STAKEHOLDER ANALYSIS FOR CONSERVATION AND MANAGEMENT OF SAMASPUR BIRD SANCTUARY, UTTAR PRADESH.

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Abstract.
The six lakes known as Samaspur wetlands in Rae Bareily district of Uttar Pradesh were declared as Samaspur Bird Sanctuary in 1987. Out of the 800 Ha of total area of sanctuary, about 370 Ha is private and community lands. Due to this, the management and conservation of the sanctuary has become an extremely complex issue. Each year about one-lakh birds migrate here from regions like Siberia during the winter season. But the percentage of visiting birds has reduced to just one-fourth in last eight-ten years. This paper tries to find out the factors responsible for this sharp decline mainly through interactions with various stakeholders associated with this sanctuary like the forest department, local communities etc. Certain critical issues like submergence of agricultural lands around the lakes or large scale poaching of birds are identified in this context. The paper also identifies other important problems in the conservation of this protected area.

Introduction
Wetlands are one of the most important ecosystems on the earth. Wetlands can be considered as the transition zones between the purely aquatic system and purely terrestrial system. In essence, wetlands are ecotones. These wetlands play a very important role in providing various ecosystem services as explained below.

Importance of Wetlands
1. Flood Control.
Some wetlands, particularly those on floodplains and in coastal areas, function in flood control by storing and decreasing the velocity of excess water during heavy rainfall. As water flows into wetlands, it naturally loses velocity as it collects and continues to spread out. Wetland vegetation provides another natural barrier to fast moving water and therefore aids in flood speed reduction. The result of wetland activity during floods is often decreased damage to surrounding areas.

2. Silt Catchers
When floodwaters are slowed by wetlands; they drop sediments among the roots and stems of the plants. This protects downstream water bodies by preventing a dangerous build-up of gill clogging and egg damaging silt.

3. Erosion Control
Wetlands buffer shore lands against erosion because they are often located between water bodies and high ground. The roots of wetland vegetation bind the soil, putting a hold on it, while the plants themselves absorb the impact of waves.

4. Water Cleaners and Suppliers
Wetlands fed by groundwater further transport the water to streams that may otherwise dry up during warm summers or times of drought. Furthermore, wetlands absorb water during the wet seasons and gradually release it during dry seasons, and can thereby refill aquifers and other drinking water supplies.

5. Vital Habitats.
There is more life in a one acre of a healthy wetland than there is in one acre of almost any other kind of habitat. They support a large variety of flora as well as fauna.

The thick vegetation found in wetlands provides a safe haven and plentiful food supplies for the young of many fish, crabs, and other small creatures that begin life in wetlands, remain safely until they are not so vulnerable, and move to open waters when the time comes.

7. Migration Stations
Many migratory birds including ducks, herons, sandpipers, and eagles visit wetlands in the fall and/or spring to feed while en route to their summer and winter destinations.

8. Economy
Wetlands support huge number of people all over the world. Some of the important activities that are carried out in the wetlands include fisheries, agriculture.

9. Recreation.
Boating, photographing, and bird watching opportunities are abundant in wetlands.

**Introduction to Samaspur wetlands.**
Samaspur Wildlife Sanctuary is located in the Salon tehsil of Rae Bareily district of Uttar Pradesh. Salon wetlands were renamed as Samaspur Bird Sanctuary in 1987. There are five connected lakes namely Samaspur, Mamani, Gorwa Hasanpur, Hakganj and Rohnia. The sixth lake Bissaiya is close by but not connected to the main water body. It also forms a part of the sanctuary. These wetlands are included in the list of wetlands identified under national wetland conservation programme by the Ministry of Environment and Forests of Indian Government.

During the winter months of November-March about a lakh birds from the regions like Siberia and Tibet visit this sanctuary. Thus this sanctuary has become an attractive destination for the bird lovers as well as tourists.

![Location of Samaspur Sanctuary in Rae Bareli district.](image)
Stakeholder Analysis.
This study adopts the stakeholders’ analysis approach. This approach is helpful in following ways:
1. Understand interests of various stakeholders in the context of conservation of Samaspur wetlands, impact of these interests on the conservation efforts and importance of the wetlands for the stakeholders.
2. Better incorporating various stakeholders’ interests in conservation efforts.
3. Understanding the interactions among the stakeholders. Better anticipating and dealing with stakeholders’ conflict.
4. Explore resources available with each stakeholder for the conservation efforts, problems faced by each stakeholder and possible actions to overcome the same.
5. Identify the important issues in management and conservation of the wetlands and suggest possible measures that can be taken.

Such approach was previously adopted in restoration, conservation and management of coastal mangroves in Andhra Pradesh (Ravishankar T., Ramasubramanian R., and Sridhar D, 2001)

Methodology:
Mostly formal as well as informal discussions were used for the study. A questionnaire was prepared as a guideline for the course of these discussions. With the help of the management plan prepared by the forest department for the sanctuary the villages were identified where private as well as village community lands were inside the sanctuary. Some villages where no substantial amount of land is inside the sanctuary were chosen as control sites. The study was thus covered thirteen villages around the lakes covering all the seven Gram Sabhas.

The discussions included the following:
1. Transect boat rides in the lakes with the forest department staff at the sanctuary to explore various issues like use of wetlands, problem faced in the conservation of wetlands.
2. Transect walks with the villagers around the lakes to know about various characteristics about the wetlands.
3. Informal interactions with individuals to know about their dependence on wetlands, possible reasons for decline of birds etc.
4. Focused Group Discussions (FGDs) in the surrounding villagers to identify the reasons for decline of birds, use of wetlands by the local communities etc.
5. Interactions with Pradhans of Gram Sabhas of the villages to know about the efforts done through Panchayats to solve the issues regarding the wetlands.
6. Formal interactions with officials of forest department, irrigation department and media to explore their role in the conservation efforts for the wetlands.

Identification of Stakeholders.
The following stakeholders can be identified in the context of conservation of Samaspur wetlands.
1. Local communities
2. Migratory waterfowls
3. Forest Department
4. Irrigation department
5. Local media.

Stakeholders are those who are related to conservation efforts. Either they can influence the conservation efforts for the Samaspur wetlands or they are going to be affected by these efforts.

Local communities are dependent on wetlands in various reasons and they can contribute the conservation efforts substantially. Seven Gram Sabhas surround the Samaspur wetlands. Each Gram Sabha has a number of villages. The number of household in each village varies between 25-80.

The existence and conservation of the wetlands are critical for the migratory waterfowl. So they have been classified as one of the stakeholders. Each year about one lakh birds travel from Siberian and other regions to these wetlands. Forest department is an obvious stakeholder, as the conservation and management activities will be implemented through this department. Currently there are nine people with the forest department at the Samaspur Bird Sanctuary.

Irrigation department can influence the conservation activities in a significant manner. The department looks after the Sharda Canal, water from where flows into to the Samaspur lakes. Local media has also been
made a stakeholder as it can play a vital role in the conservation activities by highlighting important issues in the conservation efforts.

Classification of Stakeholders
Out of these five stakeholders, local communities, forest department and the migratory waterfowl can be identified as Primary Stakeholders. As they have direct dependence on the Samaspur wetlands and also they are affected significantly by the conservation efforts. Local communities and the local media are classified as Secondary Stakeholders as they will not be affected significantly by the conservation efforts and also they have very low dependence on the wetlands.

<table>
<thead>
<tr>
<th>Primary Stakeholders</th>
<th>Secondary stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migratory waterfowl</td>
<td>Local media</td>
</tr>
<tr>
<td>Local communities</td>
<td>Irrigation department</td>
</tr>
<tr>
<td>Forest Department</td>
<td></td>
</tr>
</tbody>
</table>

Socio-economic characteristics of people in surrounding villages.
There are seven Gram Sabhas in the surrounding areas of the lakes. Each Gram Sabha has different number of villages. The people in these villages are a mix of Scheduled Castes (SC), Scheduled Tribes (ST) and Backward Class (BC).

The percentage of Below Poverty Line (BPL) families is very high. Certain important details about the local people are as below.

1. Means of Livelihoods.
Agriculture is the main source of income in all villages. Most of the farmers are small farmers with the average land holding between two-three hectares. Majority of people have their agricultural lands submerged in the water of lakes. Labor works remain the only other source of income generation. People have to go to market places like Salon and Unchar for search of work. A large number of people have also migrated to cities like Lucknow, Ludhiana, Delhi and Mumbai due to lack of employment opportunities in the villages. Due to lack of education, the percentage of people in service sector is extremely small. In some villages at least one or two persons from almost every household are in the cities. Without their monthly financial assistance, life would be very difficult in such villages. Agriculture is still practiced in about 50 Ha on the private land inside the sanctuary. The main crops are Wheat, Potato and Chickpea.

Before the declaration of sanctuary, fishing in the lakes used to take place mostly for self-consumption. At that time, some of the families were dependent on fishing for the income generation. After the fishing was banned, these families had to search for labor works. The labor rates vary between Rs. 25-58. The impact of government schemes is very limited. Few families from each village are engaged in poaching for their livelihoods. Mostly birds are poisoned. Nets or guns are very uncommon. A bid fetches between Rs. 5-100. In some villages milk production and piggeries are practiced. Goats and sheep are also reared although scale of such activities is small.

Income generation activities in surrounding villages.

<table>
<thead>
<tr>
<th>VILLAGES I. G. A.</th>
<th>Mamani</th>
<th>Gorwa Hassanpur</th>
<th>Hakganj</th>
<th>Bissaiya</th>
<th>Rohaniya</th>
<th>Tikra</th>
<th>Paxrawan</th>
<th>Saidpur</th>
<th>Karemuan</th>
<th>Patti Pidhan</th>
<th>Samaspur Khalsa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Labor Works</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Fishing</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Poaching</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Milk production</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Piggeries</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
2. Literacy.
The spread of education in these villages is extremely limited. Among women it is even less. On an average a child has to walk about three-four kilometers to reach the nearest Primary School.

3. Electricity.
Electricity is available in about half of the villages. Some villages have mere electricity poles installed but the wires are missing.

4. Medical Facilities.
The good health care facilities are available only at the governmental hospitals at Salon and Unchar. Primary Health Centers are missing from almost all of the villages.

5. Drinking Water.
The wells and the hand pumps in all villages have water available in them throughout the year due to the presence of the Samaspur lakes. So drinking water is not a problem in these villages.

**Use of Samaspur wetlands.**
The total area of the Samaspur Bird Sanctuary is around 800 Ha. Although so far no actual demarcation of the boundaries of the sanctuary has been done. The land area inside the sanctuary can be classified as follows:

<table>
<thead>
<tr>
<th>Type of land</th>
<th>Area (Hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private land</td>
<td>271.564</td>
</tr>
<tr>
<td>Village community land</td>
<td>96.02</td>
</tr>
<tr>
<td>Forest Land</td>
<td>431.605</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>799.731</strong></td>
</tr>
</tbody>
</table>

Source: Management Plan prepared by forest department for the Samaspur Sanctuary.

![Map of Samaspur Sanctuary](image)

Map of Samaspur Sanctuary.

The details of the distribution of this land in the surrounding villages are shown in the table below.

Table No. Distribution of land in Samaspur sanctuary.
<table>
<thead>
<tr>
<th>S.N.</th>
<th>Name of Village</th>
<th>Reserve forest land (Ha)</th>
<th>Village community land (Ha)</th>
<th>Private land (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mamani</td>
<td>80.647</td>
<td>10.873</td>
<td>64.647</td>
</tr>
<tr>
<td>2</td>
<td>Gorwa Hasanpur</td>
<td>70.982</td>
<td>10.499</td>
<td>36.037</td>
</tr>
<tr>
<td>3</td>
<td>Hakanjan</td>
<td>47.125</td>
<td>22.537</td>
<td>33.062</td>
</tr>
<tr>
<td>4</td>
<td>Bissaiya</td>
<td>50.600</td>
<td>41.910</td>
<td>73.801</td>
</tr>
<tr>
<td>5</td>
<td>Rohaniya</td>
<td>37.917</td>
<td>Nil</td>
<td>5.282</td>
</tr>
<tr>
<td>6</td>
<td>Tikra</td>
<td>Nil</td>
<td>5.226</td>
<td>4.951</td>
</tr>
<tr>
<td>7</td>
<td>Saidpur</td>
<td>Nil</td>
<td>0.187</td>
<td>3.390</td>
</tr>
<tr>
<td>8</td>
<td>Paxrawan</td>
<td>Nil</td>
<td>Nil</td>
<td>14.160</td>
</tr>
<tr>
<td>9</td>
<td>Karemuan</td>
<td>Nil</td>
<td>1.428</td>
<td>7.140</td>
</tr>
<tr>
<td>10</td>
<td>Patti Pidhan</td>
<td>Nil</td>
<td>Nil</td>
<td>1.892</td>
</tr>
<tr>
<td>11</td>
<td>Samaspur Khalsa</td>
<td>44.334</td>
<td>3.542</td>
<td>27.202</td>
</tr>
</tbody>
</table>

Source: Management Plan prepared by the forest department for the Samaspur Sanctuary.

The local communities are dependent on the wetlands in following ways:
1. Agriculture.
2. Grazing.
3. Fishing
4. Ground water recharge.
5. Other uses.

1. Agriculture.
Out of the total private as well as village community land, the water of the main water body of five lakes submerges about 180 Ha (most conservative estimates). Earlier agriculture was practiced in the private land around the lakes. But since the water from Sharda Canal started flowing into the lakes since 1970s, agriculture became increasingly difficult due to problem of flooding. Currently, out of the 271 Ha of private land inside the sanctuary, agriculture is practiced in about 50 Ha. The main crops produced are Wheat, Potato and Chickpea. The water of the lakes is used for the irrigation in these fields. The Also, in some agricultural lands that are beyond the boundaries of the sanctuary, the water of the lakes is utilized for irrigation.

Water run off from the agricultural fields enters the lakes and results in eutrophication.

2. Grazing.
There are no grazing grounds in the villages surrounding the lakes. So the cattle in these villages graze in the surrounding area of the sanctuary. Cattle of some villagers also come in the main campus of the sanctuary.

Apart from this, the villagers who own lands inside the sanctuary take their cattle to their lands for grazing. Most of the times, such cattle are found grazing in the forestland of the sanctuary. But the forest department does not recognize this as a threat to the sanctuary. Due to limited staff, monitoring such activities also becomes very difficult.

Such grazing causes soil erosion in the lands surrounding the lakes, which enhances the siltation of lakes.

3. Fishing
Before the declaration of the sanctuary in 1987, the fishing in lakes was allowed. At that time most of the families in surrounding villages used to carry out fishery in these lakes. Mostly nets were used for this purpose. Fishing was done mainly for the household consumption. There were around five-ten families in each village those were totally dependent on fishery for their livelihoods. Since the ban was imposed on all fishing activities, these families had to take up labor works for income generation. Prior to declaration in 1987, the auction of fishes in the lakes used to take place. In 1985-86 such auction took place for the last time when about 194 quintals of fishes were extracted in the period of three months. This auction fetched Rs. 5.63 lakhs. According to local estimates about 60 varieties of fishes are found in these lakes. Almost all of them are edible.

Earlier fishing was carried out on relatively large scale only during the months of summer when the water level would decrease. By this time the migratory waterbirds would be gone. Thus it did not have any adverse effect on the birds. According to local sources, these lakes always had enough quantity of fishes to sustain the local communities in surrounding villages as well as migratory birds. So fishing never posed any threat to the birds.
Illegal fishing still is carried out in lakes. It is mostly for the self-consumption. As per the local estimates, about 25-30 quintals of fishes are extracted annually from these lakes. Now in order to escape form the monitoring by the forest department guards, thiodan preparation (35% endosulfan) is used. Normally 250 grams of thiodan is sufficient to effect the fishes in about 0.5 hectares of lake water. Such fishing is carried out mostly during the nights. Nets are also used to catch fishes.

Wetlands associated with groundwater sources can serve either as recharge zones or discharge zones. Recharge Zones are areas where the substrate is permeable enough to allow an aquifer to be refilled by surface waters. Discharge zones are areas where the substrate is permeable enough to allow water from an aquifer to escape and be added to the surface water supply.
Due to presence of such large water body the ground water level in the surrounding areas is at five to 25 meters. Also the tube wells as well as wells in the surrounding villages have water throughout the year.

5. Other Uses.
For the removal of Water Hyacinth, about 200-300 people from surrounding villages are employed each year. This activity lasts for about two months. Apart from this, at the time of plantation works in the sanctuary or construction of roads by forest department, local people earn some money.
A grass locally called as ‘kamalgatta’ grows in the lake water. This is used as a vegetable in cooking by local people. Its seeds also are edible. It is also sold in markets after drying, which can be sold for Rs. 35-40 per kilogram.
Earlier the auction of this plant also used to take place. Last such auction took place in 1986-87, which earned Rs.12,000.
Another grass locally called as ‘luke’ grows on the periphery of lakes. This can be used as roof on the houses as well as for the purpose of fuelwood.
No restrictions are in place in the sanctuary if the local people want to use these plants.

Migratory waterfowl.
Samaspur Bird Sanctuary is listed as one of the Important Bird Areas (IBAs) in India. Almost 250 species of resident and migratory birds find shelter here. The important aquatic birds here are, Egrets, Painted stork, Purple Moorhen, Purple Heron, White breasted water hen, Whistling teal, Phaesant Teal, Jacana, Little grebs, Cormorants, Kingfisher, Bronzed winged Jacana, Darter, Cotton Teal, Brahmany kite, Black Drago, Green Bee Eater, Indian Sarus Crane, Pintail etc. Many of these species occur in much higher numbers than their one percent biogeographic population threshold, calculated by the Wetlands International (2002) on the basis of total biogeographic population of waterbirds.
BNHS has listed the Vulnerable and Near Threatened bird species found at the Samaspur Bird Sanctuary as below:

<table>
<thead>
<tr>
<th>Vulnerable Bird Species found at the sanctuary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
</tr>
<tr>
<td>Pallas’s Fish-Eagle</td>
</tr>
<tr>
<td>Greater Spotted Eagle</td>
</tr>
<tr>
<td>Sarus Crane</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Near Threatened Bird Species found at the sanctuary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
</tr>
<tr>
<td>Darter</td>
</tr>
<tr>
<td>Painted Stork</td>
</tr>
<tr>
<td>Black-necked</td>
</tr>
<tr>
<td>Oriental White Ibis</td>
</tr>
</tbody>
</table>

Source: IBAs of India. (BNHS)

Approximately 1 lakh waterfowl visit this sanctuary each year between the months of November and March. But according to local estimates, the number of arriving birds has reduced to one fourth in last eight-ten years. Thus this sharp decline has become a critical issue in the conservation efforts for the wetlands.
Following factors seem to have contributed to this decline:
1. Invasion of Echhornia crassipes (water hyacinth),
2. Submergence of agricultural land around the lakes and
3. Poaching of visiting birds.

1. Invasion of *Echhornia crassipes* (Water Hyacinth).
The invasion of *Echhornia crassipes* i.e. water hyacinth (locally called as Jala kumbhi) can be considered as one of the most serious threats to the Samaspur wetlands. During last 10-12 years this problem has become prominent. The plant is definitely not native. How it came in this area remains unanswered. According to some it came with the water of Sharada Canal while others suggest that it was first found in the Bissaiya Lake and spread in the main water body due to floods.

*E. crassipes* is thought to be native to the Amazon River Basin. It possesses specialized growth habits, physiological characteristics, and reproductive strategies that allow for rapid growth and expansion in freshwater environments. It has spread rapidly throughout the tropics and subtropics. It has become a serious weed in freshwater habitats in rivers, lakes and reservoirs in tropical and warm temperate areas worldwide, where it displaces native aquatic plant and animal communities, causes substantial economic hardships and interferes with water uses.

Harmful effects of Water Hyacinth
1. It forms large, free-floating, monospecific mats that compete with other aquatic species for light, nutrients and oxygen. Mats reduce dissolved oxygen levels and light and significantly alter invertebrate and vertebrate communities. As biomass from mats decomposes, organic input to sediments increases dramatically.

In July 2006, about 200 tones of fish were found to be dead in the Samaspur lakes. This was mainly contributed to the reduced level of oxygen in the lakes due to widespread presence of this weed.
2. Due to decomposition, the water of the lakes has become polluted. Earlier the local people would use the water for drinking as well as cooking purpose. Now it is impossible to do so. Now a feeling of itching is experienced if the water having these weeds in it is used for taking bath.
3. As it covers surface the birds find it difficult to see water the lakes and cannot locates sites for landing as well as their food. It restricts their movements.
4. The presence of weed in the areas around the banks of lakes has become threatening for the local cattle as if they enter the water for the purpose of drinking water and gets stuck in the weed; it becomes very difficult for them to get out of these.
5. The extensive growth of this weed inhibits the flow of water through the two drains of these lakes resulting in the flooding of surrounding land.

The only beneficiaries of the spread of Water Hyacinth appear to be birds like the Purple Moorhen or Swamphen (*Porphyrio porphyrio*) that still manages to breed in the thick floating mats of this pernicious weed.

Small scale infestations of water hyacinth can be controlled by pulling, but herbicidal and biological controls are most effective methods. Herbicides, which control *E. crassipes* also, however, damage or kill other aquatic organisms, and may have only limited usefulness in wildland settings. So currently hand pulling is the only way by which the invasion of this weed is managed in this bird sanctuary. About 200-300 people from surrounding villages are employed for this purpose. Mostly this task takes place in the months of February and March when the water level is comparatively low and the weed present around the banks of these lakes can be removed by getting in to the water. But due to budgetary constraints, the plant cannot be wiped out. From the left over, the weed spreads to other parts of the lakes very quickly.

2. Submergence of Agricultural Land Around The Lakes
As the Samaspur lakes are depressions; the rainwater accumulated in surrounding areas comes to these lakes. The lakes are surrounded by the private agricultural lands so earlier during the rainy seasons the water from the lakes used to overflow in to these agricultural lands. But that would not cause any serious damage to the crops.

Since 1970s the water from Sharada Canal (built on the Sharada River) started flowing in the lakes in form terminal ends. At present, there are ten such tail ends namely Pahadganj, Gopalganj, Rohaniya, Ghamauli, Umarpur, Riwali, Waremaun, Gamani, Samaspur and Bhagwanpur.

Since then the private as well as the village community land around the lakes started getting submerged. The calculation of the forest department officials as well as local people suggests that by most conservative
estimates out of the 271.5 Ha of private land and 96.02 Ha of village community land, about 180 Ha of land is submerged at the moment. No survey has been conducted so far to reveal the exact extent of submergence.

Earlier in these lands agriculture was practiced on a large scale. A variety of crops including vegetables were produced. But with the submergence the agriculture became increasingly difficult due to problem of flooding. For last 20-25 years no agriculture production has been possible in these lands. Most of the people in the surrounding villages have their agricultural lands submerged. Labor works remain the only other source of income generation. Those who tried getting crops in the surrounding area of lakes had to see their crops getting destroyed by flooding. This has happened two-three times. Since then, the farmers have given up on their lands.

They have yet to receive any compensation for their submerged lands. Instead they are still paying the land taxes on these submerged lands. Those who own more than 1.25 Ha of land have to pay Rs. 160 per Ha in form of these land taxes. People in the surrounding villages have between 0.5-10 Ha of lands submerged in these lakes.

For the drainage of water from these lakes, there are two natural drains namely Bakulai and Mamani. Their approximate details are as follows

<table>
<thead>
<tr>
<th>Name of Drain</th>
<th>Length (kilometers)</th>
<th>Depth (Meters)</th>
<th>Breadth (Meters)</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakulai</td>
<td>20</td>
<td>2-3</td>
<td>12</td>
<td>River Ganga</td>
</tr>
<tr>
<td>Mamani</td>
<td>10</td>
<td>2-3</td>
<td>4</td>
<td>River Sai</td>
</tr>
</tbody>
</table>

Source: Local estimates.

But due to lack of digging and proper maintenance these drainage of water from the lakes is not possible. Both the drains have extensive growth of Water Hyacinth as well as other grasses such as Typha inhibit any flow of water from them.

This issue of drainage of water had been the most serious obstacle in the devolvement of the surrounding villages.

The water level has increased from 1.2-1.5 meters to 5 meters since the water from canal started flowing in the lakes. As per the local suggestions the water level should by maintained at the previous 1.2-1.5 meters by the drainage of water so that the agriculture can be possible again.

Some of the local Pradhans of the Gram Sabhas in the surrounding areas reveal about the efforts made to bring attention of the district administration as well as the local politicians to this vital issue. But till date nothing has been done in this context. Talking to the villagers can give a clear idea about how critical this issue of drainage of water is. People seem to have given up any hope that they will be able to produce crops on their lands.

The non-existence of a Non Governmental Organization (NGO) that can organize the local people on this issue is another important thing here. Digging as well as maintaining such large drains is clearly a work that local people themselves cannot do. Talking to the officials Irrigation Department at Rae Bareli which looks after the Sharada Canal, suggests clearly that they is hardly interested in even understanding this issue. Local media can play an important role in highlighting this issue through local newspapers.

Linkage Between The Submergence of Land And Arrival of Migratory Birds.

Submergence of land is cited of one of the two reasons cited by the villagers in the surrounding villages for the decrease in number of birds.

1. Earlier as the water level in the lakes was much lower than what it today, the areas of shallow water were available to the visiting birds. The water level would further decrease in the dry months of summer. This would result in growth of a variety of grasses as well as insects. The grasses would provide the sites for resting as well as nesting to the birds. The birds would feed on these insects. Now the birds have to go to small ponds and agricultural fields in search for the shallow areas as well as food. There they become easy targets for the poachers.

2. As agriculture was possible in the surrounding lands, left over grains in the fields would serve as food for the visiting birds.
3. Due to submergence of agricultural land, labor works is only other alternative for the local people in surrounding villages. In such situation killing the birds for money becomes an attractive option for the people.

Even the forest department officials confirm to this reasoning. So the issue for drainage of water from lakes becomes very important in the context of conservation efforts of the Samaspur wetlands.

If the drainage of water is properly maintained, it will help in following ways.
1. The agriculture can be practiced again on the surrounding lands. Even the landless people will get labor works in the agricultural fields. So the economic condition of the communities will improve. The cases of poaching of birds for money will decrease substantially.
2. As shallow water as well as grains form surrounding fields will be available for the birds, they will not have to flock to other agricultural fields in the villages. This will reduce their vulnerability to the poaching.
3. As size of lake will decrease, monitoring of birds will be easier.
4. The two drains flow in to River Ganga and Sai. If the drains are maintained properly, the fishes from these two rivers will come in to the lakes. That will add to the already rich diversity of fishes in the Lakes.

3. Poaching of Visiting Birds.
Poaching of birds is another most threatening issue here. According to local people the present Samaspur Bird Sanctuary was the property of the landlords and kings in the old times. It was used as hunting ground where these landlords, kings or British officials used to come here for hunting. In those times, shooting of birds was practiced as a game or past time. Mostly guns were used for this. Local people in surrounding villages would help these hunters in form of collecting the fallen birds or other such labor works in return of money or a piece of bread. But in those times, the number of arriving birds was so large that the effect of this hunting was hardly noticeable.

Now guns are seldom used for killing birds. Poisoning of birds is mostly practiced. It happens in the lakes as well as the agricultural fields. The use of nets for catching birds is also noticed. The most cases take place in the fields where the birds flock in search of shallow water as well as grains from crops. Glass powder is the most commonly used for poisoning. It is mixed in the grains and kept on the floating leaves in the water in the lakes or in fields. After consuming, the birds usually die within two-three minutes. In case a bird does not die it is caught alive.

The poaching happens for meat as well as for selling in market places like Salon or in surrounding villages. A bird can be sold for the sum of Rs. five to as high as Rs. 100. A live bird usually fetches higher prices than the dead ones. In each village about four-five families are there who depend upon this killing for their livelihoods. It is also observed that children are engaged in large numbers in such activities. As most of the families have their agricultural lands submerged, labor remains the only source of income generation. In such situation this type of hunting becomes an attractive option for the poverty- ridden people in the surrounding villages as it provides good money with comparatively less efforts.

People in villages know about such families. But due to social pressure, they do not come forward to reveal the details. The forest department is doing its best to stop this killing of birds. But with the limited staff, such efforts have not met a great success till date. Those engaged in such activities are scolded and given warning or even fined accordingly if caught. The fine can be up to Rs. 5000. Some are even granted police custody after the court procedures for the duration of as long as a month. Currently, around 150-200 such cases are recorded in courts.

As per the records of forest department at the sanctuary, in between 1993-1998, 31 cases of poaching were recorded. According to local estimates about 200-300 birds are poisoned and killed daily in the surrounding areas during the winter months of November- March.

Along with these three, reduced intensity of winter season in this area is also cited by few villagers as one of the reasons that have caused the number of arriving birds to decline.

Problems in the conservation efforts for the wetlands.
Apart from the above factors responsible for the sharp decline in the number of birds; following problems can be identified in the context of conservation of Samaspur wetlands.
1. Inadequate staff strength at the Samaspur sanctuary.
2. Conflicts between the local communities and the forest department.
4. Non-existence of an efficient local NGO.
5. Lack of research facilities at the sanctuary.

1. Inadequate Staff Strength at The Samaspur Sanctuary.
For a wildlife sanctuary with the area of 800 Ha with such complex issues, adequate staff with the forest department is a must. But unfortunately this is not the case with this sanctuary. The existing staff at the Samaspur Sanctuary is as listed in the table-

Table No. Current staff strength at Samaspur Sanctuary.

<table>
<thead>
<tr>
<th>Staff</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranger</td>
<td>1</td>
</tr>
<tr>
<td>Deputy Ranger</td>
<td>1</td>
</tr>
<tr>
<td>Forest Guards</td>
<td>3</td>
</tr>
<tr>
<td>Sailor</td>
<td>1</td>
</tr>
<tr>
<td>Minimum wage workers</td>
<td>3</td>
</tr>
<tr>
<td>(including gardener)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Management Plan prepared by forest department for the Samaspur Sanctuary.

When the Samaspur wetlands were declared as the sanctuary, the desired strength was quoted as 25. That time the problem of poaching was not as grave as it has become today. Earlier there were seven-eight local people from surrounding villages, employed in the department on daily wage basis. Since 2002, they were removed from duty due to the budgetary constraints as well as a High Court order. Since then department has only three people from local communities on minimum wage basis. This inadequate staff strength seriously hampers the management of the sanctuary. Forest department officials state this as the most serious problem faced in the conservation efforts. Even the local communities point at this issue as the major hindrance.

In order to check illegal fishing as well as the poisoning of birds, the department staff carries out patrolling exercises in lakes using boats. This is done daily throughout the year and especially during nights. The timings of such exercises keep varying everyday. But due to shortage of staff, the effect of such monitoring exercises is limited. It is also not possible to deploy some permanent staff around the Bissaiya Lake where maximum cases of poisoning of birds take place as compared to in the main water body.

According to the forest officials in the sanctuary about 20-25 forest guards are necessary for the better conservation and management of this important bird area. The required resources like motorbikes, cycles also need to be made available to staff in sufficient quantity. The financial incentives to forest staff to curb poaching may also prove to be useful.

2. Conflicts Between The Local Communities And The Forest Department.
There are seven Gram Sabhas around the bird sanctuary. People in these Gram Sabhas are dependent on the resources of this Protected Area for a variety of reasons. Many times this leads to conflicts between the community and the forest department.

An example of conflict between the local communities and the forest department
A village road runs through the main water body of the Samaspur lakes. This road connects about 20 villages to the market place at Salon. When the wetlands were declared as sanctuary, the forest department decided to raze this road to eliminate the human disturbance to the birds due to movement on the road. The road was dug at every five meters to stop villagers from using it. The villagers protested very strongly against this and as a result the plan to raze the road was abandoned.

The presence of private lands inside the sanctuary disturbs the administrative and conservation efforts by the forest department. Many times the villagers, who own the lands inside the sanctuary, enter under the pretext of work but are found to be engaged in harmful activities like poaching or fishing. Also, the private landowners take their cattle to their lands for grazing. Most of the times, such cattle are found grazing in the forestland of the sanctuary. Due to insufficient staff, it becomes very difficult to monitor such activities. The forest department has been trying to acquire the private as well as community land inside the sanctuary since the declaration in 1987. Earlier the lakes were property of the Gram Sabhas of surrounding villages.
At the time of the declaration of the sanctuary itself, there was a proposal to acquire the private and community land inside the sanctuary. But due to budgetary constraints it was not possible. Currently fresh efforts are being taken to acquire two villages in the Mamani Gram Sabha. But due to the complexity of the issue, these efforts are taking longer time.

In order to improve the relations between the local communities and the forest department the forest department has made some conscious efforts in past seven years. Such efforts are described below:

1. **Eco Development Committees. (EDCs)**
2. **Community Health and cattle vaccination camps.**

1. **Eco Development Committees. (EDCs)**

   Eco Development Committees are formed in the villages around the Protected Areas (PAs) for the following main objectives:

   1. To make alternate sources of livelihood available to the local communities so that their dependence on the resources of the PAs can be reduced.
   2. To ensure the participation of communities in the conservation efforts for the PAs.

   One such committee was set up in Gosai Purva village of Mamani Gram Sabha in 1999. The registration period was of five years. As one member from each household in the village was required to be part of the EDC, there were 66 members in the committee. President and secretary of committees were chosen as per the established guidelines for the EDCs. A spearhead team of the forest department officials was formed to create awareness among the villages about the activities of EDC. That was followed by preparation of microplan in consultation with the villagers.

   A number of activities were started as per the microplan. Such activities included the following: Sewing, making of agarbatthi, nursery, making of candles, weaving and making of spices. Training was given to the villagers for the first two activities. In all the activities, 25 percent of the total funds were contributed by the local communities.

   These activities did not meet with much success. Almost all the activities resulted in the financial loss. The suggested reasons for this failure are as below:

   1. Although initially the villagers showed eagerness for the activities, in later stages it was found that such activities were beyond the capacities of the local communities.
   2. The villagers could not put collective efforts.
   3. People were found to be more interested in the agricultural works rather than the group activities.
   4. The quality of the items produced by the local people was not up to the market standards. Hence the goods found very few buyers.

   Out of the total funds for the EDC, a part was also distributed among villagers in form of personal loans. These loans were given for the following activities: Goods shops, agricultural works, rickshaws, piggeries, teashops and purchasing cattle. An annual interest rate of six percent was charged for the loan amounts.

   Out of the total funds, the recovery rate was found to be 93 percent. So a revolving fund of about Rs. 2,38,000 was generated. As the registration period of five years is over, no money transactions are taking place currently.

   In the absence of further instructions, fresh registration processes as well as elections for the president and secretary of new EDC have not taken place. How the revolving fund is to be utilized has also been not decided so far.

2. **Community Health and Cattle Vaccination Camps.**

   All the surrounding villages lack the health care facilities as well veterinary hospitals. The forest department has conducted health and cattle vaccination camps in about six-seven villages since 1998 with the help of doctors at the government hospitals. The forest department officials as well as villagers feel that these efforts by the department have helped to bring the department and the people closer. People started to feel free to approach the department with their problems. Clearly, there is a need to take such efforts on larger scale in the future.

3. **Management of Bissaiya Lake.**

   In Samaspur Bird Sanctuary the five lakes namely Mamani, Gorwa Hasanpur, Hakganj, Rohnia and Samaspur come together to form the main S shaped water body. The sixth lake i.e. Bissaiya Lake is situated at about two-two and a half kilometers away from these lakes. There are no proper roads to this lake. As the staff strength at the sanctuary is not adequate, it is difficult to deploy some permanent guards at this lake.
Although the fishes are found in less amount as compared to the main water body, a large number of migratory waterbirds visit this lake as, the water level in this lake is shallow (0.60-0.75 meters) and a variety of grasses grow around this lake as a result of the depth. As the monitoring of this lake does not take place on the required scale, a comparatively large number of cases of poisoning of birds take place in this lake.

4. Non-existence of An Efficient Local NGO.
At present, there is not any efficient NGO in the surrounding area of the Samaspur Bird Sanctuary. Such an NGO could have helped the conservation efforts in two ways. There is need to organize the local communities on the issue of drainage of water from the lakes. Secondly such NGO can work in the coordination with the forest department for conservation of this bird area. NGOs can play an important facilitator role in creating awareness about the conservation efforts and protection of birds. Even the forest department feels this need.

5. The Lack Of Research Facilities At The Sanctuary.
Currently there are no research facilities available at the sanctuary. A research laboratory along with the necessary requirements needs to be established here where research in following areas can be conducted: 1. The water of the lakes, 2. Soil in the surrounding area of the lakes. 3. Flora and fauna of the sanctuary.

Due to lack of such facilities, the regular monitoring of these ecological aspects cannot take place. So it becomes difficult to figure out changes in these aspects as well as the possible reasons for the same.

Stakeholders’ analysis in the context of conservation of Samaspur Wetlands.

1. Stakeholder Analysis Checklist.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Position (Rank according to importance of wetlands for the stakeholder.)</th>
<th>Impact (Rank on the level of impact they have on conservation efforts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migratory waterfowl</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Forest Department</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Local communities</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Irrigation Department</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Local media</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

1=highest position; lowest position = total number of stakeholders

Implication.
The stakeholders are ranked according to the importance of the wetlands for each stakeholder. Rank 1 denotes the stakeholder with highest degree of importance and 5 denotes the least important stakeholder. Migratory waterfowl have been identified as the most important stakeholder. The conservation of wetlands is critical for them. They have been killed in huge numbers every year. So maximum efforts need to be taken to protect interest of this stakeholder.

Local communities are the next most important stakeholders. They are dependent on the wetlands for various reasons. The responsibility of management and protection of sanctuary is with the forest department. So the wetlands are important for them. The maintenance of Sharda Canal as well as drains lies with the irrigation department. So the wetlands hold some importance for them as well although it is very small. Finally, the local media can be identified as a stakeholder who has least degree of importance to the wetlands.

Similarly there is ranking of stakeholders depending upon how much influential they are in the context of conservation of Samaspur wetlands. The most influential stakeholder is denoted by rank 1 while rank 5 denotes the least influential one.
Forest department can be identified, as the most influential stakeholder as far as the conservation of the wetlands is concerned. They have manpower as well as financial resources at their disposal that can be utilized for the various conservation activities. Local communities are the next most important stakeholders. The villagers can contribute to the conservation efforts by the forest department. As curbing poaching is one of the most important issues that the forest department is facing, the local community has a very important role to play in this context. Irrigation department too has high degree of influence attached. The work of drainage if undertaken can do wonders for the conservation efforts. Then comes local media who can bring the issue of submergence of land to the attention of district administration as well as irrigation department. Migratory waterbirds are the least important stakeholder as far as conservation efforts are concerned because they themselves can hardly contribute to these efforts in any way.

1. Stakeholder Analysis Checklist.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Primary Activities of the stakeholders.</th>
<th>Interest (s) at stake in relation to wetland</th>
<th>Effect of interests of stakeholders on the conservation of wetland. (+, 0, -)</th>
<th>Importance of the wetland for stakeholders.</th>
<th>Influence of the stakeholders in context of the wetland.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migratory waterfowl</td>
<td>Nil.</td>
<td>They use these wetlands for habitat.</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Forest Department, Samaspur Bird Sanctuary</td>
<td>Management and protection of the Bird Sanctuary</td>
<td>Management of the sanctuary is the responsibility of the department.</td>
<td>+</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Local communities</td>
<td>Agriculture Labor works</td>
<td>The villagers use the wetlands for various purposes e.g. cattle grazing.</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Irrigation Department, Rae Bareily</td>
<td>Looking after the irrigation resources in the district.</td>
<td>The department collects irrigation taxes from local people who use the water from the lakes for irrigation.</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Local media</td>
<td>Coverage of local issues</td>
<td>This stakeholder does not have any interests at stake in Samaspur wetlands.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Scale to be used in last two columns. For the fourth column.
Implication.
Each stakeholder that has been identified in context of conservation of Samaspur wetlands has certain interests at stake in the Samaspur wetlands. This table checks what impact the interests of each stakeholder has on the conservation efforts. The impact can be positive, negative or it may happen that the interests have no impact at all. The table also shows what is the degree of importance attached to each stakeholder. A rating of 1 denotes high importance while 2 and 3 denote medium and low importance respectively. Similarly the influence each stakeholder over the conservation is denoted by similar rating.
The Samaspur wetlands are very important (highest rating of 3 on scale of 1-2-3) for the migratory waterfowl. The wetlands serve as their habitat for nesting as well as breeding. They also get their food (fish etc.) from here. But these waterbirds themselves can do nothing for the conservation and management of these wetlands i.e. their influence in the context of the conservation efforts is very low (lowest rating of 1 on scale 1-2-3) Also, their activities don’t have any impact on the conservation efforts which is shown by 0 in the table.
The responsibility of the protection as well as management of the Samaspur Sanctuary lies with the State forest department. They have manpower to carry out the protection and management activities. They also have the financial resources qt their disposal. This makes them very influential in the context of the conservation. (Highest rating). Also their activities as well as interests will have a positive impact on the conservation efforts for the wetlands. The local communities are dependent on the wetlands for various reasons e.g. agriculture, grazing, fishing, ground water recharge or collection of grasses. So the wetlands are very important for them (highest rating on scale). They are one of the most important stakeholders in the context of the wetlands. Poaching is identified as one of the three most serious threats to the sanctuary.
The local communities can play a very important role in curbing that. The local knowledge can be utilized for the conservation efforts. The villagers are also employed by the forest department for various activities like removal of aquatic weeds etc. These all factors attach a high degree of influence to the local communities. (Highest rating)
As of now their activities are having a negative impact on the wetlands as denoted in the table. Irrigation department can be considered as very influential in the context of conservation of the Samaspur wetlands. (Highest rating). The issue of drainage of water is very critical for the conservation efforts. If the department takes up the work of drainage, that will be a major boost for the conservation efforts. (Highest rating). But so far they have not treated this issue as important. (Lowest rating).
The media plays a very vital role these days by highlighting the important issues and bringing the attention of the government or any other authorities to these issues. Similarly local media in Rae Bareily can play an important role in bringing attention of district administration, local politicians as well as irrigation department to this issue. Till date the local politicians have continued to neglect this issue despite of efforts by the communities. Local media can thus turn out to be very vital stakeholder in such scenario. (Median rating of two on scale). But they have very low importance attached to this issue. (Lowest rating). Due to reluctance of the irrigation department to solve the issue of drainage of water, their interests have negative impact on the conservation efforts as shown in the table. The interests of local media have no impact on the conservation efforts.

3. Participation Analysis Matrix.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Characteristics</th>
<th>Resources available for conservation efforts.</th>
<th>Problems faced in the conservation efforts.</th>
<th>Required actions to overcome these problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Department At the sanctuary,</td>
<td>1. Lack of motivation. 2. Reluctance to treat villagers on</td>
<td>Government funds and department staff for management and</td>
<td>1. Inadequate staff strength and resources. 2. Budgetary</td>
<td>1. Provision of additional staff and required resources. 2. Increased financial</td>
</tr>
</tbody>
</table>
Implication.
This table analyses the characteristics of each stakeholder, the resources available with each stakeholder for the conservation efforts, the problems faced by these stakeholders in the conservation efforts as well as the required actions to overcome the same. Special efforts are required to protect the interests of migratory waterfowl, as they themselves can do nothing for the conservation efforts.

The forest department will be implementing the conservation as well as management activities. They have the manpower and government funds at their disposal to carry out these activities. The lack of financial incentives can be one reason for this. The staff does not seem satisfied with the overall working of the forest department. The officials also seem to have a negative perception about the local communities. The most important problem faced by the department in the conservation efforts is the inadequate staff strength at the sanctuary. Budgetary constraints, non-existence of any local NGO and lack of research facilities at the sanctuary are the other problems faced. Increasing the staff as well as financial support can solve these problems to a great extent. Establishment of research lab at the sanctuary or tie-ups with regional research laboratories can solve the issue of research facilities.

Local communities in the surrounding villages are another very important stakeholder. These communities are characterized by very high rate of poverty and illiteracy. The villagers also are not organized on the issue of the submergence of land. Non-existence of any local NGO is the major reason for this. The local labor can be used for various conservation activities. The villagers have a very in-depth knowledge about the flaura and fauna of the wetlands. This local knowledge can be used for the conservation activities. The communities can use social pressure to prevent the large scale poaching of birds. Submergence of agricultural lands around the lakes has become a very critical issue in the conservation efforts. Solving this issue should be given the uppermost priority.

The irrigation department is on unfriendly terms with the forest department for various reasons. If the department can take up the work of drainage of water, it will prove to be very much beneficial for the

<table>
<thead>
<tr>
<th>Local communities</th>
<th>Poor.</th>
<th>Illiterate.</th>
<th>Unorganized.</th>
<th>1. Local labor is used in conservation of lakes e.g. removal of aquatic weed etc.</th>
<th>1. Lack of livelihood options so have to engage in poaching.</th>
<th>1. Solve the issue of drainage of water from the lakes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Department</td>
<td>On unfriendly terms with the forest department.</td>
<td>Can undertake the work of drainage of water through lakes.</td>
<td>Reluctance to comprehend the issue of drainage of water.</td>
<td>Efforts to pursue the officials to take up this issue.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local media</td>
<td>Eager to raise the important issues.</td>
<td>Can raise the issue of drainage of water through local newspapers.</td>
<td>Nil.</td>
<td>Nil.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
conservation efforts. But the department does not seem keen to even understand this issue. Proper efforts are required to convince the department about the importance of this issue. Local media seems eager to highlight the issue of submergence. It can play a very important role by bringing attention of district administration as well as irrigation department on this issue.

Conclusions
1. Efforts should be taken that the issue submergence of land is solved so that the mixed landuse can allow agriculture as well as conducive habitat for birds again. This will help to reduce the conflict between conservation and livelihoods.
2. The forest department at the Samaspur Bird Sanctuary needs to be strengthened with staff and additional budgetary allocation.
3. Efforts should be taken on much larger scale to stop the spread of Water Hyacinth in the lakes.
4. The collaborative efforts through schemes such as eco-development have provided an opportunity to the forest department and the local community to interact and understand the nature of the problem. Hence, such schemes need to be continued and expanded in other villages.
5. There are no local non-governmental organizations or community based organizations to facilitate the dialogue between the forest department and local communities.
6. Research facilities need to be established at the sanctuary for regular monitoring of important ecological factors like soil, water etc. If this is not possible, the collaboration could be sought with the regional research bodies for such monitoring.

References.
Batcher M. S. Element Stewardship Abstract for Eichhornia crassipes 


ABREVIATIONS.
BC. - Backward Class
BNHS - Bombay Natural History Society
BPL - Below Poverty Line
EDC - Eco Development Committee
FGD - Focused Group Discussions.
IBA - Important Bird Area
NGO - Non-Governmental Organization.
SC - Scheduled Castes
ST - Scheduled Tribes