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<b>Acknowledgements</b>	Subash Sitaraman, KV Member; Mr. Shyam Sunder, Wildlife Inspector, Sultanpur National Park; Dr. C.R.Babu, Botany Department, Delhi University; Dr. N.K.Mehra, Zoology Department, Delhi University; Students, Botany Department, Delhi University; Dr. Ranjit Daniels, Swaminathan Research Foundation; Special thanks to Suresh Sharma who introduced KV members to Sultanpur's birdwatching in 1985.

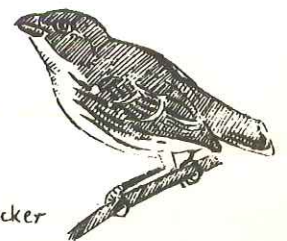


# Small AND Beautiful: SULTANPUR NATIONAL PARK

**KALPAVRIKSH**  
New Delhi

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Thickbilled Flowerpecker



## PREFACE

The Sultanpur National Park in Gurgaon District of Haryana, is perhaps one of the most remarkable wetlands of Northern India. For within its small area of just 142 hectares, more than 240 bird species have been recorded and the tally keeps growing. This is especially notable if we consider the fact that the Park must put up with intensive fodder collection, a high volume of tourism and an often absconding monsoon.

After a visit in late 1985, some Kalpavriksh members initiated a monthly bird census in and around the *jheel* in the National Park. They also took photographs and made notes on flora, other fauna, human interference and on how the Park was being looked after by the authorities.

What emerged from this exercise, in its ninth year, was quite astonishing. We discovered that this tiny wetland is invaluable as a bird refuge. It seems to be a stopover point for migratory birds on their way further south in winter as also for those later returning home north in spring. Many migratory birds, of course, spend the entire winter here. Several resident species of wetland and terrestrial birds nest here during the spring, summer and the monsoon. Some migratory species roost at night in the safe precincts of the Park. Apart from birds, several species of mammals, reptiles, amphibians, fish and insects also find refuge here.

The *jheel* acts as a sponge, a natural flood-control system for the area. Excess water from the surrounding areas drains into this depression, preventing waterlogging in the nearby fields. Being just 45 km from Delhi, it has immense educational and recreational value for jaded city-dwellers who come here for birdwatching, photography, walks or simply for a breath of fresh air.

In the process of investigating the ecological importance of Sultanpur, we have discovered the usefulness of long-term monitoring by birdwatchers and nature lovers in the absence of more organised research projects. Our numerous birdwatching, photographic and research trips into the Park have also been extremely educative and every new finding has strengthened our resolve to work towards the long-term conservation and scientific management of this unique wetland.

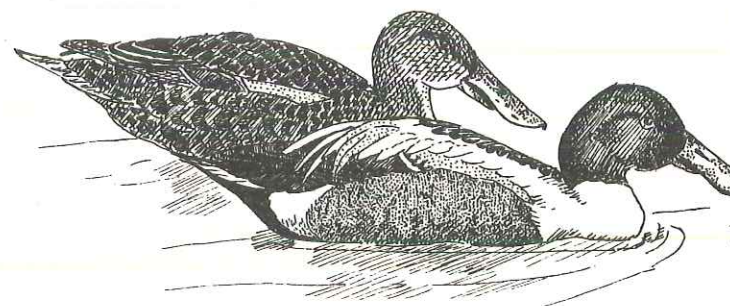
This booklet aims at creating awareness about the ecology of this dramatically diverse wetland, its functioning and its ecological importance. We hope that our effort will help the visitor to better enjoy the bounties of the Park (apart from merely picnicking on the lawns!).

As a part of this work we also identify the specific research that may need to be carried out for designing the ecologically sound management of this valuable wetland.



This is a time when wetlands are rapidly disappearing all over the country without any assessment of their resource potential or their role in biological conservation. In spite of the significance of wetlands for both humans and several other organisms, such areas are still considered useless: pieces of waterlogged land that should be reclaimed for agriculture, housing or industry. This publication is a small attempt towards creating awareness of the value of such wetland habitats as Sultanpur, in the hope that others will be spared from a destructive fate.

Authors



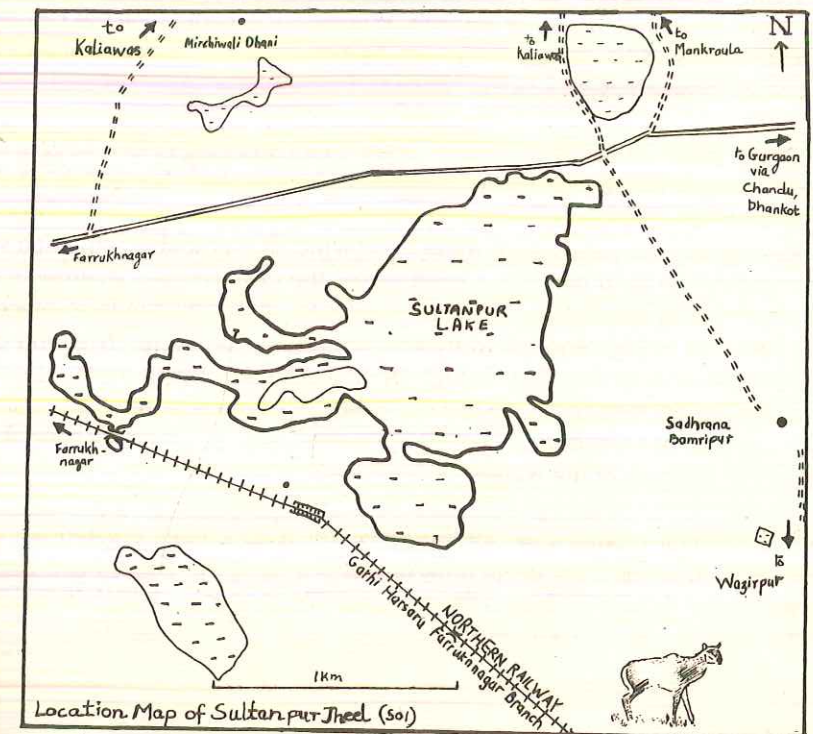
Shoveller

## INTRODUCTION

### A Bit Of History

For over one hundred years now, Sultanpur *jheel* has been attracting birds - and birders. But it was only in 1969, at the Conference of the International Union of Conservation of Nature and Natural Resources (IUCN), in New Delhi, that the potential of this wetland was highlighted in official quarters. Peter Jackson of the IUCN, together with the late Prime Minister, Ms. Indira Gandhi, were especially instrumental in this regard. And so, on the second of April, 1971, the *jheel* and its immediate precincts (an area of 1.21 square kilometres) were accorded sanctuary status under Section 8 of the Punjab Wildlife Preservation Act of 1959.

Sultanpur has since been under the control of the Haryana Forest Department, which has appointed some staff for its protection and management. On July 5, 1991, the Bird Sanctuary was notified a National Park under Section 35 of the Wildlife Protection Act. Simultaneously, the area was increased to 1.42 square kilometres. The National Park has been carved out of the lands of the villages Sadhrana, Chandu, Sultanpur and Saidpur. A buffer zone of 136 square kilometres has been declared around the sanctuary (i.e. 8 km. radius around). This area has been declared 'closed' under the Punjab New Capital (Periphery) Control Act, 1952. Hunting and trapping of wild animals is banned in this area, which encompasses 17 villages. (For the notification details, refer factsheet)





## Location

The Park is located around the intersection of the 76° 53' east longitude and 28° 28' north latitude. The nearest town and railhead is Gurgaon, 15 km. away, and the nearest airport, Indira Gandhi International Airport, 35 km. away. The Park is situated just off the Gurgaon-Farrukhnagar road.

## Geology And Climate

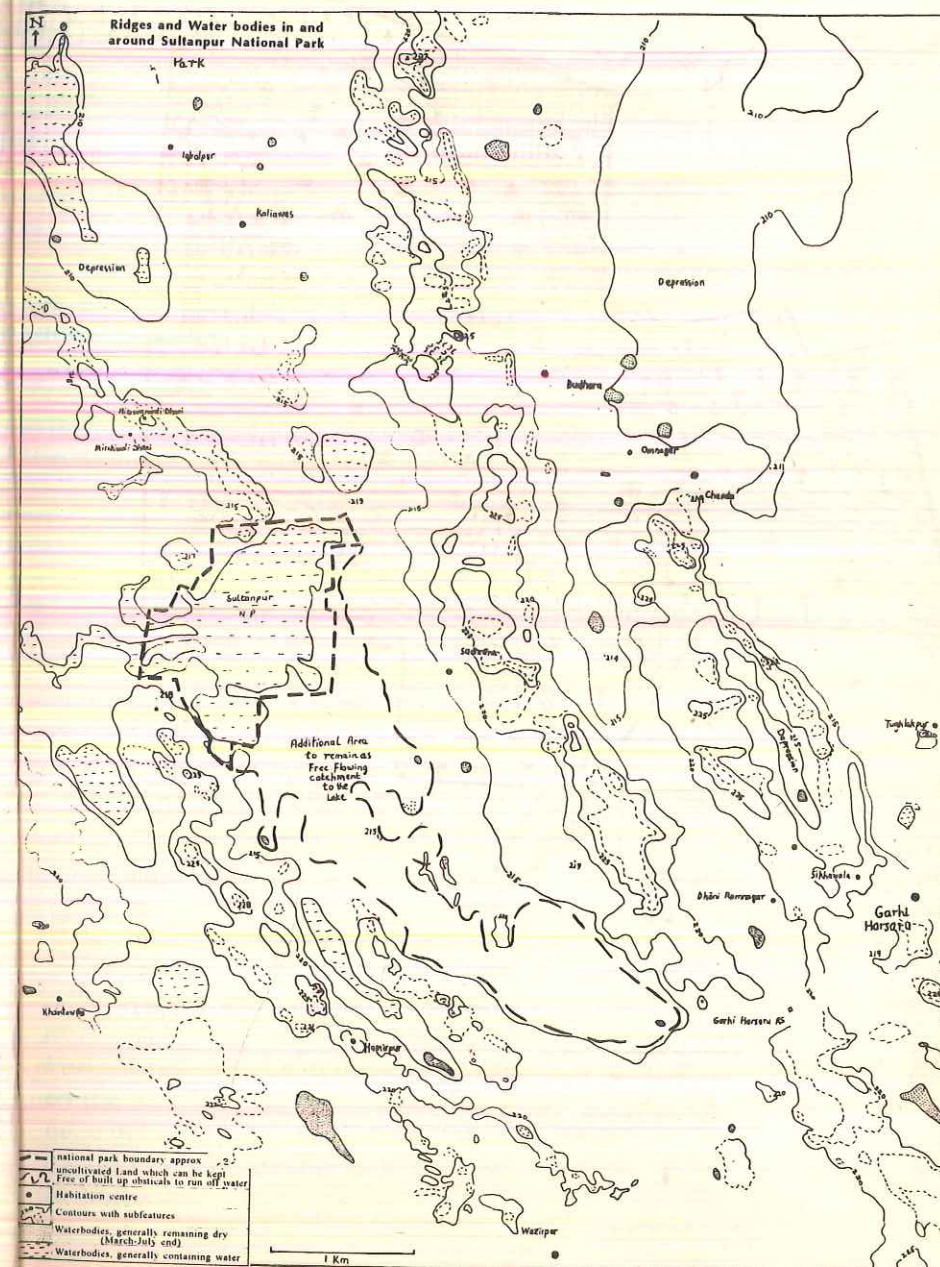
Sultanpur *jheel* is a seasonal *jheel* that was described by M. Krishnan, the eminent naturalist as 'a sheet of shallow water not merely rainfed, which dries up in summer.' The *jheel* lies in one of the natural depressions in the undulating terrain of Gurgaon District and is surrounded by gently sloping dunes which range from 214 to 225 metres above mean sea level. During the monsoon, overflows from neighbouring nullahs (mainly to the south of the Park) and agricultural areas fill up this hollow. As the soil is naturally clayey with high water retention capacity, this accumulated water remains in the *jheel* for several months after the monsoons are over.

In the old Survey of India maps, this area is shown as a seasonally marshy land contained in a salt pan. High average temperatures (causing water to evaporate very fast), the extremely retentive soils and high water table, combine to cause alkalinity and salinity (a high concentration of salts) in the soil. This is natural to the area, especially in the lowlying portions. Problem of waterlogging has caused large portions of land in Gurgaon District, to remain uncultivated. Sultanpur *jheel* is one of these areas.

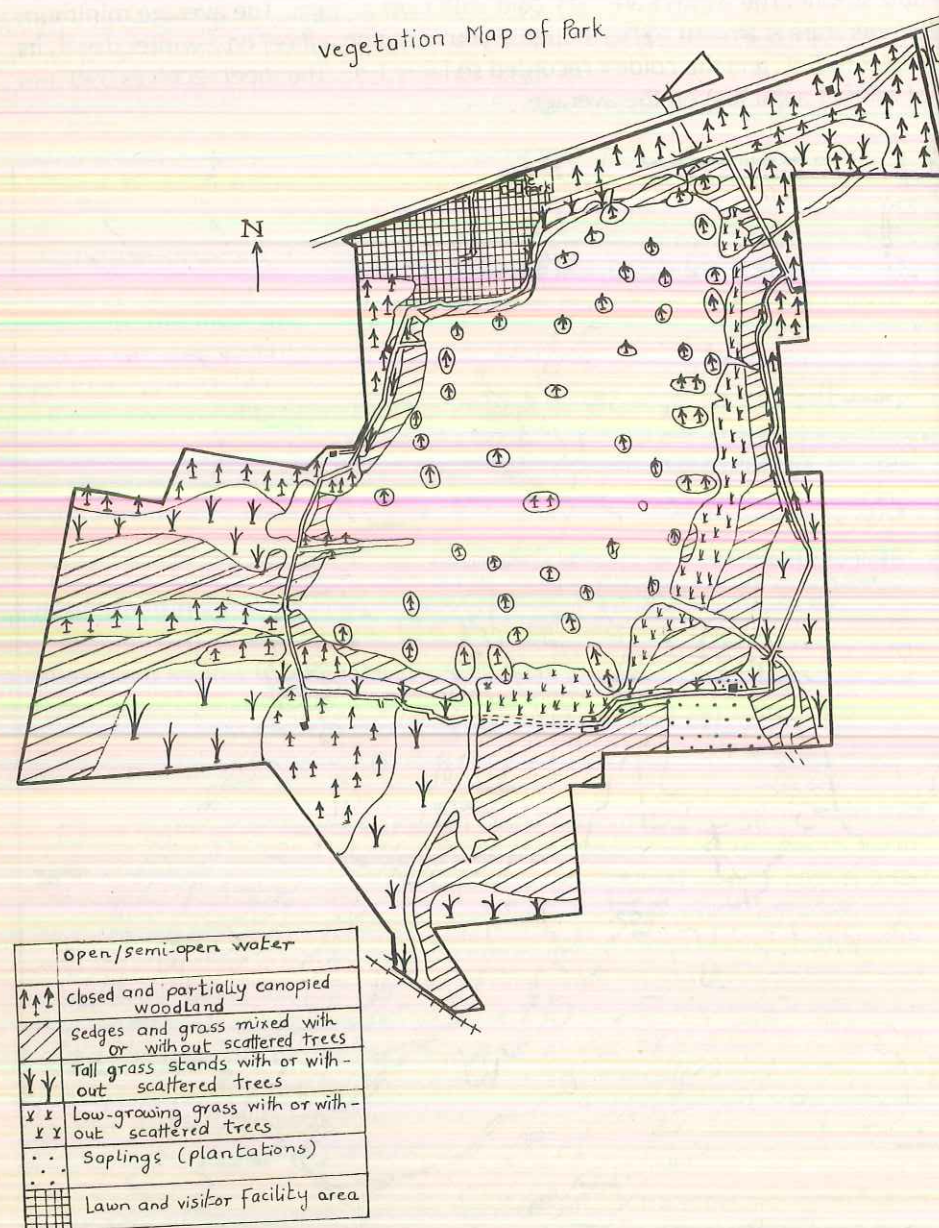
Earlier the *jheel* spread over a much larger area consisting of one large and several small water bodies, connected at places to each other. The ponds north of the National Park boundaries have reduced in number and seem to have shrunk in size, leaving only the park's large water body which has probably remained so due to the protection accorded to it. On filling up, the *jheel* remains shallow, the average depth being less than one metre. The water shows alkalinity at places while its hardness is high enough to make it useless for drinking, irrigation or washing. The salinity of the *jheel* is high by any standard, being most salty in areas that are replenished by saline ground water. Alkaline feature of the water makes for a particular composition of plant and animal species which are specially adapted to the saltiness of the waters.

Several artificial islands now dot the *jheel* which have been created out of excavated soil obtained from deepening operations in 1981. These have been planted with *kikar* *Acacia nilotica*, a thorny, scrub forest species, which is typical of the semi-arid climes of North India.

Sultanpur has extreme weather conditions typical of this region. Summer, lasting from April to July, is very hot with temperatures soaring to 46 °C during the day. May and June are the hottest months. There occur occasional sand and dust storms. The winters are very cold with frost at night. The average minimum temperature is around 15 °C, though if you're out on a *jheel* on a winter dawn, its closer to 5 °C and the coldest recorded so far is 1 °C. The *jheel* receives 690 mm of rainfall annually, on the average.







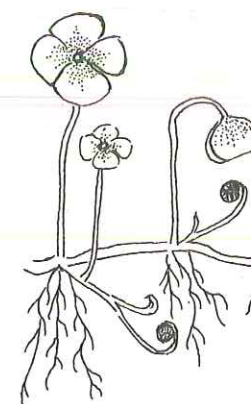
## FLORA

Two types of vegetation have been identified within the Park. There is the seasonal aquatic vegetation, flourishing and disappearing with the change of seasons, and the open grasslands containing patches of planted *kikar* *Acacia nilotica* forest.

In addition there is the community of plants typical of the *bunds* which surround the *jheel* and the small, well-maintained patch of lawn which has a mixture of planted Indian and exotic trees.

### The Water's Edge

The major part of the National Park is covered by seasonal vegetation which is adapted to a seasonal watery existence. Just after a good monsoon, the water fills up the *jheel*, in some places, to the level of the *bund*. At this time, when the water level is high, one can see the diverse aquatic vegetation in its element with several species flowering. These plants require some depth of water to survive. Their roots, leaves, seeds and other parts are relished as food by waterbirds such as dabbling ducks (ducks feeding in shallow water areas), coots and geese.



Marsilea plant

There are plants that are submerged and rooted to the *jheel* bottom such as *sawala* *Vallisneria natans* and *siwara* *Ceratophyllum demersum*. In the same zone one can see floating-leaved plants which include the attractive waterlilies, *chota kamal* *Nymphaea stellata* and *neelopal* *Nymphaea nouchali*. These are rooted in the mud and have subtly scented white flowers. *Neelopal* can be distinguished from its close relative, the *chota kamal*, by its leaves which have toothed edges. *Chota kamal* has smooth-edged leaves and mauve-tinted petals.

Duckweed *Lemna* spp. becomes very abundant during a short spell after the rains. In some areas, it coats the surface of the water like a lawn. The plant is made up of just a 'leaf' which floats on the water surface, leaving its root to hang freely in the water. Other interesting plants include the aquatic ferns which 'run' on the surface of the water, projecting their roots into the wet mud. *Marsilea quadrifolia* has leaves which look like Wood Sorrel with smooth edges. *Marsilea minuta* has tinier leaves with uneven edges. Several types of aquatic algae such as *Nostoc* spp. , *Spirogyra* spp. and Common Stonewort *Chara* spp, so called



because of high amounts of silica deposits in the plant body, stay submerged in the water column.



In the shallower water zones such as along the water edge of islands and *bunds*, there are attractively flowered sedges belonging to the genera *Cyperus* and *Scirpus*. Sedges can be distinguished from grasses by their stiff terete stems. Grasses have cylindrical stems. However, some sedges also have flexible cylindrical stems but having no branching and containing spongy tissue inside.

The most common sedges in the area are *Cyperus rotundus* and *Scirpus littoralis*, neither of which grow taller than two feet. *Cyperus rotundus* bears a cluster of brownish flowers at the apex of the stem while *Scirpus littoralis* bears its flowers on the side of the rounded stem. A more uncommon but prominent sedge is *Cyperus corymbosus* which sometimes reaches five feet in height.

A noticeable plant during this period is *sarnali Ipomoea reptans* which is hardy enough to grow both in water and in damp soil. It is a runner of sorts with elongated, heart-shaped leaves, large mauve bell-shaped flowers and a weak stem, twining in and out of the intricate plethora of aquatic vegetation.

All aquatic and semi-aquatic plants have special adaptive features one cannot find in land plants. For example most submerged aquatic plants do not need stiff woody stems to keep them upright. They use the water as support, simply letting their leaves float. Some plants such as the waterlilies have seeds that can be dispersed by water. All these plants have roots that can withstand the waterlogged soil and in fact, flourish in the organically rich mud of the wetland.

In contrast to these bountiful 'deep-water' areas where there is so much to be seen and discovered, there are vast stretches that have hardly any vegetation. Here, found submerged, is the short, salt-tolerant *doob* grass *Cynodon dactylon* which simply goes into oblivion during the post-monsoon period.

As the water level decreases and dry areas appear, sedges, grasses and other herbs which are used to a semi-aquatic existence, take over. The algae, once plentiful, disappear and several of the previously submerged plants produce fruit and seed. Occasionally mosses such as *Riccia discolor* appear on the damp areas of the exposed *jheel* beds. The aquatic fern *Marsilea* now starts producing fruiting bodies which will perpetuate their kin. Flowers of the sedges and reeds turn dry and loosely scatter their seed all over the life-giving marsh bed. By April, there is not a sign that water once flooded the entire *jheel* bed, as an almost dry expanse

is taken over by grasses and herbs. Most common of all is the *doob* grass which was lying dormant and suddenly revives. Soon the vast stretches of rapidly drying *jheel* bed become covered with a lush velvet of green clumps that take this brief opportunity to spread out and grow. They flower profusely between February to April.

Some patches of the *jheel* bed also develop a scattering of sedges which, however, cannot grow much in the absence of moisture. This is the time when the previously unnoticeable herbs break into flower and some parts of the *jheel* are covered by subtle shades of lemon-yellow, pink and other colours, contributed to mainly by the tiny flowers of *Polygonum procumbens* and *Cotula hemispherica*.

### Grasslands And Planted Scrub Groves:



'Savannah woodland' is a useful term to describe the dry grassy stretches having scattered trees or groups of planted trees. There are also large, open stretches of grasses with hardly any tree cover. The latter surrounds mainly the *jheel*-bed and cover the southeastern and western ends of the Park. The dominant grasses include *khus* *Vetiveria zizanioides* and *moonj* *Erianthus ravennae*. *Moonj* grass grows tall and bears large silvery clumps of flowers which turn dry only in December. Most of the trees, which are dominated by *kikar* *Acacia nilotica* and *khejdi* *Prosopis cineraria*, have been planted after the declaration of the area as a Sanctuary. Some of the other species growing in the area include *jhau* *Tamarix dioica*, *neem* *Azadirachta indica*, *shisham* *Dalbergia sissoo*, *Acacia tortilis* and *ronj* *Acacia leucophloea*.

These grasslands are covered by water in unusually heavy monsoons but dry up within three months and again take on the characteristics of dry savannah. There are several herbaceous weeds and other plants typical of scrub forest seen



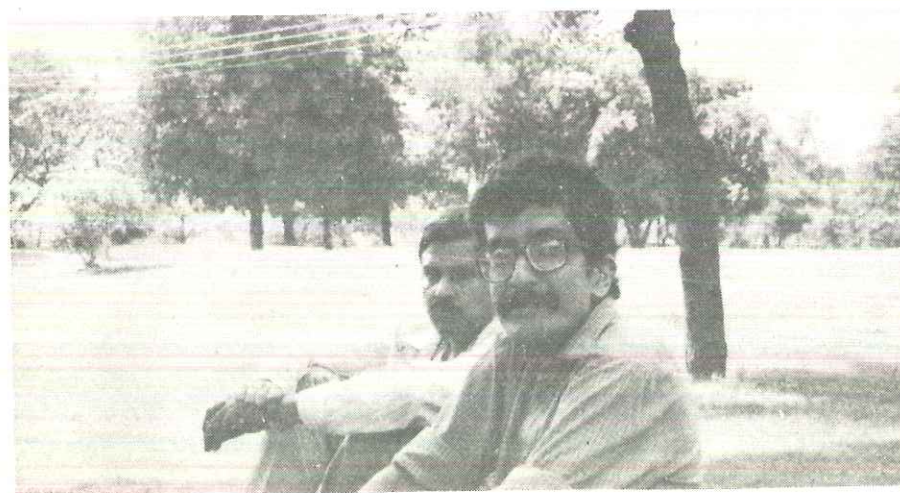
in the area which are seasonal as well. They mostly grow mixed with the grasses in the woodlands and grasslands. Abundant ones include *kharenti Malvastrum coromandelianum*, *puthkunda Achyranthes aspera*, the purple-flowered *sahadevi Vernonia cinerea* and *hathajori Xanthium strumarium* which flower just after the monsoon and dry up by November. These are more abundant in the tree-covered grasslands than in the open grasslands.

### Bund Vegetation

The sides of the *bunds* which surround the *jheel* have characteristic plants that survive on dry land such as *puthkunda Achyranthes aspera*, *gobi Launaea nudicaulis*, *tulati pati Physalis minima*, *Tephrosia villosa* and *Heliotropium curassavicum*. *Heliotropium* has succulent grey-green leaves and tiny white flowers borne on a curiously curved branchlet. It grows very close to the ground. *Tephrosia* has light purple flowers that are shaped like those of garden sweetpea. Short-growing grasses such as *sawank Echinochloa colonum* are also found in these drier areas. Most of these herbs are found as agricultural weeds, otherwise, and have colonised the bare portions of land inside the Park on which nothing else can grow, such as the sides of the woodland road and the *bunds*.

### Lawn Near Forest Office

The well-maintained lawns just outside the Nature Interpretation Centre have been planted with a diverse array of tree species such as *Acacia tortilis*, *siris Albizzia lebbek*, *Kigelia pinnata*, *jamun Syzygium cumini* and *gulmohar Delonix regia*. (See also Appendix 1 which gives a list of the identified plants and their habit)

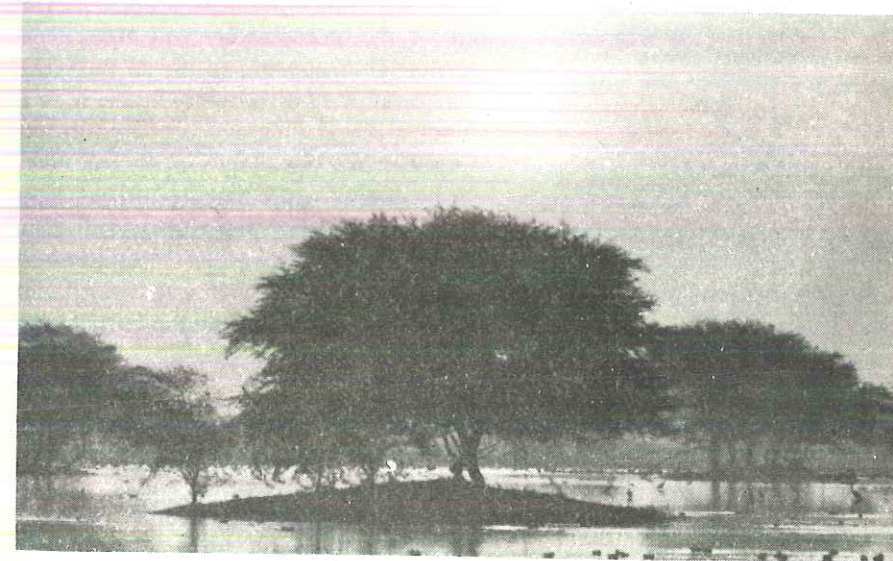


## BIRDS OF THE SEASONS

Sultanpur's extremely rich diversity of both land and wetland birds offer a feast to the birdwatcher. At the time of writing, our tally of species stands at 247, adding new species with every few birdcounts.

Depending on their seasonal patterns of utilisation of the *jheel*, the avian inhabitants of this park are of four types: residents, winter migrants, local migrants and passage migrants. Among some resident species that use the park as a nesting area are the Sarus crane, Little grebe, Whitebreasted waterhen, Moorhen, Peafowl and Redwattled lapwing. Migratory birds start arriving mostly in October and leave the park by April. Floating populations of local and passage migrants which neither live abroad, nor use the park for breeding but simply come in when there is abundant food supply. A list of bird species seen in Sultanpur and their status vis-a-vis Sultanpur *jheel* has been given in Appendix 2.

### Winter: October To January



The cold season begins gently. At dawn, the park wears a fine mantle of ground mist and the leaves and grasses are pearled with dew which sparkles prismatically in the young light. The breeze is crisp and cool, the anticipation, delicious.



For winter ushers in the long-awaited migratory season, and it is time now to go and welcome some of the many species that have flown incredible distances to be here. The early birds start arriving by August end, most are here by November. Till the following April, they will relax here, eating and sleeping, the cares of parenthood, the trauma of courting, the territorial battles forgotten. Their homelands in Eastern Europe, Siberia and Central Asia will be inhospitably iced over, no place for a bird. Here at Sultanpur, the sun is like warm butter, the feeding good, the company congenial.

On the shimmering lawns outside the wildlife office complex, a female Redstart greets you with her usual diffidence, bowing and shivering her auburn tail. A prosperous White wagtail struts past like a landlord collecting rent. The grove of *kikar* trees near the complex is full of mysterious bird movements and calls. A pair of Whitebrowed fantail flycatchers can sometimes be seen at the edge of this grove, launching dizzy sallies after insects.



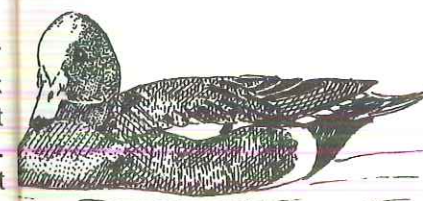
Whitebrowed Fantail Flycatcher

More common are the Lesser whitethroats who arrive in the first week of September and who will "tch-tch" at you disapprovingly all through winter. They are small off-white birds, with light grey caps. Occasionally you may come across what appears to be an oversize version of the Lesser whitethroat, with a black instead of grey cap. This is the Orphean warbler. Plain wren warblers, straw-brown and dangly-tailed, hop energetically in and out of the tall grasses, emitting truncated electric bell calls and being kept company by the more rusty Paddyfield warblers. Redbreasted flycatchers contemplate you solemnly from their perches, their eyes round and grave. The males have frosty orange flares on their breasts, while the females are dusky all over.

It is worth scanning the canopy thoroughly here, for you may be rewarded by a close view of the Verditer flycatcher, meditating on a branch, or a Sparrowhawk glaring fiercely at you out of stern sunflower eyes.

As you leave the wooded area and turn on to the *bund* leading to the *jheel*, the anticipation grows and the excitement rises. For winter is after all, waterfowl season. Perhaps the most common of the visiting ducks to Sultanpur are the Shovellers. They share their time between foraging comically (bottoms up and twirling slowly!) and dozing, heads tucked into wings, their blazing white breasts thrust out aggressively. More circumspect and shy are the Common teals, crouched tight in the grass, hiding behind their silky green masks. Pintails in silver and chocolate are as debonair and dandy as confidence

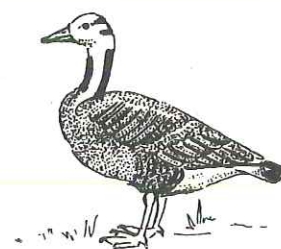
tricksters. But actually it is the Mallards that play the tricks on you. They arrive every September, looking like anything but Mallards. No distinguishing emerald heads, no kiss-curls on the bottoms, just confusing blotches of black, brown and white. With just one tell-tale feature – their flameblue specula (wing-patches). Within a month or so, they get rid of their eclipse plumage (plumage during the change from breeding plumage to non-breeding winter plumage in waterbirds) and are more conventionally clad, their emerald heads and bright yellow bills visible from quite far away.



Wigeon

For sheer jazz, its hard to beat the Wigeon. Silver-grey and white, their auburn heads streaked with creamy-gold on the forehead, they look like punks with terrific taste! If the water is deep enough you may be fortunate to spot a flock of Common pochards, in ginger and gunmetal, keeping quietly to themselves. (They are diving ducks and need deep water to find food, unlike the others who are dabblers and who need only to 'upend' in the water). The Spotbills, who are the resident hosts, maintain a low profile at this time, so that you can admire their non-resident guests.

Conversation from the sky makes you look up: a party of coppery gold Brahminy ducks is flying in, their steadily beating wings bottle-green, black and white. Conscious of their 'high-caste' status and querulous by nature, they keep away from the masses and graze in the shallows.



Barheaded Goose

Of the two species of geese, the Barheaded and Greylag, the former is more commonly seen. With charcoal-streaked heads, silver-grey bodies and papaya-coloured bills and feet, the birds make an arresting sight as they fly in and angle down for a perfect landing. Usually they are quite shy and will swim away diffidently if they think you are too curious. On some occasions however, they stick to their ground.

In a good year there may be over 6000 ducks on the *jheel* and they are kept in good flight trim all through the winter by the Marsh harriers, birds of prey which arrive by the first week of September. Female Marsh harrier looks like a



bandit. Rather like a Pariah kite, she wears caramel shoulder-patches and a matching bandit's hood over her head. The male is a slinky dandy, slimmer in build, finished in rust and silver.

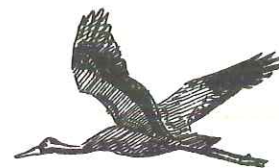


MARSH  
HARRIER

These bandit birds will beat low and slow over the massed ducks panicking them into the sky with a tumultuous roar of wings. Other raptors found here (usually perched on lookout posts on the islands) include the Lesser spotted eagle (dark chocolate with icing-sugar spotting on the wings), the hefty Tawny eagle and the ruffle-headed Crested serpent eagle, as well as buzzards in an array of confusing browns usually seen flying, from below.

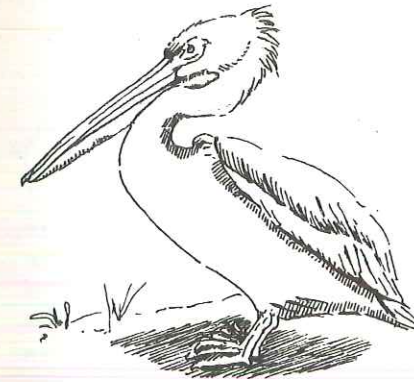
Certainly the most evocative of the winter visitors are the cranes. The tall, gangly Common cranes are not too impressive while on the ground and certainly the Demoiselles, with their lace veils, flouncy tails and black frills are more chic. But the Common cranes calling from the sky evoke strange primordial sentiments. The birds usually spend the day away from the *jheel* in the neighbouring fields where the feeding is good.

Then as the sky warms to gold and peach, the first flocks begin to arrive like bombers back from a mission. Strung across the sky in long wavy chains, or flying steadily in classical 'V' formation, they circle and touch down, one by one, calling out to each other. The squadrons keep arriving till well after dark, the latecomers being greeted noisily by those already down and resting. They will roost here for the night and be off again at dawn. It is worth spending the night at Sultanpur during this period just to witness the spectacle. The resident crane of Sultanpur is the Sarus crane whose calls can be heard by visitors almost round the year.



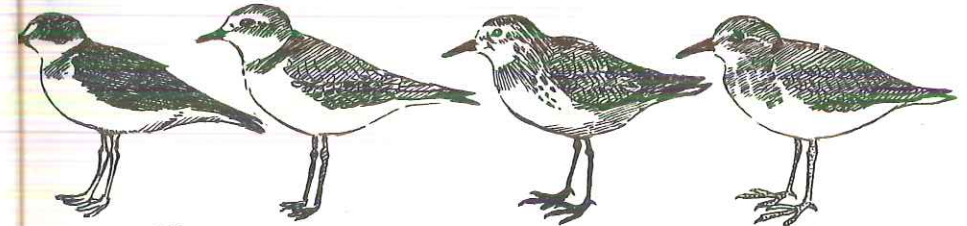
Common Crane

The clowns of the season are the big Rosy pelicans. They will huddle on an island like a group of conspirators, eyes twinkling mischievously, bills like huge yellow shopping bags. For all their slapstick appearance they float as lightly as corks and smugly as the unsinkable. By midmorning they will begin to lumber into the sky and once hitched on to a thermal, will circle the heavens slowly, lazily and with grand nonchalance. Sadly, their appearances at Sultanpur are



becoming rarer, and their numbers fewer. Nowadays it is an occasion if you see them at all – something memorable. Perhaps the receding water level of the *jheel* and the increasing human disturbance have made them feel vulnerable and seek shelter elsewhere. But if the monsoon has been kind to Sultanpur and food is plenty, they are here in hundreds.

If you want to be confused, confounded and hopelessly outnumbered, watch the small waders. They are the teeming masses of splotted, salt and pepper birds that scuttle and dart along the muddy banks, well equipped for this with long legs, long splayed toes and stiletto bills. As a group, they seem to love Sultanpur's mud and ooze for as many as 25 species have been recorded here. Also, some of them are present in hordes of five thousand strong. Visiting waders invariably, come dressed dreadfully - in browns, greys and whites, all looking terribly alike, the better to befuddle you with. (This being their vacation season, they see no reason to dress up for it!)



Little ringed Plover

Lesser sand Plover

Little stint

Temminck's stint

Green sandpipers are dark as seaweed, have white rumps and barred black tails, and will fly away from you with a plaintive whistle. Spotted or Wood sandpipers are mercifully, profusely spotted and have pale yellow legs. Blacktailed godwits have bills like Pinocchio's nose after a couple of fibs. Both the Redshank and its darker cousin the Dusky redshank, stand tall and alert on reedy red legs. Ruff and reeve assemble by the thousand: they huddle on the muddy banks in large clotted masses; they riffle over the water like dried leaves being blown by the wind. And when they flickerfly in formation (as do several other species of waders) they are breathtaking. Perhaps 2000 or more of them will suddenly fly up and off from the water, flying swiftly and tightly bunched. They will bank and swirl, low and fast, flickering silver and brown as they speed by. At close range they are unimpressive: peppery brown with 'V' shaped scallops on the back. If they are still around by mid, or end, April, some of the males (the ruffs) turn a

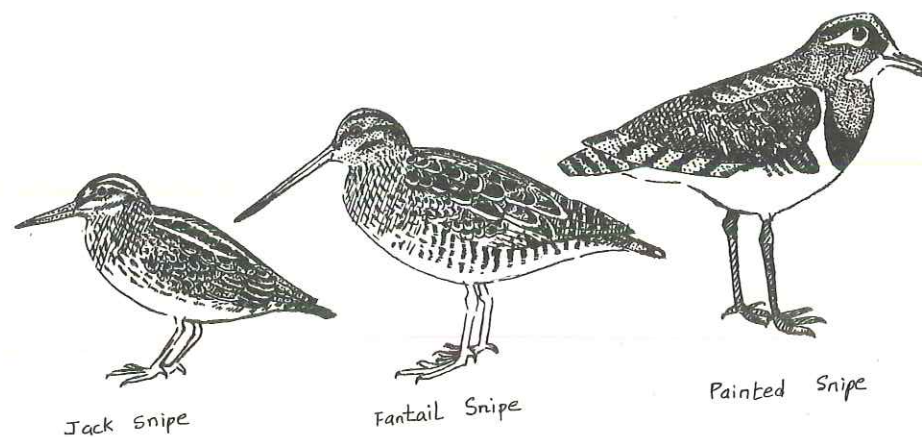


deep angry ginger as they begin to dress up for the coming breeding season. And once, they were even seen indulging in their strange ritual of territorial hopscotch.

Each male would stake out a territory of one square metre of prime real estate for himself – usually comprising of muddy squelch. This would be guarded zealously against the expansionist plans of neighbours. Any bird trying to increase its landholding, would be charged at by the offended party. Head lowered, hackles raised, the outraged bird would run stiffly towards the interloper, driving him back. Another encroacher would seize this opportunity to conduct a raid from the opposite border. With several hundred birds doing this simultaneously, one gets the weird impression that the bank itself was moving back and forth.

Relatively easy to recognise are the Whitetailed lapwings. They stand straight and tall as guardsmen, on slender yellow legs, and are neatly clad in khaki and brown. Their wings are edged with black and white and they flare their pleated white tails behind them when they fly. The gorgeous bronze green European lapwing, or Peewit, is perhaps the most richly dressed amongst the plovers. With its jaunty black crest, dark eye make-up and metallic green plumage it stands out like a proper aristocrat. Not surprisingly, only a few can be seen.

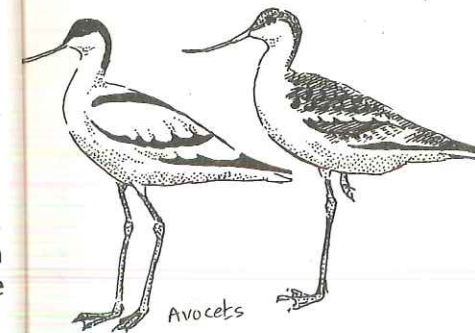
Amongst the smaller waders (or clods of earth that suddenly become animated) are the Little ringed and Kentish plovers. Both are tubby little birds, somewhat reminiscent of rather leggy doves, the former with a smart black collar, the latter with a caramel coloured nape. The snipe, striped in ginger and ochre, will crouch low in the marshy grass and explode with a muffled 'bouff' from virtually underfoot, and then zing away zig-zag as you recover from the fright.



Jack Snipe

Fantail Snipe

Painted Snipe



Avocets

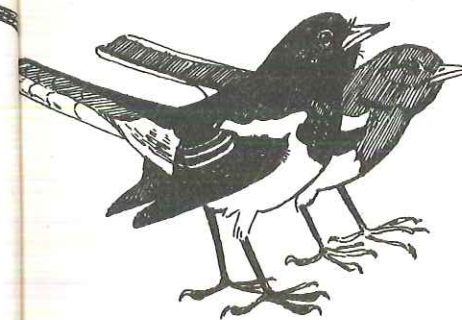
Most chic of the waders however are the lanky, blue-legged Avocets. They have sleek and graceful lines and look as though they have flown straight out of the pages of a fashion magazine. Snow-white and ebony, they wade about tummy-deep, sweeping their slim upcurving bills from side to side. They can be seen in Sultanpur nearly all the year through, save perhaps a couple of terrible months in summer (June and July, usually).

At this marvellous time of year however, each month is special. October, with its rain-washed skies, fresh grasses and cool mornings; November, nippy and intoxicating as the best champagne; December, freezing at dawn and honey-mellow at midday; January, fog-bound and cloud-white; and February, crisp, fragrant and full of early morning birdsong.

### Spring ! : February and March

By March, the relaxed lazy air has gone. No longer do the ducks doze all day, heads tucked into wings. Now they are restless and every now and then swarm into the sky. They sort themselves into small flocks and set off on short test flights, checking their flight trim for the long journey ahead. By the end of April they will have all gone, leaving the *jheel* suddenly forlorn and silent.

But already, other events are well under way, events that will lighten the sorrow of parting. For spring has come and it is time to be courting. Spring at Sultanpur, is in fact all about birdsong. As you drive in, you are greeted by the musical flutings of the Black drongoes as they knife about like sleek ebony gangsters.



Magpie-robins

The Magpie-robins, immacu-lately tuxedoed as always, give their concerts for the flute from appropriately exposed perches. They are distinct from the smaller, tubbier, Pied bushchats, who are also dressed in black and white (but not quite so smartly), and whose song though also pleasant, is more informal and less distinctive. Now, the usually silent Chiff-chaffs, and the disapproving Lesser white-throats can also be heard chirping optimistically in the canopy.



The wren-warblers (the Indian wren-warbler, the Ashy-wren warbler and the Tailor bird) of course, are leaping up and down from the grasses and bushtops, shouting at the tops of their voices. Their musical skill is nil, their 'joie de vivre', unbeatable.



Now even the deadly Grey shrikes are turning romantic. Normally they have harsh voices perfectly in keeping with their executioner looks. But now they are singing from the tops of the fearsomely armed acacias, in soft musical notes, making you stop and stare in astonishment. Green bee-eaters, sleek and svelte, in shades of leaf and grass, spiral high on taut triangular wings, trilling musically. Even the bristly muscular Roller jays are leaping upwards, emitting guttural whoops of delight.

The loveliest singers however, are the Small skylarks. Step out onto the springy turf of the *jheel* bed, look up and listen. From three or four invisible points in the sky you will hear their joyful melody emerge. Look hard and you will spot a tiny fluttering form drawing wavy circles in the sky like a moth circling the sun. For endless minutes this incredible performance will go on before the little bird falls silent and drops to earth again. And before you can shout "encore!" it will rise from the tussocks once more. Close up, Small skylarks are nondescript little things, sparrow-coloured and patterned, and sporting just a hint of a crest.



Small skylark

Alas, not all larks are always so blithe and happy. On one occasion we encountered a tiny tragedy -- a Small skylark that had lost its voice. It spiralled up into the sky and fluttered in a disconsolate circle, but not a note of music did it emit. All too soon it fluttered back to earth and vanished amidst the tussocks.

If you scan the coir-matting lake before home-making and chick-rearing. Now, drongoes, shrikes, parakeets, doves, mynas, thoroughly, you may spot the Crested larks, munias and others get on with the stern business of life. Tireless under too, a tall, gangly bird wearing a ludicrous blowtorch sun, devoted parents fly innumerable sorties, snapping up the crest. Crested larks appear to suffer from leaping grasshoppers and glittering dragonflies. Orioles flute invisibly from the vertigo for they give their modest conceals canopy, their clear "pee-lo-lo" calls unmistakable. Despite their striking and lovely from the tops of clods and rocks. looks they keep out of sight.

Spring may also bring forth some special surprises. A dusky, Grey-winged blackbird that may show itself suddenly and then be gone; a large sand-gold Short-eared owl (a passage migrant) sitting amidst the tussocks and eyeing you balefully; or the delicate flint-marked Kestrel, all sandstone and granite, hovering low over the ground, talons extended.

### Summer : April to June







Blackwinged nest on jheel bed

By May, the Blackwinged stilts and the Redwattled lapwings will have turned completely neurotic. Both species make paranoid parents. The lapwings, with their shrill and hysterical "Did you do it? Did you do it?!" calls treat you like a chick molester. The stilts aim deadly bombing dives at your head if you are anywhere near their nests. The lapwings lay their lovely stone-coloured eggs on the baking earth, so well camouflaged you can tread on them by mistake. The Black winged stilts construct untidy *jheel* side residences out of flags of straw and reeds. It is best to give both these species a wide berth at this time, for both your peace of mind and theirs.

May and June are the incandescent months. An hour after dawn, the sun is breathing hell-fire, the *loo* smarting like blasts from a furnace. The *kikar* groves at this time play host to an influx of Red turtle doves, neatly clad in pink sandstone and ash. They hide in every tree, and call out in voices rather deep for doves. For a long time we were puzzled by their annual three-month sojourn in the Park and wondered why they came here in this torrid time. Now we know that they come here to nest for we have seen them sitting on their flimsy platform thatches, solemn and vacant-eyed as ever.

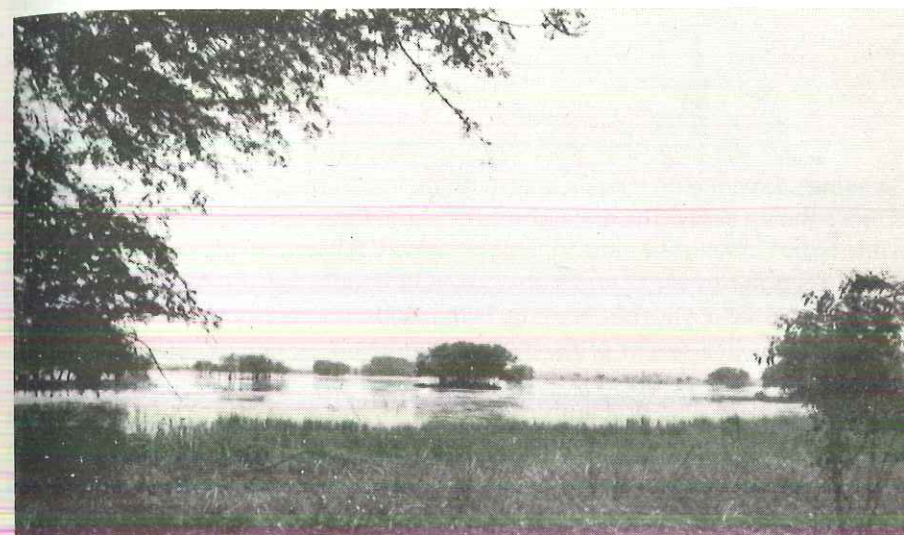
Out on the cracked-up *jheel* bed, the Green bee-eaters bunch against the stinging *loo*, vibrant symbols of life against the crazy mosaic of clay. Sleek and effete terns patrol the shrinking pools of water for the luckless fish now confined to smaller and smaller areas.

Water is now being tirelessly pumped up by the throbbing tubewells. Little ringed and Kentish plovers trundle about the shallows, bursting with self importance. Spotbill ducks float serenely in the water, and Spoonbills fish tirelessly all morning, immaculate as ever. As you stagger towards the shade of the *kikar* woodland, a Long-billed vulture circles hopefully around you. You shake your fist at it and plod on manfully, your eyes popping with the heat.



Blackwing stilt nestling

## The Monsoons : July to September



These are the most important months in Sultanpur's year. For the amount of rain that falls during this period will determine the extent and level of the *jheel* during the coming migratory season. At any rate, the Park undergoes a marvellous transformation. By end-June, the *jheel* bed lies vast and hard-baked, covered with a coarse stubble of dried grass and a chalky mosaic of splintered clay. The sky looks ill, an evil jaundiced yellow, veiled with desert dust. One month later – if the monsoon has kept its promise – all this will have changed.

Now the *jheel* bed is covered with a soft silken pelt of silver-green. The hard cracked mosaic has turned into a rich, dark squelch which grabs you by the ankles and sucks you down. The sky is heavy and low, the colour of gunmetal. The dark column of approaching thunderheads sends your spirits soaring. The breeze is cool and skittish and the redolence of wet leaves, mud and grass, quite delicious.

The water will have started to collect in shallow spread-sheets that looks like patches of fallen sky. Now the happiest sound you hear is the wild, exultant call of the Pied crested cuckoo out courting. With its wild eyes and raffish crest, it looks like a rogue with a roving eye (complete with coat-tails!).

The Streaked fantail warblers are now at their most visible. They are little caramel birds, streaked with dark chocolate chip flakes. They fly high, their scissor snip calls harmonising with their dipping flight.



Indian  
wren  
warbler

Once we discovered the neatly woven nest of an Indian wren-warbler in a fountain of high grass. It was still under construction and the owner-builder treated us with the suspicion reserved for a demolition squad from the municipality.

This too is the time to look out for fledglings. Juvenile Pied bushchats, with their stumpy tails and baby faces, keep close to their parents. The fuzzy chicks of Black-winged stilts freeze on command while baby Dabchicks climb on to their parents' backs and ride to safety. Drongos, fledglings, their eyes large and anxious, will huddle together and wait for their parents who are always out hunting. Huge mobs of screeching juvenile Bank Swallows and Pied mynas gather on the grass, looking and behaving like football hooligans.

Once (in 1987), a tiny fluffy Spotbill chick was seen and two years later we came across a nest on the ground with four white eggs in it. And then, over two consecutive years a pair of stately Sarus set up home and brought up a fledgling in each year.

It is the time for good hunting too. Amidst these emerald surroundings, the egrets stalk, dressed to kill in angelic finery. The Cattle egrets are liberally painted with light henna; the Pond herons are wearing maroon silk and the Little, Median and Large egrets are turned out in white lace. Formally suited Grey herons will stare at each other balefully, croaking in annoyance. Whitebreasted kingfishers crackle and spark like short-circuits, always dazzling.



cattle egret (br)



Pond heron

July and August are the months to look out for Collared and Small Indian pratincoles. The pratincole is a dark brown bird which looks like a cross between a swallow and a dove, with long slim swallow wings and a dove-like face. A swarm will squat in the mud and when alarmed, will whisk off in a flurry of russet, each bird flashing a white tail light behind it.

If the grass and the reeds had been allowed to grow (in the recent past, the park authorities have cleared some good reed areas and allowed certain others to dry up), a colony of Striated weaver birds would have arrived, and can be seen busily weaving nests amongst the tall reeds. Darkly streaked, they have heads that are bright and yellow as fog lamps.

As yet, Sultanpur has been able to attract only a small nesting colony of Painted storks which bred here for the first time in 1993. Large heronries at Bharatpur seem far-fetched here simply because there is not enough nesting space, food and shelter to go around (baby birds have colossal appetites).

By the end of September, the skies will be blue once more. Already the Marsh harriers and the Mallards will have flown in. The new migratory season will have got under way.



Painted Stork nesting on islands



## SULTANPUR SPECIALITIES

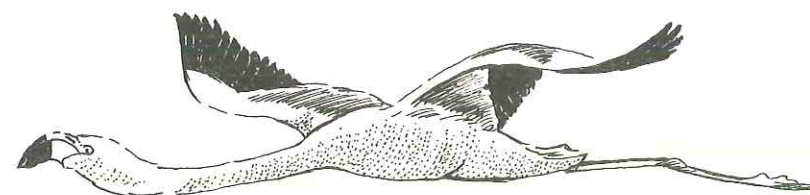
### The Flamingo

They come and go as it suits them, be it winter, summer or the monsoons. They are, perhaps Sultanpur's most glamorous avian visitors - tall and delicate as ballerinas, stiff and haughty as soldiers on parade, and always a visual delight.

A flamingo flypast is also magnificent. Necks and spindly legs outstretched, short wings beating slowly, pink and black, they look like aircraft from a nonsense world. They bank delicately over the *jheel* and touch down with a feather-light grace.

During one memorable period at the end of the eighties, there arrived a magnificent flock of five hundred or so, that stayed on for almost throughout the year. Now, neither are such big flocks seen nor are their appearances as frequent as before. The exact reasons for this are not known. The appearance of large flock of flamingos came after a severe four year drought especially in Gujarat. Protected and established wetlands, inspite of their small size, may be important refuges for animals in emergencies. They can provide food and shelter for the displaced populations of a particular region.

During the last three to four years, a small flock of a dozen or so birds, are being seen intermittently in the *jheel*, for short periods of time.

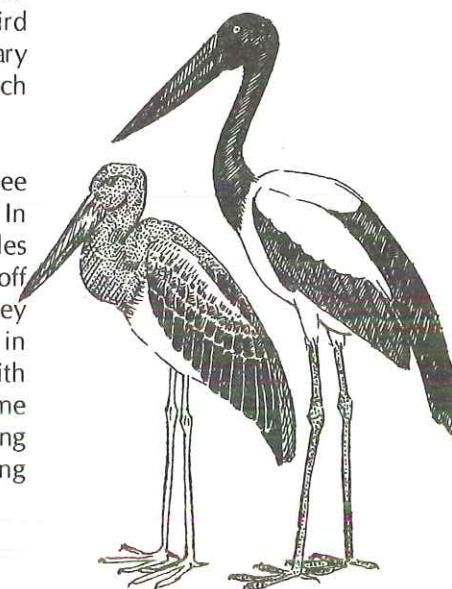


Flamingo in flight

### The Blacknecked Stork

Tall, implacable and finished in inky blue-black and white, this fearsomely armed bird has become a rarity all over India. It is solitary by nature and even pairs stay away from each other as much as possible.

At Sultanpur, it was always possible to see one or two of them at any time of the year. In 1990, we saw a pair of birds with two juveniles in tow. This small family was seen on and off after that. We never discovered where they had nested but it is possible that they did so in the precincts of the Park. Another family with three juveniles again made the *jheel* its home during the winter of 1993-94, regularly coming in to roost at dusk and feeding till late morning before flying off again.



### The Sarus Crane

These tall elegant birds are regularly seen in Sultanpur and a pair or two nest here almost every year. They choose a suitable spot, usually on a small island in the middle of the *jheel* and build their nests on the ground. They are watchful and wary parents, often seen taking their chicks for a stroll with an adult leading and the second parent bringing up the rear.





### The Osprey

The osprey, an attractive fish-feeding raptor, is often seen in the *jheel* during winters of good monsoon years, when water levels are high in the *jheel* and fish are abundant. However, it disappears as suddenly from the *jheel* as it appears, due to the very specific water conditions that it requires for its fishing.



### The Sirkeer Cuckoo

This bird was seen once during the early years of the count in thick bushes growing under the *kikar* trees along the paths. Human activity has increased manifold and almost all these bushes have been cleared now, so that this rarely seen species may never visit again.



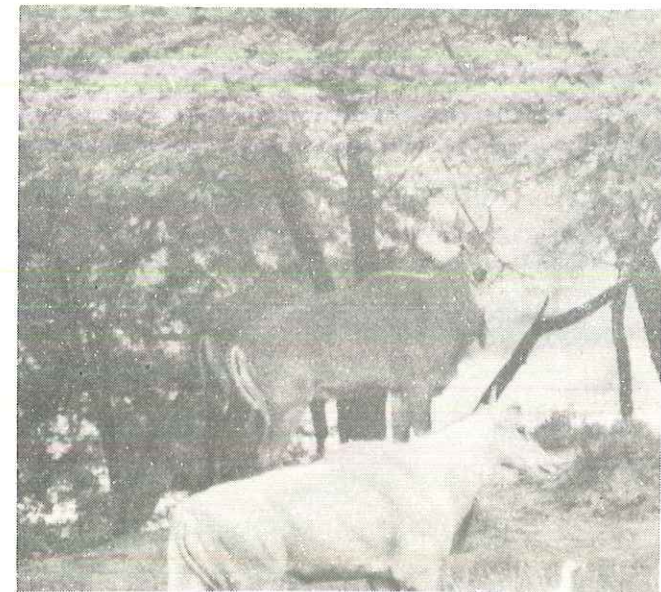
## OTHER ANIMALS

### Mammals

A number of mammals have been reported from Sultanpur National Park, though some have been seen very infrequently. The most obvious and commonly seen mammal in the Park is the *Nilgai* or blue bull of which there is a large population. The latest population estimate is 90-100 animals.

The herds of *Nilgais* are in fact so prominent that they often get more attention from visitors than the birds. For their part, the *Nilgais* avoid people as much as possible and keep their distance. This however, does not deter them from leaping over the sanctuary fence and grazing in the surrounding fields. Owing to their lucky resemblance to cows they are unharmed and get away with the crop damage they often cause. The size and composition of a herd seen in Sultanpur varies – sometimes there may be a mixed group (including juveniles and calves) of more than 50; sometimes the sexes are sternly segregated and the juveniles are seen with their mothers; and sometimes you don't see them at all.

Most of the time the *Nilgais* spend their time peacefully, browsing on the thorny *kikar* trees or resting in their shade. They often wade out to the islands in the middle of the *jheel*, in order to get as far away as possible from the tourists tramping all over the place (and mistakenly referring to them as Sambar and Chital!). Apart from the *Acacia* leaves, the *Nilgai* also help themselves to the leaves of saplings (specially *neem*) planted by the park authorities and these have to be protected with thorny tree guards if they are to survive.





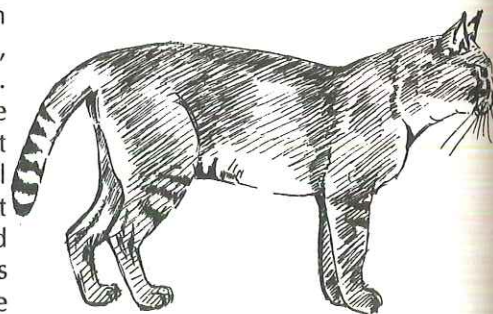
Normally quite peaceable, the bulls take to battle once the breeding season begins, for now the power structure has to be established. These battles are fierce and sometimes, bloody. The two combatants will heave and shove at each other, head against horn, often going down on their knees with the effort. Those inconspicuous horns become deadly knives as the animals thud around each other, butting and grunting. In one such battle, one of the warriors received a great tear in his haunch before deciding he had had enough. The victor pounded behind him, head and tail held high in arrogant victory, a bloody patch gleaming on his neck.

While Nilgais do not have any specific breeding season, it appears that they generally have their calves just before the monsoons. At Sultanpur, with few predators around (the stray dogs and maybe a rogue lorry on the road just outside the park) they appear to be doing rather well (See box on *Nilgais*). They are certainly an added attraction and often provide a bewildered birdwatcher with some welcome relief!

Apart from the Blue bull, there are a variety of smaller mammals to be seen. These include the Common Indian hare, the Jackal, the Indian fox, the Jungle cat, the Grey musk shrew and the Small Indian mongoose. These mammals inhabit the more well-vegetated and hidden places of the Park and you have to be lucky (and very quiet) to meet with them.

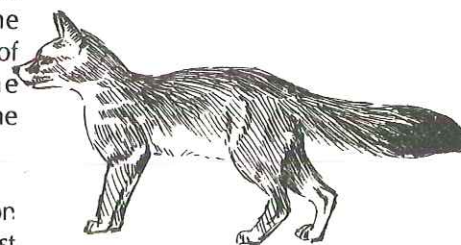
The hare is more frequently seen than the other small mammals. You may on occasion, startle a hare crouched amongst the tussocks of grass and send it lolling over the open ground, ears refulgent in the sunlight and white tail prominent in the dry ambience of the grasslands. On an early winter morning one may see it quietly nibbling away at the new shoots of grass which appear on the dry *jheel* bed or hopping carefully across the forest path, as you watch unnoticed.

The Jungle cat is one of the more elusive carnivores inhabiting Sultanpur. We had heard that a cat had a litter in the precincts of the park a few years ago, but this report could not be confirmed. However, a jungle cat was spotted in late 1993 in the tree-covered grassland west of the *jheel*. The presence of this animal has been confirmed by the finding of scat regularly, mostly on the bund surrounding the *jheel*. The foot imprints of the cat have been seen more than once on the damp *jheel* bed.



Jungle Cat

Reports of the Indian fox have been unconfirmed. It was seen only in 1986 and not subsequently. Jackals have been sighted a few times during counts. We do not know if it was seen commonly before 1986, but repeated cutting of the grasses which form its habitat and conversion of more and more land for agriculture in the surrounding areas has perhaps resulted in the decline of this animal.



Indian Fox

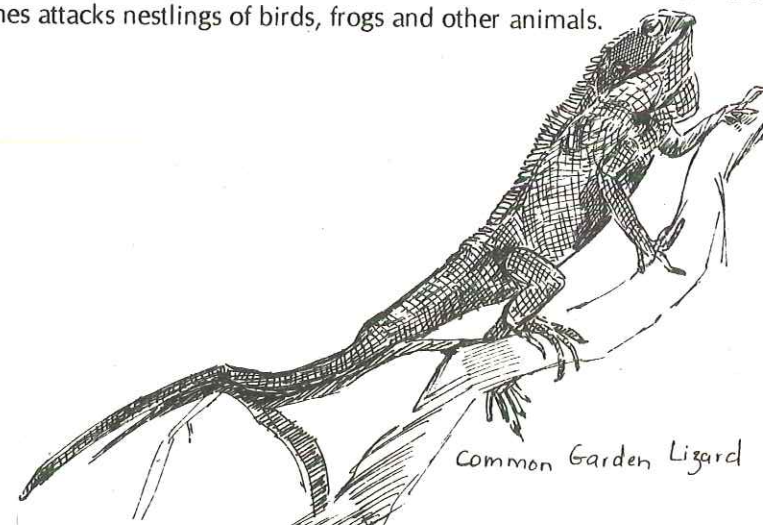
The Five-striped palm squirrel is quite common in the tree-covered drier areas close to the Forest Office but has not been seen in the Park, farther away from humans. A dead Grey musk shrew has once been seen in one of the grassland patches. The rufous-coloured small Indian mongoose is seen often near drying ponds of water where stranded fish are available for the killing. A dramatic encounter between a mongoose and Indian cobra was witnessed once.

These signs of smaller mammals which have been seen off and on in the National Park, point to the fact that if the woodlands and grasslands around the *jheel* are protected, their populations could be revived from the present low levels. As of now, their continued existence in the Park seems doomed due to repeated and indiscriminate grasscutting in the drier areas of the Park.

## Reptiles

Among the reptiles to be found in the grassy, drier areas are the snakes - the Russell's earth boa, the Indian cobra and the Ratsnake.

The Bloodsucker or Common garden lizard, coloured red and charcoal black, can usually be seen on tree trunks early in the morning. It is also seen in the semi-dry areas of the marsh where there is much insect food to be had. This lizard also sometimes attacks nestlings of birds, frogs and other animals.



Common Garden Lizard

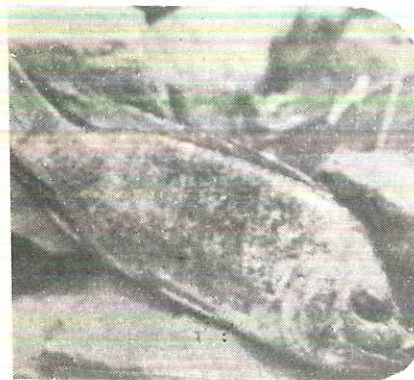


Monitor lizards have been often spotted in the grasslands. They are very well camouflaged among the grasses and thick undergrowth, and one sees them only when one bumps into them by accident. They are shy creatures and will lumber off, disappearing into the vegetation with ease. A species of gecko was seen in one of the abandoned tubewell chambers.

The *jheel* itself is home to a few reptiles. The Indian flapshell turtle is occasionally seen swimming in the *jheel*. With the onset of winter, when the *jheel* becomes quite dry, it hibernates just below the ground surface. This species was more common before the fencing of the Park was done and the practice of using tubewell water to replenish the *jheel* was begun. The dredging of the *jheel* bed in the dry season to remove silt may have contributed to its general decline.

The Checkered keelback watersnake is quite common in and around the *jheel* area. It swims in water to catch frogs, fish and tadpoles which it feeds on. One can see it slithering across the *bund* from one pond to another.

### Fish



Only one species of fish has been recorded in the *jheel* so far, *rohu Catla catla*. This is an introduced species (brought from Calcutta) and the Park management replenishes the *jheel* with fingerlings every monsoon. There may have earlier been a natural fish-renewal system in the *jheel* through the overflow of waters from surrounding nullahs and fields but it seems to have become largely defunct. Rohu breeds plentifully after the monsoon providing an abundant source of food for fish-eating birds such the storks and herons. Exotic fish introduction has somewhat changed the general composition of bird species. From dabbling and wading birds to fish eating birds. However, with the drying up of the water and gorging by egrets, herons, storks and pelicans, the fish disappear by February-March.

### Amphibians

Two species of frogs and a single species of toad have been noticed in the park so far. After the rains, the water-filled portions of the *jheel* can be seen teeming with the Indian skipper frog *Rana cyanophlyctis* which come in various sizes ranging from two centimetres to almost ten. These are dark green and spotted and take to the water no sooner than one spots them. One can often see them half-suspended near the surface of the water pretending to be invisible or resting on the accomodating waterlily leaves.

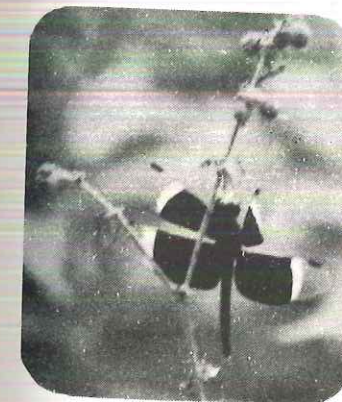
With the advent of the dry season, these entertaining creatures gradually reduce in number as the water level goes down. They, along with the flapshell turtle, hibernate in the mud at the bottom of drying pools of water, only to reappear punctually next monsoon.

There is another tiny frog (unidentified species) associated with the wetland, which is sometimes as small as a centimetre. It is plain chocolate brown with no markings to speak of and prefers the slightly moist *jheel* bed which is freshly dried. When spotted, it will immediately disappear into one of the many cracks which form in the *jheel* bed around October. (Appendix 4)



### Insects: Added Charm Of The Wetland

No visitor to Sultanpur during the monsoon can fail to notice the colourful and diverse array of insects which abound in the vegetation surrounding the *jheel*, especially the grasslands and water edges. There are dragonflies, wasps, beetles, bugs, flies, butterflies and moths present in bewildering variety. (Appendix-5)



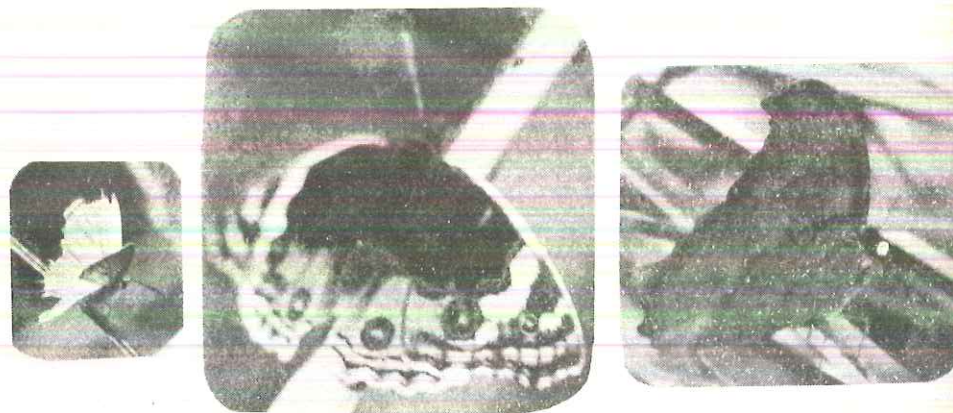
The most noticeable insects in Sultanpur are the dragonflies, damselflies and butterflies. Dragonflies are predaceous insects which capture prey on the wing, mostly smaller insects. They are fast-flying and their astonishing patterns and colours are seen only when they rest on blades of grass and on shrubby vegetation present around the *jheel*. One would be lucky to see two dragonflies flying 'in tandem', when they are mating. The life history of these creatures is intertwined with the health of wetlands as their nymphs (immature stages) are aquatic and need a certain type of water to live and develop in. There are several species in the Park and need to be identified by entomologists.

Damselflies are more fragile-looking and smaller than dragonflies in general. They differ from them in having equal sized pairs of wings (dragonflies' hind pair of wings is much smaller than the front pair). Also when at rest, their wings are folded on their backs unlike dragonflies which spread them out. They are seen closer to the water surface, weakly flying among the sedges and other emergent vegetation close to the edge of the *jheel*, using their outsize eyes to locate quarry.



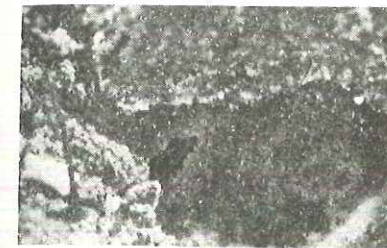
The weedy vegetation around the *jheel*, on the paths and *bunds* and in the grasslands play host, literally, to a kaleidoscope of butterflies. In the woody groves, you surprise lemony groups of emigrants and Grass yellows and occasionally, a drab-looking Evening brown or a Bushbrown which skulk in the undergrowth. In others, large swarms of tiny moths rise up from beneath your feet. Lime pansies also confine themselves to the shaded parts of the grasslands while the flighty Yellow pansy, Danaid eggfly and Blue pansy flaunt their dramatic colours in open sunny areas on the *bunds*, in the grasslands and the *jheel* edge. The Pioneer butterfly and the Small Salmon arab are the other species seen in open areas.

The Lime swallowtail and the Common mormon are most common amongst the swallowtail family, while the Common rose may surprise you with its striking black and red pattern in the *kikar* groves sometimes. Several species of tiny Blue butterflies and fast-flying Skippers, including the larger Chocolate-brown coon, can be seen along the *bunds* and groves.



The Plain tiger butterfly is among the commoner species and is seen in swarms after the monsoon flitting along the *bunds* and mud-puddling on *Nilgai* dung. This is a way of utilising the abundant minerals present in animal waste. This butterfly is seen in the Park throughout the year, numbers gradually reducing with the onset of winter.

Ladybird beetles and Blister beetles are common after the monsoon. The Blister beetle, almost an inch long, is warningly striped in red and black, as it can exude a liquid capable of producing a blister on your skin. It is often seen on *Ipomoea* flowers, methodically chewing up the petals. Harmless ladybird beetles dressed in combinations of yellow, red and black are found among all kinds of vegetation. Plainer ground beetles in sombre black scurry across the dry *bunds* to seek refuge in grasses and herbs.

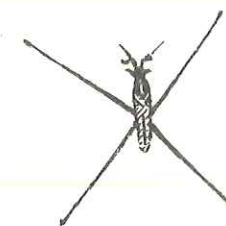


A bounty of insect life attracts a number of bird species which sally in flight to catch flying insects. Drongos, swallows, sand martins and bee-eaters are among these while rollers and shrikes concentrate on the insect life on the ground. Leaf warblers and wren-warblers find their insect prey among the flowers and leaves of the trees and grasses.

The *jheel* itself is home to a fascinating insect community adapted to the rigours of an aquatic existence. This includes the immature stages of insects such as nymphs of dragonflies and damselflies, grubs of beetles and larvae of mosquitoes, among others. In the monsoon, you can see the moulted skins of the dragonfly nymphs which drag themselves up from their homes in the dreary depths of the *jheel* bed, and change from hideous submarine monstrosities to gossamer-winged beauties.

These insect larvae form part of the intricate recycling process of nature for they convert the detritus (dead animal and plant matter) into living tissue by feeding on it incessantly.

Then there are adult beetles and bugs which are adapted to living in water. The water-skater (actually a type of bug) scurries smoothly across the water surface, quick to grab any passing prey. In the water column, watermites and diving beetles swim around, feeding on microscopic bits of vegetation and decaying matter. They carry their air-bubbles with them down into the water, often coming up to the surface to replenish them. Wriggling tadpoles swim past looking for vegetation to nibble on.



Water-skater

This bonanza of insect life, both aquatic and terrestrial, is short-lived for soon the water of the *jheel* will dry up and winter with its intolerably low temperatures will slow down the processes of reproduction and development that need more hospitable conditions. And then these creatures will go into an extended period of dormancy in the form of egg-cases or pupae to be activated only by the life-giving rains of July.



## WILL THE *JHEEL* SURVIVE?

### Management Aspects

During the course of our visits to Sultanpur *jheel*, several human induced problems have been noticed that are affecting the ecosystem of this Park, some changing the original lake character, and others threatening to diminish its value as a wetland reserve. The following account summarises these problems. We also indicate the possible steps that could be taken to overcome these problems. In some cases, we have indicated more detailed studies that need to be done to decide suitable management strategies.

### Hydrological And Water Quality Problems

#### Shrinkage of the *jheel*:

There are indications that the Sultanpur *jheel* has been slowly shrinking in size. These are the drying up of several waterbodies outside the *jheel* that were connected with the *jheel* but were not included in the National Park area. One major outlet in the northern part of the *jheel* has dried up and inlets (on the eastern boundary of the *jheel*) seem to be in the process of doing so. Comparisons of satellite pictures taken of the *jheel* and the present give the same impression. According to Peter Jackson (of the World Conservation Union - IUCN) who has been visiting the *jheel* since the late-nineteen fifties, the amount of water present in the *jheel* at a given time of the year, has definitely reduced.

The reasons for this phenomenon are not completely clear but some possible reasons are the reduction in the water table and in the amount of water flowing into the *jheel* from the surrounding areas. Roads have been constructed, ditches, fencing and small houses now dot the adjoining area.

The water table has receded over the years due to changing patterns and intensification of, agricultural activities in the catchment of the *jheel*. Extensive groundwater extraction for irrigation and growing of *Eucalyptus* spp. in the catchment area could be some of these practices.

The concrete-based fencing around the Park and the *bund* around the *jheel* may also be reducing the inflow of water into the *jheel*. Old courses of the inlets have new obstructions.

These impressions have to be confirmed by more detailed and scientific studies on the water situation of the *jheel* which would quantify the actual runoff of water from the catchment, rainfall inputs, evapotranspiration and other aspects over the years.

The possibility of fetching water through a canal to the *jheel* could be explored. If this is done, the pattern of input of water in time should closely resemble the natural rainfall inputs so that the *jheel* retains its seasonality. Also the number of openings in the surrounding *bund* and brick fencing base have to be increased in order to maximise inflow of water into the *jheel* in the wet season. Ditches along the road and similar obstructions could be smoothened to allow gradual inflow of rain water into the lake areas.

The periphery of the *jheel* should be kept free from such human activities which could endanger maximum collection and retention of rainwater in the lake bed. Growing of water-intensive crops and building of farmhouses by city-dwellers etc., if found to add to the problem could be controlled under the Environment Protection Act.

#### Salinisation:

In an effort to provide water and maintain a lake in the dry season, the Park management has bored several tubewells which can go upto the depth of 300 feet. The previous tubewells reached a depth of approximately 60 feet but the water table has receded and made it necessary to install the new ones. These are operated whenever possible and mostly feed the northern portion of the *jheel*.

Pilot surveys by Kalpavriksh on the water quality of the *jheel* have revealed a very high level of salinity in the northern portions, which is substantially higher than the natural salinity of waterbodies in the area and waterlogged parts in the south-western end of the lake. This is because of the highly saline tubewell water as compared to the rain water which used to collect in this area before. Now there is a marked increase in salinity, of these portions of the *jheel* which are replenished by tubewell water, as the months pass by.

Drastic change in water quality seemed to have affected the vegetation and possibly the invertebrates which survived in the *jheel*. A certain type of grass now seem to dominate areas of the lake bed, where tube well water is contained for the longest time. Aquatic plants and animals are adapted to particular levels of salt and mineral concentration. They are sensitive to changes in the same, which would then affect the species and the numbers of birds using the *jheel* for feeding, in the long run. Detailed studies need to be carried out to investigate the change in the types of invertebrate and plant food available for waterbirds in areas of natural collection of water as compared to areas of the lake where tubewell water is added. Also cumulative increase in salinity over the years may have to be monitored.



### Grass-Cutting From Jheel Bed And Surrounding Areas.

#### Woodlands:



The bed of the *jheel* and the surrounding scrub forests have recently turned into broadly two types of grasslands: one wetland marsh and the other dryland grassy patch in wooded areas and open scrub land areas. Before the area was fenced in the late 1980s, livestock from the neighbouring villages were able to graze inside the notified sanctuary area. This activity kept the grasses very low and after the monsoon when water collected in the depression the lake bed was converted into a vast open waterbody. Where ever brave grasses and sedges grew more than a few inches in height, they were quickly grazed away. After declaration of the sanctuary as a park and fencing, the Park started looking different - more dense and green than before. Some large waders like the Sarus crane started nesting in the safety of vegetation. Neighbouring villagers after a gap of one or two years started moving into the Park to cut grasses. Grasses and reeds are harvested continuously (mainly from August to May) by the villagers of Sultanpur, Chandu and Sadhrana who make their way into the Park through cut fences. How unplanned and indiscriminate grasscutting in all seasons is affecting the Park ecology has not been studied, though it does fall foul of the Wildlife Protection Act.

Some evident impacts are the destruction of the habitats for reptiles, mammals, insects and birds both in the drylands and in the *jheel* bed. Disturbance of the

marsh-nesting birds during the monsoon and post-monsoon period and ground-breeding birds in the summer is all too apparent. The breeding of these birds may be affected due to this disturbance.

Scientific studies have to be carried out on the exact impacts of grasscutting throughout the year, both on waterbirds and terrestrial mammals, reptiles and birds. Perhaps grass and sedges growing in the area which were underwater during the months - November to February, could be cut very close to the ground. Cutting close to the ground is to emulate the old grazing done here. This could perhaps maintain a wider open waterbody, and also protect the dryland scrub and wooded areas of the Park (see map). This action would help revive the populations of several small mammals which seem doomed as of now, as well as provide the same sort of habitat most birds were used to earlier. Comparative study of changes brought about in the park's flora and Fauna should be done which could provide useful guidelines for future management of the Park.

Inside the *jheel*-bed, however, reed and grass harvesting may be slowing down the inevitable process of 'succession' from a *jheel* to a sedge fen and then to a woodland. In the natural process, one plant community prepares the ground for another, different community which gradually can take over. It happens initially because of enriching of the *jheel* bed with decomposed plant and animal matter causing the *jheel* to turn into a swamp. This in turn progresses to a wet meadow and then to a woodland, over time.

Thus a certain amount of grasscutting may be necessary and advisable to replace grazing which was allowed before. When such decisions are made after careful thought and research, we would be doing greater justice to the ecology of the Park. In case grass and sedge cutting has to be continued, it has to be done in such a way that the breeding habitats of the marsh and reed nesting birds are not disturbed in the breeding season. Research needs to be done on feeding and breeding ecology of all bird species reported in the Park.

#### Alternative fodder:

In order to protect the Park ecosystem from damage, there will be a certain amount of loss of livestock grazing facility to the local people. When the land was sold by the villagers to the government all rights were extinguished. It seems not much thought was given to curtailing of grazing then, and villagers continued to use the land as before. After the fencing was completed, cattle grazing stopped, a year or two later some villagers took to grass cutting inside the Park. There is obviously a need now for extra fodder, after the *kharif* crop residues have been consumed by cattle. Perhaps the management could initiate a dialogue with the surrounding villagers to develop pasture lands in a participatory manner.

Waterlogged, saline and barren areas around the Park which are currently



not being used for cultivation can be developed as alternative sources for fodder. These areas need to be accurately marked out and their ownership status ascertained. Based on these and other socio-economic studies, an awareness programme has to be designed and carried out in the villages around Sultanpur to encourage the villagers to participate in the development of alternate sources of fodder.

Possibility of using the revenues from tourism in the Park to aid the development of fodder banks in the surrounding villages should be investigated.

### **Tourism And Awareness Aspects**

The *jheel* is a very popular recreation spot for urban tourists from Delhi and Haryana. In 1988-89, more than 24,000 tourists visited the Park, while in 1989-90, the number went up to more than 36,000. Almost always, crowds throng the Park on Sundays and other holidays. Large number of visitors on a single day can intensify pressure on the park and its staff. The revenue earned from tourist tickets in 1991 was Rs. 32,252 and in 1993, this went up to Rs. 33,899.

However this magnitude of tourism may not be healthy for the Park ecosystem as it is not being done with wildlife viewing in mind. Most visitors come here for a picnic. They find ways to disobey all rules and the Park's meagre staff finds it difficult to enforce the same.

Uncontrolled tourism in the Park is causing tremendous disturbance to the Park's flora and fauna. Large noisy groups of tourists have been seen throwing stones at the birds, walking into the *jheel* bed to shoo away and hoot at the birds, playing loud music, plucking waterlilies and other flowers and picnicking inside the Park. After a crowded Sunday one can see large amounts of rubbish around the *jheel* including plastic bags, broken glass bottles, paper wrappers and boxes. On days such as Republic Day, the number of visitors goes up to 1000, a number which is uncontrollable by the present staff employed here.

There are several types of tourists coming to the National Park. There are the overnight visitors and picnickers whose main destination is the tourist resort run by Haryana Tourism Development Corporation and who come to the *jheel* just because it is close by. This type of tourist form the largest group and has been found to cause the most damage to the Park.

However, there are also serious birdwatchers who come in groups and individually. There are groups of school and college students who wish to know more about the wetland and its birds but are unable to do so due to lack of proper guidance and literature. There are others who come simply to get some fresh air and to stay out of the city for a day. Thus in addition to the noisy and disturbing

tourists there is a large section of the tourist population that would benefit from enhancement of the educational facilities.

Educational facilities that might inculcate some awareness amongst the visitors and wildlife personnel who could provide proper guidance and control the activities of the visitors are almost non-existent. The nature interpretation centre has been designed in an unimaginative way and the Park has only one guide to help tourists identify the birds. Binoculars, well positioned hides etc. are not available for the use of tourists.

### **Possible solutions include:**

- Strict implementation of the existing rules controlling the activities inside the Park.
- Employment of more guards who can keep a check on tourists' activities along with their other duties, especially on holidays
- Provision of interesting and nominally priced literature and bird guides that tourists can use to understand the ecosystem better.
- Employment of trained guides (from local villages) who can help birdwatchers and tourists and also keep a check on their activities inside the Park.
- Keeping control on allowing food items inside and keeping a strict check on the kinds of things taken by visitors into the Park.
- Improving the Nature Interpretation Centre to make it more educational, informative and scientific, not by just pictures of some birds but by displaying and explaining the workings of a wetland in general and Sultanpur in particular. An NGO with experience in environmental education and ecological research should be given the contract to improve the whole Centre.
- Creating the position of Honorary Wildlife Wardens from among serious birdwatchers and nature lovers who visit the park frequently and who could help with the smooth functioning of the Park from time to time.
- To shift the main tourism thrust to an area across the road where the Forest Department own a small patch of land. There staying and eating areas as well as other recreational facilities could be developed.
- Provision of effective and closely monitored watchtowers with spot scopes and hides which would enable birdwatchers and photographers to see the place better without unnecessarily disturbing the birds and other animals of the Park.
- Increase the entrance fee.



### ***Other Disturbances***

#### **Gaps in Fencing:**

The wire fence around the Park is constantly cut by local villagers for gaining access to the fodder grasses inside the Park. This is an illegal activity in a National Park. In some places there are regular pathways from which villagers walk in and out of the Park. These activities can be stopped in the long term only by convincing the local villagers about the importance of conserving places such as these, and providing viable alternate to be taken instead.

#### **Stray Dogs:**

Stray dogs have possibly become predators to the wildlife inside the Park. They have been seen chasing *Nilgais* and their fawns. They could possibly be causing damage to few breeding birds, reptiles and the smaller mammals. The dogs enter the Park through the gaps in the wire fencing which are made by local villagers for creating easier access for themselves.

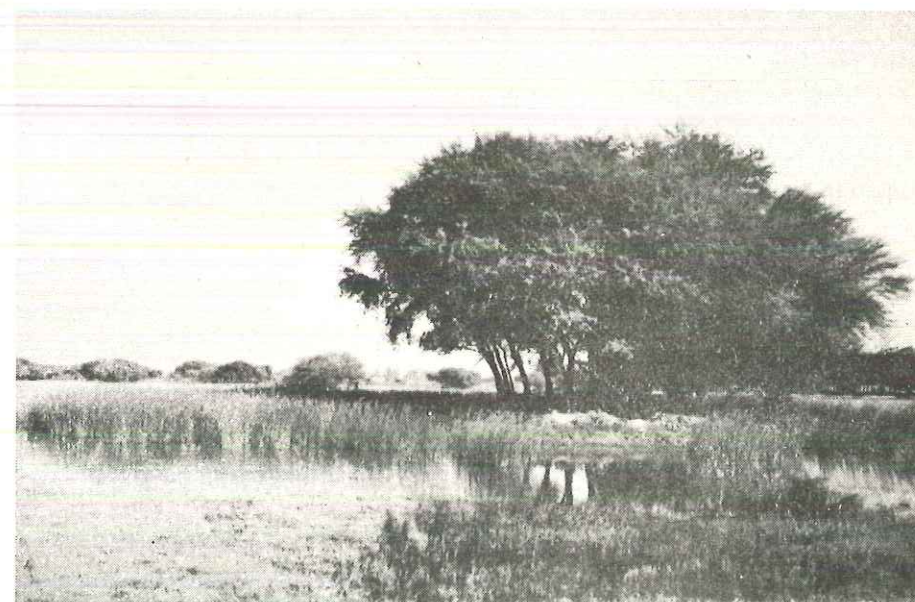
#### **Tree cutting:**

Increasingly, tree-cutting incidents are being reported in the Park. Tree-cutters disturb the animals and birds, especially the waterfowl, besides being an illegal activity. At times the staff has used cut branches of trees to protect saplings.

### ***Desired improvements in management***

- Identify the immediate catchment of the lake. Enforce either Environment Protection Act or notify the area as sanctuary to make sure that the run off water is not blocked by obstructive structures, from entering the lake.
- Implementation of the existing rules for preventing uncontrolled grass-cutting and damaging tourism requires more motivation and incentive among the staff than is present. This could be encouraged by monetary incentives, educational workshops and training programs. Such programmes would help them understand their duties and responsibilities better.
- Regular monitoring of climatic and biological features should be undertaken within the National Park. For this adequate monetary and scientific assistance should be provided to the park authorities. This would include the designing of monitoring systems which are simple enough to be used by the Park authorities and training workshops for forest staff.

- The Park should be assigned more trained staff and personnel for effective patrolling and other monitoring activities such as the recording of climatic data and undertaking bird censuses.
- The surrounding villages could be involved in conserving and managing the Park by providing them some alternate biomass, encouraging their participation in protection, management, and monitoring exercises, conducting educational programmes, initiating a regular dialogue between them and Park officials and searching for alternatives to unsustainable practices of ground water withdrawal, pesticide and fertiliser use etc.





## PLANTS OF SULTANPUR NATIONAL PARK

Name of Taxa	Common/Local Name	Habit	Water Tolerance
<b>ALGAE</b>			
<i>Chara</i> sp.	Common Stonewort	FA	AQ
<i>Nostoc</i> sp.	—	FA	AQ
<i>Spirogyra</i> sp.	—	FA	AQ
<b>BRYOPHYTA (MOSES &amp; LIVERWORTS)</b>			
<i>Riccia discolor</i>	Liverwort	TL	TR
<b>PTERIDOPHYTA (FERNS)</b>			
<i>Marsilea minuta</i>	—	H	AM
<i>Marsilea quadrifolia</i>	—	H	AM
<b>ANGIOSPERMS (FLOWERING PLANTS)</b>			
<b>ACANTHACEAE</b>			
<i>Peristrophe paniculata</i>	Missi	H	TR
<i>Rungia repens</i>	Kharmor	H	TR
<b>AIZOACEAE</b>			
<i>Trianthema portulacastrum</i>	Santhi	H	TR
<b>ALISMACEAE</b>			
<i>Sagittaria guayanensis</i>	—	H	AM
<b>AMARANTHACEAE</b>			
<i>Achyranthes aspera</i>	Puthkunda, Lapa	H	TR
<i>Alternanthera pungens</i>	—	H	TR
<i>Alternanthera sessilis</i>	—	H	TR
<i>Amaranthus spinosus</i>	—	H	TR
<i>Amaranthus viridis</i>	Chulai	H	TR
<i>Celosia argentea</i>	Chilmil, Sarwari	H	TR
<b>ARECACEAE</b>			
<i>Phoenix</i> sp.	Khajoor	T	TR
<b>ASCLEPIADACEAE</b>			
<i>Calotropis procera</i>	Ak, Madar	S	TR

1	2	3	4
<b>ASTERACEAE</b>			
<i>Ageratum conyzoides</i>	Nilam, Tambakoo	H	TR
<i>Artemisia scoparia</i>	Bano, Barna	H	TR
<i>Blumea obliqua</i>	—		
<i>Cirsium arvense</i>	Kateli	H	TR
<i>Cotula hemisphaerica</i>	—	H	AM
<i>Eclipta prostrata</i>	—	H	TR
<i>Gnaphalium polycaulon</i>	—	H	TR
<i>Grangea madraspatana</i>	—	H	TR
<i>Inula indica</i>	—	H	TR
<i>Laggera aurita</i>	—	H	TR
<i>Launea nudicaulis</i>	Gobi	H	TR
<i>Pluchea lanceolata</i>	Rukhri, Bai Surai	H	TR
<i>Pulicaria crispa</i>	—	H	TR
<i>Sonchus arvensis</i>	Pili Dudhi	H	TR
<i>Sonchus asper</i>	—	H	TR
<i>Tridax procumbens</i>	—	H	TR
<i>Vernonia cineraria</i>	Sahadevi	H	TR
<i>Xanthium strumarium</i>	Bhangra	H	TR
<b>BIGNONIACEAE</b>			
<i>Kigelia pinnata</i>	—	T	TR
<b>BORAGINACEAE</b>			
<i>Heliotropium curassavicum</i>	—	H	TR
<b>BRASSICACEAE</b>			
<i>Coronopus didymus</i>	Jungli Hala	H	TR
<i>Sisymbrium irio</i>	—	H	TR
<b>CAESALPINIACEAE</b>			
<i>Cassia</i> sp.	—	T	TR
<i>Delonix regia</i>	Gulmohar	T	TR
<b>CARYOPHYLLACEAE</b>			
<i>Polycaulon prostratum</i>	—	H	TR
<i>Spergula arvensis</i>	—	H	TR
<b>CERATOPHYLLACEAE</b>			
<i>Ceratophyllum demersum</i>	Sivara	H	AQ



1	2	3	4
CHENOPODIACEAE			
<i>Chenopodium album</i>	Bathua	H	TR
<i>Chenopodium murale</i>	Khartua	H	TR
<i>Suaeda maritima</i>	Bui, Lonia	H	TR
CLEOMACEAE			
<i>Cleome viscosa</i>	Hulhul	H	TR
COMMELINACEAE			
<i>Commelina forskalli</i>	Kankawwa	H	TR
CONVOLVULACEAE			
<i>Convolvulus pluricaulis</i>		H	TR
<i>Cressa cretica</i>	Nunki	H	TR
<i>Ipomoea optica</i>	—	H	TR
<i>Ipomoea reptans</i>	Sarnali	H	AM
CUCURBITACEAE			
<i>Melothria maderaspatana</i>	Ankh phod ki bel	H	TR
CYPERACEAE			
<i>Cyperus corymbosus</i>	—	H	AM
<i>Cyperus difformis</i>	—	H	AM
<i>Cyperus rotundus</i>	Motha	H	AM
<i>Scirpus articulatus</i>	—		
<i>Scirpus littoralis</i>	—	H	AM
<i>Scirpus tuberosus</i>	—	H	AM
EHRETIACEAE			
<i>Ehretia sp.</i>	—	T	TR
FUMARIACEAE			
<i>Fumaria indica</i>	Papra, Kilano	H	TR
EUPHORBIACEAE			
<i>Croton bonplandianum</i>	Kala Bhangra	H	TR
<i>Euphorbia hirta</i>	Dudhi, Dudhibel	H	TR
<i>Euphorbia orbiculata</i>	—	H	AM
<i>Phyllanthus fraternus</i>	Dhadhan, Mokh	H	TR
HYDROCHARITACEAE			
<i>Vallisneria spiralis</i>	Sawala	H	AQ

1	2	3	4
LEMNACEAE			
<i>Lemna sp.</i>	Chowpatti	H	AQ
LYTHRACEAE			
<i>Ammannia baccifera</i>	Dadmari	H	AM
<i>Ammannia senegalensis</i>	—	H	AM
MALVACEAE			
<i>Malva parviflora</i>	—	H	TR
<i>Malvastrum coromandelianum</i>	Kharenti	H	TR
<i>Urena sp.</i>	—	H	TR
MELIACEAE			
<i>Azadirachta indica</i>	Neem	T	TR
MIMOSACEAE			
<i>Acacia auriculiformis</i>	—	T	TR
<i>Acacia leucophloea</i>	Ronj, Safed Kikar	T	TR
<i>Acacia nilotica</i>	Kikar	T	TR
<i>Albizia lebbek</i>	Siras	T	TR
<i>Pithecellobium dulce</i>	Jungle Jalebi	S	TR
<i>Prosopis juliflora</i>	Kabuli Kikar	T	TR
MOLLUGINACEAE			
<i>Glinus lotoides</i>	Gandibudi	H	TR
MORACEAE			
<i>Ficus religiosa</i>	Pipal	T	TR
<i>Ficus sp.</i>	—	T	TR
MORINGACEAE			
<i>Moringa oleifera</i>	Sainjna	T	TR
MYRTACEAE			
<i>Callistemon lanceolata</i>	Bottlebrush	T	TR
<i>Syzygium cumini</i>	Jamun	T	TR
NYCTAGINACEAE			
<i>Boerhavia diffusa</i>	Sant	H	TR
NYMPHAEACEAE			
<i>Nymphaea stellata</i>	Chota kamal	H	AQ
<i>Nymphaea nouchali</i>	Kamal kakri	H	AQ



1	2	3	4
<b>ONAGRACEAE</b>			
<i>Ludwigia</i> sp.	—	H	TR
<b>PAPAVERACEAE</b>			
<i>Argemone mexicana</i>	Untkatera, kateli	H	TR
<b>PAPILIONACEAE / FABACEAE</b>			
<i>Aeschynomene indica</i>	Didhan	H	AM
<i>Alhagi pseudalhagi</i>	Jawasa	S	TR
<i>Erythrina indica</i>	Mandara	T	TR
<i>Indigofera astragalina</i>	—	H	TR
<i>Medicago indica</i>	—	H	TR
<i>Tephrosia villosa</i>	—	H	TR
<i>Trigonella incisa</i>	—	H	TR
<b>PEDALIACEAE</b>			
<i>Pedaliium murex</i> ***	Vilayati gokhru	S	TR
<b>POACEAE</b>			
<i>Brachiaria ramosa</i>	Makraghas	H	TR
<i>Cenchrus biflorus</i>	Chirchitta, Anjan	H	TR
<i>Cenchrus ciliaris</i>	Anjan	H	TR
<i>Cynodon dactylon</i>	Doob	H	AM
<i>Dactyloctenium aegyptium</i>	Makra	H	TR
<i>Desmostachya bipinnata</i> ***	Daab, Dhab	H	TR
<i>Dichanthium annulatum</i>	Zarga, Barlu	H	TR
<i>Digitaria adscendens</i>	Takri	H	TR
<i>Echinochloa colonum</i>	Dhelari	H	TR
<i>Echinochloa crus-galli</i>	Sama, Samak	H	AM
<i>Eragrostis</i> spp.	—	H	TR
<i>Erianthus ravennae</i>	Moonj, Sarkara	H	AM
<i>Panicum paludosum</i>	—	H	TR
<i>Paspalum paspalodes</i>	—	H	AM
<i>Phalaris minor</i>	Chiriya- bajra	H	TR
<i>Phragmites maxima</i>	Narkul	H	AQ
<i>Polypogon monspeliensis</i>	—	H	TR
<i>Sporobolus diander</i>	Chiriya ka dana	H	TR
<i>Vetiveria zizanioides</i>	Gandar, Jhaund	H	TR
<b>POLYGONACEAE</b>			
<i>Polygonum procumbens</i>	—	H	TR
<i>Rumex dentatus</i>	Jungli Palak	H	TR

1	2	3	4
<b>PONTEDERACEAE</b>			
<i>Monochoria vaginalis</i>	Piazi, Panighas	H	AM
<b>PROTEACEAE</b>			
<i>Grevillea robusta</i>	Silver Oak	T	TR
<b>PRIMULACEAE</b>			
<i>Anagallis arvensis</i>	Dharati-Dhak	H	TR
<b>RHAMNACEAE</b>			
<i>Ziziphus nummularia</i>	Beri, Jhad	S	TR
<b>SOLANACEAE</b>			
<i>Physalis minima</i>	Papotan	H	TR
<i>Solanum surattense</i>	Berkateli	H	TR
<b>SPHENOCLEACEAE</b>			
<i>Sphenoclea zeylanica</i> ***	Mirchi, Phulanghas	H	AM
<b>TAMARICACEAE</b>			
<i>Tamarix dioica</i>	Jhau	T	AM
<b>VERBENACEAE</b>			
<i>Lantana camara</i>	—	S	TR
var. <i>aculeata</i>	—	—	—
<i>Phyla nodiflora</i>	Jalbuti	H	TR
<b>ZYGOPHYLLACEAE</b>			
<i>Tribulus terrestris</i>	Bhankdi	H	TR

## KEY:

H: HERB

S: SHRUB

T: TREE

AQ: AQUATIC

AM: AMPHIBIOUS

FA: FILAMENTOUS ALGA

TL: THALLOID LIVERWORT

TR: TERRESTRIAL

\*\*\*: MONOTYPIC SPECIES



NOTE: This list has been compiled using data from field work carried out by Kalpavriksh as a part of its Project entitled 'Designing Management Strategies for the Conservation of the Avifauna of Sultanpur Jheel and Preparation of Educational Material on its Ecology, Flora and Fauna.'



## Appendix 2

## MAMMALS OF SULTANPUR NATIONAL PARK

Common Name	Latin Name	Habitat
LAGOMORPH Common Indian Hare (Hindi: Khargosh)	<i>Lepus nigricollis ruficaudatus</i>	dry lake bed, scrub & grasslands
RODENT Five-striped Palm Squirrel (Hindi: Gilheri)	<i>Funambulus pennanti</i>	planted groves
INSECTIVORE Grey Musk Shrew (Hindi: Chhuchhundar)	<i>Suncus murinus</i>	scrub, grasslands
CARNIVORES Jungle Cat (Hindi: Jungli Billi)	<i>Felis chaus</i>	scrub, grasslands
Small Indian Mongoose (Hindi: Nevla)	<i>Herpestes auropunctatus</i>	scrub, grasslands
Indian Fox ** (Hindi: Lomri)	<i>Vulpes bengalensis</i>	
Jackal ** (Hindi: Gidharh)	<i>Canis aureus</i>	
UNGULATES Nilgai (Hindi: Nilgai)	<i>Boselaphus tragocamelus</i>	scrub, grasslands

KEY: \*\*: Seen only once or twice; present status unknown



Grey Musk Shrew



## BIRDS OF SULTANPUR NATIONAL PARK

H. No.	Common Name	Scientific Name	Hindi Name	Status	Comments
1	2	3	4	5	6
Family Podicipedidae: Grebes					
5	Grebe, Little	Tachybaptus srulicollis	Pandubi	R	M
Family Pelecanidae: Pelicans					
20	Pelican, Rosy	Pelecanus onocrotalus	Hawasil	M	M
21	Pelican, Spottedbilled	Pelecanus philippensis	Hawasil	M	L?
22	also seen (Dalmatian Pelican)				***
Family Phalacrocoracidae: Cormorant					
26	Cormorant	Phalacrocorax carbo	Bada pankawwa	R	
27	Shag, Indian	Phalacrocorax fuscicollis	Jalkawwa	R	
28	Cormorant, Little	Phalacrocorax niger	Chhota pankawwa	R	
29	Darter	Anhinga anhinga	Panwa	R	
Family Ardeidae: Herons & Egrets					
36	Heron, Grey	Ardea cinerea	Anjan	R	
37	Heron, Purple	Ardea purpurea	Lal anjan	R	
38	Heron, Little Green	Ardeola striatus	Kancha Bagla	R	**



1	2	3	4	5	6
42	Heron, Pond	Ardeola grayii	Andha bagla	R	
44	Egret, Cattle	Bubulcus ibis	Cai bagla	R	
46	Egret, Large	Ardea alba	Bada bagla	R	
47	Egret, Smaller	Egretta intermedia	Karchi bagla	R	
49	Egret, Little	Egretta garzetta	Kilchia bagla	R	
50	Heron, Reef	Egretta gularis	Kala Bagla	V	*
52	Heron, Night	Nycticorax nycticorax	Kwaak	R	***
59	Bittern	Botaurus stellaris	Nir goug	V/M ?	***
Family Ciconiidae: Storks					
60	Stork, Painted	Mycteria leucocephala	Dhok	R	***
61	Stork, Openbill	Anastomus oscitans	Gungla	R	***
62	Stork, Whitenecked	Ciconia episcopus	Laglag	R	
63	White stork	Ciconia ciconia	Ugli, dhak, gybar,	M	*
65	Stork, Black	Ciconia nigra	Bada Retwa	V	UNC REP
			Surmal		
66	Stork, Blacknecked	Ephippiorhynchus asiaticus	Loharjang	R	
68	Adjutant, Lesser	Leptoptilos javanicus	Chota garur	R	UNC REP
Family Threskiornithidae: Ibises, Spoonbill					
69	Ibis, White	Threskiornis aethiopica	Safed buzza	R	
70	Ibis, Black	Pseudibis papillosa	Kala buzza	R	
71	Ibis, Glossy	Plegadis falcinellus	Chota buzza	M	**
72	Spoonbill	Platalea leucorodia	Chamcha baza	RM	

1	2	3	4	5	6
Family Phoenicopteridae: Flamingos					
73	Flamingo	Phoenicopterus roseus	Rajhans	M	
74	Flamingo, Lesser	Phoeniconaias minor	Chota rajhans	V	
Family Anatidae: Ducks, geese and swans					
79	Goose, Whitefronted	Anser albifrons		M	*
81	Goose, Grey Lag	Anser anser	Hans	M	
82	Goose, Barheaded	Anser indicus	Kareeye hans	M	
88	Teal, Lesser Whistling	Dendrocygna javanica	Seechi	RM	
90	Shelduck, Ruddy	Tadorna ferruginea	Chakwa	M	
91	Shelduck, Common	Tadorna tadorna	Shah chakwa	M	*
93	Pintail	Anas acuta	Seenkh par	M	
94	Teal, Common	Anas crecca	Choti murgabi	M	
97	Duck, Spotbill	Anas poecilorhyncha	Gugral	R	
100	Mallard	Anas platyrhynchos	Nilsir	M	
101	Gadwall	Anas strepera	Beykhur	M	
102	Teal, Falcated	Anas falcata	Kala sinkhur	M	*
103	Wigeon	Anas penelope	Chota lalsir	M	
104	Garganey	Anas querquedula	Chaita	M	
105	Shoveller	Anas clypeata	Tidari	M	
107	Pochard, Redcrested	Netta rufina	Lal chonch, Lal sar	M	*
108	Pochard, Common	Aythya ferina	Lal sir	M	
111	Duck, Tufted	Aythya fuligula	Ablak	M	
114	Teal, Cotton	Nettapus coromandelianus	Girria	R	
115	Duck, Comb	Sarkidiornis melanotos	Nukhta	R	



1	2	3	4	5	6
Family Accipitridae:Hawks, Vultures, Eagles etc.					
124	Kite, Blackwinged	Elanus caeruleus	Kapassi	R	
133	Kite, Pariah	Milvus migrans	Cheel	R	
138	Shikra	Accipiter badius	Shikra, Chipka	R	
148	Sparrow-hawk	Accipiter nasius	Basha, Bashin	M	***
153	Buzzard, Longlegged	Buteo rufinus	Chuhamar	M	*
155	Buzzard, Desert	Buteo buteo		V	
156	also seen (Japanese buzzard)				
164	Hawk-eagle, Booted	Hieraaetus pennatus	Baghati	M	UNC REP
168	Eagle, Tawny	Aquila rapax	Okaab	R	
170	Eagle, Greater Spotted	Aquila clanga	Kalijunga	M	
171	Eagle, Lesser Spotted	Aquila pomarina	Pahari teesa	R	UNC REP
175	Eagle, Greyheaded Fishing	Ichthyophaga ichthyaetus	Madhuya	R	UNC REP
182	Vulture, Indian	Longbilled Gyps indicus	Gidh	M	
185	Vulture, Indian Whitebacked	Gyps bengalensis	Gidh	R	
186	Vulture, Egyptian	Neophron percnopterus	Safed gidh	R	
190	Harrier, Pale	Circus macrourus	Girgi mar	M	*
191	Harrier, Montagu's	Circus pygargus		M	
193	Harrier, Marsh	Circus aeruginosus	Safed sira	M	
195	Eagle, Short-toed	Circus gallicus	Kulesir, Saapmar	R	*
203	Osprey	Pandion haliaetus	Machlimar	M	
Family Falconidae:Falcons					
206	Falcon, Lanner	Falco biarmicus	Charg	M	*
221	Kestrel, Lesser	Falco naumanni		M	

1	2	3	4	5	6
Family Phasianidae:Pheasants, Partridges, Quails etc.					
238	Partridge, Black	Francolinus francolinus	Kala teetur	R	
245	Partridge, Grey	Francolinus pondicerianus	Teetur	R	
311	Peafowl, Common	Pavo cristatus	Mor	R	
Family Turnicidae:Bustard-Quails					
313	Bustard-quail, Little	Turnix sylvatica	Dabki		UNC REP
318	Bustard-quail, Common	Turnix suscitator	Gundlu	R	
Family Gruidae:Cranes					
320	Crane, Common	Grus grus	Sarang, Kulang	M	
323	Crane, Sarus	Grus antigone	Sarus	R	
326	Crane, Demoiselle	Anthropoides virgo	Kunj	M	
Family Rallidae:Rails, Coots					
337	Crake, Baillon's	Porzana pusilla	Jhilli	M	UNC REP
343	Waterhen, Whitebreasted	Amurornis phoenicurus	Daul, Dawak	R	
347	Moorhen	Gallinula chloropus	Jal murghi	R	
349	Moorhen, Purple	Porphyrion porphyrio	Kalim	R	
350	Coot	Fulica atra	Dasari	M	
Family Iacaniidae:Jacanas					
358	Jacana, Pheasanttailed	Hydrophasianus chirurgus	Pihuya	R	**



1	2	3	4	5	6
Family <i>Charadriidae</i> : Plovers, Sandpipers, Snipes					
362	Lapwing, Whitetailed	<i>Vanellus leucurus</i>		M	
364	Lapwing	<i>Vanellus vanellus</i>		M	
366	Lapwing, Redwattled	<i>Vanellus indicus</i>	Titoli	R	
378	Plover, Ringed	<i>Charadrius hiaticula</i>		M?	UNC REP
379	Plover, Little Ringed	<i>Charadrius dubius</i>	Merwa, Zirrea	M	
381	Plover, Kentish	<i>Charadrius alexandrinus</i>		M	
384	Plover, Lesser Sand	<i>Charadrius mongolus</i>		M	UNC REP
388	Curlw	<i>Numenius arquata</i>	Bada gulinda	M	
389	Godwit, Blacktailed	<i>Limosa limosa</i>	Jangral	M	
393	Redshank, Dusky	<i>Tringa erythropus</i>	Catni	M	
394	Redshank	<i>Tringa totanus</i>	Chhota batan	M	
395	Sandpiper, Marsh	<i>Tringa stagnatilis</i>		M	
396	Greenshank	<i>Tringa nebularia</i>	Timtima	M	
397	Sandpiper, Green	<i>Tringa ochropus</i>	Chupka	M	
398	Sandpiper, Wood	<i>Tringa glareola</i>	Chupka	M	
401	Sandpiper, Common	<i>Tringa hypoleucos</i>		M	
406	Snipe, Fantail	<i>Gallinago gallinago</i>	Chaha	M	
410	Snipe, Jack	<i>Gallinago minima</i>	Chota chaha	M	
416	Stint, Little	<i>Calidris minima</i>	Chota pankowwa	M	
417	Stint, Temminck's	<i>Calidris temminckii</i>		M	UNC REP
420	Dunlin	<i>Calidris alpina</i>		M	UNC REP
422	Curlw-sandpiper	<i>Calidris testacea</i>		M	
426	Ruff and Reeve	<i>Philomachus pugnax</i>	Bugbad	M	
Family <i>Rostratulidae</i> : The Painted Snipe					
429	Snipe, Painted	<i>Rostratula benghalensis</i>	Raj chaha	R	***

1	2	3	4	5	6
Family <i>Recurvirostridae</i> : Stilts, Avocets					
430	Stilt, Blackwinged	<i>Himantopus himantopus</i>	Gaz paon	R	
432	Avocet	<i>Recurvirostra avosetta</i>	Chaha, Kusiya	M	
Family <i>Burhinidae</i> : Stone-Curlews and Thick-Knees					
436	Curlw, Stone	<i>Burhinus oedicephalus</i>	Karwanak	R	
Family <i>Glareolidae</i> : Coursers, Pratincoles					
440	Courser, Indian	<i>Cursorius coromandelicus</i>	Nukri	R	**
443	Pratincole, Collared	<i>Glareola pratincola</i>		R	
444	Pratincole, Small Indian	<i>Glareola lactea</i>		R	
Family <i>Laridae</i> : Gulls, Terns					
450	Gull, Herring	<i>Larus argentatus</i>	Dhumra	M	
453	Gull, Great Blackheaded	<i>Larus ichthyaetus</i>	Dhumra	M	UNC REP
455	Gull, Blackheaded	<i>Larus ridibundus</i>	Dhumra	M	
458	Tern, Whiskered	<i>Chlidonias hybrida</i>	Ganga cheel	R	
460	Tern, Gullbilled	<i>Gelochelidon nilotica</i>		R	
463	Tern, Indian River	<i>Sterna aurantia</i>		R	
464	Tern, Common	<i>Sterna hirsundo</i>		M	***
470	Tern, Blackbellied	<i>Sterna acuticauda</i>		R	
475	Tern, Little	<i>Sterna albifrons</i>		R	
Family <i>Petrochelidonidae</i> : Sandgrouse					
488	Sandgrouse, Spotted	<i>Pterocles senegallus</i>		M	***



1	2	3	4	5	6
492	Sandgrouse, Painted	Pterocles indicus	Bhat ban	R	**
Family Columbidae:Pigeons, Doves					
503	Pigeon, Green	Treron phoenicoptera	Harial	R	***
517	Pigeon, Blue Rock	Columba livia	Kabutar	R	
534	Dove, Indian Ring	Streptopelia decaocto	Panduk	R	
535	Dove, Red Turtle	Streptopelia tranquebarica	Girvi fakhta	R	
537	Dove, Spotted	Streptopelia chinensis	Chitta fakhta	M	**
541	Dove, Little Brown	Streptopelia senegalensis	Chota fakhta	R	
Family Psittacidae:Parrots					
549	Parakeet, Roseringed	Psittacula krameri	Tota	R	
557	Parakeet, Blossomheaded	Psittacula cyanocephala	Tuia tota	R	
Family Cuculidae:Cuckoos					
570	Cuckoo, Pied Crested	Clamator jacobinus	Papiha, Chatak	M	
573	Hawk-cuckoo, Common	Cuculus varius	Papiha	M	
584	Cuckoo, Indian Plaintive	Cacomantis passerinus		M	
590	Koel	Eudynamis scolopacea	Koel	M	
596	Cuckoo, Sirkeer	Taccocua leschenaultii	Jungli tota	R	
600	Crow-pheasant	Centropus sinensis	Mahoka	R	
Family Strigidae:Owls					
606	Owl, Barn	Tyto alba	Ullu	R	*
650	Owlet, Spotted	Athene brama	Chughad	R	

UNC REP  
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1	2	3	4	5	6
664	Owl, Shorteared	Asio flammeus		M	**
Family Apodidae:Swifts					
703	Swift, House	Apus affinis	Ababeel	R	
Family Alcedinidae:Kingfishers					
719	Kingfisher, Lesser Pied	Ceryle rudis	Kilkila	R	
723	Kingfisher, Common	Alcedo atthis		R	
735	Kingfisher, Whitebreasted	Halcyon smyrnensis	Bada kilkila	R	
Family Meropidae:Bee-eaters					
747	Bee-eater, Bluecheeked	Merops superciliosus	Bada patringa	M	
748	Bee-eater, Bluetailed	Merops philippinus	Bada patringa	M	
750	Bee-eater, Green	Merops orientalis	Patringa	R	
Family Coraciidae:Rollers					
755	Roller, Indian	Coracias benghalensis	Nilkant	R	
Family Upupidae:Hoopoe					
763	Hoopoe	Upupa epops	Hudhud	M	
Family Bucconidae:Hornbills					
767	Hornbill, Common Grey	Tockus birostris	Dhandmar	R	**

UNC REP



1	2	3	4	5	6
Family <i>Capitonidae</i> : Barbets					
792	Barbet, Crimsonbreasted	Megalaima haemacephala	Chota basanta	R	
Family <i>Picidae</i> : Woodpeckers					
796	Wryneck	Jynx torquilla	Cardan eyengtha	M	***
819	Woodpecker, Lesser Goldenbacked	Dinopium benghalense	Kathphora	R	
847	Woodpecker, Yellowfronted Pied	Picoides maharattensis	Kathphora	R	
Family <i>Alaudidae</i> : Larks					
875	Lark, Redwinged Bush	Mirafra erythroptera	Aggia	R	
878	Finch-lark, Ashycrowned	Eremopterix grisea	Diyora, Duri	R	
899	Lark, Crested	Galerida cristata	Chendul	R	
903	Skylark	Alauda arvensis	Bharut	M	
Family <i>Hirundinidae</i> : Swallows					
912	Martin, Plain Sand	Riparia paludicola	Mati ababil	R	
910	Martin, Collared Sand	Riparia riparia		M?	
914	Martin, Dusky Crag	Hirundo concolor	Chatan ababil	R	UNC REP
917	Swallow,	Hirundo rustica	Ababil	M	
921	Swallow, Wiretailed	Hirundo smithii	Leishra	R	
922	Swallow, Indian Cliff	Hirundo fluvicola	Nahar ababil	R	UNC REP
925	Swallow, Redrumped	Hirundo daurica		M	

1	2	3	4	5	6
Family <i>Laniidae</i> : Shrikes					
933	Shrike, Grey	Lanius excubitor	Safed latora	R	
940	Shrike, Baybacked	Lanius vittatus	Lal latora	R	
943	Shrike, Redbacked	Lanius collurio		M	
946	Shrike, Rufousbacked	Lanius schach	Mattiya latora	RM	
Family <i>Oriolidae</i> : Orioles					
953	Oriole, Golden	Oriolus oriolus	Peelak	M	
Family <i>Dicruridae</i> : Drongos					
962	Drongo, Black	Dicrurus adsimilis	Kotwal	R	UNC REP
965	Drongo, Ashy	Dicrurus leucophaeus	Nila kotwal	M	
Family <i>Sturnidae</i> : Mynas, Starlings					
994	Myna, Brahminy	Sturnus pagodarum	Kalasir myna	R	
996	Pastor, Rosy	Sturnus roseus	Tilyer	M	
997	Starling	Sturnus vulgaris	Nakshi tilyer	M	
1002	Myna, Pied	Sturnus contra	Ablak	R	
1006	Myna, Common	Acridotheres tristis	Desi myna	R	
1008	Myna, Bank	Acridotheres ginginianus	Ganga myna	R	
Family <i>Corvidae</i> : Crows, Magpies, Jays					
1032	Tree Pie, Indian	Dendrocitta vagabunda	Mahalat	R	
1049	Crow, House	Corvus splendens	Kowwa	R	
1057	Crow, Jungle	Corvus macrorhynchos	Jungli kowwa	R	



1	2	3	4	5	6
Family <i>Campephagidae</i> : Minivets, Cuckoo-Shrikes					
1069	Shrike, Common Wood	Tephrodornis pondicerianus	Keroula	R	
1085	Minivet, Longtailed	Pericrocotus ethologus		M	*
1091	Minivet, Small	Pericrocotus cinnamomeus	Rajalal	R	
Family <i>Pycnonotidae</i> : Bulbuls					
1119	Bulbul, Redwhiskered	Pycnonotus jocosus	Pahari bulbul	R	
1123	Bulbul, Whitecheeked	Pycnonotus leucogenys	Kushandra	R	
1127	Bulbul, Redvented	Pycnonotus cafer	Bulbul	R	
Family <i>Muscicapidae</i> : Babblers, Flycatcher, Thrushes, Warblers etc.					
1230	Babbler, Yelloweyed	Chrysomma sinense	Bulal chasm	R	**
1254	Babbler, Common	Turdoides caudatus	Dumri, Chilchil	R	
1258	Babbler, Large Grey	Turdoides malcolmi	Bhaina, Sat bhai	R	
1261	Babbler, Jungle	Turdoides striatus	Satbhai	R	*
1403	Flycatcher, Spotted	Muscicapa striata		V	UNC REP
1409	Flycatcher, Rufoustailed	Muscicapa ruficauda		M	
1411	Flycatcher, Redbreasted	Muscicapa parva	Turra	M	*
1445	Flycatcher, Verditer	Muscicapa thalassina		M	*
1448	Flycatcher, Greyheaded	Culicicapa ceylonensis	Zird phutki	M	*
1451	Flycatcher, Whitebrowed Fantail	Rhipidura aureola	Chak dil, Nachan	R	***
1460	Flycatcher, Paradise	Terpsiphone paradisi	Shah bulbul	RM	
1498	Warbler, Streaked Fantail	Cisticola juncidis	Chaski phutki	R	
1503	Wren-warbler, Franklin's	Prinia hodgsonii	Phutki	R	*
1506	Wren-warbler, Rufousfronted	Prinia buchanani		R	

1	2	3	4	5	6
1510	Wren-warbler, Plain	Prinia subflava	Phutki	R	
1515	Wren-warbler, Ashy	Prinia socialis	Phutki	R	
1535	Tailorbird	Orthotomus sutorius	Darzee	R	
1544	Warbler, Streaked Grasshopper	Locustella lanceolata		M	
1550	Warbler, Indian Great Reed	Acrocephalus stentoreus		R	
1562	Warbler, Booted	Hippolais caligata		M	
1565	Warbler, Orphean	Sylvia hortensis		M	
1566	Whitethroat	Sylvia communis		M	
1567	Whitethroat, Lesser	Sylvia curruca		M	
1575	Warbler, Brown Leaf	Phylloscopus collybita		M	
1581	Warbler, Olivaceous Leaf	Phylloscopus griseolus		M	
1590	Warbler, Yellow browed Leaf	Phylloscopus inornatus		M	
1602	Warbler, Dull Green Leaf	Phylloscopus trochiloides		M	
1645	Bluethroat	Erithacus svecicus	Nilkanthi	M	***
1661	Magpie-robin	Copsychus saularis	Dhaiyal	R	
1671	Redstart, Black	Phoenicurus ochruros	Thirthira	M	
1672	also seen (brownbacked subsp.)				
1692	Chat, Brown Rock	Cercomela fusca	Dauma	R	**
1697	Chat, Stone	Saxicola torquata	Kharpidda	M	
1701	Chat, Pied Bush	Saxicola caprata	Kala pidha	R	
1710	Wheatear, Desert	Oenanthe deserti		M	
1712	Chat, Pied	Oenanthe picata		M	
1717	Robin, Indian	Saxicoloides fulicata	Kalchuri	R	UNC REP
1750	Blackbird, Greywinged	Turdus boulboul	Kasturi		*
Family <i>Motacillidae</i> : Pipits, Wagtails					
1852	Pipit, Indian Tree	Anthus hodgsoni	Musa richli	M	**
1858	Pipit, Paddyfield	Anthus novaeseelandiae	Charchari	R	



1	2	3	4	5	6
1861	Pipit, Tawny	Anthus campestris	Chillu	M	
1866	Pipit, Brown Rock	Anthus similis		M	
1875	Wagtail, Greyheaded Yellow	Motacilla flava	Pilkya	M	
1881	Wagtail, Yellowheaded	Motacilla citreola	Pani ka pilkya	M	
1884	Wagtail, Grey	Motacilla caspica	Balkatra	M	
Family <i>Pelecanidae</i> : Pelicans					
1885	Wagtail, White	Motacilla alba	Dhoban	M	
1891	Wagtail, Large Pied	Motacilla maderaspatensis	Khanjan	R	
Family <i>Dicaeidae</i> : Flowerpeckers					
1892	Flowerpecker, Thickbilled	Dicaeum agile		V?	*
Family <i>Nectariniidae</i> : Sunbirds, Spiderhunters					
1917	Sunbird, Purple	Nectarinia asiatica	Shakar khora	R	
Family <i>Zosteropidae</i> : White-eyes					
1933	White-eye	Zosterops palpebrosa	Baboona	R	
Family <i>Ploceidae</i> : Weaver Birds					
1938	Sparrow, House	Passer domesticus	Chirria	R	
1949	Sparrow, Yellowthroated	Petronia xanthocollis	Jungli chirria	R	
1957	Baya	Ploceus philippinus	Baya	R	
1960	Baya, Finn's	Ploceus megarhynchus			UNC REP

1	2	3	4	5	6
1961	Weaver Bird, Blackthroated	Ploceus benghalensis	Sarbo baya	R	**
1962	Weaver Bird, Streaked	Ploceus manyar	Telia baya	R	
1964	Munia, Red or Avadavat	Estrilda amandava	Lal munia	R	
1966	Munia, Whitethroated	Lonchura malabarica	Charakka	R	
1974	Munia, Spotted	Lonchura punctulata	Telia munia	R	
2044	Redheaded Bunting	Emberiza bruniceps	Gandam	M	*

KEY:

R: RESIDENT

M: MIGRANT (WINTER)

L: LOCAL MIGRANT (RESIDENT MIGRANT BIRD)

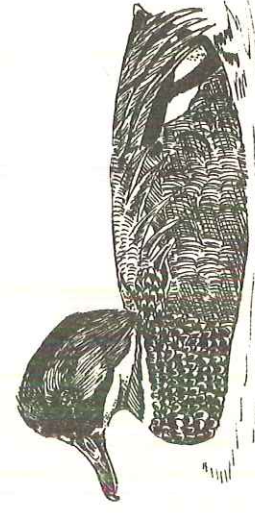
V: VAGRANT

UNC.REP.: UNCONFIRMED REPORT

H. No. Serial number in the Handbook of The Birds of India and Pakistan. Salim Ali and S. Dillon Ripley

FOR RARE SIGHTINGS:

\*: SEEN ONCE \*\*: SEEN TWICE \*\*\*: SEEN THREE TIMES



Falcated Teal



## Appendix 4

## REPTILES AND AMPHIBIANS OF SULTANPUR NATIONAL PARK

English Name	Latin Name	Habitat
<b>REPTILES</b>		
<i>Turtles</i>		
Indian Flapshell Turtle	<i>Lissemys punctata</i>	jheel
<i>Lizards</i>		
Common Garden Lizard	<i>Calotes versicolor</i>	terrestrial
Common Indian Monitor	<i>Varanus bengalensis</i>	grasslands, scrub vegetation
<b>SNAKES</b>		
Common Ratsnake	<i>Ptyas mucosus</i>	terrestrial
Indian Cobra	<i>Naja naja</i>	
Checkered Keelback	<i>Xenochrophis piscator</i>	in and around water
Russell's Earth Boa	<i>Eryx conicus</i>	dry area near lakebed
Indian Python	<i>Python molurus</i>	Seen just outside the Park.
<b>GECKO</b>		
Gecko	<i>Hemidactylus spp.</i>	old tubewell chamber
<b>AMPHIBIANS</b>		
The Indian Skipper Toad	<i>Rana cyanophlyctis</i>	jheel, ponds and inlets
	<i>Bufo spp.</i>	around jheel



Indian mud turtle or flapshell turtle

## Appendix 5

## BUTTERFLIES OF SULTANPUR NATIONAL PARK

Family **PAPILIONIDAE**: SWALLOWTAILS

<i>Papilio demoleus</i>	Linnaeus	Lime Swallowtail
<i>Papilio polytes</i>	Cramer	Common Mormon
<i>Polydorus aristolochiae</i>	Fabricius	Common Rose

Family **NYMPHALIDAE**

<i>Precis orithya</i>	Butler	Blue Pansy
<i>Precis almana</i>	Linnaeus	Peacock Pansy
<i>Precis hierta</i>	Fabricius	Yellow Pansy
<i>Precis lemonias</i>	Fruhstorfer	Lime Pansy
<i>Vanessa cardui</i>	Linnaeus	Painted Lady
<i>Hypolimnas missippus</i>	Linnaeus	Danaid Eggfly

Family **DANAIDAE**: CROWS AND TIGERS

<i>Danais chrysippus</i>	Linnaeus	Plain Tiger
<i>Euploea core</i>	Cramer	Common Crow

Family **PIERIDAE**: WHITES & YELLOWS

<i>Colotis calais</i>	Butler	Small Salmon Arab
<i>Eurema hecabe</i>	Moore	Common Grass Yellow
<i>Catopsilia crocale</i>	Cramer	Common Emigrant
<i>Anapheis aurota</i>	Fabricius	Pioneer

Family **SATYRIDAE**: BROWNS

<i>Melanitis leda</i>	Cramer	Common Evening Brown
<i>Mycalesis spp.</i>		Bushbrown

Family **HESPERIDAE**: SKIPPERS

<i>Sancus pulligo</i>	Moore	The Coon
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## FACT SHEET



### SULTANPUR AT A GLANCE

**Notified area :** 1.42 sq. km.

**Surrounding closed area :** 136 sq. km.

**Tourism Zone :** 4 ha

**Notification Date (Sanctuary) :** 2 April, 1971

**Notification No. :** S.O.34/P.A.14/59/S.8/71 sec. 8 of the Punjab Wildlife Preservation Act, 1959

**Notification Date (National Park) :** July 5, 1991

**Notification No. :** S.O.81/C.A.53/72/S.35/91 sec. 35 of Wildlife Protection Act, 1972

**Average Annual Rainfall:** 690 mm

**Maximum temperature:** 46° C

**Minimum temperature:** 1° C

**Topography :** 210 msl., in a natural depression, amongst gently undulating sand and clay dunes

**Location:** Nearest railway station: Gurgaon, 15 km; Nearest airport: Delhi, 30 km

**Latitude, Longitude:** 28° 28' N, 76° 53' E

**Personnel:** 1 inspector, 3 guards, 1 gardner-cum-watchman

**Vegetation:** Seasonal aquatic vegetation, open grassland, planted scrub forest with grassy/herbaceous understorey

**Fauna :** Birds - 247; Mammals-8; Reptiles-11; Butterflies-18

**Human pressures:** Visitors in 1989-1990 - 36,616; Grass and reed harvesting by local villagers; Habitat manipulation (official)

**Management inputs:** Fish-seeding, bunding of the lake, desilting lake, Island building, water (saline) replenishment by tubewell, tree plantation

**Facilities for visitors:** 3 Watchtowers, Library, Museum, Salim Ali Museum, park pamphlet, Accomodation (tourism area), Restuarant & Bar

**Entry fee:** Adult - Re. 1.00, Students - Re. 0.50 p., Foreigners - Rs. 5.00

**Timings:** 6 AM to 6 PM

**Contact Address :** 1. Inspector (WL), Sultanpur National Park, Gurgaon-Farrukhnagar Road, District Gurgaon, Haryana - 122001  
2. Chief Wildlife Warden - Haryana Sector 9, Panchkula, Haryana

### ATTENTION, VISITORS!

- Do not use the park as a picnicking spot. Transistors and food are not allowed inside the park. Packaging materials, food, glass bottles or other artificial material left inside the park could be injurious to the wildlife.
- Stay on the *bundh* which has been specially built for birdwatching. Do not walk onto the lake bed.
- Loud talking and disturbing behaviour will frighten away the avian visitors. Move in small groups, and attempt to talk softly. Listen to the sounds of nature instead.
- Do not pluck flowers or collect plants from any part of the *jheel*. it is an offence punishable by the law, as is the hunting, injuring or collection of any wild animal inside a national park.
- Welfare of the birds and protection of their habitat should come first.

### HOW YOU CAN HELP

- By reporting any damaging activities to the Park authorities.
- Sending us observations on wild birds and animals, ecology of the park or any other aspect.
- Carrying out or helping to carry out any studies that would be helpful in management of the Park such as control of grasscutting, water management, involving villagers and visitors, etc.
- When you find a rare or new species of bird or other animal, do inform the wildlife authorities and other institutions working in conservation field, example - WWF, BNHS, KV etc.



## THE ANTELOPE AND THE DOGS

By and large the nilgais live a peaceful life in Sultanpur, and are only troubled when they are chased for sport and sometimes game, by the stray dogs in the area. On one occasion we watched a couple of black dogs dance around a magnificent bull, who, alas, didn't quite cover himself with glory; he simply rolled his eyes in panic and took to his heels, the dogs racing behind him and barking ecstatically. A well-placed kick could have ended the matter, and it was quite pathetic to see such a large and powerful beast being put to shameful flight by a pair of ruffian mongrels.

On another occasion however, the honours were even. A rust-coloured stray (who behaved like self-appointed honorary wildlife warden!) had been having a gay time with the entire herd. Like a nut-case sheepdog, he would drive the animals from one end of the dry lake-bed to the other, deftly dodging kicks and skipping away from half-hearted charges. Then a doe decided to take the battle into the enemy's camp. She lowered her head and charged. And much to the surprise of the dog, kept on coming. He turned and fled, tail streaming out behind him, racing over the flat lake bed. The doe followed determinedly. The grand males, hitherto so harrassed and hassled, took courage from this display and began cantering behind her. Within seconds there were 25-odd nilgai thundering behind the doe giving her all the moral support she needed, much to the horror of the dog. Things had begun to look pretty bleak for him, because the nilgais were gaining, when he spotted salvation. A group of foreign tourists were watching the drama some distance away. The dog made straight for them and was soon sitting happily in their midst, grinning all over his face; and panting with relief and exhaustion. He knew full well that the nilgais couldn't get him now, and sure enough, they pulled up short, disgusted by this display of total cowardice on the part of the bully.

Not all encounters end happily like this. Sometimes the stray dogs are serious about the chase, especially if there are fawns about. One bright November morning we heard an anguished "baaa!" emerge from one of the kikar thickets. A nilgai fawn lay crippled in the tall grass, and was being savaged by a couple of strays. It had been unable perhaps, to leap over the park fence, on the other side from which its mother looked on, helplessly. Though we drove away the dogs and eventually had the fawn removed to the office complex (in the hope of getting it treated) the animal died shortly afterwards. The Park authorities said this sort of thing happened all the time. Whether the stray dogs could be regarded as the natural predators in the area, remains a moot point.

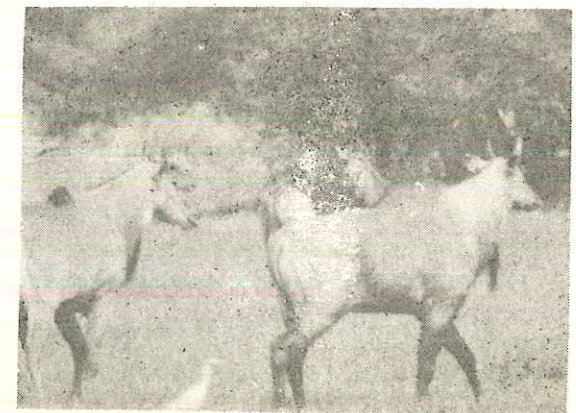
(This section has been adapted from a slightly different form which appeared in CUB Magazine (Vol. VIII No.4, 1991).

## NILGAI

The *Nilgai* *Boselaphus tragocamelus* is an antelope believed to be quite closely related to the Africal Eland, and is endemic and unique to the peninsular and northern plains of the subcontinent. In general, *Nilgai*, inhabit scrubby or grassy patches. They freely enter agricultural fields and are a source of damage to crops (Prater 1988).

Observations were made on the *Nilgai* in the Park during October - November 1993. They have been observed occasionally feeding on *Acacia* leaves and a few grasses inside the Park but often seen running over the fences, towards the agricultural fields. According to the villagers, *Nilgai* relish mustard seeds, damaging the fields, while trampling through. Even when the mustard is not flowering, they overrun the fences, towards these fields. They were not followed outside the Park, so we cannot say with confirmation what they fed on outside the Park, besides mustard.

Since they are considered sacred, there is not much threat to the *Nilgai* population in the area. A regular monitoring of the population and its behaviour needs to be conducted. When threatened they either make a grunting sound, could be an alarm call and tapping of the foot, which gives an indication to the subordinates to flee. The dominant bull or cow initiates such movements and the rest follow suit. There is a hierarchy maintained among them, wherein the adult leads the herd. Adult bulls stay together most of the time and often have been observed running away when approached by visitors, whereas adult females stay with the yearlings and juveniles and have occasionally been observed dispersing off. Morning and evenings are spent in the open areas whereas during afternoons they usually rest on the islands and woodlands, under the shade of the *Acacia* plantations. *Nilgai* in herds /solitary, were seen under the same spot for defecation every time. This must be to advertise the area or space utilised by each herd. Even though the *Nilgai* does not abide by the rules of the National Park the Park has helped them in taking a safe refuge inside the fenced area, whenever they require.





## FIELD NOTES

## KALPAVRIKSH

### LIST OF PUBLICATIONS

(upto January, 1996)

1. **What's That Bird? A Guide to Birdwatching with Special Reference to Delhi** (1991). An illustrated guide to bird identification, and birdwatching areas of Delhi with a checklist for the city. Now in its fourth reprint. *pp. 95, Rs. 30/-*
2. **The Delhi Ridge Forest: Decline and Conservation** (1991). A detailed profile of one of the world's largest city forests. Includes threats to and conservation of its flora and fauna. Hindi edition forthcoming. *pp. 55, Rs. 20/-*
3. **The Little Green Book: A Directory of Environmental Opportunities with Special Reference to Delhi** (1992; 2nd edition 1994). A first-ever guide to Delhi's environmental groups, government agencies, and libraries; and a comprehensive list of universities in India offering environment-related courses. *pp. 94, Rs. 30/-*
4. **Muddy Waters: A Critical Evaluation of the Benefits of the Sardar Sarovar Project** (1993; 2nd edition 1994). An in-depth analysis of stated vs. actual benefits of this controversial project on the Narmada river. *pp. 40, Rs. 20/-*
5. **Saving Delhi's Green Areas: A Citizen's Action Guide** (1994). A guide to the administrative and legal set-up that governs Delhi's green areas, and how citizens can act to protect greenery in Delhi. *pp. 100, Rs. 30/-*
6. **Conserving Life: The Implications of the Biodiversity Convention for India** (1994; 2nd edition 1995). A detailed analysis of the international Convention on Biological Diversity and how it relates to environment and development in India. *pp. 90, Rs. 50/-*
7. **River of Stories** (1994). A full-length comic book on environment and development. *pp. 60, Rs. 50/-*
8. **The Environmental Impact of the Sardar Sarovar Project** (1994). A detailed analysis of the environmental implications of this controversial project on the Narmada river. *pp. 50, Rs. 25/-*
9. **Treasured Islands: An Environmental Handbook for Teachers in the Andaman and Nicobar Islands** (1996). A comprehensive workbook of information and activities, specific to the islands, but applicable to other coastal areas also. Fully illustrated. *pp. 94, Rs. 100/-*
10. **Butterflies of Delhi**: An illustrated guide. (forthcoming).

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