

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated:

20th September, 2002

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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Site Reference Number

2. Country: PAKISTAN

3. Name of wetland: RUNN OF KUTCH.

4. Geographical coordinates: 69° 03' 00" to 71° 08' 00" E and 24° 09' 30" to 24° 36' 00" N

5. Elevation: (average and/or max. & min.) 10 m. Above sea level 6. Area: (in hectares) 566,375 ha.

7. **Overview:** Runn of Kutch and its adjoining tidal mudflats area is part of the great Thar desert. Thar region forms bigger desert, representing the eastern most link of the great Afro-Asian desert chain stretching eastward from the Sahara. The Runn of Kutch is spread over an area of 566375 ha and is an ideal habitat for a number of wild animals and birds of global significance. Runn of Kutch was declared wildlife sanctuary in 1980, and is located in the central south-east of the Sindh province. This area consists of old stabilized sand dunes that run parallel in south-west to north-east direction with broad inter-dunal valleys between dune tops. The marshy stretch or tidal mudflat area in its southern end is the most attractive feature of the project area. The Runn was created as delta of the Hakra' river that flows along the eastern boundary of Sindh.

8. **Wetland Type** (please circle the applicable codes for wetland types; in the present document, the "Ramsar Classification System for Wetland Type" is found on page 9)

marine-coastal: A • B • C • D • E • I K • Zk(a)

inland: L • M • N • O • P • Q • R Ss • Tp

Ts • U • Va • Vt • W • Xf • Xp • Y • Zg • Zk(b)

human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

Please now rank these wetland types by listing them from the most to the least dominant:

“ H, J, G, Sp, F ”

9. **Ramsar Criteria:** (please circle the applicable Criteria; the *Criteria for Identifying Wetlands of International Importance* are reprinted beginning on page 11 of this document.)

7 8

Please specify the most significant criterion applicable to the site: **1.**

10. Map of site included? Please tick *yes* -or- *no*

Yes.

11. Name and address of the compiler of this form:

Hussain Bux Bhaagat, Sindh Wildlife Department, M.D.Wafai Road, Karachi.
Pakistan. Phone and Fax: +9221 9260304

Please provide additional information on each of the following categories by attaching extra pages (please limit extra pages to no more than 10):

12. Justification of the criteria selected under point 9, on previous page. (Please refer to the *Criteria for Identifying Wetlands of International Importance* appended to this document)

Criterion 1: The Rann of Kutch area is comprised of many types of wetlands, such as estuarine area, tidal mudflats, permanent saline marshes, coastal brackish lagoons and salt marshes and its adjoining tidal mudflat area is a representative of a natural wetland type and desert habitat type.

Criterion 2: It supports many locally and globally threatened Wildlife species, which are considered important for maintaining the ecological diversity of this area. Tidal flat areas support variety of migratory waterbirds during winter migration season from October to March every year (list attached).

Beside the wetland dependent species the area also supports other Globally threatened species.

Endangered species: Great Indian Bustard (*Choriotis nigriceps*), Houbara Bustard (*Chlamydotis undulata*), (IUCN red data list 2000).

Vulnerable species: Sarus crane (*Grus antigone*)

Criterion 3: The wetland supports many locally and globally threatened wildlife species, which are considered important for maintaining the ecological diversity of this area. The estuarine area and mudflat area support the variety of birds and plants...

Criterion 4: Tidal flat areas support variety of migratory waterbirds during winter migration season from October to March every year (list attached).

3 breeding pairs of Sarus Crane *Grus antigone* are resident and were reported from last 5-6 years. It is also the feeding ground of flamingoes (*Phoenicopterus ruber*, *P.minor*). A large number of flamingoes feed in the Pakistani Rann of Kutch area and breeds in the Indian Rann of Kutch area.

The migration and breeding bird species include Indian Great Bustard (*Choriotis nigriceps*), Houbara Bustard (*Chlamydotis undulate*), Common Crane (*Grus grus*), Saker falcon (*Falco biarmicus*) and Tawny Eagle (*Aquila rapax*). (IUCN red data list 2000)

Criterion 5: The Rann of Kutch area is regularly support the wintering and resident birds and more than 40,000 waterbirds, including, common teal, shell duck, Mallard, pochard, flamingoes, pelicans, etc. (list attached). Ref. Midwinter waterfowl counts from 1992 to 2000 by the Sindh Wildlife Department.

Criterion 6: This wetland supports over 1% of the populations of two threatened species of flamingoes - *P. ruber* (1%=2,900) and *P. minor* (1%=1,500). More than 4,100 were counted in 1974 comparing with the Indian site of Rann of Kutch i.e. is 400,000 and more.

The Sindh Wildlife Department has recorded population counts for the *P.ruber* and *P.minor* from 1990 to 2003 are as follows;

	1990	1991	1992	1998-2000	2001	2002	2003
<i>P.ruber</i>	2,943	49,600	30,214	not counted	5450	4830	1412
<i>P.minor</i>	3,150	4500	2594	not counted	300	-	270

The reason for lower counts in 2001-2003 is that not too many wetlands were visited recently. e.g 1990 & 1991 four and seven wetlands were visited, but in 2001-2003 only two were visited.

Between 1998-2000 the Sindh Wildlife department was not able to organised the census of the Runn of Kutch area. Data from 2001-2003 is not published.

13. General location: (include the nearest large town and its administrative region).

Runn of Kutch is part of famous Thar desert. Runn of Kutch and its adjoining tidal mudflat area is spread over three Taluka's Mithi, Diplo and Nagarparkar of Tharparkar, district of Sindh province. It is located at the distance of 570 Km in the North-east of Karachi Metropolitan city. Nearest big towns in the project area are Mithi, Islamkot, Nagarparkar and Diplo.

14. Physical features: (e.g., geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

Runn of Kutch consists of old stabilized sand dunes with broad inter-dunal valleys between dune tops. Some of these sand dunes are rising more then 170 m above sea level. These sand hills run parallel to each other and are oriented from north-east to south-west. In the inter-dunal valleys, the alluvial soil, brought by rainwater is deposited in the depressions. The marshy stretch to its southern and, is the favourable ground for the aquatic birds and plants.

Geology:-

This part of Thar consists of expanse of sand hills, flat alluvial plains, rocky hill track and mudflats. Sand hills run parallel to each other and are oriented from north-east to south west. Original formation of the sand dunes seems at right angle to the direction of south-west monsoon currents. However, in the inter-dunal valleys, alluvial soil is deposited in the depressions brought by rainwater. In the south-east corner of Runn of Kutch, the parallel sand hills are replaced by flat land scapes. The soil in this area contain more clay. In the same area of Nagarparkar, detached rocky hills are found through out the plains. The highest rocky hill is "Karunjhar" rising to 356 m above sea level. These isolated hills differ materially from every other rock occurrence in Sindh. The igneous complex is late proterozoic of the western Indian Shield.

Origins:-

Karunjhar hill track, white clay and mudflat are natural origins in the area.

Hydrology.

Water is scarce commodity in the area. The soil being composed of loose and porous eolian sand, absorbs rain others that percolates down to the ground water. In the inter-dunal valleys, rainwater is collected, in the ponds (locally called tarai) and the artificially excavated wells and cemented Taka's (Tanks). Ponds are usually short lived because their water is accumulated and evaporated, while Taka's and wells live for longer time, but after some time their water quality deteriorates and become brackish. While pond water is fresh and sweet and is used for drinking and cattle watering. These ponds have significant effect on the top seated aquifers, because their water seeps down slowly to the deep water

reservoir and make it suitable for drinking. The depth of each aquifer varies from few meters (5-10 m) to 100 m.

Soil type:-

There are three main soil types in this area. The sand hills mostly consist of grayish sand derived from quartz. In the top layer of about 30 cm, the color of the soil is black due to the presence of humus. The dominant elements of alluvial soil in the depressions, between the sand hills, are clay and silt. The rocks are mostly calcareous. The soil under the desert is mostly hard alluvium. The only prominent outcrops that have escaped burial are those of Karunjhar Hills. The soil contain upto 7% clay, the percentage of clay increases upto 14% in the sub-soil.

Water quality:-

Sub-soil aquifer contains sweet water upto the depth of 5-10 m deep while deep water aquifer (30m and above) is brackish. Sub-soil water aquifer is recharged by rainwater, which are scarce in this area since last 6-7 years. There is no irrigation water system in this area, hence there is no chance of regular recharge of fresh water aquifer. Local communities use pond water for drinking and in inter-dunal valleys, they have hand pumps for getting sub-soil fresh water.

Water depth:-

Fresh water aquifer is deeper then 10-15 m, while water source deeper than 30 m is generally brackish.

Water permanence:-

Water permanence depends upon the rains area receives during the monsoon. During last 6 – 7 years, area has received long dry spell and hence there is severe water shortage.

Fluctuations:-

Fluctuation in the water aquifer takes place during monsoon, because when there are reasonable rain showers, ground water level rises and fresh water aquifers are recharged while during off-monsoon, water level goes down.

Tidal variation:-

During summer high tide, the water come to this area through rain-fed rivulets/streams both from the Pakistan and India and through the creeks to the west.

Catchment area:-

Catchment area has same topography hence have no major change in ecological and biological resources.

Climate:-

Climate of the area is semi-arid tropical. Summers are hot (45-50⁰C) and winters are cold and mild (5 – 10⁰C) Humidity is fairly high, which is a favourable factor for the growth of the plants and shrubs. Humidity in summer is 50% and in monsoon is 80%. This area receives more than 300 mm rainfall in Nagarparker, 200 mm in Mithi and Diplo area. Rainfall is almost received during monsoon from mid June to mid-Sept. However during last 6 – 7 year a long dry spell persists in the area and drought like conditions have severely affected human life and have depleted biodiversity of the area.

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.)

Groundwater recharge:-

Ground water is only recharged by the seasonal and monsoon rains. Since there is no irrigation water system in the area, fresh water layers are only recharged by the rainwater, which also provides an opportunity for collecting, the rainwater at large scale in open ponds and Taka's.

Flood control:-

There is no flood control system, because area does not have any irrigation channel system. Rains are very scarce and they do not form floods.

Sediment trapping:

Sediment trapping is only during the high monsoon, rainwater bring the sediments in the undulating valleys locally called Tarai's, where sediment trapping occurs.

Shore line stabilization:

Being high elevated sand dunes and in the absence of canals, rivers or shores, there is no system of shoreline stabilization.

16. Ecological features: (main habitats and vegetation types)

It is a true desert habitat and sand dunes are main characteristics of this area. In its eastern side, some rain fed ponds in the Nagarparker area provide refuge to sarus crane and other coastal birds. This area can be classified into three habitat types.

Sandy and sand-dunal tract:

This habitat consists of a vast expanse of sand hills, which run parallel to each other and are oriented from north-east to south-west. The original formation of these sand dunes was at right angle to the direction of the south-west monsoon currents. In the intervening valleys, the alluvial soil, brought by rainwater, got deposited in the depressions. In the Nagarparker area, flat alluvial plains replace the sand hills, where soil contains more clay.

Karunjhar hill range:-

In the Nagarparker area, detached rocky hills are found throughout the plains, covering about 480 K.m². The highest hill track is Karunjhar, which rises about 356 m above sea level. These isolated hills differ materially from every other rock

occurrence in Sindh. These rocks belong to Dhawar and other pre-cambrian system and are therefore, associated with the neighboring aravally Range.

Coastal saline marshy tract/mudflats:-

The marshy tract or mudflats to its southern end is the most attractive habitat of this area. The water comes to this area through rainfed rivulets/streams, flowing into it from Pakistan and India and through the creeks to the west during summer high tide.

Vegetation:

Runn of Kutch or Thar desert is located in the tropical thorn forest sand-dune type of vegetation zone of Pakistan (Roberts 1991). This area has five major vegetation types.

1. Desert habitat
2. Hilly habitat
3. Marshy habitat
4. Wetland habitat
5. Agriculture habitat

Desert Habitat:

This habitat is mainly characterized by sand dunes. Well developed herbs/ shrubs including *Calligonum polygonoides*, *Aerva javanica* and trees like *Prosopis cineraria*, *salvadora oleoides* and *Capris decidua*, manifest the permanent land scape over the dunes and inter dunal valleys in the area.

Hilly Habitat:

This habitat mainly consists of Karunjhar hill range in the southern part of the area. *Acacia senegal*, *Calotropis procera*, *Prosopis glandulosa*, *Prosopis cineraria*, *Acacia jacquemontii*, *Salvadora spp*, *Tecoma undulata*, *Caparis decidua* are the common tree/shrub species of this habitat.

Wetland Habitat:

Runn of Kutch does not have much fresh water wetland ecosystem because of lack of rainwater and absence of irrigation river/canal system. Only few rainfed ponds are available in the eastern part of Nagarparkar. These ponds, covered by *Prosopis juliflora* are refuge to some of the very rare bird species like sarus crane, lesser flamingoes. Marshy habitat is concentrated to the southern part and is most attractive feature of the area. The Runn of Kutch was created as delta of the Hakra river that ran along the eastern boundary of Sindh. This area is now a desert of sterile decay, swept from time to time by monsoon waves.

Agriculture habitat:

Since the area receives rains once a year before the dry spell, the agriculture is based on a mono-cropping system. The main crop of the area are, millet (*Pennisetum typhoideum*), Gwar (*Cyamospsis proralioides*), sesamum (*Sesamum indicum*) cluster beans and caster. Since the agriculture practices are seasonal and depends upon the rain, hence this habitat does not offer permanent attraction to the wildlife. During crop season, peafowl and other resident birds do come for grain picking and when crop is over, area does not attract these birds.

17. Noteworthy flora: (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc.)

Area is rich in floral diversity and a well developed herbs/shrubs, trees and grasses manifest the area. Main floral species includes, *Acacia senegal*, *Acacia jacquemontii*, *Prosopis cineraria*, *Prosopis glandulosa*, *Caporis decidua*, *Zizyphus nummularia*, *Salvadora oleoides*, *Euphorbia candicifolai*, *Panicum targidun*, *Aerva tomentosa*, *Calligonium polygonoides*, *Calotropis procera*, *Azadirachta indica*, *Prosopis spp.*, *Tecoma undulata* are common tree, herb and shrub species of the area. Grass species are *Cenchrus ciliaris*, *Cenchrus biflorus*, *Cenchrus setigerus*, *Dichanthium annulatum*, *Panicum antidotale*. These floral species are biogeographically important.

18. Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.).

Rare: Indian Wild Ass (*Equus hemionus*), Wolf (*Canis lupus*), Sarus crane (*Grus antigone*), Great Indian Bustard (*Choriotis nigricaps*), IUCN Red data book 2000.

Endangered: Hyeana (*Hyeana hyaena*), Desert cat (*Felis libyca*), Caracal cat (*Felis caracal*), Small Indian Civet (*Viverricula indica*), Honey Badger (*Mellivona capanisis*), Blue bul (*Baselaphus tragocamelus*), Houbara Bustard (*Chamydotis undulata*), IUCN red data book 2000 Common crane (*Grus grus*), Common peafowl/Peacock (*Pavo cristatus*).

Abundant: Chinkara gazelle (*Gazella gazella*), Desert fox (*Vulpus vulpus*), Indian fox (*Vulpus bengalensis*), Indian Cobra (*Naja naja*), Sawscaled viper (*Echis carinatus*), Indian Krait (*Bungarus caetruleus*), Indian desert monitor (*Varamus griseus*), Indian Fringe – toed sand lizard (*Acanthodactylus cantoris*), Grey parteidge (*Francolinus pondicerinus*), Black Partridge (*Francolinus francolinus*), Sandgrouse (*Pterocelus excustus*), Tawny eagle (*Aquila rapax*), Sakar falcon (*Falco biarmious*).

List of animals and birds are attached

19. Social and cultural values: (e.g., fisheries production, forestry, religious importance, archaeological site, etc.)

Fishery:-

Area does not support fragile wetland ecosystem, hence fishery production is usually non economical.

Forestry:-

There is no protected forest in Thar desert, only range management practices are carried out by the Sindh Forest Department.

Religious:-

There are many famous Hindu temples such as Jain temples at Bhodesar, Mahadev temple near Karunjhar hills, and other Jain temple at Virawah and marbled build Bhodesar mosque and many local made mosques in every Muslim populated village an town are found in the area.

Archaeological Sites:-

At Bhodesar, 6 Km in the north-west of Nagarparkar, there are three remains of ancient giant temples, supposed to have been built between A.D 1375 and 1449. One of the temple have very beautiful interior decoration on its walls. Closely is a tank 120x60 m, said to have been built about 700 years ago by Bhoda Parmar son of Prince Jeso Parmar, who scarified his son to the goddess of the town for retaining water in the tank. At this place, is a mosque, built of marble during the same period that of temple. At Gori, about 22 Km in the north-west of virawah, is a fine marble made jain temple measuring 38 x 15 m. Near Mithi, the headquarter of district Tharparkar, there are ruins of two old forts, one to the south and other to the west. These were build in 1900, when Talpurs were rulers in this area. About 3 Km to the south of Nagarparkar, there is a place of pilgrimage called Sardhara in the Karunjhar hills, where there is temple of Mahadev. Below the temple, to the north is a pool of water, where Hindus were used to perform ceremonies of their dead. Near the pool is a destroyed fort, which was built by Chandan son of Gobindra. This fort was destroyed in 1859 by British rulers in connection with a rebellion.

20. Land tenure/ownership of: (a) site (b) surrounding area

Site:-

There are 330 villages/hamlets in project area having about 500,000 hundred thousand population. This population belongs to both Muslim and Hindu religion. Peoples are generally agro – pastoralists, since the agricultural fields are un-surveyed, people enjoy unrestricted landuse and rights of cultivation and grazing through centuries. According to the land Grant policy”, as laid down in the collector, Tharparkar’s Circular No. 1258 of 14.04 1930, any one could cultivate and use any piece of land without obtaining prior permission. Most of the land use is for agriculture purposes.

Surrounding area:- -- Same --

21. Current land use: (a) site (b) surroundings/catchment

Site:

Since under land grant policy 1930, there is no restriction on the land use in this area, hence current land use at site is for agriculture purposes only. While in the surrounding is also same status.

Surroundings: same.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site

Site:-

Water scarcity, long dry spell, grazing, fuel wood collection, hunting, newly discovered coal reservoirs and subsequent development activities for their extraction.

Surrounding:

-- Same --

23. Conservation measures taken: (national category and legal status of protected areas - including any boundary changes which have been made: management practices; whether an officially approved management plan exists and whether it has been implemented)

Runn of Kutch is declared Wildlife Sanctuary (Category - IV of IUCN) in 1980. It is declared protected area under Sindh Wildlife Protection Ordinance 1972 as Wildlife sanctuary. Since then there is no change in its boundary. Restrictions have been imposed on illegal hunting, wood cutting, mining and destruction to the habitat under section 14 of Sindh Wildlife Protection Ordinance 1972. No management plan (approved or un-approved) exists.

24. Conservation measures proposed but not yet implemented: (e.g., management plan in preparation; officially proposed as a protected area, etc.)

Recently area of Runn of Kutch has been surveyed jointly by WWF – Pakistan and Sindh Wildlife Department for Protected Areas Management Project under GEF funding, and the project is still being reviewed. Preparation of Management plan of the area is part of this project. It is already declared protected area.

25. Current scientific research and facilities: (e.g., details of current projects; existence of field station, etc.)

Currently no such research project or scheme is under implementation, one Wildlife Station is based at Mithi (District headquarter) for monitoring the wildlife activities such as hunting, protection and protected area management etc.

26. Current conservation education: (e.g., visitors centre, hides, info booklet, facilities for school visits, etc.)

Sindh Wildlife Department has started conservation education in the local communities for the protection, conservation and management of natural biodiversity resources in the area. Regular meetings with local communities are being held by Wildlife officers. However, there is neither any visitor centre, nor info booklet or facilities for school visits.

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

Individual trips of local tourists and foreign visitors are arranged officially on request. No management tourism exists. However, Pakistan Tourism Development Corporation and Sindh Tourism Development Corporation can play their part in managing the eco-tourism in collaboration with Sindh Wildlife Department, because area has great potential for tourism. Many archaeological sites (mentioned in column 19), Karunjhar hill range and site scenes are available in this area.

28. Jurisdiction: (territorial, e.g. state/region, and functional, e.g. Dept of Agriculture/Dept. of Environment, etc.)

29. Management authority: (name and address of local body directly responsible for managing the wetland)

Sindh Wildlife Department, Government of Sindh, M. D. Wafai Road, Saddar
Karachi Tel: 92-021-9204951-2 Fax – 9204959. Karachi. Email:
Website: www.sindhwildlife.com.pk

30. Bibliographical references: (scientific/technical only)

Please return to: **Ramsar Convention Bureau, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

1. Pakistan Wetland Action Plan (August 2000).
2. Conservation of Runn of Kutch Wildlife Sanctuary through community based management WWF – Pakistan (2000)
3. A directory of Asian Wetlands.
4. Baseline Study of Nara desert.
5. Mammals and Birds of Pakistan - By T.J. Robert. (1991)
6. IUCN Red Data book 2000
7. Mid Winter Waterfowl Counts by the Sindh Wildlife Department from 1992 to 2000.

TABLE-1. VEGETATION SPECIES OF RUNN OF KUTCH

S.NO	SCIENTIFIC NAME
1	<i>Aristida mutabilis</i> Trin. & Rupr.
2	<i>Cleome brachycarpa</i> Vahl.
3	<i>Cleome scaposa</i> D.C.
4	<i>Cocculus birsutus</i> (Linn.) Diels.
5	<i>Convolviulus prostratus</i> Forssk.
6	<i>Capparis decidua</i> (Foressk.) Edgew.
7	<i>Cassia italica</i> (Mill.) Lam ex f.w. Anderssp.
8	<i>Cenchrus ciliaris</i> Linn.
9	<i>Citrulus colacynthis</i> (Linn) schrad.
10	<i>Bocrbavia procumbense</i> Bank ex Roxb
11	<i>Calligonium polygonoides</i> Linn.
12	<i>Tribulus longipetalus</i> Viv.
13	<i>Zizyphus nummularia</i> (Burm.f.)Wt. & Arn.
14	<i>Zygophyllum simplex</i> Linn.
15	<i>Salvadora oleoides</i> Decne.
16	<i>Setaria punila</i> (Poir.) Roem. & Schult.
17	<i>Stipagrostis plumosa</i> (Linn.) Karst.
18	<i>Tephrosia tenctoria</i> Pers.
19	<i>Tephrosia uniflora</i> Pers.
20	<i>Tephrosia uniflora</i> Pers.
21	<i>Polygala crioptera</i> D.C
22	<i>Pluebia lanccolata</i> Oliv & Hiern.
23	<i>Prosopis cineraria</i> (Linn. Druce.)
24	<i>Rbynchosia minima</i>
25	<i>Saccharum spontaneum</i> Linn.
26	<i>Salsola baryosoma</i> (Roem & Schult.) Dandy.
27	<i>Heliotropium</i> Desf.
28	<i>Heliotropium strigosum</i> Wild.
29	<i>Indigofera bochstetterii</i> Baker.
30	<i>Indigofera semitrijuga</i> Fork.
31	<i>Corchorus depressus</i> (Linn.) Stocks.
32	<i>Crotalaria hurbia</i> Ham ex Bentham
33	<i>Cynodon dactylon</i> (Linn.) Pers
34	<i>Cyperus arenarius</i> Retz.
35	<i>Euphorbia prostrata</i> Ait..
36	<i>Farsetia hamiltonii</i> Royle.
37	<i>Leptadenia pyrotechnical</i> (Forssk.) Decne.
38	<i>Limeum indicum</i> Stocks ex T. And.
39	<i>Mollugo cerviana</i> (Linn.)
40	<i>Neurada procumbens</i> Linn.
41	<i>Pameum turgidum</i> Forsk.
42	<i>Acacia jacquemontii</i> Benth
43	<i>Aerva javanica</i> (Burm.f.)Juss ex J. AQ. Shultes
44	<i>Apluda mutica</i> Linn.
45	<i>Aristida adseensionis</i> Hk. F.
46	<i>Aristida funiculata</i> T. & P.
47	<i>Cenchrus cilliaris</i> Linn.
48	<i>Desmostachya bipinhnata</i> (L.) Stapf.
49	<i>Fimbristylis acuminata</i> Vahl.
50	<i>Indigofera hochstetterii</i> Baker.
51	<i>Limeum indicum</i> Stocks ex T. And.
52	<i>Mothugo cerviana</i> (Linn.) Ser.
53	<i>Polygala erioptera</i> DC.

54	<i>Prosopis cineraria</i> (Linn.) Druce.
55	<i>Saccharum bengalensis</i> Retz.
56	<i>Eragrostis minor</i> Host.
57	<i>Euphorbia prostrata</i> Ait.
58	<i>Phyla modiflora</i> (L.)
59	<i>Portulaca oleracea</i> Linn.
60	<i>Pluchia lanceolata</i> Oliv & Hiern.
61	<i>Suaeda nudiflora</i> (Wild.) Moq.
62	<i>Salsola baryosoma</i> (Roem & Schult.) Dand
63	<i>Boerhavia procumbens</i> (Bank ex. Roxb.
64	<i>Capparis decidua</i> (Forssk.) Edgew.
65	<i>Heliotropium europeum</i> Linn.
66	<i>Heliotropium strigosum</i> Wild.
67	<i>Aeluropus lagopoides</i> (Linn.) Trin.
68	<i>Alhagi maurorum</i> Medic.
69	<i>Bacopa mouieri</i> (Linn.) Pennell.
70	<i>Saccharum spontaneum</i> Linn.
71	<i>Zaleya pentamudra</i> (Linn.) Jaffrey
72	<i>Zygophyllum simplex</i> Linn.
73	<i>Typha elephantina</i> Roxb.
74	<i>Stipagrostis plumosa</i> (Linn.) Munro ex T.A.
75	<i>Tamarix dioica</i> Roxb.
76	<i>Trianthema triquetra</i> Rottle. And Wild.
77	<i>Tribulus longipetalus</i> Viv.
78	<i>Typha domingensis</i> Pers.
79	<i>Cenchrus melo</i> var. <i>Agrestis</i> Naud.
80	<i>Cyperus difformis</i> Linn.
81	<i>Cyperus irta</i> Clarke
82	<i>Calotropis procera</i> (Wight & Arn.)
83	<i>Codoorus aestuans</i> Linn.
84	<i>Cochorus trilocularis</i> Linn.
85	<i>Solanoa surattense</i> Burm.f.
86	<i>Tamarix dioica</i> Roxb.
87	<i>Tamarix madica</i> Wild.
88	<i>Typha domingensis</i> Pers.
89	<i>Typha dephontima</i> Roxb.
90	<i>Digera muricata</i> (Linn.) Mart.
91	<i>Echinochloa colomum</i> (L.) Link
92	<i>Echinochloa crusgalli</i> (L.) P. Beauv.
93	<i>Alhagi maurorum</i> Medic.
94	<i>Alernanthera sessili</i> (Linn) R. Br.
95	<i>Alysicarpus scariosus</i> Grah. Ex Thwaites
96	<i>Eimbrastylis dichotonta</i> Clarke
97	<i>Hydrilla corticallata</i> (L.T)Royale.
98	<i>Impomoca aquatica</i> Forssk.
99	<i>Iponoca eriocarpa</i> R.Br.
100	<i>Cyperus rotundus</i> Linn.
101	<i>Demostabya bipinnata</i> (L.) Stapf
102	<i>Dichanthium annulatum</i> (Forssk.) Stapf.
103	<i>Bacopa monnicri</i> Linn.
104	<i>Bergha aestivosa</i> Wight & Arn,
105	<i>Brachiaria cruciformis</i> (J.E Smith)Griseb.
106	<i>Phragmites korka</i> (Retz Trin.)
107	<i>Phyllonbus reticulatus</i> Poir
108	<i>Physalis perucuana</i> Linn.
109	<i>Nymphtea pubescens</i> Willd.
110	<i>Oxystebua esculentum</i> (L.F) R. Br.
111	<i>Persicora barbata</i> (Linn). Hara.

112	<i>Saccharum bengalensis</i> Retz.
113	<i>Sacharwn spontaneum</i> Linn.
114	<i>Eleusine indica</i> (Linn.) Gaertn.
115	<i>Embrstylis acmuinata</i> Vahl.
116	<i>Eragrostis minor</i> Host.
117	<i>Euphorbli prostrata</i> Ait.
118	<i>Phyla nodiflora</i> (L.)
119	<i>Populus cuphratica</i> Olivier.
120	<i>Portulaca oleraced</i> Linn.
12	<i>Rhynchostra minima</i> (L). DC.
122	<i>Seshouna bispinosa</i> (Jacq.) W.F Wight..
123	<i>Solwuna nigram</i> Linn.
124	<i>Perstatria glabra</i> (Willd. M. Gomes.
125	<i>Convolvulus arvensis</i> Linn.
126	<i>Convolvulus prostratus</i> Forssk.
127	<i>Corchorus aestuans</i> Linn.
128	<i>Phyla modiflora</i> (L) Greene.
129	<i>Physalis peruviana</i> Linn.
130	<i>Portulaca oleracea</i> Linn.
131	<i>Celosia argentea</i> Linn.
132	<i>Amaranthus Viridis</i> Linn.
133	<i>Aristida adscensionis</i> Hk.f.
134	<i>Brachiaria eruciformis</i> (J.E. Smith)Griseb.
135	<i>Corchorus trilocularis</i> Linn.
136	<i>Cressa cretica</i> Linn.
137	<i>Cleome viscosa</i> Linn.
138	<i>Cyamopsis tetragonoloba</i> (Linn.)
139	<i>Cynodon dactylon</i> (L.)
140	<i>Cyperus rotundus</i> Linn.
141	<i>Achyranthes aspera</i> Linn.
142	<i>Albagi maurorum</i> Medic.
143	<i>Tribulus terrestris</i> Linn.
144	<i>Xanthium indicum</i> J.Koenig.
145	<i>Mukia maderaspatana</i> (L.)
146	<i>Cucumis melo</i> Var. Agrestis Naud.
147	<i>Euphorbia birta</i> Linn.
148	<i>Euphorbia prostrata</i> Ait.
149	<i>Ipomoca aquatica</i> Forssk.
150	<i>Datetyloctenium aegypticum</i> (L.) P. Beavu.
151	<i>Desmostachya bipinnata</i> (L.) Stapf.
152	<i>Lauaea procumbens</i> (Roxb.) Ramayya & Raj
153	<i>Echinochloa colonum</i> (L). Link
154	<i>Echinochloa crusgalli</i> (L). P. Beave.

TABLE-2. LIST OF MAMMALS OF RUNN OF KUTCH.

S.No	Local name	Scientific Name
1	Chinkara	<i>Gazella gazella</i>
2	Indian Wild Ass	<i>Equis hemionus</i>
3	Blue bull	<i>Baselaphus tragocamelusa</i>
4	Caracal cat	<i>Felis caracal</i>
5	Desert Cat	<i>Felis libyca</i>
6	Jungle Cat	<i>Felis chaus</i>
7	Hyaena	<i>Hyaena hyaena</i>
8	Indian fox	<i>Vulpus bonglensis</i>
9	Desert Fox	<i>Vulpus vulpus pusilla</i>
10	Small Indian Civet	<i>Viverricula indica</i>
11	Honey Badger	<i>Mellivora capamisis</i>
12	Jackal	<i>Canis aureus</i>
13	Long-eared Hedge Hog	<i>Hemiechinus auritus</i>
16	Yellow throated Shrew	<i>Suncus Stoliezkanus</i>
17	Small Mongoose	<i>Herpestes auropunctatus</i>
18	Indian Wild Boar	<i>Sus scrofa</i>
19	Indian Hare	<i>Lepus nigrocollis</i>
20	Indian Crested Poreupine	<i>Hystrix indica</i>
21	Five Stripped Palm Squirrel	<i>Funambulus pennanti</i>
22	House Mouse	<i>Mus musculus</i>
23	Short-Tailed Mole Rat	<i>Nesokia indica</i>
24	Bluchistan Gerbil	<i>Gerbillus nanus</i>
25	Indian Gerbil	<i>Tetra indica</i>
26	Indian Desert Jud	<i>Meriones hurrianae</i>

TABLE - 3. LIST OF REPTILES OF RUNN OF KUTCH.

S.NO	Local Name	Scientific name
SNAKES		
1	Brahminy Blind Snake	<i>Typhlops braminus</i>
2	Indian Sand Boa	<i>Eryx johni</i>
3	Saw scaled Viper	<i>Echis carinatus</i>
4	Indian Krait	
	Indian Cobra	<i>Naja naja</i>
LIZARDS		
5	Brilliant Agama	<i>Trapelus (Agama) Agilis isolepis</i>
6	Afghan Ground Agama	<i>Trapelus Agama megalonyx</i>
7	Indian spiny-tailed Lizard	<i>Uromastix hardwicki</i>
8	Indian Fringed Toed sand Lizard	<i>Acanthodactylus contoris contoris</i>
9	Long-tailed Desert Lacerta	<i>Eremias guttulata watsonana</i>
10	Sindh Sand Gecko	<i>Crossobamon orientalis</i>
11	Banded Dwarf Gecko	<i>Tropicolotes helenae</i>
12	Indian Sand Swimmer	<i>Ophiomorus tridactylus</i>
13	Indian Monitor	<i>Varanus bengalensis</i>
14	Indian Desert Monitor	<i>Varanus griseus Koniecznyi</i>

TABLE-4. LIST OF BIRDS OF RUNN OF KUTCH.

S.NO	LOCAL NAME	SCIENTIFIC NAME
1	Grey Partridge	<i>Francolinus pondicerianus (Gmelin)</i>
2	Black Partridge	<i>Fracolinus francolinus</i>
3	Houbara bustard	<i>Chlamydotis undulata</i>
	Great Indian Bustard	
	Tawny Eagle	
4	Sarus crane	<i>Grus antigone</i>
5	Common Crane	<i>Grus grus</i>
6	Grey Heron or Common Heron	<i>Ardea cinerea</i>
7	Montagu's Harrier	<i>Circus pygargus</i>
8	Egyptian Nightjar	<i>Caprimulgus aegyptius lichtenstein</i>
9	Little Stint	<i>Calidris minuta (Leisler)</i>
10	Moorhen, Waterhen	<i>Gallinula chloropus (L)</i>
11	Marsh Harrier	<i>Circus aeruginosus</i>
12	Black or Eurasian Coot	<i>Fulica atra (L)</i>
13	Garganey	<i>Anas querquedula</i>
14	Pied Wagtail	<i>Motacilla alba</i>
15	Black winged Kite	<i>Elanus caeruleus (desfontaines)</i>
16	Black winged stilt	<i>Himantopus himantopus (J)</i>
17	Ruff	<i>Philomachus pugnax (L)</i>
18	Little Tern	<i>Sterna albifrons pallas</i>
19	Gadwall	<i>Anas strepera linnaeus</i>
20	Marbled Teal	<i>Marmarouetta angustirostris</i>
21	Shoveler	<i>Anas chypeata</i>
22	Curlew Sandpiper	<i>Calidris ferruginea</i>
23	Blue Rock Pigeon	<i>Columba livia gmelin</i>
24	Common Crow Pheasant (Cocal)	<i>Centropus sinensis (Stephens)</i>
25	Great Grey Shrike	<i>Lanius excubitor</i>
26	Rufous-backed Shrike	<i>Lanius schach linnaeus</i>
27	Eurasian Kestrel	<i>Falco tinnunculus</i>
28	Common Myna	<i>Acridotberus tristis (L)</i>
29	Common Babbler	<i>Turdoides caudatus (Dumont)</i>
30	Bank Mayna	<i>Acridotberus ginginianus (Latbam)</i>
31	Black Drongo/King Crow	<i>Discrurus macrocercus vielliot</i>
32	White Cheeked Bulbul	<i>Pycnonotus leucogenys (J.E.Gray)</i>
33	Indian Robin	<i>Saxicoloides fulicata (Linnaeus)</i>
34	Stoneohat or Collared Bush Chat	<i>Sexicola torquatta (Linnaeus)</i>
35	Crested Lark	<i>Galerida cristata</i>
36	Hoopoe	<i>Upupa epops linnaens</i>

37	Pied Kingfisher	<i>Ceryle rudis (Linnaeus)</i>
38	White-breasted Kingfisher	<i>Halcyon smyrnensis (Linnaeus)</i>
39	Little Green Bee-eater	<i>Merops orientalis latham</i>
40	Blue-cheeked Bee-eater	<i>Merops superciliosus linnaeus</i>
41	Little Egret	<i>Egretta garzetta (Linnaeus)</i>
42	Intermediate Egret	<i>Egretta intermedia (Wagler)</i>
43	Indian Pond Heron	<i>Ardeola grayii (Sykes)</i>
44	Redshank	<i>Tringa totanus (Linnaeus)</i>
45	Grey Plover	<i>Pluvialis squatarola (Linnaeus)</i>
46	Indian Roller	<i>Coracias benghalensis (Linnaeus)</i>
47	Common Pochard	<i>Aythya ferina (Linnaeus)</i>
48	Common Teal	<i>Anas crecca Linnaeus</i>
49	Common Sandpiper	<i>Actitis hypoleucos (Linnaeus)</i>
50	Sand Martin	<i>Riparia paludicola (Vieillot)</i>
51	Roseringed Parakeet	<i>Psittacula crameri (Scopoli)</i>
52	Indian Tree Pie	<i>Dendrocitta vagabunda (Latham)</i>
53	Spoon Bill	<i>Platalea leucorodia (L)</i>
54	Purple Sunbird	<i>Nectarinia asiatica (Latham)</i>
55	Spotted fly catcher	<i>Muscicapa striata</i>
56	White tailed plover	<i>Chettusia leucura</i>
57	Black crown finched lark	<i>Eremoterix nigriceps (Gould)</i>
58	Ring Dove	<i>Streptopelia decaocto (Frivaldszky)</i>
59	Great Cormorant	<i>Phalacrocorax carbo (Linnaeus)</i>
60	Little Cormorant	<i>Phalacrocorax niger (Viellot)</i>
61	Little Orstriated Heron	<i>Butorides striatus (L.)</i>
62	Grater Flemingo	<i>Phonicopterus ruber</i>
63	Osprey	<i>Pandion Haliatos (L.)</i>
64	Black Francolin	<i>Francolinus francolinus (L.)</i>
65	Purple Gallinule	<i>Porphyrio porphyrio (L.)</i>
66	Great Indian Bustard	<i>Ardeotis nigriceps</i>
67	Pied Avocet	<i>Recurioiostra avosetta (L.)</i>
68	Kentish Plover	<i>Charadrius alexandrinus (L.)</i>
69	Red wattled Lapwing	<i>Hoplopterus indicus</i>
70	Dunlin	<i>Calidris alpina (L.)</i>
71	Common or Fantail snipe	<i>Gallinago gallinago (M.)</i>
72	Balck tailed Godwit	<i>Limosa limosa (L.)</i>
73	Marsh Sandpiper	<i>Tringa stagnatilis (Beckstein)</i>
74	Chestnut-Bellied Sandgrouse	<i>Pterocles exustus temmimck</i>
75	Red collared or Turtle Dove	<i>Streptopelia tranquebarica</i>
76	Spotted Little Owl	<i>Athene brama (Temminck)</i>
77	Common Swift	<i>Apus apus (L.)</i>
78	Common small Blue kingfisher	<i>Alcedo atthis (L.)</i>
79	Blue tailed Bee eater	<i>Merops philippines (L)</i>
80	Eurpian or Kashmir Roller	<i>Coracias garrulus (L.)</i>

81	Greater short Toed Lark	<i>Calendrella brachydactyla (Leisler)</i>
82	Indian Pipit	<i>Anthus similis jerdon</i>
83	Grey wagtail	<i>Motacilla alba</i>
84	Red vented Bulbul	<i>Pyenonotus cafer (L.)</i>
85	Pied stone chat or pied Bush Chat	<i>Saxicola caprata (Linnaeus)</i>
86	Graceful Stripe Backed Prinia	<i>Prinia gracilis (M.b.c. lichtenstein)</i>
87	Common Tailor Bird	<i>Ortbotomus sutorius (Pennant)</i>
88	Indian Great Reed Warbler	<i>Acroccpbalus stentoreus (Hemprich & Ebrenerberg)</i>
89	Plain Leaf Warbler	<i>Thylloscopus neglectus bume</i>
90	Jungle Babbler	<i>Turdoides striatus (Gmelin)</i>
91	House Crow	<i>Corvus splendens vieillot</i>
92	Brahminy Starling or Myna	<i>Sturnus pagodarum (S.G.Gmelin)</i>
93	Rosy pastor	<i>Sturnus roseus (L.)</i>
94	House Sparrow	<i>Passer domesticus (L.)</i>
95	Sindh Sparrow	<i>Passer pyrronotus blyth</i>
96	Indian Baya	<i>Ploceus philippinus (L.)</i>
97	Lesser Florican or likh	<i>Sypheotides indica</i>
98	Dalmation Pelican	<i>Pelicanus crispus</i>
99	Rosy White Pelican	<i>Pelicanus onocrotalus</i>
100	Brahminy kite	<i>Haliastur indus</i>
101	Lesser Flamingo	<i>Phoenicopterus ruber</i>
102	Pallas fish eagle	<i>Haliaeetus leocoryphus</i>
103	Marsh harrier	<i>Circus aeruginosus</i>
104	Shikra or Indian sparrow hawk	<i>Accipiter badius</i>
105	Lagger falcon	<i>Falco lugger</i>
106	Peregrine Falcon	<i>Falco peregrinus</i>
	Saker Falcon	