

## Save Deepor Beel Campaign

Deepor Beel (Beel means wetland or large aquatic body in Assamese) is one of the largest and most important riverine wetland in Assam's Brahmaputra valley (India) and is representative of the wetlands found within the Burma Monsoon Forest biogeographic region. Located between Latitude: 26d 05m N to 26d 11m N and Longitude: 91d 35m E to 91d 43m E, Deepor covers an area of 40.14 sq km and varies in depth from approximately 4 m to 1 m depending on the season; monsoon or dry season. It is a permanent freshwater wetland in a former channel of Brahmaputra River. The site supports a number of International Union for the Conservation of Nature (IUCN) red-listed species such as the birds, Spot-billed Pelican (*Pelecanus philippensis*), Baers Pochard (*Aythya baeri*), Lesser Adjutant Stork (*Leptoptilos javanicus*), Pallas's Sea Eagle (*Haliaeetus leucogaster*), Slender-billed vulture (*Gyps tenuirostris*), Ferruginous Duck (*Aythya nyroca*), and Greater Adjutant Stork (*L. dubius*) and the mammals, Asiatic Elephant (*Elephas maximus*), Irrawaddy Squirrel (*Callosciurus pygerythrus*), and Hoolock Gibbon (*Hylobates hoolock*). Deepor Beel is one of the staging sites for migratory birds in India; some of the largest congregations of aquatic birds in Assam can be seen here, particularly in winter. 19,000 birds is the record for single-day-count of waterbirds in Deepor Beel. The wetland supports a highly concentrated and diverse indigenous freshwater fish population (approximately 50 species belonging to 19 families). The wetland is a major fish breeding and nursery ground, which supplies fish stocks to other nearby wetlands and rivers. Because of the richness of avian fauna, Deepor Beel has been selected as one of the Important Bird Area (IBA) sites by Birdlife International. It is the only Ramsar Site in the state of Assam.

In addition to the invaluable fish and bird population of Deepor Beel, a large number of wetland vegetables, fruits and medicinal plants have been identified in this wetland. Most of the vegetation is directly or indirectly used by the surrounding human communities. Deepor Beel is a source of water for the number of wild animals from the adjoining Rani and Garbhanga Reserved Forests, including the noteworthy Asiatic elephants. In addition, the area provides essentially the only major stormwater storage basin for the city of Guwahati. Stormwater detention is vital in North-east India; the highest rainfall zone in the world. There are fourteen villages (1200 families) around Deepor Beel, most of which belong to low income groups living under the poverty line and are dependant on the wetland natural resources.

Sustainable management of Deepor is important not only for the wetland itself, but for greater good of the rest of the wetlands in Assam and India. In addition, Deepor management can serve as a model for other wetlands in the region and ensure their sustainable management. There are 3513 wetlands covering an area of 101232 ha (pre-monsoon) in Assam which constitutes 1.29% of the total geographical area of the state. Many of these wetlands face similar threats due to unplanned and uncontrolled development.

## 1. What is the nature of the environmental threat?

During the past few decades the Deepor Beel area has undergone rapid changes due to industrialization, agricultural activities, forest cover change in the adjoining reserved forests, and human settlement within the wetland and its buffer zone; resulting in an imbalance in the wetland eco-system. Moreover, the inflow of stormwater from Guwahati City to the Beel is degrading its water quality causing a hazardous environment for the aquatic flora and fauna. The threats to Deepor are typical of wetlands in this region and other developing countries. It is purposed that the following three major anthropogenic threats receive immediate attention:

- Municipal garbage dumping in the wetland by Guwahati Municipal Corporation
- Illegal land use and settlement in and around the wetland
- Lack of a comprehensive management policy with adequate institutional arrangements

**Additional threats faced by the wetland**, which could be mitigated by long-term environmental management policies, include:

- Newly constructed railroad, along the southern boundary of Deepor Beel, fragments the two previously dependent ecosystems, Deepor Beel and Rani/Garbhanga Reserved Forests.
- Industrial development within the periphery of the Beel.
- Brick manufacturing and soil cutting within the Beel ecosystem.
- Hunting, trapping and killing of wild birds and mammals within and in the adjoining areas of Deepor Beel.
- Spread of invasive species and associated problems
- Unplanned and non-regulated fishing practices

## 2. Describe the ecosystems, endangered species, and human communities that are or will be affected.

**Species in Danger:** Most of the wetland bird species, fish, amphibians, aquatic reptiles and some mammals are in danger due to the threats to this wetland system. The livelihood of tribal and fisherman community in villages around the Deepor Beel is also at risk because of ongoing habitat degradation.

**Endangered Species:** IUCN lists following species found in Deepor Beel under the Red List of Threatened Species: Birds, Spot-billed Pelican (*Pelecanus philippensis*), Baers Pochard (*Aythya baeri*), Lesser Adjutant Stork (*Leptoptilos javanicus*), Pallas's Sea Eagle (*Haliaeetus leucogaster*), Slender-billed vulture (*Gyps tenuirostris*) Ferruginous duck (*Aythya nyroca*) and Greater Adjutant Stork (*L. dubius*) and the mammals, Asiatic Elephant (*Elephas maximus*), Irriwaddy Squirrel (*Callosciurus pygerythrus*) and Hoolock Gibbon (*Hylobates hoolock*).

**Biodiversity:** Deepor Beel provides a wide array of habitats for many organisms including many economically important and endangered species of animals and plants. This enormous wetland system provides an important breeding and feeding grounds for millions of water fowl, consisting of more than 70 migratory species. Due to rich bird diversity, the government of Assam declared 414 ha as a bird sanctuary in 1989. Further, Deepor Beel was declared an IBA by Birdlife International in 2004. This site is vital for the existence of several globally threatened bird species including Spot-billed Pelican (*Pelicanus philippensis*), Lesser Adjutant Stork (*Leptoptilos javanicus*), Baer's Pochard (*Aythya baeri*), Ferruginous duck (*Aythya nyroca*), Pallas's Sea Eagle (*Haliaeetus leucogaster*), Greater Adjutant Stork (*L. dubius*) and Slender-billed vulture (*Gyps tenuirostris*). Herpetofaunal diversity includes 20 amphibians, 12 lizards, 18 snakes and 6 turtles/tortoises.

Although mammals have received little attention during previous conservation efforts, it is necessary to mention the population in this request. There is a range of local populations of Asiatic Elephants (*Elephas maximus*) in the adjoining Rani and Garbhanga Reserved Forests, which extend up to the wetland system. In addition, big cats such as Leopard (*Panthera pardus*), Jungle cat (*Felis chaus*) and fishing cat (*Prionailurus viverrinus*) have been documented in Rani and Garbhanga. Two mammals present in the periphery of Deepor Beel, Irriwaddy Squirrel (*Callosciurus pygerythrus*) and Hoolock Gibbon (*Hylobates hoolock*), are listed as a vulnerable and endangered species, respectively, in IUCN Red List of threatened species. The rich fish fauna includes many commercially valuable species such as snakeheads *Channa* spp., large cyprinids *Labeo* spp., *Cirrhinus* spp., and large catfish. The freshwater fish is a vital protein source for local communities as well as generating an income for many local fishermen.

Phytoplankton is among the major constituents of the lowest level of producers in Deepor Beel. Eighteen genera of phytoplankton are reported to have been found throughout most of the Beel. The aquatic body and the shoreline is providing house for a number of angiosperm and pteridophytic plant species. A recent survey has recorded 448 floral species. The vegetation is mainly comprised of aquatic submerged and emergent vegetation, shrubs, climbers and trees. The dominant families of plants include *Poaceae* (28), *Cyperaceae* (11), *Asteraceae* (25), *Scrophulariaceae* (7) and *Fabaceae* (7).

Dominant aquatic plants include *Pistia stratiotes*, *Ottelia alismoides*, *Lemna minor*, *Potamogeton crispus*, *Vallisneria spiralis*, *Hydrilla verticillata*, *Ipomoea reptans*, *Azolla pinnata*, *Spirodela polyrhiza*, *Eleocharis plantaginea*, *Nymphaea alba*, *N. rubra*, *Sagittaria sagittifolia* and giant water lily (*Euryalea ferox*). A few exotic species like *Eichhornia crassipes* (Vern. Meteka) are naturalized in the beel area. However, these exotic plants have deleterious affect on native flora. Various cultivars of Rice (*Oryza sativa*) are cultivated in the wetland system. Puffed seeds of giant water lily (*Euryalea ferox*) is a delicacy in the region. Dominant shoreline vegetation includes *Eupatorium odoratum*, *Achyranthes aspera*, *Cyperus esculentus*, *Phragmites karka*, *Vitex nugundo*, *Murraya koenigii*, *Acclum basilium* and *Saccharum spontaneum*. Dominant tree species

in the surrounding area include *Tectona grandis*, *Ficus bengalensis* and *Bombax malabaricum*.

**Social Setting:** There are fourteen villages (1200 families) around Deepor Beel wetland, most of which belong to low income groups living under the poverty line and depend directly or indirectly on the wetland's natural resources. The villagers are mostly uneducated and belong to socio-economically backward scheduled castes and scheduled tribes. A socio-economic survey conducted on the fourteen villages in the Deepor Beel fringe unveils the following information:

- 22.63% of the people are dependent on the natural resources of the wetland.
- 17.3% of the people are partially dependent on the natural resources of the wetland.
- 45-56% of the families depend on the wetland for fodder for their domestic animals.

### 3. Are scientific reports available that document the dangers?

Yes. Please visit <http://www.ndsu.edu/ndsuem> and go to 'Case Studies' and 'Documents'.

### 4. Which local organizations are working on this issue?

**Institute for Scientific and Technological Research (INSTER):** INSTER started the *Save Deepor Beel Campaign* in 1989. Dr. Achintya Bezbaruah (Assam Engineering College), Dr. Prasanta Saikia, and Dr. Manideep Raj (both from Gauhati University) started the campaign for INSTER by writing to the Governments of Assam and India, and a mass media campaign followed. INSTER also moved the state high court to force the government to act. Intense lobbying with the authorities led the Government of India to ordering an environmental impact assessment for a railroad project. The State (Assam) Government instituted three different committees and established a Deepor Beel Management Authority. INSTER is presently working with Aaranyak; Early Birds; Deepor Beel Ramsar Site Conservation Community; Appropriate Technology Mission of Assam; and Assam Science, Technology, and Environment Council towards developing an integrated management plan for Deepor Beel.

**Aaranyak:** Aaranyak, a society for biodiversity conservation, has been an advocate for Deepor since 1990s. It has been vocal for the conservation of the wetland and voiced opposition to governmental inactivity on the wetland. In addition to lobbying the authorities on Deepor, Aaranyak has launched the following initiatives toward capacity building in the villages: (i) Evaluation of the socio-economic status of the fringe villages, (ii) Awareness drive among the villagers, (iii) Efforts to provide alternative source of livelihood, (iv) Workshops for the government officials, (v) Workshops on wetland values. Aaranyak has also organized bird watching program at Deepor for middle/high school and college students.

**Early Birds:** Early Birds is a grass-root environmental organization working with the tribal community living in the southern fringe of the wetland. The tribal community has been living in harmony with nature in this location for many years. However, poverty and lack of education have driven the population to exploit the wetland and the adjoining Rani and Garbhanga Reserved Forests in an unsustainable manner. Early Birds is working with the people and educating them on sustainable ways of living. The organization also extensively works on vaccinating the local cattle population against various diseases.

**Deepor Beel Ramsar Site Conservation Community:** Deepor Beel Ramsar Site Conservation Community is an informal non-profit education and research group of the faculty, student, and staff of the premier Gauhati University, Assam, India. The university is approximately three kilometers away from the northern fringe of Deepor Beel. The university departments of Zoology, Botany, Environmental Science, and Biotechnology use the wetland as an outdoor laboratory. There have been numerous research papers, project reports, and dissertations based on topics related to Deepor. It is for that very interest that they want Deepor to be protected. Dr. Prasanta Saikia and Dr. Manideep Raj from Gauhati University were among the original proponents of the *Save Deepor Beel Campaign* that started back in 1989. This group has been continuously lobbying with the legislative and administrative wings of the Central and State Governments for the protection of the wetland. The group also organizes seminars and workshops dedicated to Deepor Beel. Most recently they organized a protest procession and a rally against the governmental inaction on Deepor.

**Assam Science, Technology, and Environment Council:** Assam Science, Technology, and Environment Council (ASTEC) is an autonomous body who works for the State (Assam) Government. With funding from the Central Government, ASTEC is working on socio-economic capacity building in the fringe villages of Deepor and funding various educational and non-profit organizations on various research and development projects related to Deepor. It undertook a massive desilting and digging operation at Deepor in an effort to protect the wetland from encroachment for civil construction. ASTEC is also working on steps to control weeds in the wetland, and for demonstration programs for alternative fishing management and training for income generating schemes for the local villagers.

**Do they want Global Response to organize an international letter-writing campaign to help them succeed?**

Yes. They have already contacted Paula Palmer.

**5. Are national or international organizations involved in the campaign?**

**The Secretariat of the Ramsar Convention on Wetlands, Switzerland:** Deepor Beel was declared a wetland of international importance under the Ramsar Convention in

August of 2002. The convention website maintains an active Ramsar site list and states the obligations of member countries towards Ramsar sites.

**Birdlife International, United Kingdom:** Birdlife has included Deepor as an *Outstanding* Important Bird Areas (IBA) in 2004 for threatened birds. Deepor is among the select five IBAs in Assam-Sylhet region, primarily because of its importance to Greater Adjutant Storks, Baers Pochard and Pallas's Fish-eagle, as well as Spot-billed Pelican and Lesser Adjutant Stork. The selection of IBAs has been a particularly effective way of identifying conservation priorities. IBAs are key sites for conservation and small enough to be conserved in their entirety. The IBA status of Deepor recognizes that it (i) holds significant numbers of one or more globally threatened species, (ii) is one of a set of sites that together hold a suite of restricted-range species or biome-restricted species, and (iii) has exceptionally large numbers of migratory or congregatory species. Red Data Book on Threatened Birds of Asia ([www.rdb.or.id](http://www.rdb.or.id)) maintained by Birdlife International includes a number of birds from Deepor Beel.

**WWF-India:** WWF-India Guwahati representative is actively involved in lobbying the governments for various policy decisions on Deepor Beel. WWF-India's website maintains information on Deepor Beel.

Other non-profits like **Bombay Natural History Society, Natures Beckon, Center for Environment Education, Rhino Foundation, WWF-North-east India, Appropriate Technology Mission of Assam,** and **Explorers** are also working on various projects (related to Deepor Beel wetland) involving research, bird watching, socio-economic development of the villagers, and lobbying the governments.

## 6. What have the campaign organizers achieved so far?

**1989:** As a response to the public out cry (initiated by INSTER), the Forest Department of the Government of Assam proposed 414 hectares (out of total 4,000 hectares) of Deepor Beel as a Wildlife Sanctuary (preliminary gazette notification) under Wildlife Protection Act of 1972. Final notification on the sanctuary is never forthcoming due to lack of a conflict resolution mechanism. Villagers are worried about losing their rights on the wetland.

**1997:** Deepor Beel Management Authority was formed by the State (Assam) Government to oversee conservation and development of Deepor Beel. However, it remains effectively non-functional till date due to existence of numerous other authorities with jurisdiction over Deepor Beel.

**2002:** The Deepor Beel was declared a Wetland of International Importance under the Ramsar Convention.

**2004:** Birdlife International included Deepor among the five select wetlands from Assam-Sylhet region as an Important Bird Area with an *outstanding* grade.

**2006:** Assam Science, Technology, and Environment Council started a massive desilting and digging project at Deepor with an objective of increasing water storage and deterring further encroachment into the wetland.

**1989-2007:** Various socio-economic programs have been successfully undertaken (and on-going) by a number non-profit and governmental organization in the fringe villages of Deepor Beel. These programs target in capacity building, drinking water supply, alternative fisheries, alternative livelihood, children's education, and public awareness for wetland conservation.

## **7. What is the current status of the problem?**

This campaign focuses on three key problems: (1) garbage dumping, (2) land settlement in and around Deepor, and (3) the lack of a comprehensive management plan with a sole oversight agency. At this time garbage dumping and settlement continue without government regulation or violation enforcement. Illegal land settlement is rampant and land use change is occurring without any oversight. In addition, the government has not taken the initiative to begin a comprehensive management plan or directed a sole oversight agency for the wetland.

The current status of the problem can only be described in terms of the effect on the delicate ecosystem and indigenous people of Deepor Beel. Most of the details have been stated above regarding the dependence of endangered species, surrounding villages and the local and regional ecosystems on Deepor Beel.

The municipal garbage dumping practice continues despite protests from various groups and individuals. Both the occurrence of settlement and dumping reduces the physical area of the wetland. However, the reduction in the ecological habitat is greater. Due to the presence of human, wildlife will cease to occupy not only the active wetland area but buffer zone as well. Garbage dumping is extremely detrimental to the water quality and scenic beauty of the wetland.

It needs to be reiterated that degradation of Deepor Beel has primarily been the result of a lack of comprehensive or coordinated governmental control. Different government entities act without regard to the authority of other agencies. The poorly organized management system threatens the very existence of a unique wetland that is a source of livelihood to indigenous tribal and fisherman communities as well as the home to endangered flora and fauna.

**8. Who can make a decision to resolve this problem? (usually an official in a government, corporation or international financial institution)**

**Dr. Manmohan Singh**, the Prime Minister of India. He is the executive head of the Government of India. He also happens to be the Member of Parliament from Assam representing the area where Deepor Beel wetland is located.

**Mr. Tarun Gogoi**, the Chief Minister of Assam. He is the executive head of the Government of Assam.

**9. Are there specific dates when important decisions will be made regarding this issue?**

None at this time. However, we suggest starting the campaign before the end of the year (2007); winter is the time when a great deal of land filling and civil construction begins because the wetland water recedes to its yearly low.

**10. To whom should Global Response members write their letters, and what should they ask for in their letters?**

To whom letters should be written:

1. Dr. Manmohan Singh  
Prime Minister of India  
Room No. 152, South Block  
New Delhi - 110001, India
2. Mr. Tarun Gogoi  
Chief Minister of Assam  
Janata Bhawan  
Dispur, Assam - 781006, India

Letter writers will ask for:

1. Declare the wetland area a protected area with fishing rights to indigenous tribes and fisherman communities. Initiate a comprehensive management plan with adequate institutional arrangements.
2. Immediately stop garbage dumping in the wetland by Guwahati Municipal Corporation and restore the wetland to its pre-dumping status.
3. Stop any further land use change, civil construction, and land settlement in and around the wetland. Cancel all government allotted 'pattas' (settlements) and initiate process to purchase back patta lands in the wetland and in its buffer zones.

## **11. Name and contact information for the local campaign contact persons**

**Dr. Prasanta Saikia** (Deepor Beel Ramsar Site Conservation Community)

saikiapk@rediffmail.com

Department of Zoology

Gauhati University

Guwahati-781014, India

**Dr. Bibhab Talukdar** (Aaranyak)

bibhab@aaranyak.org

50, Samanwoy Path,

Survey, Basistha Road

Beltola, Guwahati 781028, India

**Mr. Moloy Barua** (Early Birds)

moloybaruah@yahoo.co.in

26, Surujmukhi, Chandmari

Silpukhuri

Guwahati-781003, India.

### **Further information on Deepor Beel can also be obtained from**

**Dr. Achintya Bezbaruah**, Assistant Professor of Civil Engineering, North Dakota State University, Fargo, ND 58105, USA. Phone: 701-231-7461. Fax: 701-231-6185. E-mail: a.bezbaruah@ndsu.edu

### **Website highlighting the Deepor Beel issue**

<http://www.ndsu.edu/ndsuem>

### **This document is prepared for Deepor Beel Stakeholders by**

North Dakota State University students and faculty in ECS 740: Environmental Management (Fall 2007).

### **This document is approved by**

1. Deepor Beel Ramsar Site Conservation Community
2. Aaranyak
3. Early Birds