Gujarat State is situated on the western coast of India. Study area is selected within Gujarat State (Fig.1). The north Gujarat area is well known as a land of agriculture having very few natural forest lands. Patan District is located in northern part of the state. It is located 23°04' to 23°55' north latitude and 71°31' to 72°20' east longitude. It is surrounded by Banaskantha District to its north and north-east, Mehsana to its south and south-east and Kachchh District (Little Rann of Kachchh) by south-west. Geographical area of district is 6.37 lakhs ha. The district is situated in the semi-arid zone and suffering from low water supply. The average annual rainfall in the district is 876 mm. It is strongly periodic and seasonal. A total of 453 species of birds belonging to 66 families have been listed from Gujarat state 4 recent record is 494 species. Patan district of north Gujarat region is concerned, no such published information is available in literature. In past1 has studied bird diversity in wetland area of Visnagartaluka of Mehsana district, whereas, Vyas has reported bird fauna of urban area of Visnagar4.

Birds constitute a very important component of agroecosystem. Agriculture provides a concentrated and highly predictable source of food to birds4. Many birds reported as pest to the agriculture is very old problem, but it is not an easy job to state which species is harmful and which is useful to crop. A species useful at one place may be neutral at the other or even harmful at some other place depending on on agroecosystem. It is necessary to study the agroecosystem of Patan district, prepare inventory of birds found in this District.

ABBREVIATIONS
a. Residency status :RB= Regular Breeder; IB= Irregular breeder; IM= irregular migrant;IR = irregular resident; RM= Regular migrant ;TR= Transient. (from north India or Palaearctic region)
b. Utilization: C = Cover;F = Foraging; N = Nesting;R = Roosting.
c. Foraging guild:Gd = Ground foraging; Eg = Earhead gleaner; Fg = Foliage gleaner; H = Hawking; Pb = Probing wet mud; Pl = Plunge fishing;P-S = Perch-to-site forage; Sy = Sally.
d. Flocking habit: S =Solitary;G = Group

MATERIALS AND METHODS

The survey of birds population was made by frequent visits to
all the sites of Patan District during 2006-08. General observations of various types of birds were recorded covering various parameters like status, occurrence, breeding etc. Identification of different species of birds and plants was carried out by noting down the various characters and with the help of keynotes from the standard book 2,3,5.

RESULTS AND DISCUSSION

During the present study a total of 141 different types of birds belonging to different species, genera and families were recorded. The avian fauna is rich and majority of the birds are residents of the area studied.

Residency status of birds: Out of total 141 bird species found in Patan district, majority of them were regular breeder (88=62.41%), followed by irregular resident (22=15.60%). There are 14 regular migrant bird species (9.93%) and more or less equal number of irregular migrant bird species (13=9.22%) were noted in Patan District, whereas, only three bird species were irregular breeder and Rosy Starling, Sturnus roseus was the only 1 species found to be transient (Table 1).

Utilization of site: The results presented in Table 1 revealed that majority of bird species used the site under observation for foraging (96=68.06%) followed by foraging and nesting (17=12.06%) and foraging and cover (9=6.38%). Seven species of birds used the sites either for foraging and roosting or foraging, nesting and cover (7=4.97) and only five species used it for foraging, nesting, roosting and as cover. None of the bird species recorded used the site solely either as cover or for roosting or nesting.

Foraging guilds: Table 1 shows that the results further revealed that majority of bird species (77 = 54.61%) were ground forager, followed by ear head gleaner (12 = 8.51%), hawkers (10 = 7.92%), perch to site foragers was resorting to plunge fishing. Among combination of foraging guilds, hawking and perch to site foragers constituted the largest group (6 = 4.26).

Flocking habits: According to Table 1 the results also indicated three types of flocking habit of the birds, out of which most of the species lived solitary life, whereas, 51 species of birds
Table 1. Taxonomic composition and ecological characteristics of the birds found in Patan district

<table>
<thead>
<tr>
<th>Bird (Scientific Name)</th>
<th>Residency status</th>
<th>Utilization</th>
<th>Foraging guild</th>
<th>Flocking habit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little Grebe <em>Tachybaptus ruficollis</em></td>
<td>RB</td>
<td>F</td>
<td>Gd</td>
<td>S,G</td>
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<tr>
<td>Great White Pelican <em>Pelecanus onocrotalus</em></td>
<td>RB</td>
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<tr>
<td>Great Cormorant <em>Phalacrocorax carbo</em></td>
<td>RB</td>
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<tr>
<td>Darter <em>Anhinga melanogaster</em></td>
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<td>F</td>
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<tr>
<td>Grey Heron <em>Ardea cinerea</em></td>
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<td>F</td>
<td>Gd</td>
<td>S</td>
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<tr>
<td>Black-crowned Night Heron <em>Nycticorax nycticorax</em></td>
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<td>Indian Pond Heron <em>Ardeola grayii</em></td>
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<td>Black-Headed Ibis <em>Threskiornis melanoccephalus</em></td>
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<tr>
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<td><strong>White-eyed Buzzard</strong>&lt;br&gt;Batastur teesa</td>
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<tr>
<td><strong>Red-headed Vulture</strong>&lt;br&gt;Sarcogyps calvus</td>
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<td>HPS</td>
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<td><strong>Common Kestrel</strong>&lt;br&gt;Falco tinnunculus</td>
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<td><strong>Ruff</strong>&lt;br&gt;Philomachus pugnax</td>
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<td><strong>Yellow-legged Green Pigeon</strong>&lt;br&gt;Treron phoenicoptera</td>
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<tr>
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<td>Method</td>
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<td>RM</td>
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<td>Hirundo smithii</td>
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<td>IR</td>
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<td>PS,SY</td>
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(36.17%) preferred to live in group and only 10 species exhibited both solitary as well as group flocking habit.

**CONCLUSION**

The inhabitants of the Patan city have arrived from surrounding villages and basically deal in agriculture. Several species of crop plants are cultivated.

The grassland is short lived and the foliage period is limited to the monsoon months only. There is a deciduous forest area nearer to this zone. The vegetation in open stabilized soil soon after the rains is abundant in a form of grasses and other species. *Leucas aspera*, *Tridex procumbens*, *Celosia argentia*, *Euphorbia hirta* and *Amaranthus* spp. etc. are common weeds. Meaning is not clear reform the sentence. A large number of tall trees like sisu (*Dalbergia sissoo*), mango (*Mangifera indica*), banyan (*Ficus benghalensis*) and peepal (*Ficus religiosa*), etc. are scattered all over the District. The main trees that cover the district area are *Azadirachta indica* (Limbdo), *Acacia arabica* (Baval), *Ficus religiosa* (Pimpalo), *Delonix regia* (Gulmohar), *Eugenia jambolana* (Jambu), *Zizyphus jujube* (Bor), *Mangifera indica* (Ambo), *Moringa oleifera* (Sargavo), *Salvadora persica* (Vakhado) and other shrubs and trees. Many of the above trees are used by birds as nesting places as they are tall and leafy, without thorns. Many Neem trees are crowned with nests of crows. The mixed vegetation of dominating trees, flowering shrubs and bushes, open area and neighbouring water reservoirs provide a healthy environment to the birds and hence large flocks and variety of birds can be observed. Common Myna, Yellow Footed green Pigeon and Egrets, etc. are roosted on shadow lengthened trees. The birds are settled on this tree for the night to the accompaniment of a great deal of cacophony.

Blue Rock Pigeon and Indian Ring Dove are granivorous birds and they damaged sown seeds of sesamum and sorghum. Indian Black Ibis feed on groundnut in harvested fields. Indian Peafowl feed on tender leaves and flowers of cucumber, ground nut and cotton. Roseringed Parakeet feed on fruits of chilly and millet crops. Trees provided perching sites for feeding to Parakeets. Trees might also have provided nesting sites to them. Trees of Khijado (*Prosopis cineraria*) in the middle or along the borders of fields provided shelter to small passerines; these fields also suffered heavy damage. Baya Weaver birds performed dual role as its feed upon larvae of insects of different crops but damaging leaves of sorghum for nest construction. It also used leaf blades of weeds for the nest. Common Myna, Bank Myna, Common Babbler and Rosy Pastor are feeding on insect pest of various crops.

**REFERENCES**