbosus* and *Pentatropis spiralis* etc are life supporting plants.

Key words: Little Rann of Kachchh, life supporting plant, ecology.

INTRODUCTION

Plant genetic resources having potential economic value, which is referred to as life supporting species which might be the most suitable introductions in these extreme environmental conditions. So far, of the global wealth of 80,000 edible plants, only about 150 falls in the major useful category and of these about 20 species provide 90% of the world's food (Paroda, 1987). The twelve centers of diversity of crop plants in the different continents and 36 phyto-geographical region of the world still constitute the botanical paradise from where the newer resources to meet our growing needs are being

tapped. The climatologically features have been well ingrained in the minds of the desert dwellers. According to the nomenclature of the desert people the famines can be categorized into three types 1. Ann-kal (Food famine), 2. Jal Kal (Water famine), 3. Chara - Kal (Fodder famine). But, when all three scarcity conditions occur, it is termed as Tri-Kal (Triple famine) (Shankarnarayan and Saxena, 1987). The people inhabiting this 32 million hectares hot desert have learnt to live with the frequent occurrence of agriculture droughts which area a regular feature (Rao, 1985). The rural people in these stress environments make use of native vegetation to cope with their need for food, forage, fiber, medicine, etc. during the time of emergency. Their distinct adaptation to environment extremes and their values to human survival in this

*Corresponding author. E-mail: jssmohan@yahoo.co.uk.

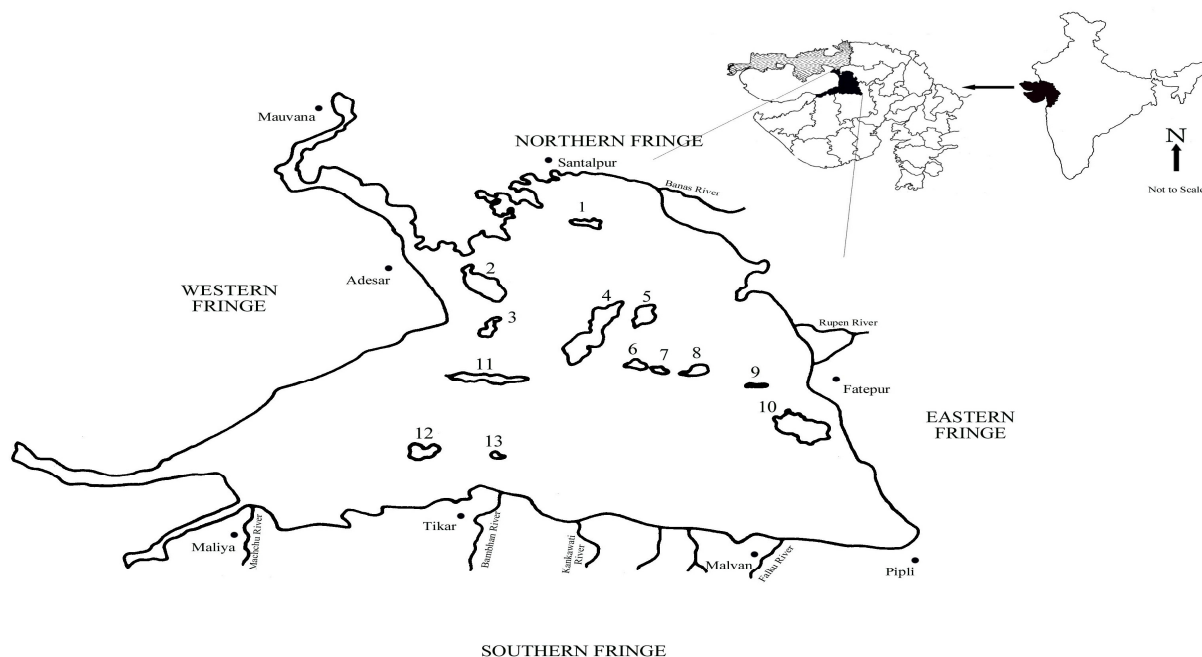


Figure 1. Map showing the present study area. Legends -1. Dongi Bet; 2. Nanda bet; 3. Shedwa Bet; 4. Pung Bet; 5. Dhut Bet; 6. Khijadiya Bet; 7. Andheriven Bet; 8. Wasraji Bet; 9. Achewada Bet; 10. Jilandhar Bet; 11. Mardak Bet; 12. Keshmara Bet; 13. Rataadla Bet.

condition have not received sufficient attention. Many of this life supporting species are under threat of extinction because of their over exploitation or increasing biotic interference. Scientific evaluation of selected promising species for diverse situation should be done as available information is exceedingly limited. It is extremely important to generate information on the origin, distribution, habitat, agro-climate requirements, benefits as well as scientific utilization of ecologically important and life supporting plant species. In the past, several ethnobotanists made personal efforts to talk to the rural population and to document the 'famine food plants' (King, 1869; Brandis, 1874; Lisbose, 1886; Bhandari, 1974; Gupta and Kanodia, 1968; Thaker, 1926). The present paper highlights the various ecologically and life supporting species and their economic value for human welfare under extreme environmental conditions of Little Rann of Kachchh (LRK).

Little Rann of Kachchh (LRK) of Gujarat possesses unique components of both flora and fauna. It harbours a number of migratory birds besides being a natural heritage centre for wild ass (*Equus hemionus* Khur.). It is situated between 22° 55" to 24° 35" North latitudes and 70° 30" to 71° 45" East longitudes and covers an area of 4953.7 Sq km. It is bounded by five districts namely Surendranagar, Patan, Banaskantha, Kachchh and Rajkot. About 3.7% of total area is composed of 74 islands ranging from 500 to 1000 m²; out of them 51 islands have vegetation cover. It receives an average annual rainfall of less than 400 mm. Rivers like Banas,

Rupen, Kankawati and Bamhan are flowing into Rann with tidal water. The area has the highest evaporation rate in the country and the mercury level rises up to 42°C during summer.

MATERIALS AND METHODS

Frequent exploration trips (July 2002 to December 2005) were conducted to study the vegetation and different local tribes and healers were interviewed about Little Rann of Kachchh and their ecologically and life supporting plants (Figure 1). On the basis of information collected during surveys on vegetation of the Little Rann of Kachchh, a synoptic account of the ecologically and life supporting species is presented.

RESULTS AND DISCUSSION

Little Rann of Kachchh (LRK) of Gujarat possesses unique components of both flora and fauna. According to the data available from Red Data Book of Indian plants, many rare and narrow populations of plants species of Gujarat are found in Little Rann of Kachchh with restricted distribution present in this areas like *Cleome brachycarpa* Vahl, *Commiphora wightii* (Arn.) Bhandari, *Schweinfurthia papilionaceae* A. Br., *Urochondron setulosa* (Trin.) Hubb. and *Moringa concanensis* Nimmo. (WCMC, 1994). During the survey on vegetation of the Little Rann of Kachchh (LRK), recorded about 108 plant species (44-herbs, 35-grasses, 10-trees and 7-climbers) distributed in the area under the study

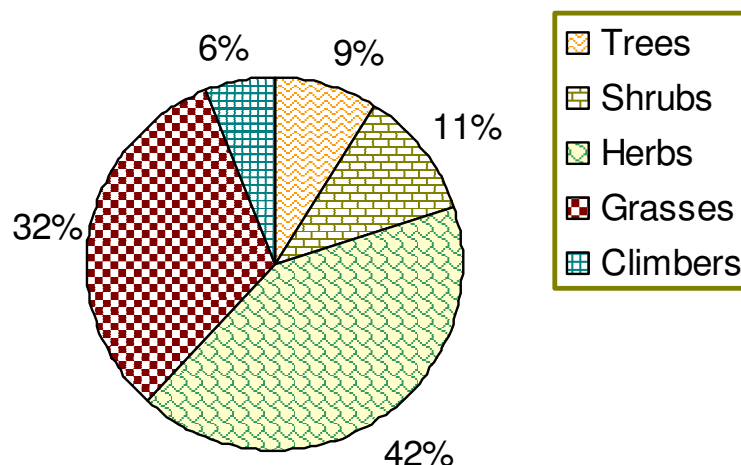


Figure 2. Plant diversity in little Rann of Kachchh.

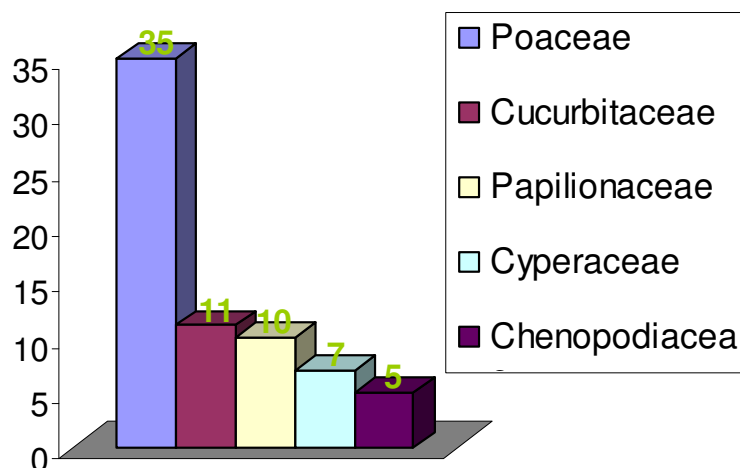


Figure 3. Showing occurrence of species belonging to dominant families in Little Rann of Kachchh.

(Figure 2). The dominant families are Poaceae, Cucurbitaceae, Papilionaceae, Cyperaceae and Chenopodiaceae (Figure 3). The LRK is composed of both aquatic and terrestrial vegetation. Wetland flora is mainly composed of grasses and sedges. Broadly, the vegetation in islands and fringe areas is scattered thorn type intermixed with grass patches dominated with luxuriant growth of *Prosopis juliflora*. It is estimated that about 677 hectare area is covered annually by thickets of this exotic tree. True xerophytic plants grow all the year round whereas herbaceous ephemeral species appear during monsoon only. This luxuriantly growing tree, thus, covers the Rann saline thorn forest and greatly effecting the establishment of other floral component. Out of the recorded 108 species 16 species are (Trees-07, Shrubs-

03, Herbs-04, Grass - 02) ecologically important (Figure 4 and Table 1) and 49 species (Trees-08, Shrubs-12, Herbs-21, Grass – 05, Climbers-03) are life supporting species (Figure 5). Under different species of trees are life supporting species like fodder -05, food and fruits-05, forage-05, medicinal -05, oil and fats-02, seed -01 and economically-01. Under different species of shrubs like crop-01, fodder-03, food and fruits-02, forage-01, fruit-03; Gum-01, medicinal-03, tannin -03 and economically-03 species are useful. Under different species of herbs useful like crop-02, fodder-11, food and fruits-01, forage-04, medicinal -10 seeds-02 and economically-01. Under the grasses species are useful in crop-04 and seeds-03. Under different climbers are useful like fodder-01, food and fruits-02, forage-01 and medicinal-01 and seed-01.

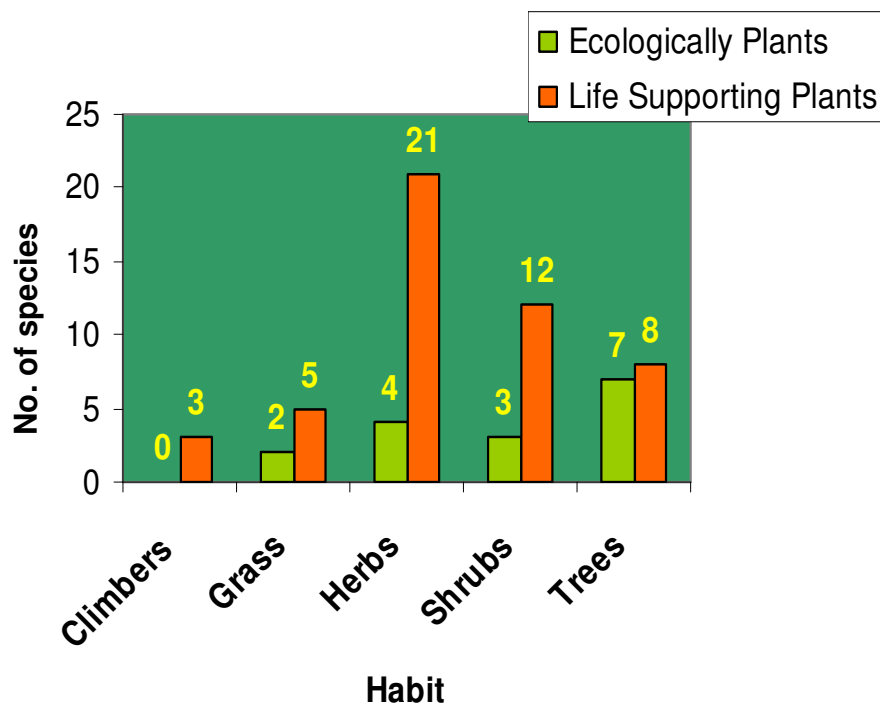


Figure 4. Ecologically and life supporting plants diversity in little Rann of Kacchchh.

Table 1. Source of ecologically important plants.

Name of the species	Family	Local name	Importance
<i>Acacia nilotica</i>	Mimosaceae	Baval	Soil erosion, Wild ass supporting during monsoon
<i>Acacia senegal</i>	Mimosaceae	Nanobaval	soil erosion, Wild ass supporting during monsoon
<i>Aeluropus lagopoids</i>	Poaceae	-	Clay accumulation during water logging
<i>Balanites aegyptica</i>	Balanitaceae	Igorio	soil erosion
<i>Capparis decidua</i>	Capparaceae	Karda	Adapted in drought situation
<i>Cressa cretica</i>	Convolvulaceae	Kherdi	Decreasing salinity
<i>Crotalaria burhia</i>	Papilionaceae	Zipto	salt pan preparations
<i>Delonix elata</i>	Caesalpinaceae	Sandsro	Nesting for birds
<i>Prosopis juliflora</i>	Mimosaceae	Gadobaval	Decreasing salinity, Wild ass supporting during monsoon and fodder
<i>Salsola baryosma</i>	Chenopodiaceae	Utado	Desert mammals fodder
<i>Salvadora oleoides</i>	Salvadoraceae	Mithijal	Adapted in drought situation, fodder
<i>Salvadora persica</i>	Salvadoraceae	Kharijal	Adapted in drought situation, Forage
<i>Suaeda fruticosa</i>	Chenopodiaceae	Moras	Soil erosion, Desert mammals fodder
<i>Suaeda nudiflora</i>	Chenopodiaceae	Moras	Soil erosion, Desert mammals fodder
<i>Tamarix aphylla</i>	Tamaricaceae	-	Water logging
<i>Urochondra setulosus</i>	Poaceae	-	Adapted in drought situation

The ecological surveys of vegetation of the LRK, a synoptic account of the ecologically and life supporting species mentioned in Table 2.

Conclusion

The present study reveals that 16 species are

ecologically and 49 species are life supporting species (Figure 5). Out of 49 species of life supporting species important crop plants-07, fodder-21, food and fruit-09, foliage-11, fuel wood-06, gum-03, economically - 05, honeycombe-03, medicinal plants-18, oils and fats-02, seeds-07 and tannins-03 are useful. Knowledge on the ecologically important and life supporting species, which is an outcome of the experience passed on to the

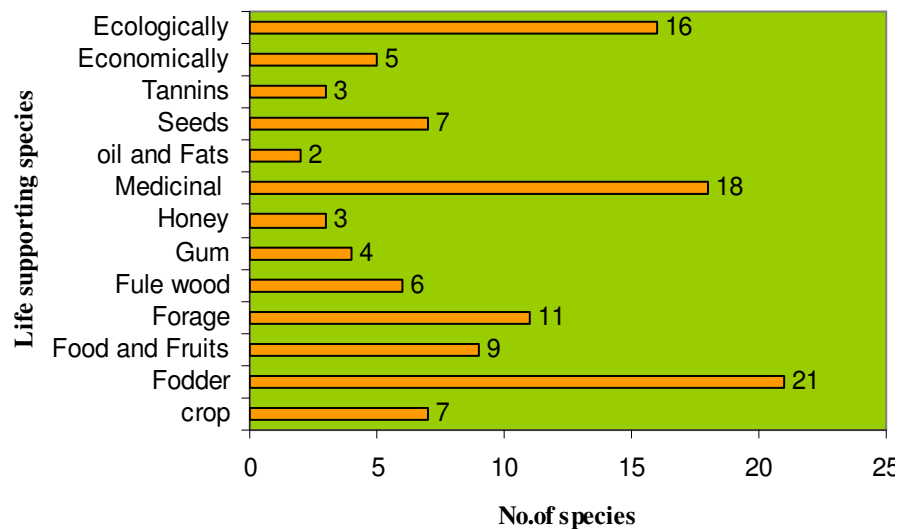


Figure 5. Showing life supporting plants present in little Rann of Kachchh.

Table 2. Source of Life supporting plants.

Name of the species	Habit	Life supporting species											
		1	2	3	4	5	6	7	8	9	10	11	12
<i>Acacia nilotica</i>	Tree		√		√	√	√	√	√				
<i>Aeluropus lagopoides</i>	Herb		√										
<i>Asparagus racemosus</i>	Climber									√			
<i>Azadirachta indica</i>	Tree				√	√	√	√	√				
<i>Balanites aegyptica</i>	Tree					√			√				
<i>Barleria acanthoides</i>	Herb								√				
<i>Bergia capensis</i>	Herb								√				
<i>Boerhavia verticillata</i>	Herb								√				
<i>Calotropis gigantea</i>	Shrub								√				
<i>Canavalia ensiformis</i>	Climber			√							√		
<i>Capparis deciduas</i>	Shrub			√									√
<i>Cassia auriculata</i>	Shrub								√			√	
<i>Cassia italica</i>	Herb								√				
<i>Celosia argentea</i>	Herb			√					√				
<i>Commiphora wightii</i>	Shrub						√						√
<i>Cressa cretica</i>	Herb		√										
<i>Crotalaria burhia</i>	Herb												√
<i>Cyperus bulbosus</i>	Herb												
<i>Cyperus rotundus</i>	Herb				√								
<i>Digitaria ciliaris</i>	Grass		√										
<i>Echinops echinatus</i>	Herb								√				
<i>Euphorbia hirta</i>	Herb		√						√				
<i>Euphorbia nivulia</i>	Shrub		√		√								
<i>Euphorbia tirucalli</i>	Shrub								√				
<i>Fagonia cretica</i>	Herb								√				
<i>Gossypium herbaceum</i>	Shrub	√											
<i>Grewia tenax</i>	Shrub			√									
<i>Leptochloa chinensis</i>	Grass	√											
<i>Moringa oleifera</i>	Tree			√	√		√						

Table 2. Contd.

<i>Pennisetum typhoides</i>	Grass	√								√
<i>Pentatropis spiralis</i>	Climber		√	√	√					
<i>Phaseolus mungo</i>	Herb	√								√
<i>Portulaca quadrifida</i>	Herb		√							
<i>Prosopis cineraria</i>	Tree		√	√						
<i>Prosopis juliflora</i>	Tree		√			√		√		√
<i>Salsola baryosma</i>	Shrub		√		√					
<i>Salvadora oleoides</i>	Tree		√	√	√	√				
<i>Salvadora persica</i>	Tree		√		√	√	√	√	√	
<i>Sesamum indicum</i>	Herb	√						√	√	
<i>Solanum surattense</i>	Herb					√				
<i>Sorghum bicolor</i>	Grass	√								√
<i>Suaeda fruticosa</i>	Herb		√		√					
<i>Suaeda nudiflora</i>	Herb		√		√					
<i>Tamarix aphylla</i>	Shrub									√
<i>Tamarix troupii</i>	Shrub									√
<i>Tribulus terrestris</i>	Herb		√							
<i>Triticum aestivum</i>	Grass	√								√
<i>Typha angustata</i>	Herb						√			
<i>Zizyphus nummularia</i>	Shrub		√	√						√

1-Crops, 2 – Fodder, 3 – Food and Fruit, 4 – Forage, 5-Fule Wood, 6 – Gum, 7-Honey, 8-Medicinal Plants, 9-Oil and Fats, 10-Seeds, 11-Tannins, 12- Economically Plants.

successive generation, make the desert dweller specially the rural poor to survive not only in the normally harsh desert environment but also in the prolonged drought and famine. It is also paramount importance that advance planning is made to preserve and propagate all the ecologically and life supporting species to meet to exigencies of the future.

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