BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

AT PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 65 OF 2016

IN THE MATTER OF :-

MANOJ KUMAR MISHRA ...APPLICANT

VERSUS

DELHI DEVELOPMENT AUTHORITY & ORS.
.RESPONDENTS

INDEX

S.N.	PARTICULARS	PAGE(S)
1.	Affidavit on behalf of Respondent No. 3 for submission of suggestions/objections to the report dated 28th July 2016 filed by the Principal Committee	616–641

FILED BY:

(AKSHAMA NATH & KAPIL GUPTA)
COUNSELS FOR RESPONDENT NO.3
CHAMBER NOS.154 & 622,
LAWYERS' CHAMBERS BLOCK,
SAKET COURTS COMPLEX,
NEW DELHI-110017 NEW DELHI

DATE: 14.09.2016

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
AT PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 65 OF 2016

IN THE MATTER OF:-

MANOJ KUMAR MISHRA ...APPLICANT

VERSUS

DELHI DEVELOPMENT AUTHORITY
& ORS. ..RESPONDENTS

Affidavit on behalf of Respondent No. 3 for submission of suggestions/objections to the report dated 28th July 2016 filed by the Principal Committee

MOST RESPECTFULLY SHOWETH:

1) I, Tripta Dhawan, aged about 68 years, Trustee of Vyakti Vikas Kendra-I, Art of Living, B-182A, Sector 48, Noida, U.P., presently at New Delhi, do hereby solemnly affirm and declare as under:

2) That I being a Trustee, am authorized representative of Respondent No.3 in the above noted case and being well conversant with the facts and circumstances of the case and hence competent to swear the present affidavit.

3) The present suggestions/objections are being filed without prejudice to the contention of Respondent No. 3 that the expert Committee is biased/pre meditated and as such ought not to enter upon any investigation of facts in the present matter as elaborately dealt with in M.A. No. 561 of 2016 seeking an appointment of an independent Committee. Nothing contained in the present affidavit may

be taken as a waiver of any ground raised in the said M.A. 561 of 2016. The present suggestions/objections are being made out of abundant caution and only to exhibit and highlight the flaws and gross defects in the report dated 28th July 2016.

4) Pursuant to the liberty granted to the parties to file suggestions, Respondent No.3 seeks to submit its suggestions/objections pertaining to the report dated 28th July 2016. However, I reserve my right and liberty to file an additional affidavit containing suggestions / objections to the report dated 28 July 2016 if the need so arises.

5) On a careful examination Respondent No.3 states that there are serious discrepancies including selection bias and misinterpretation of satellite images (as explained in great detail in the report of the technical expert annexed herewith as **Annexure - 1**) in the report produced by the Principal Committee to the Hon'ble Tribunal, that has resulted in serious errors in the said report. I adopt and rely upon the contents of said report of the technical expert (the profile/CV of the said technical expert had already been annexed with my affidavit dated 03rd August 2016). It is further submitted that all the contents of the report dated 28 July 2016 are hereby denied in totality and nothing contained in the said report dated 28 July 2016 may be taken as admitted merely for want of denials or non traverse.

6) Respondent No.3 respectfully submits that the report presented by the Principal Committee is not based on any scientific assessment and there is no scientific basis to establish that damage to the environment, ecology and/or biodiversity has been caused by Respondent No.3. Nevertheless, without prejudice to its submission above, Respondent No.3 seeks to submit scientific facts and

statistically unbiased scientific evidences to challenge the findings in this *ex-parte* Committee report, as contained and explained in great detail in the report of the technical expert (annexed herewith).

7) To assist the Hon'ble Tribunal in arriving at a factual position, the Respondent No.3 requested for permission to voluntarily conduct detailed environmental examination which would have inherently included geotechnical examination of the soil at the event site; sampling and tests of samples by Ministry of Environment and Forest and/or Ministry of Road Transport and Highways through its Miscellaneous Application No. 311 of 2016 filed on 31st March 2016; which was disposed off on 31st May 2016 without granting permission to do the requested detailed scientific assessment of the event site (as elaborated above). If this permission had been granted, the facts would have emerged conclusively, resolving the issue once and forever. Therefore, alternative scientific ways had to be explored to ascertain the facts.

8) It is respectfully submitted that the allegation made in the report that a large amount of debris and stone grit were lying close to the pontoon bridges site for use in construction, is a misrepresentation of facts. The site allotted for the event had been open for trespassing and the land parcel between Barapullah Drain and DND Flyway had been a popular spot for dumping of debris. Large part of debris had been cleared as noted in the Judgment of 13th January 2015. But as can be seen from the satellite images submitted along with the technical report dated 3 August 2016, debris neither got cleared in totality nor the practice of dumping of debris stopped at this land parcel on allotment of site for the event. Respondent No.3 found huge piles of debris lying there

and trucks were also coming there to dump the debris of major construction works within an economical lead distance. This issue had been raised before the DDA (by way of letter dated 14th December 2015, copy of which is herein enclosed as **Annexure – 2**) along with a request to facilitate clearance of debris from the site. In reply to the aforementioned letter, the DDA wrote back stating that Respondent No.3 may clear the debris on its own (copy enclosed herewith as **Annexure – 3**). I state that this resulted into a substantial financial burden on the Respondent No.3, but being a law-abiding organisation, it promptly acted to ensure that there is no further damage to the environment because of the debris. Respondent No.3 had hired dumpers and trucks to dispose off the debris to the designated construction waste disposal and recycling facility at Gazipur, Delhi. The copies of the payment receipts and number of trips made by these trucks are enclosed as '**Annexure –4**'. It is unfortunate that the Principal Committee while visiting the site observed movement of these trucks engaged for disposal of debris (as well as JCB's for loading the debris on these trucks/dumpers); but instead of appreciating the efforts of the Respondent No.3, they vilified, misrepresented the facts in the report presented before the Hon'ble tribunal.

9) The observation of the Principal Committee pertaining to debris and stone grit as stated in the report – "*A large amount of debris and stone grit were lying close to the pontoon bridges site for use in construction. Other pontoon bridges were under construction also cover the Barapulla drain*" is far away from fact and it is appears to be an ideal case of misrepresentation due to bias. The fact is that the Principal Committee's purported findings are based on a vague idea of the area used for the event

and ongoing activities in the vicinity of the project site, since they never followed a scientific approach towards the valued responsibility assigned to them by Hon'ble Tribunal. The stone grit as presented in Photograph – B13 of the Principal Committee's report belongs to the contractors working for the ongoing construction works for the Barapullah Elevated Road Project. This is another instance where facts have been misrepresented in the report. The reputation of Respondent No. 3 has been sought to be maligned on basis of false reporting of photographs from another project site.

10) Respondent No.3 is a volunteer based organisation and even the volunteers of the organisation had joined in to supplement the efforts of the dumpers that had been hired. Accordingly, they were handpicking and collecting the debris and random rubble spread over the site and from the banks of River Yamuna in accordance with the reply received from the DDA pertaining to clearance of debris by Respondent No. 3 on its own. The volunteers collected this debris at a point, which was waiting to be transported to the construction waste recycling plant at Gazipur, Delhi. Instead of appreciating the hard work of Volunteers in a mega cleaning drive of the floodplains of Yamuna, the Principal Committee has reported the exact opposite of the factual situation and tried to project that some debris has been dumped. While accusing Respondent No.3 of dumping debris prior to the start of its event, the Principal Committee even failed to establish as to why someone will spread debris to create an eyesore before an international event.

11) The report fails to explain and establish how a three-day event falling within the ambit of cultural/recreational programme, confined within a well-defined land parcel

approximately about 25 Hectares has caused loss of all the natural vegetation over the entire floodplain of Yamuna. The same is not possible. Apart from that, the same has not even happened. First and foremost, the exercise of delineation of the area over the satellite image (or any other unbiased thematic map of the Principal Committee's choice) should have been conducted. Second, the allegations against Respondent No.3 should have been confined to such delineated area. Further, the allegations of the Principal Committee are not supported by any evidence much less sufficient evidence of any damage in any part of the delineated area of the event, and therefore the report has failed to establish with any scientific evidence that the event has caused any impact. The statements have no probative value especially given the fact that there is no reference to any baseline situation with which the present alleged status of the land parcel can be compared and the veracity of these allegations can be tested.

12) Notwithstanding the vague, unsubstantiated and baseless statements in the report the following facts pertaining to the vegetation within the delineated limits of the event site used during the event are noteworthy:

1. The event site was under agricultural land use immediately before the event and therefore, the presence of natural vegetation was limited to some weeds and few trees only.

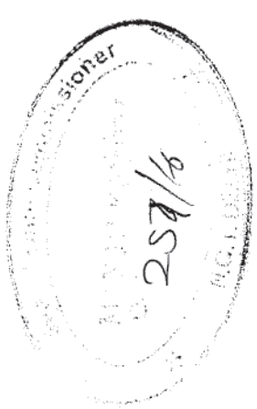
2. The trees in existence before the date of event and after the date of event are capable of being counted over the satellite images of dates before the event and after the event. Respondent No. 3 took utmost

care to keep the trees unaffected in entirety during the event so that no provisions under the Delhi Tree Preservation Act, 1994 is violated. As a matter of fact, the concerned inspector from Government of NCT of Delhi visited the event site before and after the event to count the number of trees and their condition; and his team was satisfied with the fact that no tree has been damaged during the event.

3. For conclusive record (evidence), Respondent No.3 conducted a study of counting of trees on High Resolution Satellite Imagery on dates closer to the date of allotment of the event site to Respondent No. 3 and the dates after the event (during handing over of the site back to DDA). No variation in the number of trees have been noticed between both the dates. Therefore, Hon'ble tribunal is urged to consider this fact pertaining to the trees present over the event site.

13) Before considering the need of continuous supervision during restoration and thereafter for management and monitoring of the restored floodplains for several years (about 10 years), it would be necessary for the Principal Committee (which it has miserably failed to do) to establish the fundamental facts which are as follows:

A. Confirmed existence of claimed wetland over the depositional landform composed of sand deposited within Yamuna floodplain, (called "Point Bar" in floodplain Geomorphology), which has otherwise never been



recorded as such by any national or international body responsible for identification and declaration of a wetland;

B. That based on primary and secondary data, there has been an adverse impact on various parameters (as defined in respective codes/guidelines of Government of India and/or relevant legislations) of the natural environment due to the three-day cultural event;

C. That there has been an adverse impact on various natural parameters due to the three-day event organised by the Respondent No. 3 after comparing the same with the baseline data so that it is conclusively proven and established that the same conditions (for that particular environmental parameter) were existent on the day of official allotment of the land by Delhi Development Authority for the event in question and non-existent on the day the land was handed back to the DDA .

D. That the previous land use activities on the event site [and adjoining land parcel] which include (but is not limited to): (i) farming/agricultural activity since time immemorial; (ii) temporary parking/storage yard for major civil engineering projects like construction of DND Flyway; (iii) digging of deep trench to straighten the Barpullah Drain; (iv) land scaping and construction works for Sundial; (v) construction works for Barapullah Elevated Road Corridor; (vi) Filling and burial of the original

meandering path of 'Kushak Nadi-Barapullah Drain'; (vii) dumping of construction waste on the floodplain and its partial removal using earthmovers and dumpers in accordance with the order of Hon'ble Tribunal in O.A. No. 6/2012; (viii) establishing and demobilising various camps of paramilitary forces on this site; (ix) organising mega cultural/commercial events; (x) frequent trespassing with an intention to learn driving trucks, buses, heavy vehicles and other motorised vehicles over an open flat land in seasons when the event site is not having standing crops; and (xi) various sports activity like professional kit flying, horse riding, cricket, volleyball, motor cycling etc. and other past human activities have had no impact on the floodplains.

E. That the type and extent of impact (if any), is such which requires human intervention at the event site and which nature is unable to revere over a dynamic floodplain with active natural process of annual post monsoon sedimentation.

F. That natural processes over a dynamic floodplain will not be enough to rejuvenate itself.

G. That the processes of depositional fluvial environment, prevailing at the event site (as elaborated in the report/suggestions of the Technical Expert annexed

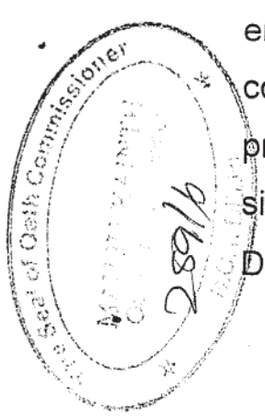
herewith) is insufficient and an unsubstantiated restoration plan is necessary;

H. That there is a need to artificially (by human intervention) reverse and restrict the natural processes over the floodplains of River Yamuna.

Further, the following aspects are to be considered:

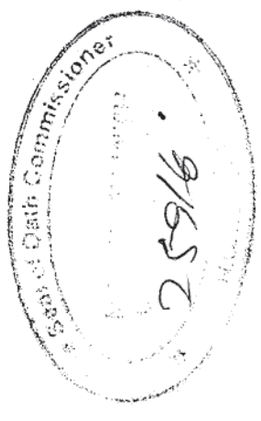
(i) The mechanism to determine the '**process of normalisation towards optimal functioning of the ecosystem**' in the absence of past records of baseline data for various environmental parameters. An absolute lack of credible scientific data (primary and secondary) in the present report of Principal Committee raises a doubt about the restoration, supervision and monitoring plan that is being proposed, when the Principal Committee has failed to establish the following crucial issues, viz. (i) what exactly has been impacted and/or damaged; (ii) which parameter(s) has been impacted (damaged or destroyed); (iii) if there are impacts on any of the parameter(s), the extent of impact; (iv) whether the identified and assessed impact is naturally reversible.

(ii) Further, the Principal Committee has failed to establish the exact role of the three-day event organized by Respondent No.3 in support of the allegations of damage to the floodplain or claimed wetland (which has not been established by any scientific data for any of the environmental parameters) over and above the baseline conditions for various environmental parameters prevailing on and before the date of handing over of the site for the event to Respondent No.3 from the Delhi Development Authority (DDA).



(iii) The existence of wetland has not been established in the report by any credible Government of India records. In such circumstances, it is difficult to understand how the Principal Committee is treating and declaring it as a 'wetland thereby requiring continuous supervision during restoration and thereafter for management and monitoring of the restored floodplains for several years (about 10 years) until the situation becomes normal for optimal functioning of the ecosystem'. Even otherwise it is unintelligible as to how a Principal Committee formed to facilitate the judicial process has the power to declare an area as a wetland on its own. Further, it is submitted that the Principal Committee cannot do the function of the Government of India which has dedicated department(s) and institutions of high reputation under Ministry of Environment and Forest (MoEF) and Ministry of Water Resources, River Development & Ganga Rejuvenation.

(iv) It is submitted that there are dedicated research institutions with state of the art research infrastructure; resources; substantial know how; credible scientific record; and thousands of scientists/research manpower skilled to take care of wetland(s) and fluvial ecosystem but, they have been completely ignored in this process and three members (in role of expert members) of the Principal Committee have sought for their own preference over the entire institutional setup of Government of India.



(v) It is submitted that the Principal Committee could not recommend the names of an officiating position (the chairman of the Principal Committee) and three persons/individuals (in the role of expert members) namely Prof. Gosain, Prof. C.R. Babu and Prf. Brij Gopal for a self-selection of themselves instead of adopting fair

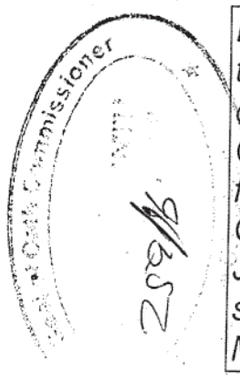
randomisation for undertaking the responsibility. This is hit by the principle of **'Self-selection Bias'**. Self-selection bias arises in any situation in which individuals select themselves into a group, causing a biased sample (opinion in this case) with vocal expression of non-probability sampling (non-probability opinion in this case). Self-selection bias is commonly used to describe situations where the characteristics of the people, which cause them to select themselves in the group, create abnormal or undesirable conditions affecting and/or defeating the overall objective of the group.

(vi) The behavior recorded in the report by some expert members of the Principal Committee is a glaring example of '**Non-response Bias**', towards the dissenting opinion of an individual and/or a smaller sub-group within the group (the Principal Committee). ***Non-response Bias*** *is a type of Bias which adversely affects the process of decisions making/collective opinions. Non-response bias arises due to behavioral dominance of a group within the decision making group or by a dominating individual within the group who is responsible for cascading or suppressing impact on dissenting opinion expressed by one or few individuals within the group. This results into situations where the final opinion become almost non-responsive towards a portion of (or in entirety) vital and valid opinion expressed by the dissenting opinion maker.* In present context, the dissenting voice of the nominated expert member on behalf of NEERI appears to be victim of 'Non-response Bias' towards his vital and valid piece of opinion (as is signified by the email correspondences attached to the report).

The following submissions are made with respect to certain specific statements made in the report of the Principal Committee:

Paragraph – 2: Clearing of Vegetation: *Practically all wetland vegetation on the Main Event site had been removed completely along with their belowground rhizomes and roots by excavation which was evident from some such excavated material still lying on the site (Photos B1, B2). Most of the trees and shrubs had also been removed. No plant cover was visible anywhere in the area.*

Photograph B1 and B2 presented by the Principal Committee are pictures of a bundle of bush vegetation /cattail collected from the banks of Barapullah Drain by farmers and/or individuals belonging to nearby villages/ localities like Village Kilokari and Batla House etc. These tall grasses are being sold in Delhi and NCR as decorative items. Traditionally, some individuals/villagers have been collecting these tall grasses from the banks of Barapullah Drain for selling it to various florists/flower venders. Sometimes these grasses are also used as fodder when they are in tender condition and the hardened ones are sold for thatching the animal shelters in urban villages of Delhi. This practice continues unabated till date. The photographs B1 and B2 presented in the report as evidence in favour of the allegation of removal of wetland vegetation from the event site by Respondent No. 3 is erroneous and misrepresentation of facts.



Paragraph – 2: *The Principal Committee surveyed the site after the event on 15th April, 2016 and planned to investigate the damage quantitatively on 16th April, 2016. However, the Committee was prevented for making any study and were forced to retreat by the AOL volunteers on the site. The present Committee also visited the sites (both sides of the river) on 6th June, 2016 for visual assessment. Our observations are further supported by the Satellite images on 15 March 2016 and 10 May 2016 (Images C 1 to C3)*

The Principal Committee was never prevented by the volunteers of Respondent No.3 from doing their work, but they were only reminded about the written communication dated 1 April 2016 from Chairman of the Principal Committee to, Chairperson (available on judicial record) which stated that the investigation ought to be conducted after handing over of the site to the DDA (Enclosed as **Annexure – 5**). Some volunteers of Respondent No. 3 who were supervising the dismantling and removal of stage, noticed a JCB entering the site. In the background of the serious allegations that were being levelled on Respondent No. 3 and considering the sensitivity of the situation, the said volunteers referred to the aforementioned communication to the persons who had arrived on the site with the JCBs. There was no use of physical force or any threat whatsoever forcing the persons who had arrived at the event site on that particular date. It was simply a humble request made to the concerned persons/officials that as per the aforementioned communication, as the land has not yet been handed over to the DDA and the official investigation of the Principal Committee could not start until the site had been handed over to the DDA. The dismantling and removal of stage was in an advance stage on that particular date.

Therefore, the statement made in the report is not the correct description of facts. The satellite imagery of 15th March 2016 and of subsequent dates are a matter of record, which have already been submitted to the Hon'ble Tribunal by Respondent No. 3 as a part of the expert affidavit dated 03 August 2016.

The Committee observes that:
Paragraph – 3: *The entire floodplain area used for the Main Event site, i.e. between the DND flyover and Barapulla drain (on the right bank of River Yamuna) has been completely destroyed, not simply damaged. The ground is now totally levelled, compacted and hardened, is totally devoid of water*

bodies or depressions, and almost completely devoid of any vegetation (except a few large cattails – The Typha elephnatina – at the base of the DND flyover).

The statement on record regarding alleged completely destruction and damage of the floodplain in the report prepared by the Principal Committee is untrue, false, baseless since they have concluded without establishing facts based on established methodology, study of baseline data, scientific data collection and its analysis. The observations made by the Principal Committee in this report pertaining to "levelling, compaction and hardening of the ground making it devoid of waterbodies or depressions and wetland vegetation" has been explained at length in the technical report annexed herewith and it has further been explained while responding to the "Levelling and Compaction of the ground and filling up of water bodies" in "Activities Causing Damage to the Floodplain During Preparation for the AOL Event."

Paragraph – 4: Loss of floodplain vegetation and Biodiversity: *The floodplain has lost almost all of its natural vegetation – trees, shrubs, reeds, tall grasses, aquatic vegetation including water hyacinth. The vegetation also includes numerous microscopic forms of algae, mosses and some ferns which inhabit the soil and water bodies. All of them have been destroyed in the area completely. Their total loss cannot be readily visualized and documented.*

The reeds mentioned here were present along Barapullah Drain and near the guide bund along River Yamuna, not at the event venue. During the event utmost care was taken by the organisers associated with the Respondent No.3, therefore no reeds were damaged or removed from

the site. Therefore, it is not clear as to how Respondent No.3 is being alleged of trimming or cutting some reeds (*Phragmites karka*). The photograph used by the expert committee in the report (Annexure - B: B1 and B2) is a plant which has been harvested by some local residents to use it for thatching the roof of cattle shade and manufacturing matt and toys. The photographed plant is not something that is dumped but it must have been placed by the locals to dry it up - so that they could use it for thatching.

Paragraph – 9: *The Committee also observed similar construction activity with the use of JCBs on the eastern floodplain across the river. The Committee also learned about the layout plan of the AOL event which clearly showed the areas to be impacted by the activities including making paths for the movement of vehicles and their parking, as well for the area to be used by the visitors/audience.*

- There is no permanent construction at the event site, and therefore, repeated use of term 'construction activity' is erroneous. The use of earthmover (JCB) and other vehicles was to done to the minimal extent, wherever transportation and lifting was not possible by human labour and that too to remove debris which was permitted by the DDA to its removal as stated hereinbefore.

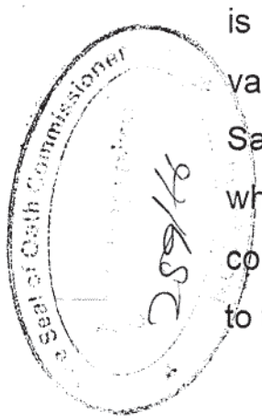
On the eastern floodplain across the river, there is no permanent or temporary construction whatsoever. No road or path had been constructed by Respondent No.3 on the eastern

bank of the river. The report fails to establish how the movement of some vehicles on sand/sandy stratum has impacted the soil/substratum. A basic analysis of this purported finding raises the question as to how have the vehicles associated with 'Respondent No.3' caused the alleged impact on the floodplain but the farm equipment like tractors of farmers; the trucks and dumpers of various contractors working for ongoing metro projects as well as the Barapullah elevated highway; and the vehicles of police department have not caused any impact on the same land parcel since years (decades) of continuance of such activities.

***Paragraph – 10**: The nature and extent of the activities undertaken during the preparation for the event can be assessed also from the photo of the site plan displayed by AOL itself at site. (Photo B20)*

As a responsible organization, Respondent No. 3 disclosed all relevant photographs to the members of the public and concerned authorities. Nevertheless, misrepresentation of these photographs is extremely unfortunate. The alleged site plan presented as an annexure to the report (as Photo B20) is not true depiction of the facts and it was not the site plan of Respondent No.3.

As a matter of fact, the report also refers to the satellite image dated 15th March 2016, which is a realistic record of the event, yet the Principal Committee has chosen to present an incorrect reference as per its personal preference. This Hon'ble Tribunal is urged to consider the realistic record showing actual size of various event related temporary facilities (as depicted in the Satellite Image dated 15th March 2016) instead of the map which has been wrongly relied upon in the report. Such a conduct on part of the Principal Committee raises concerns as to the fairness on part of the Principal Committee.



Suggestions Pertaining to the "State of the Floodplain After the Event" as Described in the Report of Principal Committee [Section III; Page 4]

Paragraph – 1: *The Satellite image of 15 March 2016 (immediately after the event, Annex C) clearly shows the extent of activities which included three large ramps, three pontoon bridges on Barapulla drain, two large and one unfinished pontoon bridges over River Yamuna, several crossings over the side channel by blocking it with debris, the large stage, huge area for seating of the audience, several cabins, approach roads, parking areas etc.*

The satellite image dated 15 March 2016 is the most representative and accurate depiction of the land use for the event in terms of area used but it is misrepresenting the facts pertaining to the alleged 'several crossings' on the so-called side channel.

This Hon'ble Tribunal ought to have considered a delineated area for the event based on the satellite image dated 15th March 2016. The actual area used for the event is much less than the limits of 50 hectares as defined in the EIA Notification, 2006. Therefore, as per the EIA, there is no violation and no MOEF consent is as such required.

The allegation pertaining to side channel has been dealt with in the affidavit annexed herewith.

"***Paragraph – 11:*** *In the Eastern Floodplain, access was provided to the river bank for parking the vehicles and then movement to the Event site through pontoon bridges. One road was widened and compacted with debris also from near the Mayur Vihar Metro Station towards the river. Another two roads were constructed from the Noida-Link Road – DND junction towards the river by dumping debris and filling up a large area of wetland on the way (Image C2). Large parking lots were*

created near the river bank close to the two pontoon bridges, by leveling the crop fields."

No road was ever widened and compacted with debris and no road was ever constructed by Respondent No.3. It is submitted that millions of participants in the event could not have been left to 'health and safety hazard'. Even 'National Disaster Management Authority (NDMA), Government of India has issued a comprehensive document titled – ***"Managing Crowd at Event and Venues of Mass Gathering – A Guide for State Government, Local Authorities, Administrators and Organizers; 2014"*** requires health and safety provisions for participants.

Paragraph – 4: *Despite the above stated fact limitations, we must undertake restoration of flood plain that has been destroyed or degraded. In case of River Yamuna, extensive areas of floodplain have been reclaimed and brought under human settlements and development. River .Yamuna is today among the most degraded and threatened rivers in the country. In view of the multifarious problems faced by the river, the National Green Tribunal laid out a plan of action in their judgment of 13 January, 2015. Notwithstanding this order of the Tribunal, we would like to emphasize upon the functions of floodplains of ensuring the ecological integrity of the rivers and their ecosystem services. The most important functions of floodplains include:*

- *Moderation of flood peaks through temporary retention of water and spread of water;*

- *Enhancement of ground water recharge in large area and improvement of ground water quality;*

- *Stabilization of banks by the vegetation and maintaining channel form;*

Seal of Oath Commissioner

- *Maintenance of higher biodiversity and high production of natural resources;*

- *Provision for fresh sediments with high fertility (suitable for high productivity of vegetation for grazing animals or for growing vegetables);*

- *Filtering sediments, chemicals and nutrients from upslope sources, and thereby improving water quality;*

- *Maintenance of good stream habitat for fish (and other wildlife also), thereby promoting high fisheries production.*

Respondent No.3 submits that no damage to the event site has been caused due to the three-day event; its preparatory and de-mobilisation activities. Therefore, the 'Respondent No.3' denies the all the statement made in this paragraph by the 'Principal Committee' as if the each and every statement is specifically set out herein and traversed.

Concluding Remarks

14) The report presented by the Principal Committee is full of contradictions, untruthfulness and bias against Respondent No.3, therefore it is urged to the Hon'ble Tribunal to reject this report outright and consider the facts presented by Respondent No.3. Respondent No.3 once again states that it reserves its right to file an additional affidavit containing suggestions /objections to

Seal of Oath Commissioner

the report dated 28 July 2016 in the event the need to do so arises.

15) That the Respondent No. 3 had filed an affidavit on 30.05.2016 but the affidavit is not presently on court record as the Respondent No. 3 has learnt through subsequent inspections. The affidavit had stated to the following effect (and the same may be deemed to form a part and parcel of the present affidavit. The annexures to the said affidavit dated 30.05.2016 are annexed herwith as Annexure- 6 (Colly)):

"

That I being a Trustee, am authorized representative of Respondent No.3 in the above noted case and being well conversant with the facts and circumstances of the case and hence competent to swear the present affidavit.

I state that the World Culture Festival had been organized from the 11th to 13th of March 2016 by the Art of Living to spread the message of One World Family, celebrate cultural diversity and inspire humanity for service of one and all and for working towards conservation and protection of environment and propogation of human values. The said event had been successfully concluded with positive notes across the globe.

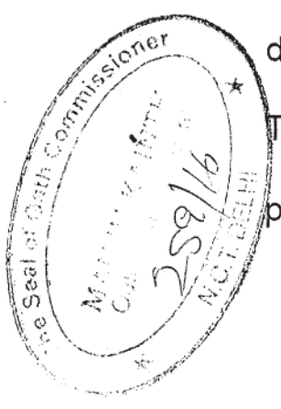
That the present affidavit is being filed to bring on record certain facts pertaining to the Handing Over of the venue alloted for the said event to the Delhi Development Authority (Hereinafter referred to as 'DDA') and related matters thereto.

That the site allotted to Respondent No. 3 for organising The World Culture Festival on March 11th, 12th and 13th 2016 through DDA's letter No. F.10 (25) 2015 / FS / 2015 / 4861 dated 15/12/15 has been cleared from all our temporary structural units including stage infrastructure, scaffoldings, carpets, tents, toilet blocks, chairs, furniture and all other temporary fixtures.

That the pontoon bridges assembled for the event by Public Works Department, Government of Uttar Pradesh and the 71, Engineers Regiment, Ministry of Defence, Government of India; have been dissembled and removed from the site in totality.

That the Respondent No. 3 and / or its associate organisations have not constructed any permanent structure, therefore there is no question of leaving any debris or remnants at the event site.

That all the activities were confined within the land parcel allotted to us for the said event by the DDA.



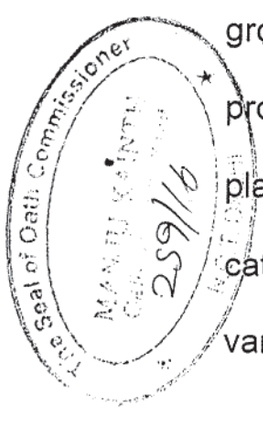
That no earthen material has ever been brought at the event site, except for borrowed earth from the same site.

That except for the sediments and / or inert earthen material originating from the same land parcel, nothing has been left over the flood plain.

That the geomorphology of the land parcel allotted for the event has been kept unaltered.

That any further alteration / clearing and the Independent Scientific Assessment as to the impact of the Respondent No. 3's event on the floodplain/environment as sought by the Respondent No. 3 by way of its application dated 31.03.2016 (being M.A. 311 of 2016, judgment in respect of which has been reserved by this Hon'ble Tribunal) and application dated 27.05.2016,will be possible only as per directions of this Hon'ble Tribunal.

That the land parcel allotted to Respondent No. 3 for the captioned festival is not protected from trespassers and groups. Our volunteers have noticed several groups at this site (including but not limited to) professional and / or amateur kite flying groups; cricket playing groups; leisure biking, horse riding and grazing cattle in the area. That they are littering the ground with various kind of non-biodegradable rappers and plastic



bottles; threads etc. By way of letter dated 28.04.2016, Respondent no. 3 also pointed out "construction debris/ malba dumping" activities at the site (supported with pictures attached to the said letter). Controlling and managing such activities is beyond the capacity of the Respondent No. 3 so the same was brought to the notice of DDA by way of the aforesaid letter dated 28.04.2016 (copy of which had also been filed with this Hon'ble Tribunal). These facts were brought to the notice of the DDA and this Hon'ble Tribunal earlier (as stated above) and are again being broughtto the notice of this Hon'ble Tribunal by way of the present affidavit so that such activities at the floodplain are prevented/stopped in the future. That it is further stated in this context that the the lack of security at the venue and the aforemenitoned concerns (including, but not limited to, the tresspassers at the venue, garbage dumping, Dumping of Construction Debris and other concerns) had also been brought to the notice of the DDA by way of lettersdated 28.03.2016, 18.04.2016 and 28.04.2016, a copies of which letters are annexed herewith as Annexure -1 (Colly).

That the Respondent No. 3 further states that it had also brought to the DDA's notice by way of letter dated 18.04.2016 thatcertain farmers have been using JCB's

on the portion of the land which they use for farming activities.

That the Respondent No. 3 has complied with the conditions outlined by DDA during the grant of permission and also with the directions of this Hon'ble Tribunal in its orders dated 09.03.2016 and 11.03.2016 in its true spirit before, during and after the event.

That it is further stated that the volunteers of Art of Living worked day and night at the venue and have cleared the site by handpicking all the accidental litters whatsoever that was left at the site. We also engaged professional cleaning organizations for the said purpose. With their combined efforts, the venue is now free from any waste and garbage including plastic bottles, snack wrappers etc.

That the three earthen ramps which are resting on the embankment (on the built ground and not over the natural ground of floodplain) of DND Flyway and are entirely within the Right-Of-Way (ROW) of DND Flyway have been left intact for reasons as detailed in note attached as Annexure 2.

Pictures of the aforementioned site (which had been allotted to the Respondent No. 3 for organizing the World Culture Festival)as in the month of April and May 2016 (after the event had been concluded and site had been cleaned by the Art of Living Volunteers of all the accidental litters whatsoever) are annexed herewith as Annexure 3 (Colly).

That it is further stated that the concerned DDA officials had arrived at the aforementioned venue on 12.05.2016 for Joint Inspection and the official attendance of the concerned DDA officials as well as the representatives of the Respondent No. 3 had also been documented. "

Tripla Dhawan

VYAKTI VIKAS KENDRA OF INDIA
THROUGH
TRUSTEE, VYAKTI VIKAS KENDRA OF INDIA

Akshama

(AKSHAMA NATH & KAPIL GUPTA)
COUNSELS FOR APPLICANT/RESPONDENT NO.3
CHAMBER NOS.154 & 622,
LAWYERS' CHAMBERS BLOCK,
SAKET COURTS COMPLEX,
NEW DELHI-110017 NEW DELHI.

DATE: 14.09.2016

AKSHAMA NATH & ASSOCIATES
Legal Consultants & Advocates
Enrl. No. D-653/92
Chamber No.154 Saket Court
New Delhi-1[illegible] 9101454
Email:ksharma[illegible]m

VERIFICATION:

Verified at Delhi on this 14th day of September, 2016 that the contents of this Application are true and correct to the best of my knowledge and belief and on the basis of legal advice and on the basis of the advice rendered by the technical expert (whose detailed report is annexed herewith) and nothing material has been concealed therefrom. Last para is prayer to this Hon'ble Tribunal.

Tripla Dhawan

VYAKTI VIKAS KENDRA OF INDIA
THROUGH
TRUSTEE, VYAKTI VIKAS KENDRA OF INDIA

CERTIFIED THAT THE DEPONENT
Shri Tripla Dhawan Trustee
Akshama Nath
true 259/2016
OATH COMMISSIONER, DELHI
14 SEP 2016

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

AT PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 65 OF 2016

IN THE MATTER OF :-

MANOJ KUMAR MISHRA ...APPLICANT

VERSUS

DELHI DEVELOPMENT AUTHORITY
& ORS. ...RESPONDENTS

INDEX OF THE ANNEXURES OF THE AFFIDAVIT DATED 14.09.2016 FILED BY RESPONDENT NO. 3

FILED BY:

(AKSHAMA NATH & KAPIL GUPTA)
COUNSELS FOR RESPONDENT NO.3
CHAMBER NOS.154 & 622,
LAWYERS' CHAMBERS BLOCK,
SAKET COURTS COMPLEX,
NEW DELHI-110017 NEW DELHI

DATE: 14.09.2016

ANNEXURE-1
642

Suggestions with respect to the 'Report' of the Principal Committee as per Order dated 10th August 2016 of Hon'ble National Green Tribunal in O.A. No. 65 of 2016 (Manoj Mishra v. Delhi Development Authority & Ors.)

Introduction

REPORT

(A) Suggestions based on a holistic evaluation of the report prepared by the Principal Committee.

(1) The Principal Committee appointed by this Hon'ble Tribunal has admitted on record in its report, that they have solely relied upon site visits conducted by some of its members and just one (single) satellite imagery before the event as opposed to a larger sample size covering pre-monsoon and post monsoon data for 15 to 20 years (despite its availability in public domain on Google Earth). A comprehensive study (as aforesaid) of satellite images ranging from the period 2000 -2016 has already been submitted in the technical report dated 3 August 2016 before this Hon'ble Tribunal and the same has been referred to hereinafter in the present report for elaborating various aspects with respect to the condition of the site in question and the statements made in the report dated 28th July 2016. The compilation of all the satellite images as aforesaid has already been filed with the said technical report dated 3 August 2016 and is not being refiled herein to avoid duplication and

unnecessary wastage of resources. It is pertinent to note that the satellite imagery dated 5 September 2016 is during peak monsoon season in Delhi – because of which the said satellite imagery cannot be taken or considered as a true and correct representation of the factual condition existence prior to the event. This signifies that there has been a clear 'selection bias' of the sample satellite imagery. Accordingly, there has neither been collection of any primary data (and/or samples tested in laboratories empanelled and authorised for testing environmental samples for various parameters by Ministry of Environment and Forest), nor has any secondary data base from reliable and unbiased sources been considered in the report. This gives rise to 'selection bias' and as such invalidates the Principal Committee Report in its entirety. Selection bias is the selection of individuals, groups or data for analysis in such a way that proper randomization is notachieved, thereby ensuring that the sample obtained is not representation of the prevailing situation, which was intended to be analyzed.Selection bias is a systematic error due to differences between those selected for study and those not selected[1].

[1] Oxford Reference available online at - http://www.oxfordreference.com/view/10.1093/oi/authority.20110803100452883

(2) Further, report of the Principal Committee contains the following glaring deficiencies and flaws. The report -

(i) is grossly deficient in scientific data;

(ii) has failed to define the environmental parameters for the baseline conditions existing at the event site before the World Culture Festival 2016 and its immediate environs;

(iii) has failed to record and take into account previous landuse(s) on the event site over a representative (unbiased) timeframe stretching to at least a decade (at least for 10 years) and ideally more than a decade;

(iv) has not conducted delineation of impact area due to the WCF event on the same set of thematic data (satellite images);

(v) has not conducted any environmental analysis of scientific data;

(vi) has failed to discuss the proportionate weightage of each of the baseline parameters;

(vii) not based on any findings on environmental analysis;

(viii) has no factual interpretation of findings based on environmental analysis as per established norms in science;

In absence of all of the above fundamental requirements, specific data, supporting documents, etc. the findings of the Principal Committee are baseless, *vague and uncertain.*

Without following the acceptable scientific procedure, rules and regulations for conducting tests pertaining to environmental assessment, the report wrongly and erroneously concluded that the activities of Respondent No.3 have 'completely destroyed not simply damaged' (Page - 4) the entire floodplains used for the WCF event.

(3) The report lacks necessary scientific investigation report assessing impacts on natural environment as a result of the event. Glaring fundamental errors in the report produced by the Principal Committee include (but not limited to) following:

(a) The report prepared by the Principal Committee has not discussed or taken into account the previous landuse(s) on the event site over a representative (unbiased) timeframe. In absence of this exercise, any assessment that may have been done, would necessarily contain the cumulative impact of

years of previous landuse/damage on the same site, and impact caused by such landuse/damageto its immediate neighbourhood.The Principal Committee findings without appreciating and taking into account this previous landuse(s) will doubtlessly be erroneous.

(b) The report does not enunciate as to the methodology adopted for the study and assessment of environmental impacts on the event site. No established scientific methodology has been followed. As a result, the findings made in the report are baseless, arbitrary and unacceptable as a work of systematic scientific study worth consideration in a judicial process. There has neither been collection of any primary data for any of the environmental parameters, nor has any defined set of unbiased secondary data been used to define the baseline conditions of the event site. In absence of systematic data collection exercise, the report produced by the Principal Committee is devoid of any credible database, for establishing the baseline environmental conditions. In fact, even the primary data collected by the Principal Committee (as stated in the letter in July, 2016), has not been stated in the report. In such a case, an

adverse inference with regard to the primary data collected by the Principal Committee may be drawn against the findings of the Principal Committee.

(c) Further, a structured database comprising primary and secondary data, **environmental analysis/scientific analysis** of environmental data for various parameters is also non-existent. In fact, no environmental data analysis has been conducted at all. Any attempt to draw conclusions pertaining to environmental impacts, without this exercise will necessarily be baseless, unscientific, biased and unacceptable.

(d) There has been no delineation of the event site and no '**Basemap**' defining the area of impact has been prepared.Such an approach is highly unscientific and unacceptable approach in any environmental assessment. In cases where, there has been no delineationof a map based on the same data set, the entire exercise invariably results in erroneous conclusions and recommendations. The present report consists of all of the aforesaid deficiencies and in fact is based on 'evidences' located outside the geographic realm of the actual event site.

(4) It is submitted that the reference to satellite images dated 15th of March 2016 from Google Earth, without delineation of the impact area of event on this satellite image has rendered the whole process invalid and erroneous. It is further surprising to note that the Principal Committee has drawn all of the conclusions based on site visits and cursory reference to google earth images of 15th of March 2016 for assessment of the extent of event related activities.

Additionally, the report also relies on a layout plan prepared by Respondent No.3 (AOL), pertaining to which the Principal Committee has observed – "*The Committee also learned about the layout plan of the AOL event which clearly showed the areas to be impacted by the activities including making paths for the movement of vehicles and their parking, as well for the area to be used by the visitors/audience.*" I am given to understand that 'Respondent No.3' never prepared the map being claimed as 'Layout Plan of AOL' in the report by the Principal Committee. As a matter of fact, the map prepared for the layout plan for the event was a to-the-scale detailed vector map and it was based on engineering details. Therefore, any study based on the layout plan annexed to the report is bound to result in serious errors in interpretation of the facts pertaining to the activity (event in this case) in question.

(e) **Selection Bias of the Committee**

The basis of the findings arrived at in the report is; (a) primarily the visual observation of some of its members. Some of the members of the Principal Committee are also in the Committee formed/constituted by the decision of this Hon'ble Tribunal dated 13th January 2015 in O.A. No. 6 of 2012 [Manoj Mishra v/s Union of India & Ors.]. The Report is bereft of any supporting data or material based on primary or secondary sources (since no physical examination of any environmental and ecological parameters has been conducted). Also the reliance on a single satellite image before the event is not acceptable practice or procedure and as such is not well founded. This image is of a selected date which seems to be a personal preference of the individuals who have produced this report, despite availability of satellite images for last 16 years for the event site from the same source in public domain of 'Google Earth', which is also attached with the technical report dated 3 August 2016 submitted before this Hon'ble Tribunal. By referring to one (single) satellite imagery of a particular date 5th September 2015, (with peak monsoon precipitation in Delhi) for representation of the site conditions before

the event; the Principal Committee has adopted an erroneous and fallacious approach and an approach which is unacceptable and unknown while conducting a scientific assessment. Selection of just one image before the event out of a larger lot available from the same source (Google Earth) is unacceptable in scientific study. This is a clear case of **selection bias**.

The Principal Committee ought not to have selected one single image out of the entire lot between year 2000 to 2016, which is available in the public domain from the same source on same scale and resolution. The entire set of Google Earth images spanning over 16 years (in excess of a decade and half) should have been properly considered to create an unbiased temporal sample (sample of the images of various dates over the larger time frame). Repetitive images in a temporal record would have revealed a true and comprehensive description of the land-use, physiographic character and various other land related environmental parameters. The selection of one single image of a date within the peak monsoon month of Delhi is inconsistent with the accepted principles of randomisation in data pertaining to most

representative depiction of land and water related facts.

(f) **Incorrect Interpretation of the Satellite Imagery**

Without prejudice to the fact that the Principal Committee is guilty of selection bias which has invalidated the entire exercise and resulted in the report being erroneous, it is submitted that the satellite image relied upon has also been incorrectly interpreted. One of the most glaring mistakes made in the report is the declaration of dry farmlands as huge tract of wetlands filled with water; several waterbodies etc. Even the agricultural crops have been considered as wetland vegetation with shallow to deep water beneath them.

The report also holds Respondent No.3 responsible for felling/cutting of trees. As a matter of fact, counting of trees on a high resolution satellite image is very easy and their numbers could be compared between dates before and after the event. Such an exercise has not been conducted. Without conducting such an exercise, holding Respondent No.3 responsible for felling/cutting of trees seems to be a major flaw in the report.

Respondent No.3 has also been held responsible for construction of earthen/gravelled roads and other infrastructure. This matter has already been dealt in the technical report dated 3 August 2016, where it had been elaborately explainedthat the earthen/gravelled roads and other infrastructure was already existing since a date prior to 22nd December 2000, [as recorded in the satellite images of this date as enclosed in the technical report dated 3 August 2016].

(B) Suggestions pertaining to certain specific statements made in the report prepared by the Principal Committee

This section deals with the suggestions pertaining to certain statements made in the report prepared by the Principal Committee.

Suggestions pertaining to the Section "State of the Floodplain Before the Event" as described in the report [Section 1; Page 2]

Paragraph – 2 (Page – 2): *Some members of the Committee had been visiting the Floodplains of River Yamuna for the past couple of years for preparing their Reports to the NGT on the ecological restoration of the Yamuna flood plain in the 22 Km stretch of the river passing through Delhi, as ordered by the Hon'ble NGT. One such visit was made during 2-4 October, 2015.*

(1) Floodplains contain several geomorphic features, which have specific geomorphology; distinct origin and specific function in a fluvial environment and eco-system. Therefore, their respective role in fluvial hydrology; riparian ecology and environment is distinct and specific to the geomorphic character of specific landform within the floodplain.

(2) The report of the Principal Committee while describing the visit of some of the members for past couple of years to the 22Km stretch of River Yamuna passing through Delhi fails to:

(a) State specific location(s) where such visit(s) had been made;

(b) the purpose of their visit;

(c) whether the visit was for some scientific assignment or for some other purpose particularly between 2-4 October, 2015. If they were on a specific scientific assignment, between 2-4 October 2015, then the scientific data they collected during those dates and the scientific document they have produced after the visit ought to have been disclosed. It would also be

pertinent to consider which specific role was played by that landform in relation to overall riparian ecology of Yamuna; and what was the environmental significance attached to that landform within the floodplain;

(d) It has also not been stated or established whether the visit(s) covered the event site or whether it/they was/were confined to other locations of the Principal Committee's preference and purpose. A basic understanding of floodplain landform; riparian ecology and floodplain environment reveals that the generalisation of the entire floodplain of Yamuna as a uniform and single geomorphic entity is not in accordance with principles of fluvial geomorphology and depositional environment of floodplains. The report has been prepared on generalised and vague premise, and accordingly the statements made in the report do not present a correct description of the impact of World Culture Festival on the site in question.

Paragraph – 2 (Page – 2): *Accordingly, the floodplain of the main Event site had huge tract of wetlands, natural vegetation comprising of trees and shrubs, tall reeds, cattails, sedges and other aquatic vegetation including water hyacinth (in the foreground). Several large water bodies and some patches of agriculture (Photos A1, A2) can be seen. The nature of aquatic vegetation also indicates the presence of shallow to deep water below them.*

(3) At the outset, it is necessary to point out a glaring error i.e. the photos A1 and A2 which have been annexed to establish that "**Several large water bodies** and some patches of agriculture (Photos A1, A2) can be seen". The photograph labelled A2 is in fact the zoomed in' picture of a small green bushy area and it does not establish the condition of the whole or even a portion of the site prior to the event as has been claimed in the report. Similarly, photograph A2 cannot be held to be a representative condition of the site prior to the event as there is no specificity of the location whatsoever. Such photographs are not qualified to form a part of a scientific assessment.

(4) The report states that the event site had a huge tract of wetlands over which Respondent No.3 organised the three-day event in March 2016. The basis of such a statement is primarily visual observation

of the event site by some of the members of the Principal Committee who had also been a part of the Principal Committee constituted as per the judgement dated 13th January 2015 in O.A. No. 6 of 2012 [Manoj Mishra v/s Union of India & Ors.]. The Principal Committee has not conducted any physical examination for any environmental and ecological parameters at this site either before the event or after it. Therefore, the description made in the report is without any supporting data of primary or secondary origin. To support its description of the site before the event, the report relies on one (single) satellite image of a selected date of the Principal Committee's preference (5th September 2015) despite availability of satellite images for last 16 years for the event site from the same source in public domain of 'Google Earth'. It appears that a somewhat hasty approach has been adopted to prepare the report, by referring to and relying upon only one (single) satellite imagery of a particular date i.e. 5th September 2015, and that too during peak monsoon season in Delhi, which is neither representative of the ground conditions nor acceptable as a

safe approach in matters pertaining to scientific assessment. Selection of just one image before the event to define the prevailing ground conditions out of a larger lot available from the same source (Google Earth) in public domain is a clear case of selection bias as explained at length hereinabove. In fact, it was expected that in preparing the report of such high importance, randomisation of image dates and seasons should have been practiced.

(5) Further, the technical report dated 3rd August 2016submitted before this Hon'ble Tribunal contains complete set of satellite images available in public domain (i.e. Google Earth) from 22nd December 2000 to 25th May 2016 thereby creating a complete and unbiased record of the satellite data (temporal record). A holistic interpretation of these satellite images (as done in the aforesaid technical report dated 3rd August 2016) conclusively proves that the event site never had any wetland at all, but this land parcel was under agricultural landuse at least since 22nd December 2000 as recorded in Satellite Images.

(6) Apart from the satellite images as enumerated above, the fact that the site was not a wetland but a flat agricultural field (crop-land) is further evident from the following:

(a) The event site allotted to Respondent No.3 belongs to village Kilokari. The entire land parcel issued by DDA for the event was government land (due to Land Acquisition proceedings) but the possession was with farmers who were holding it for generations and the entire land used for the event was under agricultural landuse. Various Khasra Nos. covering the event site were under agricultural landuse on the date when the site was handed over to Respondent No.3 by Delhi Development Authority. There were crops and harvested farmlands on the entire land allotted to Respondent No.3, as is evident in the satellite image of 15th December 2015. I am given to understand that to get the farmland free from various farming activity Respondent No.3 had to pay a hefty compensation against the standing crops/early harvesting and not farming during the month of event to various farmers. However, a few farmers

refused to take compensation and continued farming on the basis of the order issued by Hon'ble High Court of Delhi, which issued an order dated 20th January 2016 in Writ Petition No.483/2016 pertaining to Khasra No. 610 of Kilokari Village. As such, no activity was done on those Khasra Numbers and status quo was maintained. Other farmers (holding other Khasra Numbers) received compensation from Respondent No.3.

(b) The description of these agricultural farms as a waterbody/wetland is inconsistent with the facts registered in Khasra maps. The ongoing court cases in Hon'ble Delhi High Court in the matter of Writ Petition No.483/2016 pertaining to Khasra No. 610 of Kilokari Village [Annexure -I]; where relief has also been granted to the Petitioner-farmer by an order dated 20th January 2016 establishes that the land in question is not a wetland and is being used for the purpose of agriculture. All these farmlands were dry land with sandy substratum as evident in the concurrent record of satellite images of

covering the land parcel on which the WCF event was organised, shows any wetland and or enclosed waterbody. The Delhi Guide Map; Third Edition 1985; on a scale of 1:25,000 published by Survey of India [Copy enclosed in Annexure - II], depicted this land parcel as a perfect flat land without even a difference of one contour interval. This indicates that the entire land parcel did not have any undulation recorded in the survey which was conducted with the highest degree of geodetic controls.

(e) The Principal Committee's report is in clear contradiction to the facts presented by Survey of India in terms of topography and landform, which has depicted this land parcel as an extremely flat land devoid of any wetland and/or enclosed waterbody. It is also important to note that the Principal Committee has not done any topographic survey or primary data collection pertaining to the topography but has used various topography dependent features and expressions like wetland and waterbodies. The statements made in the report are against the facts presented in Survey of

last 16 years from 22nd December 2000 to 25th May 2016. It is submitted that because of the dry sandy character of the land, no wetland vegetation ever existed on this land parcel except for some fast growing seasonal weeds only during monsoon season.

(c) The report has failed to recognise the farmlands and have erroneously and baselessly reported such farmlands as "*huge tract of wetlands, natural vegetation comprising of trees and shrubs, tall reeds, cattails, sedges and other aquatic vegetation including water hyacinth (in the foreground). Several large water bodies and some patches of agriculture can be seen. The nature of aquatic vegetation also indicates the presence of shallow to deep water below them*".

(d) Survey of India is India's central engineering agency in charge of mapping and surveying. The department has global reputation for accuracy; correctness and detailed depiction of landform with highest degree of precision. None of the maps prepared by Survey of India for Delhi

India maps, which are prepared after a comprehensive engineering survey maintaining highest degree of precision and accuracy; as presented in "The Delhi Guide Map; Third Edition 1985, published under the direction of Major General Girish Chandra Aggarwal,Surveyor General of India."

(f) The report prepared by Principal Committee is emphatic about the existence of wetland and water bodies on the event site and adjoining land parcel. The report further states that there has been damage to huge tract of wetlands, but there is no evidence to support such statements. The report also fails to produce any conclusive evidence in support of their claim (such as evidence in support of presence of undrained hydric soil). It further fails to produce any third party record pertaining to existence of wetland on this land parcel. The alleged 'huge tract of wetland' existing within the capital city of India has never been mentioned by wetland specialists responsible for identification and declaration of wetlands under Ramsar Convention. Even after the appointment of Principal

Committee in January 2015, the alleged 'huge tract of wetland' and alleged 'several water bodies' as alleged in report has not been disclosed to the 'Scientific and Technical Review Committee of Ramsar Convention'.

(g) In March 2011, Space Applications Centre (ISRO), Ahmedabad published an elaborate document titled "National Wetland Atlas" sponsored by 'Ministry of Environment and Forests, Government of India', as a part of the project on National Wetland Inventory and Assessment (NWIA). This atlas has an elaborate section on wetlands of Delhi in 'Chapter 8; Section 8.1.7.; which elaborately covers and lists 399 wetlands in Delhi including 301 micro-wetlands (very small wetlands) up to the size of 2.25 hectare, but it has not identified even a single wetland of smallest possible size on the event site of WCF 2016. Chapter 8; Section 8.1.7. and an enlarged map of the event area are enclosed as evidence in 'Annexure - III'. Therefore, it is established conclusively that no wetland and water bodies ever existed on the event site

since they are not recorded by one of the most advanced high resolution remote sensing sensor system installed on Indian Remote Sensing Satellites. Learned scientists of 'Space Application Centre' which has not identified and marked even a single pool of water/micro-wetland on the land parcel over which the Principal Committee alleges the existence of "Huge Tract of Wetlands" and "Several Large Waterbodies".

(h) Broadly, the report claims existence of: (a) Huge Tract of Wetlands; (b) Several large waterbodies; (c) some patches of agriculture; (d) presence of shallow to deep water below the claimed aquatic vegetation. However, the report does not clarify how the same had been identified and considered as wetland covering a huge tract without there being any physical survey or primary data collection pertaining to the topography of the land. Further, the report has not clarified the number, shape, size and morphology of the claimed huge tract of wetlands; several large waterbodies; some patches of agriculture; and

presence of shallow to deep water below the claimed aquatic vegetation. Therefore, the report ought to have disclosed the sum total of the area covered by the 'huge tract of wetlands' plus 'several large water bodies' plus 'agricultural farms' plus 'shallow to deep waterlogged land with aquatic vegetation'. The report should also have clarified as to whether the above includes the actual land allotted to Respondent No.3 for WCF 2016.

(i) One of the expert members in the Principal Committee Prof. Brij Gopal compiled the 'Handbook of Wetland Management' for Wetlands Division, WWF-India [first Published August 1995]. In this handbook Brij Gopal has briefly dealt with the issue of invasive alien species in -Section 1.4 - Natural Processes and Anthropogenic Impacts; Introduction of invasive alien species [Page – 43];

Invasive species are an important threat to wetlands. Strangely, in the tropics these species are often neotropical natives which have been introduced in

the old world tropics accidentally or intentionally. Among the most important and therefore well-studied of these aquatic weeds among which the most significant are Eichhornia crassipes (water hyacinth), Salvinia molesta, Pistia stratiotes, Alternanthera philoxeroides and hydrilla verticillata (Pieterse and Murphy 1990). Water hyacinth may be singled out for the degree to which it has received global attention (see Gopal 1987). Water hyacinth has the capacity for prolific growth and completely cover the water surface with a thick mat. These mats become colonized by less desirable semi-aquatic species which replace the natural biota (Mitchell and Gopal 1990). Although water hyacinth is eaten by some animals, there are no native herbivores which may be used to control its growth. Water hyacinth also exhibits high evapotranspiration rates which coupled with organic matter accumulation can turn a wetland quickly into dry upland (Gopal 1987).[2]

---

[2] *"Handbook of Wetland Management", compiled by Brij Gopal; prepared and produced by Wetlands Division, WWF-India (WWF – World Wide Fund for Nature – India, August 1995)*

In spite of the above scientific fact as enunciated by one of the committee members himself, the report states "*The floodplain has lost almost all of its natural vegetation – trees, shrubs, reeds, tall grasses, aquatic vegetation* ***including water hyacinth***". Such a statement in the report, which seems to potray as a part of the natural/aquatic vegetation of the floodplain and which imputes Respondent No.3 for the alleged damage to the 'natural/aquatic vegetation *including water hyacinth'*seems to be contrary to the scientific facts, enunciated by one of the committee members himself.

Paragraph – 4 (Page – 2): *The status of the site is seen clearly from the satellite image of 5th Sept, 2015 (Image A3) which shows the then existing scenario circled in different subheads on the map. The presence of natural vegetation and large expanse of water can be readily recognized. A side channel of the river running almost parallel to it and passing under the DND flyover is also noteworthy. Some agricultural activity can be seen in the area between the side channel and the river.*

(7) To depict the then existing scenario/ status/baseline of the site, the report has relied on one single satellite image dated 5th September 2015 scanning Delhi immediately after a heavy monsoon downpour; despite availability of satellite images for last 16 years for the event site

from the same source in public domain of 'Google Earth'. As already stated earlier, this is an unreasonable approach and a clear case of 'selection bias'; and it cannot be considered as genuine scientific assessment as explained above.

(8) The report also refers to the presence of natural vegetation, which are actually crops and the alleged large expanse of water is nothing but a dry farmland if anyone observes the repetitive temporal record of satellite images over a period of time (say between December 2000 to 2016). .There is not even one enclosed waterbody on the event site situated over the floodplain of river Yamuna, and the circles shown in the report is not a correct representation/interpretation of scientific data.

(9) The following statement made in the report - *"Side channel of the river running almost parallel to it and passing under the DND flyover is also noteworthy"*, is associated with the natural phenomenon of 'Meandering [3] ' and 'Avulsion [4] ' in the

[3] Meander: A winding curve in the course of a river.
[4] Avulsion: The abandonment of all or part of a channel belt in favour of a new course (Source: Oxford Dictionary of Geography; Susan Mayhew; ISBN 978-0-19-968085-6)

floodplain. This statement in the report exhibits lack of proper understanding of the relevant floodplain process and natural phenomenon associated with the fluvial environment of the floodplain; stages associated with '**stream meandering**', '**avulsion**' and '**channel migration**'.

(10) River Yamuna in Delhi exhibits a tendency of 'Avulsion'; the river channel of Yamuna has migrated substantially eastwards in the period of 2000 to 2016, which is noticeable in the satellite images presented to Hon'ble National Green Tribunal in "Annexure – II" of the technical report submitted to Hon'ble National Green Tribunal on 03rd August 2016. On carefully observing the set of satellite images and in particular the event site starting from 22nd December 2000 to 25th May 2016; 'Avulsion' in the course of the river channel is noticed, in as much as, there is a measurable shift towards the east in excess of 50m along the event site. This type of shift in the river leaving behind a truncated scar/ remnant of the channel is a characteristic feature associated with 'Avulsion' in major rivers. There are several such scars due to a previous course of Yamuna in Delhi and

Uttar Pradesh by virtue of (a) natural character of 'open Channel Flow'; (b) sediment Transport by the river; and (c) the process of floodplain sedimentation. In the present case, a further shift in the main channel of River Yamuna is restricted due to the presence of a guide bank (bund) and reduction in the fluvial energy level due to several barrages in course of River Yamuna, upstream of the event site. The left over scar of the channel [which the report states as being a 'side channel'] after avulsion gets filled and buried within a short span of time. It is a temporary feature on floodplain in geological terms. Any attempt to prohibit this natural process of disappearance of channel scar due to deposition of sand and debris carried by the river during the flood is against the process of natural character of the floodplain and its depositional environment. After avulsion the mouth/opening of the left over channel scar is invariably blocked and filled by sediment and/or debris transported by the river during floods and subsequently the entire (narrow) scar is also filled by sand and flood sediments. The report fails to appreciate this process in its correct

perspective. Instead, it has been incorrectly concluded being accused to have impacted one of the temporary floodplain landform namely like a scar due to Avulsion.

(11) There is a selective admission in the report, where it is stated that 'some agricultural activity can be seen in the area between the side channel and the river'. The report fails to appreciate the importance and impact of the reflectance character which is indicative and in identification of vegetation and other features on the surface of the land. Therefore, based on variation in reflectance, existence of farmland and wetland is determined in studies based on Remote Sensing (Study of satellite imagery) On the basis of the reflectance character recorded over a decade and half it is clear that the event site and its adjoining land parcel is a farmland.

Paragraph – 5 (Page – 2):*These wetlands as shown in the photographs performed many ecological functions which included flood control, ground water recharge, supporting large biodiversity (birds, fish, reptiles, amphibian, numerous invertebrates and microorganisms). The invertebrates such as nematodes, snails and insects served as food for other animals whereas the microorganisms contributed to decomposition, cycling of nutrients and supported food chain. Whereas some wetland vegetation was grazed upon, large reeds, shrubs and trees contributed most significantly to carbon sequestration*

(storing carbon in biomass and soil). Further valuable function of wetland vegetation was to process nutrients and other pollutants thereby assimilating wastes entering the area and hence, maintaining water quality in the river and belowground.

(12) When there are no wetlands and/or water body on this land parcel as proven in paragraphs above then there is no justification to claim the functions of wetland. The report ought to have provided evidence with the aid of species survey about the existence of the species of *"birds, fish, reptiles, amphibian, invertebrates such as nematodes, snails and insects"*at the event site before the event along with details of the survey done by the Principal Committee.In case the Principal Committee has done this survey before the event then, the same has to be furnished to enable a complete and comprehensive reply. In absence of such an exercise, there is no justification to give such a finding.

Paragraph – 6 (Page – 2):*The Eastern Floodplain (on the left of the river) has been largely under seasonal agriculture but there were some large wetlands. These can be clearly seen in the satellite image of the same date (05 September 2015) (Image A4) where the wetlands have been specifically marked.*

(13) The description is generic in nature, and there is no merit in the argument pertaining to the declaration of wetlands,

which is nothing buta spill over of water from the outlet of municipal sewer after an event of precipitation/ monsoon season. The texture of water registered on the satellite image indicates that there could have been a spill over of untreated sewage, which may have been accidental or temporary in nature. The Principal Committee ought to have substantiated the basis of their decision pertaining to the claim of wetland, which claim, is in contradiction to the declarations made under Ramsar Convention and is in fact contrary to the National Wetland Atlas with relevant sections pertaining to the wetlands in the state of Delhi as elaborated hereinabove.

Suggestions pertaining to the "Activities Causing Damage to the Floodplain During Preparation for the AOL Event" as described in the Report of Principal Committee [Section II; Page 3].

Paragraph – 8 (Page – 3): Clearing of Vegetation: *Practically all wetland vegetation on the Main Event site had been removed completely along with their belowground rhizomes and roots by excavation which was evident from some such excavated material still lying on the site (Photos B1, B2). Most of the trees and shrubs had also been removed. No plant cover was visible anywhere in the area.*

(14) As established hereinabove, the event site had only agricultural fields and no wetland ever existed at this site. Accordingly, no question of removal of wetland vegetation arises. As a matter of fact, as per the Principles of Fluvial Geomorphology, wetland cannot be formed over a point bar (sandy deposit of the floodplain). This phenomenon had been explained at length in the technical report submitted on 3rd August 2016. For the sake of continuity, the same is being reproduced (Para 8 (iv) of the technical report dated 3 August 2016):

"Study of satellite images over the timeline between 22nd December 2000 till 10th May 2016 reveals an important fact about the geomorphology and fluvial hydrology of the Land Parcel used for the WCF event. Satellite images and previous records of Survey of India maps [Copy enclosed in Annexure - IB] covering this Land Parcel reveal the fact that no enclosed waterbodies and wetland ever existed on this Land Parcel in recent history. In terms of floodplain geomorphology, this Land Parcel over the Yamuna floodplain, is a "Point-Bar"; which are a depositional feature of active floodplains made up

of sandy deposits (and alluvium in lower reaches of rivers before formation of delta) that accumulates on the inside bend (curve) of rivers below the slip-off slope. Point Bars are found in abundance in mature or meandering rivers in entire Ganga Catchment, to which River Yamuna belongs. River Yamuna flowing through Delhi is in mature stage and it starts forming Point Bars at least 80km upstream of the Land Parcel allotted for the event of World Culture Festival 2016. To control floods, fluvial erosion and meandering of the river, flow in Yamuna has been heavily regulated through a series of barrages, which has seriously affected the natural flow, inter alia, slowing down the geomorphic processes related to the fluvial hydrology of the river. Despite regulation and/or restriction of flow in Yamuna, due to the pattern of flow, the river has a natural tendency of forming 'Point Bar' at the event site and a bank of erosion on the other side. Therefore, to deal with this situation a 'Guide Bank (Guide Bund)' had been constructed (probably at the time of construction of the DND flyover) at this very location, which is in existence at least since the year 2000 as is evident from the

satellite images. 'Guide Banks' are mostly constructed over Point Bar on one side and bank of erosion on the other side with an aim to train the meandering tendency of river. Guide Bank is sited on a Point Bar at the vertex, which is the local point of maximum curvature in the river. Therefore, the designers of the Guide Bank at this location (where WCF was organised) were sure of the existence of Point Bar at this location in terms of geology, geomorphology, fluvial hydrology, geotechnical properties and engineering considerations. In this study, extremely flat topography of the event site is evident in all the satellite images for last 15 years as well as in the Delhi Guide Map; third Edition 1985; on a scale of 1:25, 000 Published by Survey of India [Copy enclosed in Annexure - IB], which further confirms that this land form is a Point Bar. This type of topography and very gentle slope with elevation very close to river water level is a typical behaviour of a Point Bar. Since Point bars are low-lying, they are often overtaken by floods and can accumulate driftwood and other debris during times of high water levels. In a heavily polluted river with extremity of anthropogenic interventions flood

accumulated driftwood and other debris is a strong possibility.

The reflectance of bare land in satellite images of dry season indicates the presence of extremely high sand content in the soil. Field assessment of sedimentological assemblage of this site also confirms this landform to be a Point bar comprising of dense sand deposit. Field assessment of sedimentological assemblage further indicates that the sand/sandy soil present at this Land Parcel is well shorted and fairly uniform in grain size. Although sub-stratum has not been investigated in this study but it is expected that the Land Parcel must be having intercalation deposits of flood debris, which has inherent characteristic of high permeability making it unsuitable to confine or hold surface water but it forms a good aquifer.

Consequently, uniform flatness and very rich sand content in this stratum makes it unsuitable for the formation of any confined surface water body and/or a wetland. Even in extreme rainfall and a condition of raised groundwater level, this Land Parcel could hold water for an insignificantly small

time frame. Even if deliberate human intervention modifies this landform to create a wetland, that would not survive due to the sedimentology, topography, geomorphology, fluvial hydrology and depositional phenomenon associated with every event of flooding.

Therefore, the records of satellite imagery, the aforementioned map published by Survey of India showing extreme flatness, the existence of 'Guide Bank' on this Land Parcel as elaborated above, the principles of geomorphology, fluvial hydrology, sedimentology and other undeniable scientific evidences enunciated above confirm nonexistence of any water bodies and wetlands on this Land Parcel over Yamuna floodplain."

(15) Accordingly, the claim made in the report produced by Principal Committee pertaining to the wetland and wetland vegetation on the event site in question is completely erroneous.

(16) Photograph B1 and B2 presented by the Principal Committee are pictures of a bundle of bush vegetation /cattail collected from the banks of Barapullah Drain by farmers and/or individuals

belonging to nearby villages/ localities like Village Kilokari and Batla House etc. These tall grasses are being sold in Delhi and NCR as decorative items. Traditionally, some individuals/villagers have been collecting these tall grasses from the banks of Barapullah Drain for selling it to various florists/flower venders. Sometimes these grasses are also used as fodder when they are in tender condition and the hardened ones are sold for thatching the animal shelters in urban villages of Delhi. This practice continues unabated till date. The photographs B1 and B2 presented in the report as evidence in favour of the allegation of removal of wetland vegetation from the event site by Respondent No. 3 is erroneous and misrepresentation of facts.

Paragraph – 9 (Page – 3): Levelling and compaction of the ground and filling up of water bodies: *There were no water bodies left. All depressions had been filled up with soil or debris, and the ground had been levelled totally flat. The compaction and consolidation of land was apparent from the use of numerous heavy vehicles (JCBs, trucks, dumpers and cars) and could be experienced during walking on the ground.*

(17) There are no enclosed wetland or water bodies on the event site as explained hereinabove. Accordingly, the observation in the report pertaining to the alleged levellingand compaction of the ground and

filling up of the water bodies is factually incorrect.

(18) As is evident from the report, the Principal Committee has not conducted any primary test (geotechnical examination of unconfined sandy soil at the event site) and compared it with the results of the geotechnical test of same parameters prior to the event. Accordingly, the report disregards the basic scientific facts and the physical character of the sand/sandy soil. The report relies solely on visual observation with respect to its statements pertaining to levelling and compaction of the ground. Hence, conclusions based solely on visual observations cannot be relied upon.

(19) While preparing these suggestions to the report of the Principal Committee, an attempt has been made to ascertain likelihood and extent of the alleged compaction of earthen stratum (if any) at the event site - by means of a study based on comparison of temporal records of high-resolution satellite imagery of dates before, during and after the event. The exercise reveals that there is no change in micro-level geomorphology/landform or

any ground subsidence at the event site which otherwise would have been registered if any filling of depressions, compaction and/or consolidation had taken place as alleged in the report.

(20) For a confirmative statement on extent and exact reason of consolidation and/or compaction in qualitative and quantitative terms, laboratory test of undisturbed soil samples from the event site is mandatory for dates before and after the event. On a comparison of the soil density post event with previous records of soil density (pre event) in respect of the event site, if any difference is noticed or recorded – such difference will indicate the extent of filling, compaction and/or consolidation (if any). The Principal Committee Report has failed to indicate such difference. The report has also failed to record the tests undertaken in support of the conclusion as regards compaction. Further, the report fails to substantiate exact cause; mechanism and forces responsible for alleged compaction (if any). A three-day cultural programme was neither a heavy industry nor a road or railroad project which could have resulted in compaction of soil. In cases such as a road or a railroad project, compaction is

achieved by a serious effort over a substantial time frame. In standard cases compaction of soil is a result of a series of actions starting with removing natural top soil, followed by laying soil suitable for the desired 'California Bearing Ratio (CBR)'[5] in thin layers under confined condition on which enormous pressure is applied continuously for a substantial timeframe through specialised soil compaction equipment(s) [heavy earthwork equipment] designed for compaction of soil. Instruments used for compaction of soil include: sheepsfoot compactor; vibrating rollers; pneumatic rollers; grid rollers and many more. By using a combination of these equipments (as per engineering design), smallest measurable compaction is achieved. In a road or railroad project, one of the most demanding and time-consuming jobs is to achieve compaction of the soil. Despite all these exercises, most of the pavement failures on roads (roads under poor/failed pavement condition) are primarily because of the deficiency in achieving soil compaction. Therefore, in relation to soil compaction, elaborate guidelines have been laid down

[5] *California Bearing Ratio (CBR) is the Strength tests of subgrades and construction material; also used in the design of flexible pavements to meet specifications.*

by the erstwhile Ministry of Surface Transport (now renamed Ministry of Road Transport and Highways); Indian Roads Congress; and various other institutions responsible for regulation of quality in civil works. Overall compaction of soil is an expensive; skill-dependent; time consuming; and difficult task.

(21) Therefore, it was important to specify how the compaction of soil has taken place without deploying sheepsfoot roller, pneumatic roller and vibrating roller and that too without operating a fleet of these equipment(s) for several months. It is equally important to inquire as to how the conclusion pertaining to the alleged compaction was arrived at by the Principal Committee. This is necessary as, to record compaction, physical measurements are required and only a Civil Engineer/Geologist/Skilled Technician can measure compaction of soil with an aid of appropriate equipment and the same cannot be done by mere visual observation.

(22) For a confirmative statement on extent and exact reason of consolidation and/or compaction in qualitative and quantitative

terms, laboratory test of undisturbed soil samples from the event site ought to have been conducted by the Principal Committee. Ideally, by comparing the current soil density with previous records of soil density at the event site, the difference could have been worked out, which would indicate the extent of consolidation and/or compaction, if any. The specification of the process by which the report concluded as to the alleged compaction is further necessitated because, a test (as explained above) for unconfined sand/sandy soil appears almost impossible in accordance to the established principles of Soil Mechanics and Geotechnical Engineering. The established principles of Soil Mechanics and Geotechnical Engineering confirm that:

"Normally, no consolidation tests are done on samples of sand as the compression of sand under external load is almost instantaneous as can be seen in pressure-void ratio curves (% consolidation v/s time in minutes) for sand, which gives a typical curve showing the time versus the compression caused by an impact of load. [Figure -1 (plot – a)]

43

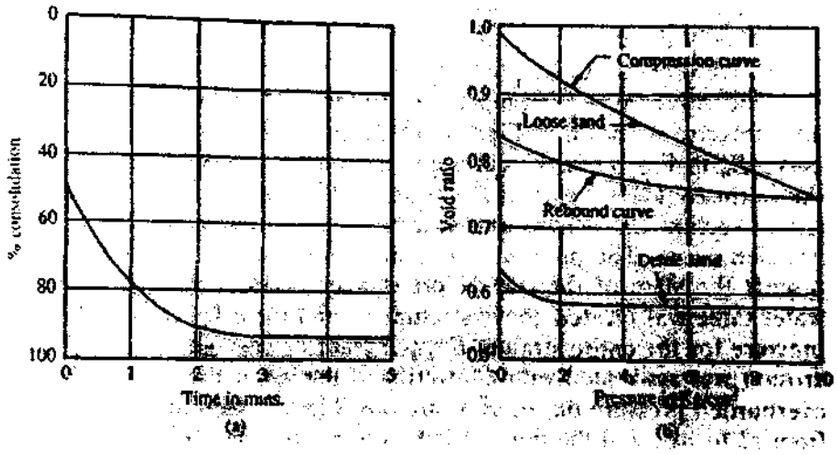


Figure – 1: Pressure-void ratio curves for sand

(Source: "A Text Book of Soil Mechanics & Foundation Engineering; Fourth Revised & Enlarged Edition; Author - Prof. V.N.S. Murthy")

In this curve, it is evident that more than 90% of compression has taken place within a period of less than 2 minutes. The time lag is largely of a frictional nature. The compression is about the same, whether the sand is dry or saturated. The shape of typical 'void ratio' v/s pressure curve also known as e-p curves for loose and dense sands are shown in Figure -1 (plot – b). The amount of compression even under high load intensity is not quite significant as can be seen from the curves. [Reference – "A Text Book of Soil Mechanics & Foundation Engineering; Fourth Revised & Enlarged Edition; Author - Prof. V.N.S. Murthy; UBS Publishers Distributers Limited; Page No.256-257 (Pressure-void Ratio Curves)]

(23) It was thought prudent to evaluate likelihood and extent of consolidation and/or compaction of soil at event site as based on the principle of soil mechanics' as explained above, in 'pressure-void ratio curves' for sand. On such evaluation, the following conclusions can be drawn:

I. Mineralogical composition of the stratum and surface of the event site is predominantly composed of dense sand as deposited by the rivers originating from Himalayas in their mature stage. Presence of Yamuna sand/ extremely sandy soil is further evident in the satellite imageries of those plots on or near the event site where harrowing of farm plot was done before the scanning date of image.

II. As explained in the '% consolidation v/s time (in minutes) curve' above, 90% of the consolidation has taken place in less than 2 min, therefore it is obvious that natural consolidation of the event site would have taken place in geological past immediately after deposition with some movement of animals and humans over it, decades

before the event of 2016 was organised by the Respondent No.3.

III. Furthermore, the curve for dense sand in 'Void ratio v/s pressure in Kg/cm^2' indicates that dense sand (as deposited by Yamuna and Ganga) does not show noticeable changes with increase in pressure. It is an undeniable fact that the event site has been under agricultural practices since decades (if not centuries). Agricultural practices; tilling (harrowing); movement of farm equipment and agricultural machinery; movement of dumpers for unabated dumping of construction waste for years and then the movement for trucks and dumpers for removal of the same has already shaped the consolidation and/or compaction at the event site years/ decades/centuries before the World Culture Festival 2016 was organised. Even fractional consolidation (something of academic interest) on the event site dates back to the year when this Point Bar was deposited; and the likely causes of this consolidation are movement of cattle,

tractors, farming machinery and truck loaded with construction material for construction of guide bank, DND flyway and Barapullah drain etc. Possibility of subsequent compaction is insignificant. Therefore, it is almost impossible that any further consolidation and/or compaction would have taken place at the event site due to the event compared to the baseline conditions existing before the event.

IV. As a matter of fact, this property of dense sand of Yamuna and Ganga makes them valuable material for filling in embankments, as inert material in terms of consolidation and/or compaction.

(24) Therefore, consolidation and/or compaction of the event site due to the three-day event appears impossible.

Paragraph – 10 (Page – 3): Construction of the stage and other temporary structures: *The levelling and compaction of the ground was followed by the construction of a huge stage*

using steel pipe scaffolding and wooden planks (Photos B3, B4). Several large cabins/tents were constructed for various purposes (office, green rooms, stores etc.) (Photo B5). Construction material was strewn all over (Photo B6).

(25) There is no specification of the location on the event site where a particular picture has been taken. For instance, Photograph B6 is used to state that "*Construction material was strewn all over*" but the picture does not give a synoptic view of a reasonably sizeable portion of the Land Parcel. A 'zoomed in' picture a small area where certain construction material had been kept has been produced and it has been used to state"*Construction material was strewn all over*". Even when viewed with the other pictures (B13 and B14), which show construction material, the generic statement that "*Construction material was strewn all over*" does not seem justified.

(26) At the outset, it may be noted that, on disclosure of necessary plan as regards the construction of the stage, permission had been granted to Respondent No.3 for conducting the event by the competent authorities. Moreover, it is also important to note that the entire stage for the event was supported on a series of iron

scaffolding with raft footing (as illustrated in figure – 2).

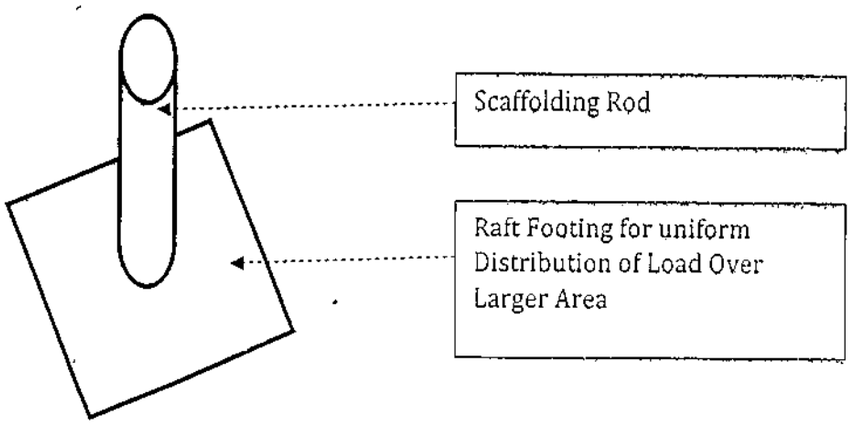


Figure – 2: Schematic representation of the raft footing for each of the scaffolding element used for the stage

(27) Nothing was anchored in the natural stratum to hold the stage. Overall, the stage had a floating foundation. The impact of a floating foundation on the ground [sandy soil] is insignificant. 'Annexure –IV' contains the photographs of the stage, its scaffolding, footing and its comparison with a yogi sleeping on a bed of thorns to draw visual analogy. As a matter of fact, this ancient technique used by *hathyogis* in India has been the source of inspiration for the design of the stage.

(28) Therefore, consolidation and/or compaction at the event site due to the

three-day event and particularly due to the stage is unlikely The report fails to take this into account.

(29) It's obvious for an organiser of a large event to erect cabins/tents for various purposes including (but not limited to) office, green rooms, stores etc. While erecting a tented structure and scaffolding, the parts and components are bound to appear to anyone who visits the site with an intention to inspect ongoing activity pertaining to the preparatory works for the event. But the Principal Committee is unable to establish the fact that by this activity, how the law of the land has been violated and why the event organisers should not have done all this for the mega event. It is also important to note that all the tents used during the event were made-up of eco-friendly material. These temporary infrastructures were investigated by the concerned officers of Fire Safety Department. The Fire Safety Department inspected the site and event related infrastructure minutely and after necessary satisfaction issued its consent.

(30)

Paragraph – 11 (Page – 3): Construction of Ramps: *Three large ramps had been constructed along the DND flyover by filling with the debris and soil for access to the site by the VIPs and security personnel (Photo B7).*

(31) The issues and factual status of these ramps has been explained at length in the technical affidavit submitted by Respondent No. 3 on 3rd August 2016. For the sake of continuity, the same is being reproduced:

"On the basis of examination of temporal records of satellite images, it is established that two of the permanent ramps having bituminous pavement (which is now in dilapidated condition and potholes whereof are filled with earthen material) connecting the DND flyway with earthen service road came in existence on some date prior to January 2008 since they are present in the satellite imagery of 21 January 2008. (Annexure – II of the technical affidavit submitted by Respondent No. 3 on 3rd August 2016). Therefore, it is clear that these two ramps have not been constructed by the Respondent No.3 i.e. Respondent No.3 has no role in their existence.

Three additional earthen ramps have been recorded in satellite images after 27 February 2016 (but are not present in

satellite images of previous dates as delineated in the Annexure – II of the technical affidavit submitted by Respondent No. 3 on 3rd August 2016). These three new ramps are made up of inert earthen material with a soil top without any hard or soft pavement.

The embankment of DND flyway is a mechanically compacted earthen structure (manmade-ground) protected by stone pitching and gabion boxes on either side, which has been appropriately designed to sustain dynamic and static load of the entire DND flyway along with adequate factor of safety (in engineering terms). These three earthen ramps have been constructed over (on top of) stone-pitched mechanically compacted embankment of DND flyway (without altering or disturbing the embankment of DND flyway). Consequently, the ramps are not on natural ground of the floodplain. Since these three earthen ramps are resting on the stone pitched embankment of DND flyway, their entire mechanical load including the vehicular movement over it (both static and dynamic load), is being transferred over mechanically compacted embankment of DND flyway and it has apparently no

loading or physical impact over the natural floodplain of Yamuna at the event venue. Even during the peak use on the dates of event, net loading on these ramps was insignificantly small compared to the design capacity of the embankment of DND flyway. These ramps do not have any structural relation with the natural floodplain. As a result, actual environmental impact due to earthen ramps prior to, during or after the event is likely to be neutral towards the floodplain and it may be positive (if they are retained for future use) for the overall infrastructure.

Based on interpretation of high resolution satellite images and ground verification, environmental impacts of these ramps in qualitative terms have been assessed as:

(i) In post event period these three ramps would support more vegetation (grasses and bushes) compared to the stone pitched compacted earthen embankment of DND-flyway. They are likely to be naturalised in a very short span of time with arrival of monsoon in Delhi.

(ii) Due to the advantage of slope, these ramps are likely to facilitate future

ecological management of the site, by providing an easy access to the site during restoration and rejuvenation works.

(iii) These three ramps would facilitate in prevention of health and safety hazards to humans as well as wildlife in case of any emergency and/or needs associated with capturing and evacuation of estranged wildlife.

(iv) These three ramps would facilitate policing, para-military and military operations in times of emergency.

(v) These ramps would also support entry of ambulance and vehicle mounted medical support system in times of emergency."

Paragraph – 12 (Page – 3): Construction of pontoon bridges: *A pontoon bridge had been under construction on the River Yamuna. The wetland vegetation along the bank had been buried under the debris to provide access to the pontoon bridge (Photos B8 to B16). A large amount of debris and stone grit were lying close to the pontoon bridges site for use in construction. Other pontoon bridges were under construction also cover the Barapulla drain.*

(32) The issues and factual status of pontoon bridges has been explained at length in the technical affidavit submitted by Respondent No. 3 on 3rd August 2016. For

the sake of continuity, the same is being reproduced:

"The evidences based on high resolution satellite image dated 3rd March 2016 confirms that one pontoon bridge is noticed across River Yamuna immediately after the confluence of Barapullah drain with the river. Similarly, the satellite image dated 15th of March 2016 has three pontoon bridges across River Yamuna (one being half dismantled) and three small pontoon bridges across Barapullah drain. It is important to point out for record that the satellite image dated 15th December 2015 has no pontoon bridge(s) at their respective location as visible in satellite image of 15th March 2016 as delineated in the Annexure – II of the technical affidavit submitted by Respondent No. 3 on 3rd August 2016). Therefore, it is probable that these pontoon bridges must have been constructed sometime in last week of February 2016 and in no case did their construction begin before late December 2015.

Pontoon bridges are generally considered 'neutral' in terms of environmental impacts, barring few exceptional cases where the river stretch is traversing through the core

conservation area of aquatic mega fauna like crocodilians and dolphins (that is not the case with present stretch of River Yamuna in Delhi). Pontoon bridges do not create obstruction in fluvial hydrology; they have no load bearing relation with the riverbed and they do not require any pier or abutment. Environmental studies prove them to be most environment friendly type of bridge structure."

(33) The statement in the report pertaining to the wetland vegetation along the river bank, which has been buried under the debris to provide access to the pontoon bridge is sought to be substantiated by a photograph (*Photos B8 to B16*). But, in fact, the access to the pontoon bridges was provided through wooden approach slabs as shown below in the photograph 1 and 2. Therefore findings made in report in this respect are incorrect and reflect the facts in an incorrect and slanted manner.

Photo – 1: Laying of Pontoon bridges across Yamuna by trained professionals note the ramps are made-up of wooden 'approach slab' and corrugated metal sheet and not of debris and stone grit as claimed by the Principal Committee.

Photo – 2: Laying of Pontoon bridges across Yamuna by trained professionals note the ramps are made-up of wooden 'approach slab' and corrugated metal sheet and not of debris and stone grit as claimed by the Principal Committee.

Paragraph – 13 (Page – 3): Construction of access roads: *Two major access roads had been built from the Barapulla drain side along the DND flyover towards the Event site and along the river towards the pontoon bridge. Other paths had been made criss-crossing the entire floodplain of the Main Event site and vehicles moved there.*

(34) The issues and factual status pertaining to the construction of access roads has been explained at length in the technical affidavit submitted on 3rd August 2016. Further to this submission, it is submitted as follows:

(35) On examination of satellite imageries submitted as Annexure-II of the Technical Affidavit submitted to the Hon'ble Tribunal dated 3rd August 2016; it is apparent that almost all earthen roads over and around the event site of World Culture Festival 2016 were in existence at least since 29thDecember 2000 as recorded in the satellite image of this date.

(36) Respondent No.3 would urge the Hon'ble Tribunal to note that as per the requirement of civil engineering projects of linear nature like a road, railroad, canal and drains, a service road is required parallel to the proposed alignment with an aim to facilitate the movement of engineering staff vehicles, construction equipment, carriers for transportation of

earth-work material and movement of other construction material etc. The road to the south of the event site was actually constructed as a box-cut compacted gravelled road competent to sustain continuous movement of earth-movers, loaders, dumpers and other heavy-engineering equipment for construction of the earthen embankment of DND Flyway; the guide bank on Yamuna and the Bridge over River Yamuna. Till date the stone-pitching and gabion structure of the embankment continue up to this gravelled road. After completion of the construction works for DND Flyway, this gravelled road lost its day-to-day engineering role but continued serving as approach road up to the guide banks of Yamuna present at this land parcel. Since then this gravelled road is also in use by villagers doing farming on this land and for the purpose of policing. Later on in the satellite image of satellite imagery of 21 January 2008, a new development has been noted on this gravelled road. It is noticed that this road got paved with bituminous pavement (blacktop) at least towards the eastern end linking it with two permanent ramps probably for some public function.

(37) Brapullah Drain (a tributary of the Historic 'Kushak River') originally had a meandering and free-flowing path parallel to the existing alignment of Ring Road at the event site and it used to merge in Yamuna further south near Okhla barrage traversing through unauthorised housing of Batla House. The above description of facts is clearly apparent in the 'Delhi Guide Map; third Edition 1985; on a scale of 1:25,000; Published by Survey of India' [Annexure -II]. While constructing the DND Flyway, the course of Barapullah Drain was straightened (along its present course, north of the event site) by cutting a deep trench in the sandy deposits of the Point Bar at floodplain of Yamuna. Similar to the road project, this was also a linear project requiring transportation/ movement of engineering staff vehicles, construction equipment, carriers for transportation of excavated earthen material and movement of other construction material etc. For this reason, an earthen road was constructed parallel to the Barpullah Drain, which is present even in the satellite image of the area (dated 29th December 2000) and is also

recorded in all the satellite images of subsequent dates.

(38) The earthen tracks marked by movement of agricultural equipment like tractors and other loading vehicles for engineering works along guide bank; DND flyway and maintenance works of Barapullah drain are also existing since 29th December 2000. Nevertheless, minor modification in their shape and dimension has been observed as per requirement with passage of time between 29th December 2000 and 15th December 2015. But no modification has been observed in geometry of earthen roads due to the event on this Land Parcel.

(39) Trails on agricultural farm land are of extremely temporary nature and it has been observed as changing throughout the time frame between 29th December 2000 till date.

(40) No construction of a specific road has been recorded before, during or after the event. Not even construction of earthen track is recorded in these images. Nevertheless, the markings of carpet laying have been recorded in the images of post event days particularly in the satellite image of 10th of May 2016 and 25th of May 2016. These

markings are temporary in nature and they are formed due to variation in reflectance due to changing soil moisture content of the exposed earth and earth beneath the carpet. They are not due to any physical change in landform. As a matter of fact, these markings vanished with advent of Monsoon rains in Delhi (as it was expected), because of a uniformly distribution of soil moisture all over the event site and adjoining Land Parcel.

Paragraph – 14 (Page – 4): Blocking the side channel of River Yamuna: *During our visit on 20 February, the filling up of the wetlands in and along the side channel was in progress. A road was under construction with debris and garbage along the river to the area beyond the side channel (Photos B17 to B19).*

(41) At the outset, it must be pointed out that in the report of the committee submitted on 20 February 2016, there seems to be no reference to the alleged activities in and along the 'side channel', nor has any picture to that effect been annexed.

(42) The report has failed to establish that any wetland ever existed at the event site (as explained in 'Section – 4.1.2' of this document). The so-called 'side channel', which is actually a scar due to Avulsion of the main channel of River Yamuna. The report is incorrect as to the nature of the

floodplain and the natural process of sedimentation and deposition of flood debris in the leftover scar.The Scar is destined to be rapidly filled by the said natural process of sedimentation and deposition of flood debris. The report has arrived at conclusions without considering the basic floodplain processes.

Paragraph – 20 (Page – 4):*The area where the grand stage was erected (and the area immediately behind it) (appearing reddish in colour, marked in image C1) is heavily consolidated – most likely with different kind of external material used to level the ground and compress it.*

(43) Reddish appearance has nothing to do with consolidation and compaction but it is in all likelihood because of the presence of some pigmented bacteria in the soil (subject to investigation), which gives this particular soil reflectance character based on soil moisture content on that particular date. This doubt is because of the fact that similar reddish halos/patches have been observed on the sandy soil on Yamuna floodplain and on the event site in past. At the event site, there are previous images with reddish patches, which appear and disappear with change in soil moisture

conditions. Therefore, this finding in the report is not in accordance with the scientific facts.

Paragraph – 21 (Page – 4): *Huge amount of earth and debris have been dumped to construct the ramps for access from the DND flyover and from two pontoon bridges across the river and three bridges across the Barapulla drain.*

(44) The said ramps are not on the floodplain but on a built ground i.e. embankment of DND flyway, and they are made up of environment friendly earthen material as one can see in following three photographs (Photo – 3, 4, and 5) hereinafter.

Photo – 1: One of the three earthen ramp constructed over the embankment of DND Flyway for World Culture Festival 2016

Photo – 2: Second (of the three) earthen ramp constructed over the embankment of DND Flyway for World Culture Festival 2016

Photo – 3: Third (of the three) earthen ramp constructed over the embankment of DND Flyway for World Culture Festival 2016

Paragraph – 23 (Page – 5): *Ground compaction has been especially heavy in the wetland areas along the river, areas of approach to pontoon bridges, on the side channel, and other marshy areas.*

(45) The report does not present any quantified test results supporting this finding. There is also no explanation as to how the unconfined compression of sandy soil of the event site has been tested. The suggestions with respect to the issue of compaction have already been made hereinabove.

Paragraph – 24 (Page – 24): *Ground over the entire area has been consolidated by movement of vehicle and people over several months.*

(46) The report fails to give any test results supporting its findings and it has not been explained as to how unconfined compression of sandy soil present at the event site has been tested.

Paragraph – 25 (Page – 5): *The criss-cross lines across the area between the river and the stage location clearly indicate consolidation for making temporary paths and by movement of heavy vehicles.*

(47) Again, the report does not present test results supporting this finding and it also fails to explain as to how unconfined compression of sandy soil of the event sitehad been tested. The said lines on the image seem to be due to the difference in moisture level of soil which remained under the carpet for some weeks and those where moisture was lost unabated. With the advent of rains these temporary markings would have gone.

Paragraph – 26 (Page – 5): *The side channel has been blocked at several points for access to the parking area between the channel and river (Images C1 and C3).*

(48) The report does not present any test results supporting their allegation along with scientific dating of the dumped debris. The report also does not substantiate as to why the debris are not a part of fluvial origin as explained in the

textbooks and journal dealing with this subject.

Suggestions Pertaining to the Alleged "Environmental Damage and Degradation" as Describe in the Report of Principal Committee [Section IV; Page 5]

Paragraph – 28 (Page – 5): *The above observations on the state of the floodplains after the AOL event provide only a picture of their physical damage and destruction. There is far more environmental damage, degradation and damage to the natural ecosystems than can be appreciated from these visual observations. Environmental damage to ecosystems includes loss or damage to biological components, physical structure and chemical characteristics that in turn have serious consequences for their functioning. Some of the more prominent aspects of damage and degradation are noted below.*

(49) As explained earlier, there has been no scientific data collection, data analysis, and a systematic assessment of environmental impact assessment study of various components of the natural environment at the event site. The findings made are accordingly not in conformity with the facts recorded in satellite image(s). The facts based on detailed analysis of the temporal record of satellite images for a period in excess of 16 years starting from December 2000 to May 2016 as enclosed in 'Annexure – II' of the Technical Report filed in this matter on 03rd. August 2016', represent the fact. From the aforesaid study of the satellite

images, it appears that no adverse environmental impacts have taken place at the event site due to the cultural event.

(50) The findings made in report pertaining to thealleged degradation and damage to the natural ecosystems is without any supporting data or evidence for any of the parameters of natural environment.

(51) The report has not produced any credible scientific data in support of the alleged environmental damage to the ecosystem including loss or damage to biological components, physical structure and chemical characteristics. As a matter of fact, all the parameters governing health or damage to biological components, physical structure and chemical characteristics are largely determined in quantitative terms in environmental assessments but no such efforts had been made by the committee.

(52) The event site was under agricultural landuse since last several decades. Satellite images dating from 22nd December 2000 to 10th May 2016 conclusively prove agricultural activities on this land parcel. The same is also proven by the revenue records, Khasra maps and some ongoing

litigations in High Court of Delhi at New Delhi.

(53) In geomorphological terms this entire land parcel is a point bar, which is an extremely flat sand deposit in the floodplain, which has been dealt with at length in the Technical Report submitted to the Hon'ble Tribunal on 03rd of August 2016. This fact is supported by the topography depicted in the Delhi Guide Map; third Edition 1985; on a scale of 1:25,000 Published by Survey of India [Copy of the relevant portion is enclosed in Annexure – II] -). Similarly, the satellite images of dates before and after do not indicate any change or loss or damage to biological components, physical structure and chemical characteristics of the 24.65Hectare of land used for the event site or its immediate neighbourhood.

Paragraph – 29 (Page – 5): Change in topography/habitat diversity: *The physical changes in the floodplains and its wetlands include a change in topography which has a direct bearing on the diversity of habitats. Construction of ramps and roads, filling up of water bodies and leveling of the ground together with compaction have almost completely eliminated the natural physical features and the diversity of habitats. Physical changes also occurred in the river channel due to the removal of riparian vegetation, construction of road and pontoon bridges, blocking of the side channel that would invariably disturb the flow and bottom sediments besides bringing in particulate material (sediments and organic matter) into it.*

(54) This finding has been dealt with at length hereinbefore and in the Technical Report submitted to Hon'ble Tribunal on 03rd of August 2016.

"Paragraph – 30 (Page – 6):Loss of water bodies/wetlands: *The simplification of habitat into a flat land has eliminated all water bodies in the impacted area – shallow or deep that form naturally in the floodplain. These water bodies control floods, help groundwater recharge, support vegetation, fish and other biodiversity. Overall the floodwater retention capacity of the area has been severally compromised."*

(55) Study of satellite images over the timeline between 22nd December 2000 till 10th May 2016 reveals an important fact about the geomorphology and fluvial hydrology of the land allotted for the event and its immediate environs. Satellite images and previous records of 'Delhi Guide Map; Third Edition 1985; on a scale of 1:25,000 Published by Survey of India' [Annexure – II]covering the event site reveal the fact that no enclosed waterbodies and wetland ever existed on this Land Parcel between DND Flyway in South to Barapullah Drain in North, River Yamuna in East, and Ring Road in the West, (hereafter called "Land Parcel'). In terms of floodplain geomorphology, this Land Parcel over the Yamuna floodplain, is a "Point-Bar"; which is a depositional feature of active floodplains made up of sandy deposits

(and alluvium in lower reaches of rivers before formation of delta) that accumulates on the inside bend (curve) of rivers below the slip-off slope. Point Bars are found in abundance in mature or meandering rivers in entire Ganga Catchment, to which River Yamuna belongs. River Yamuna flowing through Delhi is in mature stage and it starts forming Point Bars at least 80km upstream of the Land Parcel allotted for the event of World Culture Festival 2016. To control floods, fluvial erosion and meandering of the river, flow in Yamuna has been heavily regulated through a series of barrages, which has seriously affected the natural flow, inter alia slowing down the geomorphic processes related to the fluvial hydrology of the river. Despite regulation and/or restriction of flow in Yamuna, due to the pattern of flow, the river has a natural tendency of forming 'Point Bar' at the event site and a bank of erosion on the other side. Therefore, to deal with this situation a 'Guide Bank (Guide Bund)' had been constructed (probably at the time of construction of the DND flyover) at this very location, which is in existence at least since the year 2000 as

is evident from the satellite images. 'Guide Banks' are mostly constructed over Point Bar on one side and bank of erosion on the other side with an aim to train the meandering tendency of river. Guide Bank is sited on a Point Bar at the vertex, which is the local point of maximum curvature in the river. Therefore, the designers of the Guide Bank at this location (where WCF was organised) were sure of the existence of Point Bar at this location in terms of geology, geomorphology, fluvial hydrology, geotechnical properties and engineering considerations. In this study, extremely flat topography of the event site is evident in all the satellite images for last 15 years as well as in the Delhi Guide Map; third Edition 1985; on a scale of 1:25,000 Published by Survey of India [Copy enclosed in Annexure - II], which further confirms that this land form is a Point Bar. This type of topography and very gentle slope with elevation very close to river water level is a typical behaviour of a Point Bar. Since Point bars are low-lying, they are often overtaken by floods and can accumulate driftwood and other debris during times of high water levels. In a heavily polluted river with extremity of

anthropogenic interventions flood accumulated driftwood and other debris is a strong possibility.

(56) The reflectance of bare land in satellite images of dry season indicates the presence of extremely high sand content in the soil. Field assessment of sedimentological assemblage of this site also confirms this landform to be a Point bar comprising of dense sand deposit. Field assessment of sedimentological assemblage further indicates that the sand/sandy soil present at this Land Parcel is well shorted and fairly uniform in grain size. Although sub-stratum has not been investigated in this study but it is expected that the Land Parcel must be having intercalation deposits of flood debris, which has inherent characteristic of high permeability making it unsuitable to confine or hold surface water but it forms a good aquifer.

(57) Consequently, uniform flatness and very rich sand content in this stratum makes it unsuitable for the formation of any confined surface water body and/or a wetland. Even in extreme rainfall and a

condition of raised groundwater level, this Land Parcel could hold water for an insignificantly small time frame. Even if deliberate human intervention modifies this landform to create a wetland, that would not survive due to the sedimentology, topography, geomorphology, fluvial hydrology and depositional phenomenon associated with every event of flooding.

(58) Therefore, the records of satellite imagery, the aforementioned map published by Survey of India showing extreme flatness, the existence of 'Guide Bank' on this Land Parcel as elaborated above, the principles of geomorphology, fluvial hydrology, sedimentology and other undeniable scientific evidences enunciated above confirm non-existence of any water bodies and wetlands on this Land Parcel over Yamuna floodplain.

(59) Therefore, the issue raised in the report pertaining to the 'role of water bodies in controlling floods, helping recharge of groundwater, supporting vegetation, fish and other biodiversity' is not in accordance with the aforesaid scientific facts.

(60) The event seems to have been neutral towards the overall impact on the functional capacity of the floodplain in relation to the floodwater retention capacity of the area since the event has neither altered any of the parameters governing fluvial geomorphology and flood hydrology.

Paragraph – 31 (Page – 6): Loss of floodplain vegetation and Biodiversity: *The floodplain has lost almost all of its natural vegetation – trees, shrubs, reeds, tall grasses, aquatic vegetation including water hyacinth. The vegetation also includes numerous microscopic forms of algae, mosses and some ferns which inhabit the soil and water bodies. All of them have been destroyed in the area completely. Their total loss cannot be readily visualized and documented.*

(61) The report fails to explain and establish how a three-day event falling within the ambit of cultural/recreational programme, confined within a well-defined land parcel approximately about 25 Hectares has caused loss of all the natural vegetation over the entire floodplain of Yamuna. First and foremost, the exercise of delineation of the area over the satellite image (or any other unbiased thematic map of the Principal Committee's choice) should have been conducted. Second, the allegations against

Respondent No.3 should have been confined to such delineated area. Further, the allegations of the Principal Committee are not supported by any evidence much less sufficient evidence of any damage in any part of the delineated area of the event, and therefore the report has failed to establish with any scientific evidence that the event has caused any impact. The statements have no probative value especially given the fact that there is no reference to any baseline situation with which the present alleged status of the land parcel can be compared and the veracity of these allegations can be tested.

1. The following facts pertaining to the vegetation within the delineated limits of the event site used during the event are noteworthy: The event site was under agricultural land use immediately before the event and therefore, the presence of natural vegetation was limited to some weeds and few trees only.

2. The trees in existence before the date of event and after the date of event are capable of being counted over the satellite images of dates before the event and after the event. I have been informed that Respondent No. 3 took utmost care to keep the trees unaffected in entirety during the event so that no

provisions under the Delhi Tree Preservation Act 1994 are violated. I have also been informed that the concerned inspector from Government of NCT of Delhi visited the event site before and after the event to count the number of trees and their condition and his team was satisfied with the fact that no tree has been damaged during the event.

3. For conclusive record (evidence), I am given to understand that Respondent No.3 conducted a study of counting of trees on High Resolution Satellite Imagery on dates closer to the date of allotment of the event site to Respondent No. 3 and the dates after the event (during handing over of the site back to DDA). No variation in the number of trees have been noticed between both the dates.

4. As far as the statements in the report pertaining to removal of shrubs, reeds, tall grasses, aquatic vegetation are concerned, it is important to note the following: The reeds are generally described by conservation scientists as hardy plant due to its survival instinct against cutting, burning, harrowing and repeated removal from a particular area. The reeds (Phragmites karka), is classified as 'Least Concern' in "The IUCN Red List of Threatened Species™; ISSN 2307-8235

(online); IUCN 2008: T168955A1256797" (Enclosed as Annexure – V). IUCN 2008: T168955A1256797 states that "There are no known significant past, ongoing or future threats to this species" and it further states that – "There are no conservation measures in place and none needed". Alongside this authoritative document on conservation there are many research papers which do identify this species in the category of a 'native invasive species' and often a problem species of tall grass.

5. It is further important to mention that since reeds (*Phragmites karka*) is not a timber forming tree species which could grow in girth in excess of 30cm, therefore its not covered under the 'Delhi Tree Preservation Act 1994' or in any other central act dealing with the protected species of plants.

6. The other vegetation claimed in the report is tall grass/cattil (*Typha latifolia Linnaeus var. orientalis)* is once again classified as 'Least Concern' in "The IUCN Red List of Threatened Species™; ISSN 2307-8235 (online) IUCN 2008: T168629A6524306" (Enclosed as Annexure – VI). IUCN 2008: T168629A6524306 states that "There are no known threats to this species".

7. It is also important to bring to the kind notice of the Hon'ble tribunal that these *cattil* (toll grass) was not present over the event site but it does exist along a narrow depressed gallery formed by the gabion boxes and erosion control structures parallel to the DND Flyway; in small patches along Barapullah Drain; and near the guide bund along River Yamuna. During the event, utmost care was taken by the organisers associated with the Respondent No.3, therefore no *cattil* was damaged or removed from the site.

8. The report prepared by the Principal committee states that there is a loss of 'Water Hyacinth'. This is in contradiction of Government of India's policy (which is in public domain) pertaining to invasive species by the Ministry of Environment & Forest, Govt. of India in through 'ENVIS Centre' (printout enclosed in 'Annexure - VII). The public disclosure on INVASIVE ALIEN SPECIES recorded in 'Convention for Biological diversity, 1992' has described the invasion of these plants as: "The second worst threat ". Government of India (and Indian economy as a whole) spends substantial money and resources to control and eradicate Water Hyacinth *[Eichhornia crassipes (C. Martius) Solms-Loub. (Pontederiaceae)]*.

9. Nevertheless, the fact is that no water hyacinth could have been present on the floodplain since it can't survive on dry land.

10. Therefore, its proven that net impact on the environment or ecology due to alleged removal of some shrubs, reeds, tall grasses, aquatic vegetation from the approximate 25 Hectares of floodplain are either 'neutral and beneficial' or 'rapidly reversible by natural process'. As a matter of fact, if at all any such accidental damage which would have taken place during the event, in all probability they have already been reversed by natural process with the advent of monsoon in Delhi.

Paragraph – 32 (Page – 6): *The vegetation provides habitat, food and sites for breeding/nesting etc. to a large number and kinds of animals including birds, fishes, frogs, turtles, insects and innumerable bottom and mud-dwelling organisms (mollusks, earthworms, insects, and various other micro and macroscopic invertebrates). These organisms were rendered homeless, driven away by the intense activity, and many were consigned to their graves under the debris. This is an invisible loss of biodiversity which cannot be easily assessed and most may never be able to return. Far more significant changes are expected in the micro-organism which are critical to the ecosystem functioning.*

(62) Undoubtedly vegetation provides habitat, food and sites for breeding/nesting etc. to a large number and kinds of animals including birds, fishes, frogs, turtles,

insects and innumerable bottom and mud-dwelling organisms (mollusks, earthworms, insects, and various other micro and macroscopic invertebrates). It would have been prudent if the report had provided a list of species present within the 25 Hectares of land allotted for the event. Nevertheless, the fundamental question pertaining to the alleged existence of such a vegetation cover over the event site remains outstanding as no evidence is produced in support of the allegation that the same existed. As such, the main question whether such vegetation was in existence is unresolved. As a matter of fact, the entire land allotted for the event and its immediate neighbourhood was under agricultural landuse. If at all the event site was such an important birding site or a place of bird nesting/animal habitat, it would have been given the status of a wildlife sanctuary or even got notified by Birdlife International in its monumental work (published document in public domain) – "Important Bird Areas in Asia – India; Key Habitats and Birds; October 27, 2004" (also available in public domain over internet –

http://www.birdlife.org/datazone/userfiles/file/IBAs/AsiaCntryPDFs/India.pdf) A print of the same is enclosed in Annexure - VIII.

(63) With this vital evidence of international recognition, it is established that no such alleged biodiversity was in existence at the event site since last several decades. Therefore, the allegation pertaining to "an invisible loss of biodiversity which cannot be easily assessed and most may never be able to return" is untrue and unacceptable in wildlife management and ecological studies.

(64) Further, It also qualifies as a clear case of non-application of mind since no organism or micro-organism was confined and endemic to that particular 25 Hectares of land. Therefore, even if the claimed loss in the report would have happened in terms of vegetation loss over the entire 25 Hectares of land, even then re-colonisation would have started immediately after removal of human interventions after the event. With arrival of monsoon almost all the lost plants and animals would have recolonised the event site.

(65) However, the fact is very different, no such habitat ever existed at the event site before or during the allotment of land for the event.

Paragraph – 33 (Page – 6): *A change in community structure is bound to follow as some of the competitors are lost and may be replaced by undesirable or less desirable species of plants and animals. For the vast majority of floodplain organisms except for a few species of trees and reeds like Typha elephantine (giant cattail), the compaction and loss of water (filing and drying up of the habitat) means irreversible loss of habitat and death for ever in that impacted area.*

(66) **The theory of undesired impacts on population size and species diversity with change in community structure**" holds good only on continental scale and in-case of isolated islands where re-propagation of a depressed (or removed) species is not possible due to geographical restrictions; isolation; and remoteness.

(67) This theory has no relevance in cases where the size of impacted area is as small as 25 hectares and is surrounded by land parcel of similar character. In Indo-Gangetic Plain (in which Yamuna Bank is situated) such phenomenon is impossible since, millions of representatives of the eradicated or suppressed species are readily available for exporting the pollens, spores, seeds, eggs and live offspring to colonise a land parcel

the moment it gets available. Therefore, in such an area (like the event site) regeneration of the same pattern and species diversity is an integral part of the natural process associated with the re-generation.

Paragraph – 34 (Page – 6): Changes in substrata – nature of soil, compaction, toxic substances: *Changes in the physical, chemical and biological characteristics of the soil have wide ranging ramifications for ecosystem functioning. As a direct influence of compaction alone, there is a decline in the ground water recharge as the soil loses its infiltration capacity. This further inhibits gas exchange, creates an oxygen deficient environment and eliminates soil organisms, as well affects any other plant of animal dependent on the soil. There is every possibility of leaching of toxic substances (both organic and inorganic) derived from the debris and other wastes brought from outside. These are expected to affect all forms of life, and the quality of water both belowground and in the river over a long period and long distance.*

(68) Evidences pertaining to significant changes in physical, chemical and biological characteristics of the soil and characteristics confirmed by petrographic [6] and lithologic [7] examination of

---

6Systematic description and interpretation of rock (Soil) textures and mineralogy in thin section and as hand specimens; Oxford Dictionary of Geology and Earth Sciences (Fourth Edition); Edited by Michael Allaby; Oxford University Press; ISBN 9780199653065

7 The physical character of a rock or rock formation or soil; its composition, structure, texture, and harness. A lithogenous sediment consists of particles derived from the physical and chemical breakdown of rocks and minerals; Oxford Dictionary of Geography (Fifth Edition); Susan Mayhew; Oxford University Press; ISBN 978-0-19-968085-6

samples confirming to metamorphism of soil sediments may result into wide ranging ramification for ecosystem functioning. Such changes are only possible in case of sandy soil when the stratum is subjected to enormous pressure and/or temperature under confined conditions. Therefore, the major question pertaining to the statementmade in the report is whether such a pressure and temperature has been applied on the soil of the event site, which could instigate the process of metamorphism of soil sediments?It is impossible by any means as per the established scientific principles in sedimentology, petrology and soil sciences. Such a statement in the report does not seem to be appropriate in the present context where the activities were limited to setting up of facilities in preparation of a cultural programme as such changes seem impossible even if the activities pertained to setting up and functioning of a heavy industry. The porosity and permeability of the sand deposit (as in case of event site) is one of the highest (next to gravel bed/stratum composed of boulders) among all earthen material and compression (and consolidation) of unconfined sand is almost unachievable as explained at length in this document (from paragraph 20 to 24). Therefore, without establishing compaction and/or consolidation in

728

sandy stratum at event site, drawing conclusion pertaining to decline in recharge potential of groundwater is illogical and incorrect. By virtue of the porosity and permeability of sandy stratum at the event site the question of loss of infiltration capacity is impossible unless the mineralogical assemblage, petrology and lithology of the stratum changes. It is impossible to bring such changes in sandy stratum by movement of humans; animals and even the vehicles. Nevertheless, while framing the allegation pertaining to loss of infiltration capacity and truncation of voids leading to obstruction in gaseous exchange and oxygen deficiency, the report is silent about the basis of their observation, which otherwise is impossible to be assessed without the aid of appropriate instruments and a full scale Geophysical Survey of the stratum before and after the event (to establish a comparative change). It is impossible even for the practicing Geophysicist to pass such an observation without conducting detailed Geophysical Survey of the area and analysis of data obtained through the survey. Such a detailed Geophysical Survey has not been conducted while preparing the report. The reportonly mentions visual observation of some of the members of the Principal Committee. Therefore, the allegation pertaining toloss of infiltration

capacity and truncation of voids leading to obstruction in gaseous exchange and oxygen deficiency, is incorrect and without any basis.

(69) It has been learned that no debris has been brought in for the event but a sizable quantity of construction waste (debris) spread over and around the event site has been safely disposed to recycling plants at Gazipur, Delhi. Nevertheless, just for academic interest if the allegation framed in the report is analysed by simple scientific logic, even then the possibility of leaching of toxic waste is almost impossible because of the fact that almost entire construction waste is composed of inert material in terms of chemical behaviour. Debris (Construction Waste) in Delhi are primarily composed of random rubble of concrete, bricks and stone; and filler earth. The metal, wood and glass are never disposed-off in India at dumping sites since there are buyers available for them or if disposed they are immediately picked-up by rag-pickers. It is a well-established fact in waste management engineering, that random rubble of concrete, bricks and stone; and filler earth are inert and chemically neutral. Therefore, the statement pertaining to the leaching of toxic substances (organic and inorganic) derived from debris and other waste is incorrect and seems to be a case of non-application of mind. There is also no

scientific evidence in the form of test results annexed to the report of the Principal Committee.

(70) Based on interpretation of a temporal record of satellite images over a decade and half as submitted in the technical report annexed to the affidavit submitted to Hon'ble Tribunal on 3rd August 2016, the immediate environs of the event site were full of dumped construction waste. The judgement passed by Hon'ble Tribunal on 13th January 2015 in O.A. No.6 of 2012, also records the facts pertaining to the dumped debris. Therefore, the statement that the event has caused such leaching, without taking note of the practices which have been going on for years (decades) by virtueof construction waste dumping at the same site; and why such a practice of dumping over years has not caused leaching of toxic substances (both organic and inorganic) derived from the debris and other wastes but the alleged event has caused such leaching (I have been given to understand that no such dumping was ever done by the event organisers)?

(C) Suggestions Pertaining to the Alleged "Restoration of Damaged Floodplain of River Yamuna" as Describe in the Report of Principal Committee [Section V; Page 7]

Paragraph – 36 (Page – 7): *Restoration of an ecosystem refers to bringing it back to the original state. It requires not only elimination of all the drivers of change which caused damage or degradation in the first instance, but also providing suitable conditions for recovery – returning on path leading to earlier state and also preventing at the same time any other new condition or factors that may cause another kind of damage or interfere with the process of recovery. The trajectory of restoration never follows the same course as that of damage/degradation, and many of the changes in some physical or biological component of the ecosystem may have been irreversible, for example loss of soil layer or some species. In general, the extent of restoration that can be achieved depends upon the level of degradation at which the efforts for restoration are planned, the approaches followed for restoration and the rate of recovery of different components.*

The report does not follow any established scientific methodology; there is no indication of scientific collection of any baseline data pertaining to any of the environmental parameters; confirmsany analysis of primary and secondary data; and failed to establish that what is the impact of the event in quantitative and qualitative terms. Accordingly, a restoration plan which most certainly seems to charge responsibility for no damage done seems incorrect.

The report fails to establish as towhat was existing there; what got damaged or destroyed; how it got damaged; to what extent it got damaged; whether the damage was reversible or irreversible etc. is claiming for restoration.

Suggestions Pertaining to the Alleged "Restoration of Damaged Floodplain of River Yamuna" as Describe in the Report of Principal Committee [Section VII; Page 7]

Paragraph – 61 (Page – 10): *(a) It requires substantial time, human and other resources to collect detailed quantitative information on the nature, extent and magnitude of various activities listed earlier for the restoration. For example, the*

amount of debris to be dredged out and its nature requires time and where and how far has it to be transported for disposal has to be also decided accordingly.

(a)***Paragraph – 62 (Page – 10):*** *(b) Another major factor is the long time period required for restoration that may be a decade or more for the trees and many other species to establish.*

(b)***Paragraph – 63 (Page – 10):*** *(c)Estimation of the costs of restoration requires the preparation of a Detailed Project Report that may take several months to a year besides financial resources.*

(71) Since, no scientific methodology has been followed and the comments/observations made in the report are not based on a proper scientific assessment, therefore estimation of cost is not only impossible but if attempted by someone it will only be an arbitrary figure without any legitimate supporting analysis and justification.

Rakesh Ranjan

Mr. RAKESH RANJAN CEnv FIES

Independent International Consultant

(River and Lake Rejuvenation and Conservation)

Dated: 14.09.2016

Place: New Delhi

733

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

AT PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 65 OF 2016

IN THE MATTER OF :-

Manoj Kumar Mishra ...Applicant

VERSUS

Delhi Development Authority & Ors. ...Respondents

AFFIDAVIT OF Mr. RAKESH RANJAN

I, Rakesh Ranjan, residing at 88- Ajanta Apartments, 36-Indraprastha Extension, New Delhi-110092, India, do hereby solemnly affirm and say as follows:

Vyakti Vikas Kendra India, has approached me as an Expert for suggestions with respect to the 'Report' report dated 28th July 2016 of the Principal Committee submitted as per Order dated 10th August 2016 of Hon'ble National Green Tribunal in O.A. No. 65 of 2016 (Manoj Mishra v. Delhi Development Authority & Ors.). I have independently analyzed and evaluated the report dated 28th July 2016 and have prepared a report/suggestions with respect to the findings

and observations made in the report dated 28th July, 2016. My report along with the accompanying Annexures is annexed to the Affidavit dated 14th September, 2016 filed by the Respondent No. 3. I repeat and reiterate the contents of my report/suggestions as if the same were incorporated herein in extenso.

Rakesh Ranjan

DEPONENT

VERIFICATION:

I, Rakesh Ranjan, the deponent above named, do hereby verify that that the contents of my above affidavit are true and correct, no part of it is false and nothing material has been concealed therefrom.

Verified at New Delhi on this____ day of September, 2016,

Rakesh Ranjan

DEPONENT

733

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

AT PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 65 OF 2016

IN THE MATTER OF :-

Manoj Kumar Mishra ...Applicant

VERSUS

Delhi Development Authority & Ors. ...Respondents

AFFIDAVIT OF Mr. RAKESH RANJAN

I, Rakesh Ranjan, residing at 88- Ajanta Apartments, 36-Indraprastha Extension, New Delhi-110092, India, do hereby solemnly affirm and say as follows:

Vyakti Vikas Kendra India, has approached me as an Expert for suggestions with respect to the 'Report' report dated 28th July 2016 of the Principal Committee submitted as per Order dated 10th August 2016 of Hon'ble National Green Tribunal in O.A. No. 65 of 2016 (Manoj Mishra v. Delhi Development Authority & Ors.). I have independently analyzed and evaluated the report dated 28th July 2016 and have prepared a report/suggestions with respect to the findings

NOTARY Rajendra Kumar Delhi Regd. No. 5780 Date of Expiry 27th ... GOVT. OF INDIA

and observations made in the report dated 28th July, 2016. My report along with the accompanying Annexures is annexed to the Affidavit dated 14th September, 2016 filed by the Respondent No. 3. I repeat and reiterate the contents of my report/suggestions as if the same were incorporated herein in extenso.

Rakesh Ranjan

DEPONENT

VERIFICATION:

I, Rakesh Ranjan, the deponent above named, do hereby verify that that the contents of my above affidavit are true and correct, no part of it is false and nothing material has been concealed therefrom.

Verified at New Delhi on this 14th day of September, 2016,

NOTARY 14 SEP 2016 Rajendra Kumar Delhi Regd. No. 5780 Date of Expiry 27th April-2018 GOVT. OF INDIA

NOTARY Rajendra Kumar Delhi Regd. No. 5780 Date of Expiry 27th April-2018 GOVT. OF INDIA

Rakesh Ranjan

DEPONENT

ATTESTED

RAJENDRA KUMAR
NOTARY, DELHI-R-5780
GOVERNMENT OF INDIA
SUPREME COURT OF INDIA
COMPOUND, NEW DELHI
Register Pg./Sl. No. 14 SEP 2016

Ph. 9212451892
9899446209

CERTIFIED THAT THE CONTENTS EXPLAINED TO THE DEPONENT/EXECUTANT WHO IS SEEMED PERFECT TO UNDERSTAND & AFFIRMED DEPOSED BEFORE ME AT DELHI ON 14 SEP. 2016 INDENTIFIED BY IDENTIFY THE EXECUTANT/DEPONENT WHO HAS SIGNED IN MY PRESENCE

IDENTIFY THE EXECUTANT/ WAS PRESENCE OF

ANNEXURE-I
735

DELHI DEVELOPMENT AUTHORITY
OFFICE OF CHIEF ENGINEER (E.Z.)

No.F.10(25)2015/FS/2015/ 590 Dated: 11/2/16

To:

Ms. Tripta Dhawan,
Trustee Vyakti Vikas Kendra,
B-182-A, Sector-48,
NOIDA-201303.

Sub: Intimation of Status Quo Order on Khasra No.610 Kilokri in case titled Ram Singh Saini Vs Govt. of NCT.
WP(C) No. 483/2016.

Madam,

DDA has allotted the land with certain terms and conditions for holding the World Culture Festival i.e. Art of Living w.e.f. 11.3.16 to 13.3.16 in the Yamuna Flood Plains as per the request of Vyakti Vikas Kendra. Now one Sh. Ram Singh Saini, resident of 96-97, Sarai Kale Khan, New Delhi-110 013 has informed this office that he has filed a Writ Petition No. 483/2016 in the High Court of Delhi praying Hon'ble High Court not to damage the crops which are existing in khasra No.610 Kilokri. A copy of the representation of Shri Ram Singh Saini alongwith a copy of the order of Hon'ble High Court dated 20.01.16 in Writ Petition No.483/2016 is enclosed for ready reference.

You are requested to take cognizance of the orders of Hon'ble High Court to avoid any contempt of the orders of Hon'ble High Court of Delhi.

Thanking you,

Encl: As stated above.

Yours sincerely,

(D.P. Singh)
Chief Engineer (EZ)

Copy to :

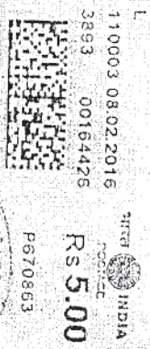
1. PC(LM) for kind information with enclosures.
2. Shri Ram Singh Saini, 96-07, Sarai Kale Khan, New Delhi-110 013 w.r.t. your letter dated 10.02.16.

Chief Engineer (EZ) 11/2/16

736

IN THE HIGH COURT OF DELHI AT NEW DELHI

No. 2636/CO /DHC/WRITS/D-1/2016
Dated 28/1/16 NDOH 23.08.2016



To,

The Registrar General
High Court of Delhi
New Delhi

1. Sh. Ram Singh S/o Late Sh. Tara Chand R/o House No. 96-97, Sarai Kale Khan New Delhi.
2. Govt. of NCT of Delhi Through its Secretary (L&B) Land & Building Department, Vikas Bhawan ITO New Delhi.
3. The Land Acquisition Collector Tis Hazari Courts Complex, Delhi.
4. Delhi Development Authority Through its Vice Chairman Vikas Sadan INA New Delhi

CIVIL MISC. PETITION NO. 1988/2016
AND
WRIT PETITION (CIVIL) NO. 483/2016

Sh. Ram Singh ....Petitioner/s

Vs.

Govt. of NCT of Delhi and Ors. ....Respondents

I am directed to forward herewith for information and immediate compliance/necessary action a copy of order dated 20.01.2016 passed by Hon'ble Division Bench of this Court in the above noted case along with a copy of Memo of Parties.

Please acknowledge receipt.

Yours faithfully

28/1/16

Assistant Registrar (Writs)
for Registrar General

AM/27.01.2016

737

4

IN THE HIGH COURT OF DELHI AT NEW DELHI
(EXTRAORDINARY CIVIL WRIT JURISDICTION)
WRIT PETITION (CIVIL) NO. 483 OF 2016

MEMO OF PARTIES

IN THE MATTER OF:

SHRI RAM SINGH
S/O LATE SHRI TARA CHAND
RESIDENT OF HOUSE NO.96-97
SARAI KALE KHAN
NEW DELHI. .. PETITIONER

VERSUS

1. GOVT. OF NCT OF DELHI
THROUGH ITS SECRETARY (L&B)
LAND & BUILDING DEPARTMENT
VIKAS BHAWAN – ITO
NEW DELHI.

2. THE LAND ACQUISITION COLLECTOR
TIS HAZARI COURTS COMPLEX
DELHI.

3. DELHI DEVELOPMENT AUTHORITY
THROUGH ITS VICE CHAIRMAN
VIKAS SADAN – INA
NEW DELHI. .. RESPONDENTS

PETITIONER
THROUGH:

PAWANJIT S. AHUJA
ADVOCATE
A-428, FF, DEFENCE COLONY
NEW DELHI

NEW DELHI:
DATED: 13/1/16

TRUE COPY
EXAMINER

$~33

* IN THE HIGH COURT OF DELHI AT NEW DELHI

\+ W.P.(C) 483/2016

RAM SINGH ..... Petitioner

Through Mr P.S. Bindra, Advocate.

versus

GOVT. OF NCT OF DELHI AND ORS ..... Respondents

Through Mr Dhanesh Relan with Mr Arush Bhandari and Mr Sanjeev Sabharwal, Advocates for respondent No.3.

CORAM:
HON'BLE MR. JUSTICE BADAR DURREZ AHMED
HON'BLE MR. JUSTICE SANJEEV SACHDEVA

ORDER

% 20.01.2016

CM No.1989/2016 (exemption)

Exemption is allowed subject to all just exceptions.

W.P.(C) 483/2016 & CM No.1988/2016 (stay)

Issue notice. Notice is accepted by the learned counsel for the respondent No.3. The counter affidavit be filed within six weeks. The rejoinder affidavit, if necessary, be filed within four weeks thereafter.

Notice shall go to respondent Nos.1 & 2, returnable on 23.08.2016.

In the meanwhile, the parties shall maintain *status quo* with regard to the nature, title and possession of the subject land.

BADAR DURREZ AHMED, J

SANJEEV SACHDEVA, J

JANUARY 20, 2016
st

TRUE COPY

EXAMINER

739

Status Quo Order

To
The S.E.(HQ) EZ
VIKASH MINAR, DDA
I.T.O.
NEW DELHI

SUBJECT –INTIMATION OF STATUS QUA ORDER ON KHASRA NO. 610 KILOKERI IN CASE TITLED RAM SINGH SAINI VSGOVT. OF NCT, WP(C) NO. 483/2016

SIR,

It is to inform you that on Khasra no 610 kilokeri there is status qua order which has been passed by the hon'ble Division Bench on 20th January 2016. This the intimation later kindly do not take any action against the nature, title and possession of the land till the writ is pending adjudication.

Your office is bound to obey the order of honble high court passed in the abovementioned case.

Thanking you

Sincerely yours

Ram Singh Saini रामसिंह

96-97 Sarai kale khan

New Delhi 13

C.E. (E.Z.) D.D.A.
Dy. No. ......
DATE 18/5/16

740

DELHI DEVELOPMENT AUTHORITY
दिल्ली विकास प्राधिकरण
(Receipt & Despatch Cell)
प्राप्ति और प्रेषण कक्ष

www.dda.org.in

Acknowledgement
प्राप्ति सूचना

Receipt Number : REC / LD / 16 / 4.257 Date: 28/01/16 11:43:25AM
रसीद संख्या

Letter Date : 28/1/16
पत्र की तिथि

Subject : INTIMATION
विषय

DDA file Number : WP(C) NO.483/2016
डी डी ए फिसिल संख्या

Received From : RAM SINGH SAINI
से प्राप्त

Addressed To : LM DIRECTOR(LAND MANAGE.)HQ
को संबोधित

Enclosures Attached :-
संलग्न

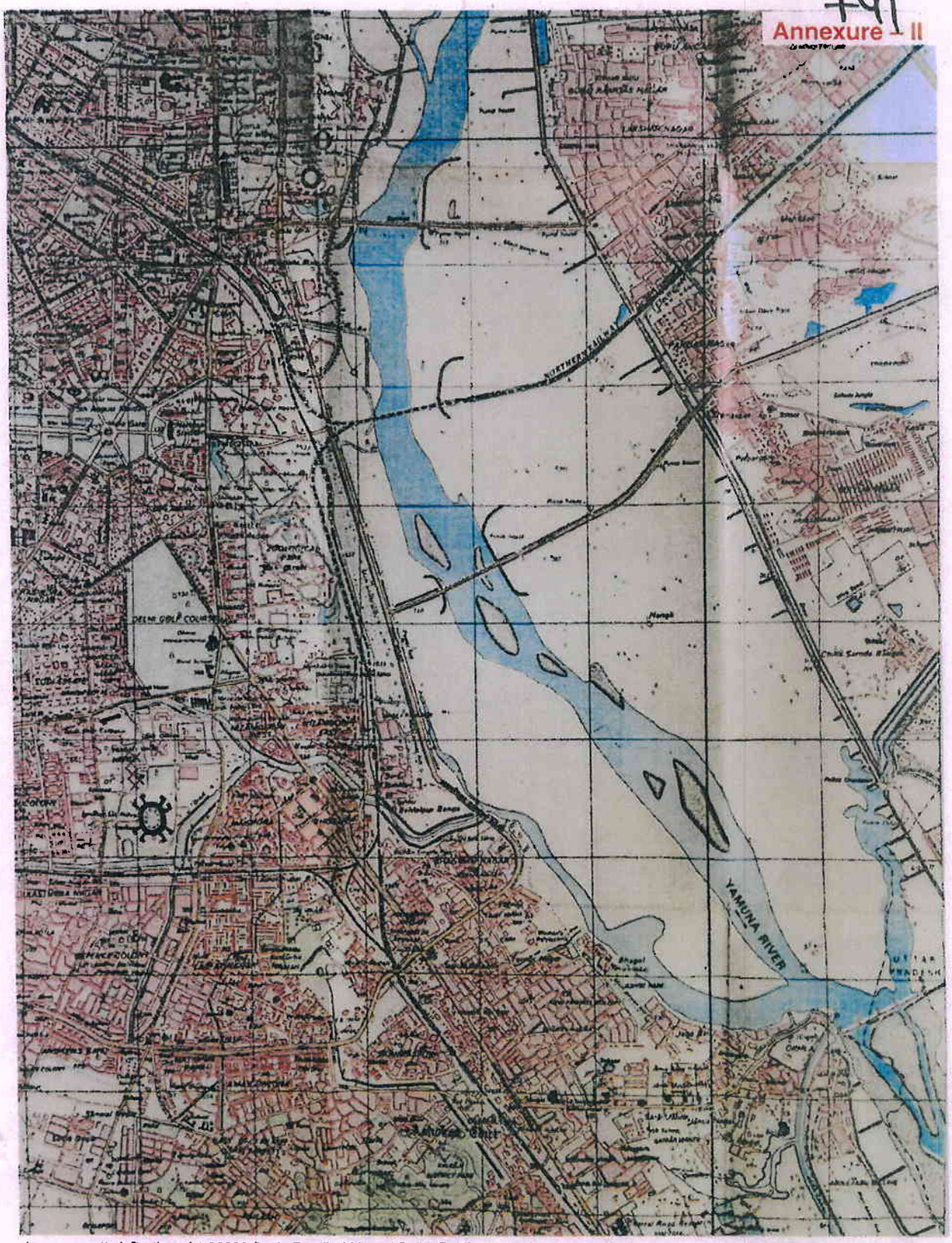
Serial no. क्रम संख्या	code कोड	Copy प्रतिलिपि	Description विवरण
1	99	1	COPY OF COURT ORDER

Total Pages
कुल पृष्ठ

1.The correctness of the above enclosures are subject to verification by the concerned Department
उर्प्युक्त संलग्नों की परिशुद्धता संबंधित विभाग द्वारा सत्यापन के अधीन हैं।
2.Visiting Hours for general public to visit various departments on Public Dealing Days i.e. every working Monday, Tuesday and Thursday.
(i) 2.30 p.m. to 3.30 p.m.:Only allottees/applicants having prior appointment in writing from the concerned branches of Housing, Lands, etc. will be allowed.
(ii) 3.30 p.m. to 5.00 p.m.:All (without appointment) will be allowed.

Received By : PRASHOTAM
प्राप्त कर्ता

Annexure – II



Annexure – II: A Portion of 1:25000 Scale Detailed Map of Delhi; Published by Survey of India in Year 1985, Under the Direction of Major General Girish Chandra Aggarwal, Surveyor General of India; Titled – "Delhi Guide Map, Third Edition 1985".

The map clearly depicts the WCF 2016 event site as an extremely flat "Point Bar" (floodplain deposit) without existence of any wetland or enclosed waterbody. The flatness of this land parcel is to the extent that contour indicating difference in height of the order of 100cm is also non-existent throughout the area.

Another important point for record in this map is the existence of natural path of 'Kushak River – Barapullah Drain' prior to straightening of its channel traversing straight into River Yamuna and filling of its original channel. The map also depicts the situation prior to construction of Guide Bank and DND Flyway.

ANNEXURE – III
742

8.1.7 Delhi

Total 98 wetlands have been mapped at 1:50,000 scale in the state. In addition, 301 wetlands (smaller than 2.25 ha) have also been identified. Total wetland area estimated is 2771 ha that is around 0.93 per cent of the geographic area (Table 26). The major wetland types are river/stream (1074 ha), reservoir/barrage (479 ha) and waterlogged (natural) accounting for 13.71 per cent of the wetlands (380 ha). Graphical distribution of wetland type is shown in Figure 25. Wetland map of the state is shown in Plate 29.

Analysis of wetland status in terms of open water and aquatic vegetation showed that around 46 and 55 per cent of wetland area is under open water category during post-monsoon and pre-monsoon respectively. Aquatic vegetation (floating/emergent) occupies around 30 and 35 per cent of wetland area during post-monsoon and pre-monsoon respectively. Aquatic vegetation comprised of various types hydrophytes which include mainly grasses in the periphery of the banks and on exposed sand beds. Water hyacinth is a dominant floating hygrophyte in open water. It is observed that *Ipomoea aquatica* showed luxuriant growth in waters which are mainly influenced by sewage. Aquatic vegetation (floating/emergent) accounted for more than 60 per cent area in particular to Okhla barrage and dispersion of floating vegetation is more during post-monsoon season.

Most of the wetlands showed low turbidity and the area was 1239 ha in post-monsoon season and 1461 ha in pre-monsoon season.

Table 26: Area estimates of wetlands in the Delhi

Area in ha

Sr. No.	Wetcode	Wetland Category	Number of wetlands	Total wetland area	% of wetland area	Open Water	
						Post-monsoon area	Pre-monsoon area
	1100	Inland Wetlands - Natural					
1	1101	Lake/Pond	2	49	1.77	42	28
2	1105	Waterlogged	15	380	13.71	80	135
3	1106	River/Stream	2	1074	38.76	756	849
	1200	Inland Wetlands -Man-made					
4	1201	Reservoir/Barrage	1	479	17.29	173	234
5	1202	Tank/Pond	66	260	9.38	180	182
6	1203	Waterlogged	12	228	8.23	51	98
		Sub-Total	98	2470	89.14	1282	1526
		Wetlands (<2.25 ha)	301	301	10.86	-	-
		Total	399	2771	100.00	1282	1526

Area under Aquatic Vegetation	700	835

Area under turbidity levels		
Low	1239	1461
Moderate	43	65
High	-	-

District-wise wetland area estimates in Delhi

Delhi is divided into nine districts. They are North, Central, East, West, South, New Delhi, North-East, North-West, and South-East. Each district is headed by a Deputy Commissioner. All Deputy Commissioners report to the Divisional Magistrate. Every district has three sub-divisions headed by a sub-divisional magistrate.

District-wise distribution of wetlands showed that total wetland per cent area (0.93) is much less compare to country average. South district has 2.89 per cent of geographic area under wetland. The other three districts are: North West, North and East with around 1.70, 7.28 and 6.68 per cent area under wetland respectively.

New Delhi and South West districts have the lowest area under wetland. Wetland category of reservoir/barrage was observed only in South and East districts, mainly due to the presence of the Okhla barrage. District-wise wetland area estimates is given in Table 27. Figure 26 shows district-wise graphical distribution of wetlands. District-wise area of wetlands (type-wise) in the state is given in Table 28.

South West and North West district have 111 and 108 small wetlands (<2.25 ha) respectively, While other districts have less wetlands.

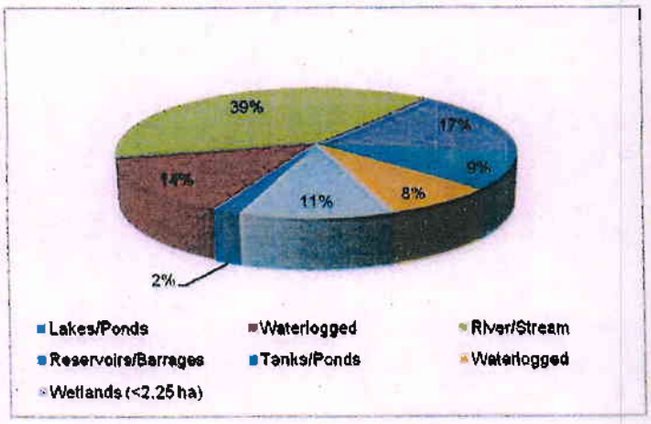


Figure 25: Type-wise wetland distribution in Delhi

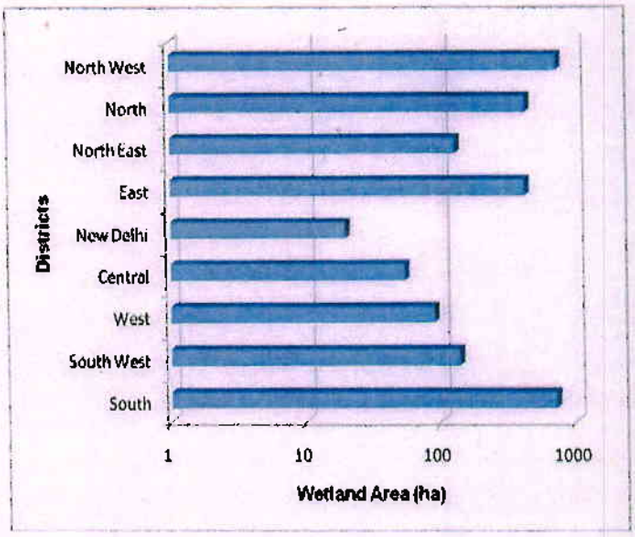


Figure 26: District-wise graphical distribution of wetlands in Delhi

744

Table 27: District-wise area of wetlands in Delhi

District code	District	Geographic area *	Wetland area	% of total wetland area	% of district geographic area	Open water		Aquatic Vegetation		Turbidity (Post-monsoon)			Turbidity (Pre-monsoon)		
						Post-monsoon	Pre-monsoon	Post-monsoon	Pre-monsoon	Low	Moderate	High	Low	Moderate	High
		(sq. km)	(ha)		(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)
1	North West	440	748	26.99	1.70	232	291	273	258	227	6	-	283	8	-
2	North	60	437	15.77	7.28	324	338	21	82	319	5	-	331	7	-
3	North East	60	131	4.73	2.18	86	107	-	7	86	-	-	107	-	-
4	East	64	428	15.45	6.69	207	233	170	186	206	1	-	233	-	-
5	New Delhi	1483	20	0.72	0.01	17	17	-	-	17	-	-	17	-	-
6	Central	60	55	1.98	0.92	47	48	3	2	36	11	-	33	15	-
7	West	129	91	3.28	0.71	38	43	20	15	18	20	-	10	33	-
8	South West	420	139	5.02	0.33	26	23	3	5	25	1	-	21	2	-
9	South	250	722	26.06	2.89	305	426	210	280	305	-	-	426	-	-
	Total	2966	2771	100.00	0.93	1282	1526	700	835	1239	43	-	1461	65	-

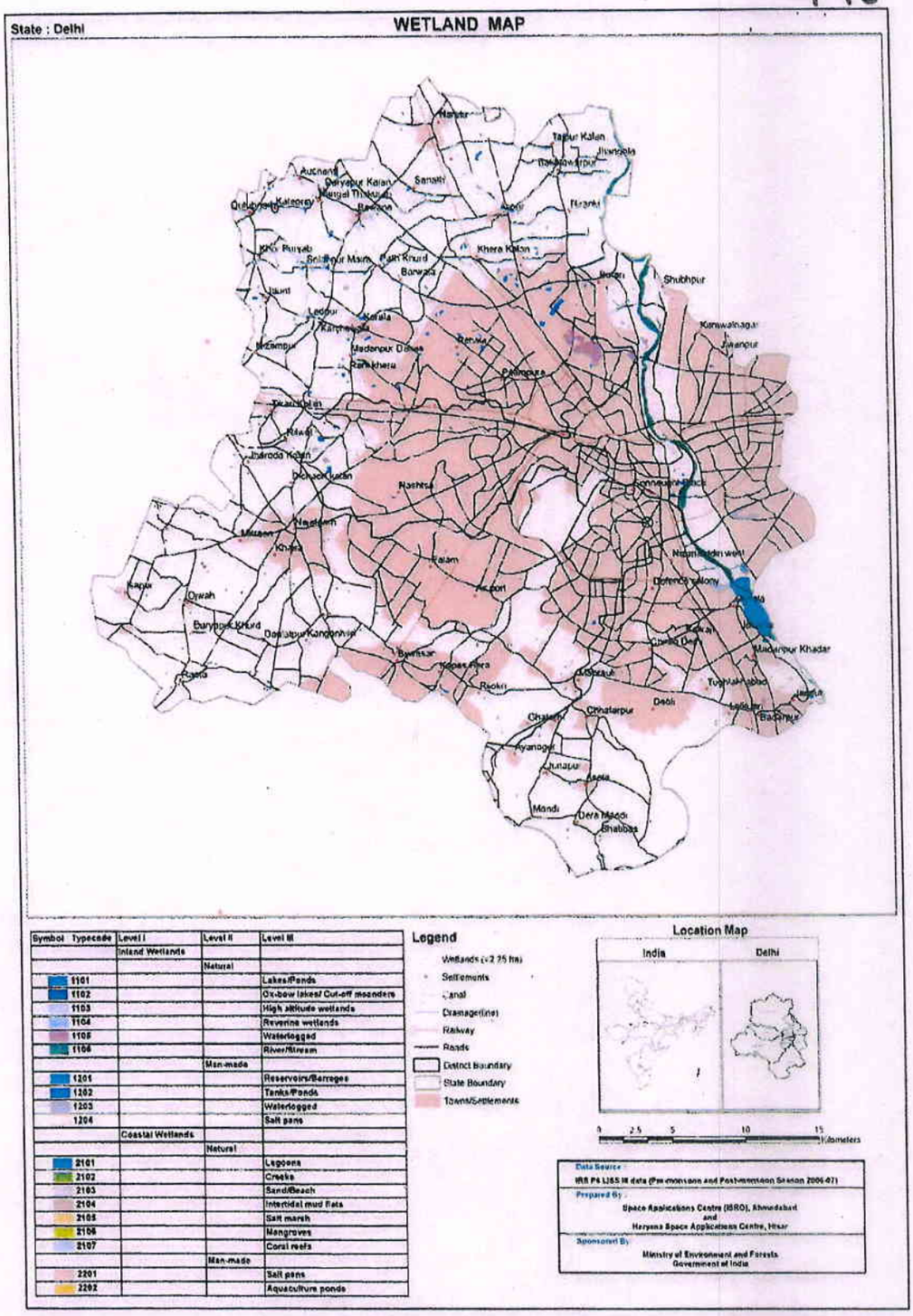
* - Data source : http://nic.in

Table 28: District-wise area of wetlands (type-wise) in Delhi

District code	District	Geographic area *	Wetland Type						Sub-total	Wetlands (<2.25 ha)	Total
			1101	1105	1106	1201	1202	1203			
			Lake/ pond	Waterlogged (Natural)	River/ Stream	Reservoir/ Barrage	Tank/ Pond	Waterlogged (Man-made)			
		(sq. km)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)
1	North West	440	21	285	152	-	179	3	640	108	748
2	North	60	28	34	349	-	4	12	427	10	437
3	North East	60	-	-	123	-	-	-	123	8	131
4	East	64	-	26	231	87	-	84	428	-	428
5	New Delhi	1483	-	-	17	-	-	-	17	3	20
6	Central	60	-	-	33	-	15	2	50	5	55
7	West	129	-	23	-	-	30	8	61	30	91
8	South West	420	-	-	-	-	28	-	28	111	139
9	South	250	-	11	169	392	4	120	696	26	722
	Total	2966	49	379	1074	479	260	229	2470	301	2771

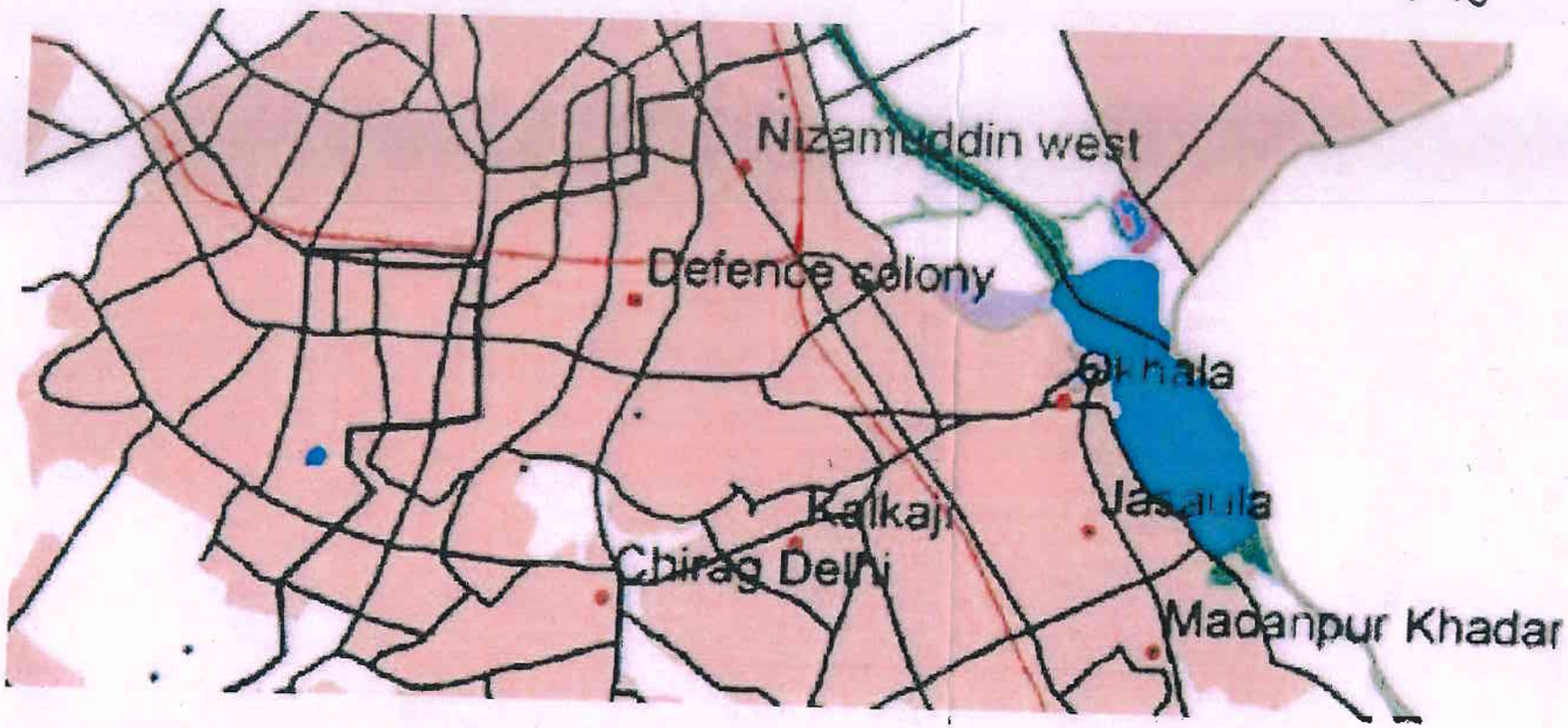
* - Data source : http://nic.in

745



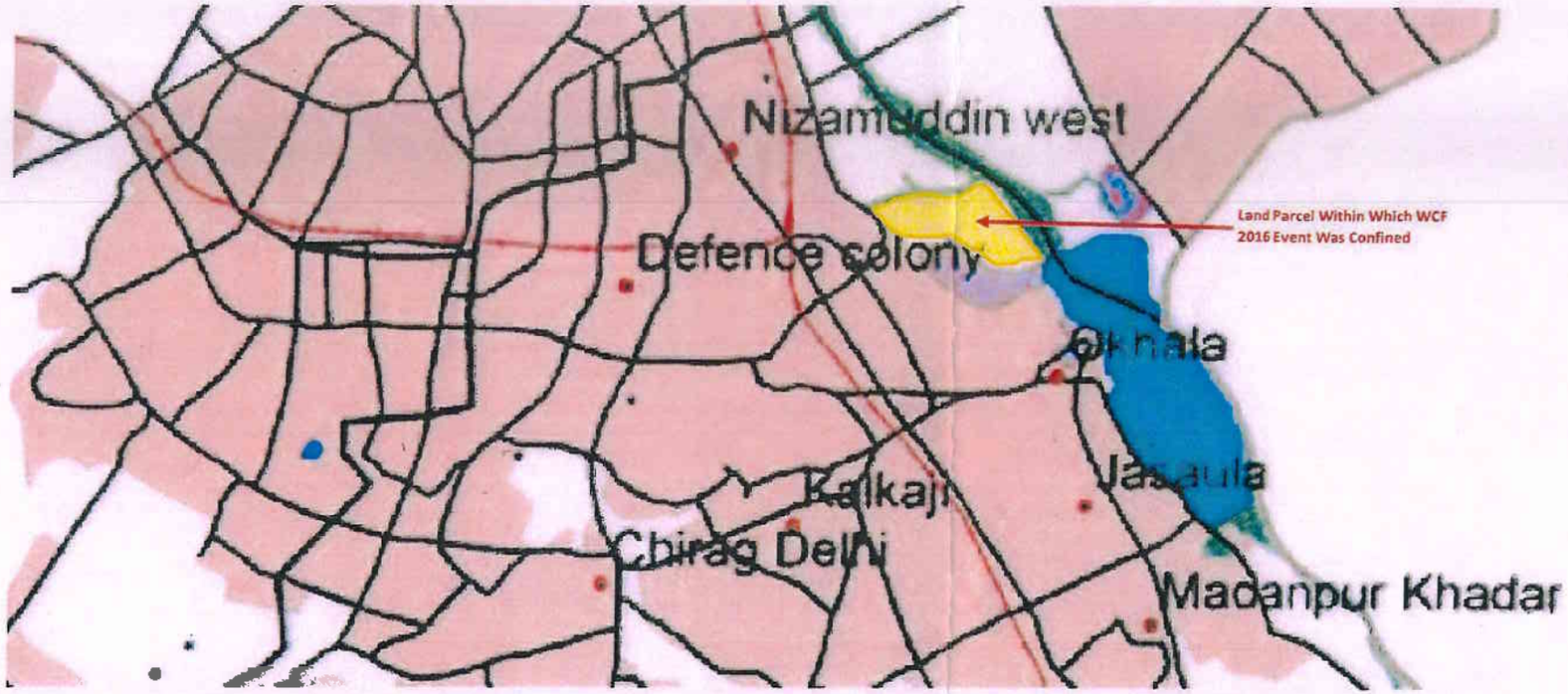
Symbol	Typecode	Level I	Level II	Level III
		Inland Wetlands		
			Natural	
	1101			Lakes/Ponds
	1102			Ox-bow lakes/ Cut-off meanders
	1103			High altitude wetlands
	1104			Riverine wetlands
	1105			Waterlogged
	1106			River/Stream
			Man-made	
	1201			Reservoirs/Barrages
	1202			Tanks/Ponds
	1203			Waterlogged
	1204			Salt pans
		Coastal Wetlands		
			Natural	
	2101			Lagoons
	2102			Creeks
	2103			Sand/Beach
	2104			Intertidal mud flats
	2105			Salt marsh
	2106			Mangroves
	2107			Coral reefs
			Man-made	
	2201			Salt pans
	2202			Aquaculture ponds

Plate 29 : Wetland map of Delhi



ANNEXURE – III: Enlarged Map Sourced from Section 8.1.7. of Chapter 8 in the "National Wetland Atlas"; Prepared by Spiros Applications Centre (ISRO), Ahmedabad; sponsored by 'Ministry of Environment and Forests, Government of India'; clearly showing the fact that there is no wetland and/or several water bodies over the Land Parcel within which the event site for WCF 2016 was confined.

747



ANNEXURE – III: Enlarged Map Sourced from Section 8.1.7. of Chapter 8 in the "National Wetland Atlas"; Prepared by Space Applications Centre (ISRO), Ahmedabad; sponsored by 'Ministry of Environment and Forests, Government of India'; clearly showing the fact that there is no wetland and/or several water bodies over the Land Parcel (marked with Yellow encircled under Orange Poly-line) within which the event site for WCF 2016 was confined.

ANNEXURE IV

Annexure – IV
Sheet - A

748

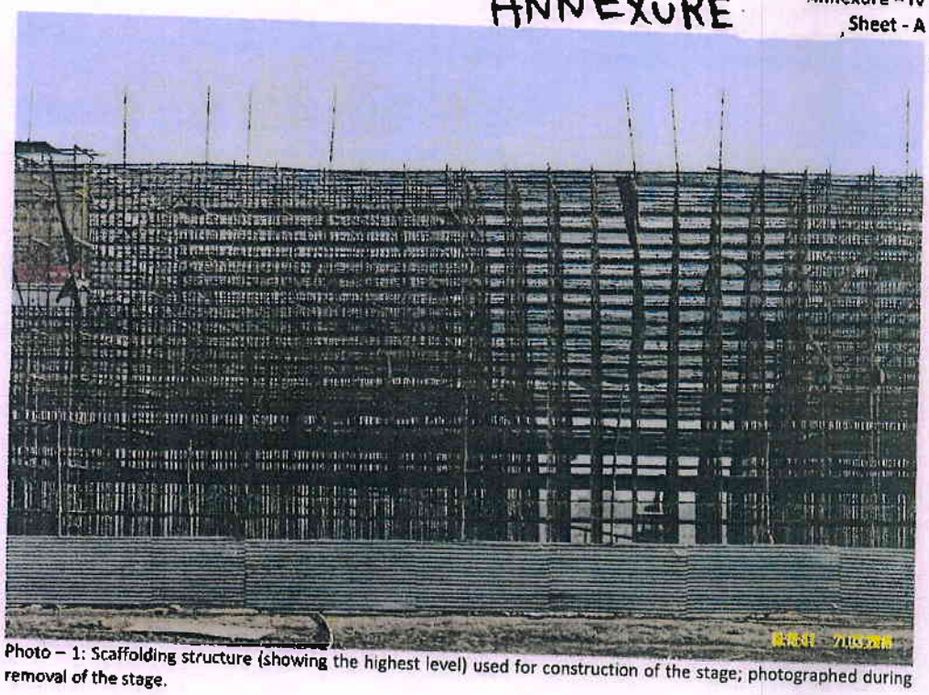


Photo – 1: Scaffolding structure (showing the highest level) used for construction of the stage; photographed during removal of the stage.

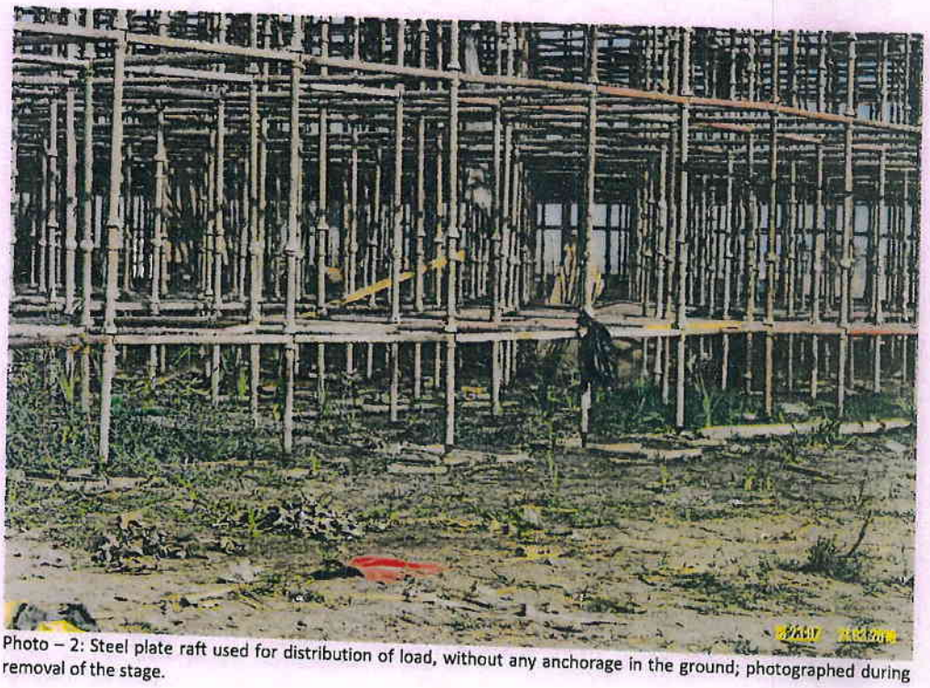


Photo – 2: Steel plate raft used for distribution of load, without any anchorage in the ground; photographed during removal of the stage.

749

Photo – 3: Photograph of stage resting on scaffolding; the stage was also composed of light weight material.
(Photograph Sourced from Public Domain)

Photo – 4: Concept of 'Yogic Nail Bed' was used in construction of the stage, which is based on the principle of uniform distribution of weight over a large surface area, therefore overall impact is extremely low/negligible.
(Photograph Sourced from Public Domain)

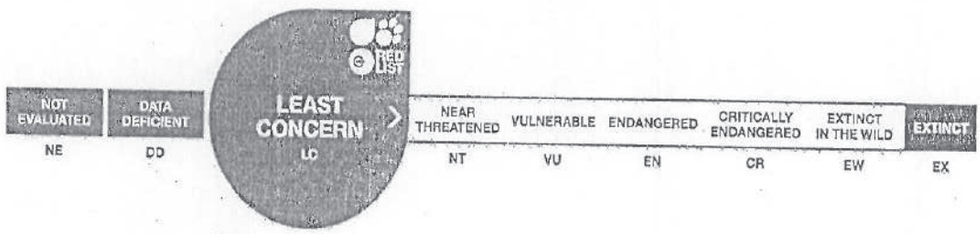
ANNEXURE-V

750

The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T168955A1256797

Phragmites karka

Assessment by: Lansdown, R.V.



View on www.iucnredlist.org

Citation: Lansdown, R.V. 2013. *Phragmites karka*. *The IUCN Red List of Threatened Species 2013*: e.T168955A1256797. http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T168955A1256797.en

751

Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Liliopsida	Cyperales	Gramineae

Taxon Name: *Phragmites karka* (Retz.) Trin. ex Steud.

Taxonomic Notes:

This species can be regarded as the tropical counterpart of *Phragmites australis*; as noted by Cope (1982) (Cope, T.A. 1982 Flora of Pakistan No. 143. Poaceae. Jointly published by the Institute of Plant Conservation, University of Karachi and Missouri Botanical Press) "for most of their range these two species of *Phragmites* are allopatric. *Phragmites australis* is a temperate species while *Phragmites karka* is tropical". However, different approaches to recognition of taxa within the genus and uncertainty about taxonomy in some areas make it difficult to establish the precise distribution and status of this taxon.

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2013

Date Assessed: May 14, 2012

Justification:

This species is classed as Least Concern as it is widespread, able to exploit a range of anthropogenic habitats and does not face any major threats.

Geographic Range

Range Description:

This species occurs throughout much of the Old World tropics, including central Africa from Senegal east to Ethiopia and south to Uganda. It is reported from Oman, Saudi Arabia, the United Arab Emirates and Yemen (Cope 2007) and from Pakistan east to China and Japan, south through South-east Asia to northern Australia, as well as some Pacific Ocean island groups.

Country Occurrence:

Native: Australia (Northern Territory, Queensland, South Australia, Western Australia); Bangladesh; Benin; Bhutan; Brunei Darussalam; Cambodia; Cameroon; China (Fujian, Guangdong, Guangxi, Hainan, Sichuan, Yunnan); Eritrea; Ethiopia; Ghana; Guinea-Bissau; India (Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Jammu-Kashmir, Karaikal, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal); Indonesia; Japan; Kenya; Lao People's Democratic Republic; Malaysia; Mali; Myanmar; Nepal; Niger; Nigeria; Oman; Pakistan; Papua New Guinea; Philippines; Saudi Arabia; Senegal; Sierra Leone; Somalia; Sri Lanka; Sudan; Taiwan, Province of China; Thailand; Uganda; United Arab Emirates; Viet Nam; Yemen (North Yemen)

752

Population

There is no information available on population trends in this species.
Current Population Trend: Unknown

Habitat and Ecology (see Appendix for additional information)

This species grows in a range of habitats, from swamps to shallow water at the margins of lakes, ponds, in and along streams and ditches and in irrigation canals (Cook 1996).

Systems: Freshwater

Use and Trade (see Appendix for additional information)

The young leaves are used as fodder, older culms are used for thatching, screens, baskets, paper and reeds for musical instruments (Cook 1996).

Threats

There are no known significant past, ongoing or future threats to this species.

Conservation Actions

There are no conservation measures in place and none needed.

Credits

Assessor(s): Lansdown, R.V.

Reviewer(s): Tognelli, M. & García, N.

Contributor(s): Knees, S.G., Patzelt, A., Neale, S. & Williams, L.

http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T168955A1256797.en

753

Bibliography

Cook, C.D.K. 1996. *Aquatic and Wetland Plants of India*. Oxford University Press, Oxford.

Cope, T.A. 2007. *Flora of the Arabian Peninsula and Socotra*. Edinburgh University Press, Edinburgh.

IUCN. 2013. IUCN Red List of Threatened Species (ver. 2013.1). Available at: http://www.iucnredlist.org. (Accessed: 12 June 2013).

Citation

Lansdown, R.V. 2013. *Phragmites karka. The IUCN Red List of Threatened Species 2013*: e.T168955A1256797. http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T168955A1256797.en

Disclaimer

To make use of this information, please check the Terms of Use.

External Resources

For Images and External Links to Additional Information, please see the Red List website.

http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T168955A1256797.en

754

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	-	Suitable	Yes
5. Wetlands (inland) -> 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks	-	Suitable	Yes
5. Wetlands (inland) -> 5.4. Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands	-	Suitable	Yes
5. Wetlands (inland) -> 5.5. Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)	-	Suitable	Yes
5. Wetlands (inland) -> 5.6. Wetlands (inland) - Seasonal/Intermittent Freshwater Lakes (over 8ha)	-	Suitable	Yes
5. Wetlands (inland) -> 5.7. Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)	-	Suitable	Yes
5. Wetlands (inland) -> 5.8. Wetlands (inland) - Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)	-	Suitable	Yes
5. Wetlands (inland) -> 5.9. Wetlands (inland) - Freshwater Springs and Oases	-	Suitable	No
15. Artificial/Aquatic & Marine -> 15.9. Artificial/Aquatic - Canals and Drainage Channels, Ditches	-	Suitable	No

Use and Trade

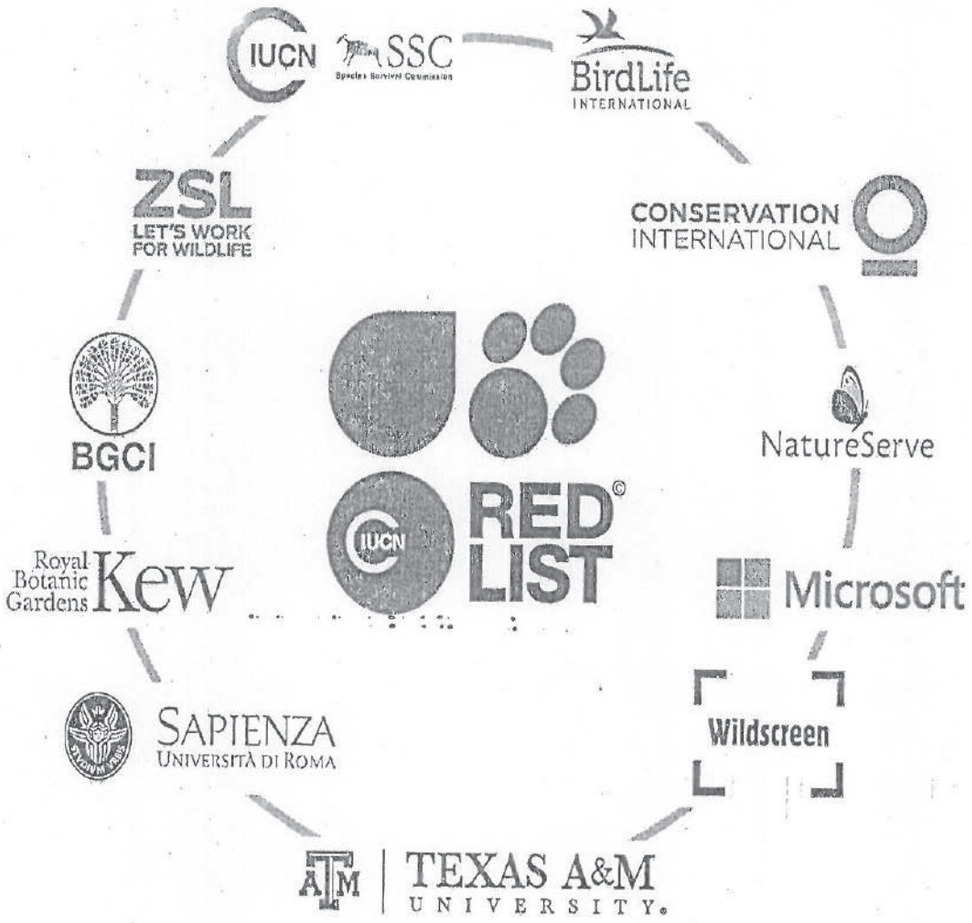
(http://www.iucnredlist.org/technical-documents/classification-schemes)

End Use	Local	National	International
Food - animal	Yes	No	No
Construction or structural materials	No	No	No

Additional Data Fields

Distribution
Lower elevation limit (m): 0
Upper elevation limit (m): 1600
Population
Population severely fragmented: No

The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership. The IUCN Red List Partners are: BirdLife International; Botanic Gardens Conservation International; Conservation International; Microsoft; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; Wildscreen; and Zoological Society of London.

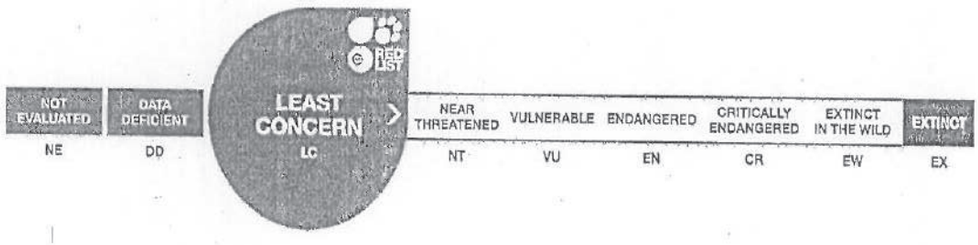
ANNEXURE-VI

The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T168629A6524306

756

Typha orientalis, Bullrush

Assessment by: Zhuang, X.



View on www.iucnredlist.org

Citation: Zhuang, X. 2011. *Typha orientalis*. *The IUCN Red List of Threatened Species 2011*: e.T168629A6524306. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

757

Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Liliopsida	Typhales	Typhaceae

Taxon Name: *Typha orientalis* C.Presl.

Synonym(s):

- *Typha latifolia Linnaeus var. orientalis*
- *Typha muelleri*

Common Name(s):

- English: Bullrush

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2011

Date Assessed: April 20, 2010

Justification:

Widespread and abundant in suitable habitat throughout its known range with no known threats. It is therefore listed as Least Concern.

Geographic Range

Range Description:

Widespread from Asia (Indonesia, India, Malaysia), Korea, Philippines, China (Anhui, Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Taiwan, Yunnan, Zhejiang), Taiwan (Province of China), the western Himalayas, Japan, Mongolia, Myanmar, Russia (Primorskye, Sakhalin), and Australasia (eFloras 2011); Australia, and New Zealand (Kermadec Islands group (Raoul Island only), North and South Islands), and the wider western Pacific. Deliberately naturalised on the Chatham Islands by Maori.

Country Occurrence:

Native: Australia (New South Wales, Northern Territory, Queensland, South Australia, Tasmania, Victoria, Western Australia); Bangladesh; Bhutan; China (Anhui, Beijing, Fujian, Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanghai, Shanxi, Tianjin, Yunnan, Zhejiang); Hong Kong; India (Sikkim); Indonesia; Japan; Korea, Democratic People's Republic of; Korea, Republic of; Lao People's Democratic Republic; Macao; Malaysia; Mongolia; Myanmar (Myanmar (mainland)); Nepal; New Zealand (Chatham Is., Kermadec Is., North Is., South Is.); Philippines; Russian Federation (Primoryi, Sakhalin); Taiwan, Province of China

http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

758

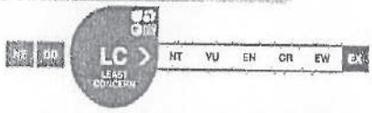
Distribution Map

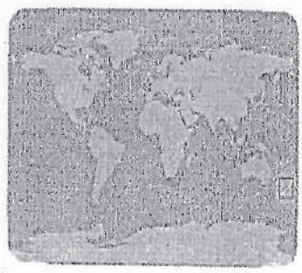
Typha orientalis

Range

☐ Probably Extant

Compiled by:
IUCN (International Union for Conservation of Nature)





The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

759

Population

There is no information on global population trends for this species, but considered stable.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

Coastal to lowland in fertile wetlands, on the margins of ponds, lakes, slow flowing streams, and rivers. Less frequently found on the margins of low moor bogs. Occasionally found in muddy ground within industrial areas. Lakes, ponds, channels, swamps, slow-moving rivers (efloras 2011).

Systems: Freshwater

Use and Trade (see Appendix for additional information)

The whole plant has many edible parts: flowers, leaves, pollen, root, seed, and stem. It also has medicinal uses such as astringent, diuretic, sedative, and used to treat bruises, dysentery, and fever. It is also a source of biomass and fibre. It is used for insulation, thatching, weaving, stuffing etc. It tolerates lead and is used to accumulate lead in metal mines, as well as other pollution control applications.

Threats

No known threats to this species.

Conservation Actions

No population conservation information on this species.

Credits

Assessor(s): Zhuang, X.

Reviewer(s): Lansdown, R.V. & Allen, D.J.

http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

760

Bibliography

Chen J. Hoch, P. and Raven, P.H. 2011. Flora of China Vol. 13: Epilobium. Available at: http://www.efloras.org/flora_page.aspx?flora_id=2.

Duke, J.A. 2010. Phytochemical and Ethnobotanical Databases. Available at: http://www.ars-grin.gov/cgi-bin/duke/ethnobot.pl. (Accessed: 20 January).

IUCN. 2011. IUCN Red List of Threatened Species (ver. 2011.2). Available at: http://www.iucnredlist.org. (Accessed: 10 November 2011).

Li, Y.-L., Li, X., Li, S., Wang, X.-H., Fan, T. and Liu, Y.-G. 2005. Characteristics of a lead accumulator plant, *Typha orientalis* Presl. *Ecology and Environment* 14(4): 555-558.

Plants For a Future. 2010. Plants For a Future. Available at: http://www.pfaf.org/index.php. (Accessed: 10/04).

Citation

Zhuang, X. 2011. *Typha orientalis. The IUCN Red List of Threatened Species 2011*: e.T168629A6524306. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

Disclaimer

To make use of this information, please check the Terms of Use.

External Resources

For Images and External Links to Additional Information, please see the Red List website.

761

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (Includes waterfalls)	-	Suitable	Yes
5. Wetlands (inland) -> 5.4. Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands	-	Suitable	Yes
5. Wetlands (inland) -> 5.5. Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)	-	Suitable	Yes
5. Wetlands (inland) -> 5.7. Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)	-	Suitable	Yes

Use and Trade

(http://www.iucnredlist.org/technical-documents/classification-schemes)

End Use	Local	National	International
Food - human	Yes	No	No
Medicine - human & veterinary	Yes	No	No
Fuels	Yes	No	No
Fibre	Yes	No	No
Construction or structural materials	Yes	No	No

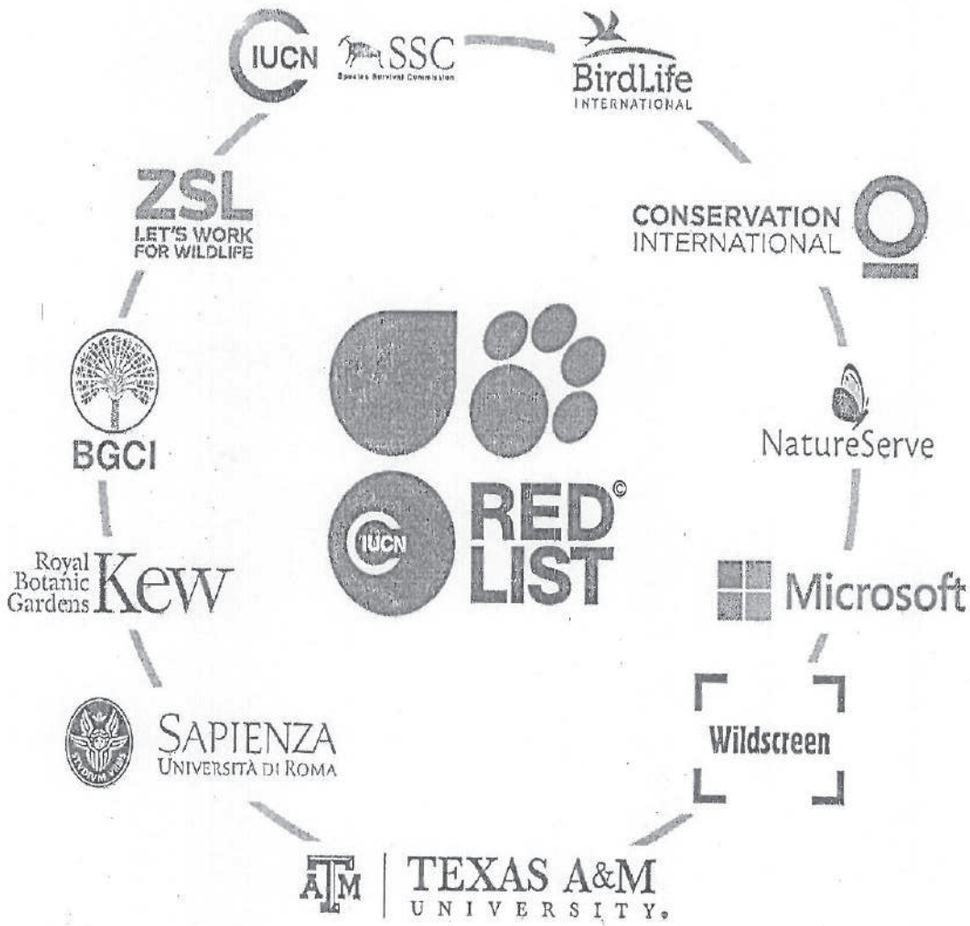
Additional Data Fields

Population
Population severely fragmented: No

http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T168629A6524306.en

762

The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership. The IUCN Red List Partners are: BirdLife International; Botanic Gardens Conservation International; Conservation International; Microsoft; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; Wildscreen; and Zoological Society of London.

ANNEXURE-VII

763

ENVIS Centre, Ministry of Environment & Forest, Govt. of India

Printed Date: Tuesday, September 13, 2016

Invasive Alien species

INVASIVE ALIEN SPECIES

The second worst threat is the biological invasion of alien species (Convention for Biological diversity, 1992)"

An alien plant also referred to as exotic, introduced, foreign, non-indigenous or non-native, is one that has been introduced by humans intentionally or otherwise through human agency or accidentally from one region to another. An alien plant that has escaped from its original ecosystem and is reproducing on its own in the regional flora is considered a naturalized species. Those naturalized aliens that become so successful as to spread in the flora and displace native biota or threatens valued environmental, agricultural or personal resources by the damage it causes are considered invasive.

Humans have been transporting animals and plants from one part of the world to another for thousands of years, sometimes deliberately for social or personal gain and sometimes accidentally. In most cases, such introductions are unsuccessful, but when they do become established as an invasive alien species (defined by IUCN (2000) as "an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity"), the consequences can be catastrophic. According to the Convention for Biological Diversity, invasive alien species are the second largest cause of biodiversity loss in the world and impose high costs to agriculture, forestry, and aquatic ecosystems. In fact, introduced species are a greater threat to native biodiversity than pollution, harvest, and disease combined.

The global extent and rapid increase in invasive species is homogenising the world's flora and fauna (Mooney & Hobbs, 2000) and is recognized as a primary cause of global biodiversity loss. Bio-invasion may be considered as a form of biological pollution and significant component on global change and one of the major causes of species extinction (Mooney and Drake, 1987; Drake et al., 1989).

Foresters, taxonomists and ecologists are now well aware of the problems caused by the invasion of alien species into natural areas and the associated negative effects on global patterns of native biodiversity. Once established, some alien species have the ability to displace or replace native plant and animal species, disrupt nutrient and fire cycles, and cause changes in the pattern of plant succession. Studies are underway to better understand the impacts of these species on native ecosystems.

764

Many invasive plants continue to be admired by people who may not be aware of their weedy nature. Others are recognized as weeds but property owners fail to do their part in preventing their spread. Some species do not even become invasive until they are neglected for a long time. Invasive plants are not all equally invasive. Some only colonize small areas and do not do so aggressively. Others may spread and come to dominate large areas in just a few years. The loss due to invasive species in United States estimated to be $125-150 billion each year and 25% of US agriculture gross national product lost due to foreign pests and weeds (McNeely et al. 2001). Alien plants can spread rapidly because of our mobile society and the intentional transportation of ornamental and forage plants (Randall and Marinelli, 1997).

Characteristic features of Invasive species:

Invasive species possess characteristic features like "pioneer species" in varied landscapes, tolerant of a wide range of soil and weather conditions, generalist in distribution, produces copious amounts of seed that disperse easily, grows aggressive root systems, short generation time, high dispersal rates, long flowering and fruiting periods, broad native range, abundant in native range. Preliminary data from one interesting study shows that invasive species are likely to have relatively small amounts of DNA in their cell nuclei. Apparently, the cells in these plants are able to divide and multiply more quickly and consequently the entire plant can grow more rapidly than species with higher cellular DNA content. This gives them a leg up in disturbed sites.

According to World Conservation Monitoring Centre (WCMC), 1,604,000 species have been described at the global level. Thus India accounts for 8% of the global biodiversity existing in only 2.4% land area of the world. According to Nayar (1989) the number of flowering plant species endemic to the present political boundaries of this country is 4900 out of a total of 15000, i.e. 33%. Hajra & Mudgal (1997) report 5400 endemics in 17000 angiospermous species of India, which comes to 31.76 %. India is an important center of agri-biodiversity having contributed 167 species to the world agriculture and homeland for 320 species of wild relatives of crops. The present study focuses on **173** species of invasive alien plants in India. These include the most serious invasives, such as *Alternanthera philoxeroides, Cassia uniflora, Chromolaena odorata, Eichhornia crassipes, Lantana camara, Parthenium hysterophorus, Prosopis juliflora* and others.

Top Home

LIST OF INVASIVE ALIEN PLANT SPECIES IN INDIA

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Acacia farnesiana (L.) Willd. (Mimosacceae)

Habit: Tree

Nativity: Trop. South America

Acacia mearnsii De Wild. (Mimosacceae)

Habit: Tree

Nativity: South east Australia

Acanthospermum hispidum DC. (Asteraceae)

Habit: Herb

Nativity: Brazil

Aerva javanica (Burm.f.) Juss. ex Schult. (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Top

Aeschynomene americana L. (Papilionaceae)

Habit: Herb

Nativity: Trop. America

Ageratina adenophora (Spreng.) King & Robinson (Asteraceae)

Habit: Herb

Nativity: Trop. America

Ageratum conyzoides L. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Ageratum houstonianum Mill. (Asteraceae)

Habit: Herb

Nativity: Trop. America

766

Alternanthera paronychioides A. St. Hil (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Alternanthera philoxeroides (Mart.) Griseb. (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Alternanthera pungens Kunth (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Alternanthera tenella Colla (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Antigonon leptopus Hook. & Arn. (Polygonaceae)

Habit: Climber

Nativity: Trop. America

Argemone mexicana L. (Papaveraceae)

Habit: Herb

Nativity: Trop. Central & South America

Asclepias curassavica L. (Asclepiadaceae)

Habit: Herb

Nativity: Trop. America

767

Asphodelus tenuifolius Cav. (Liliaceae)

Habit: Herb

Nativity: Trop. America

Top Home

B

Bidens pilosa L. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Blainvillea acmella (L.) Philipson (Asteraceae)

Habit: Herb

Nativity: Trop. America

Blumea eriantha DC. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Blumea lacera (Burm.f.) DC. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Blumea obliqua (L.) Druce (Asteraceae)

Habit: Herb

Nativity: Trop. America

768

Borassus flabellifer L. (Arecaceae)

Habit: Tree

Nativity: Trop. Africa

Top

C

Calotropis gigantea (L.) R.Br. (Asclepiadaceae)

Habit: Shrub

Nativity: Trop. Africa

Top

Calotropis procera (Ait.) R.Br. (Asclepiadaceae)

Habit: Shrub

Nativity: Trop. Africa

Cardamine hirsuta L. (Brassicaceae)

Habit: Herb

Nativity: Trop. America

Cardamine trichocarpa Hochst. ex A.Rich. (Brassicaceae)

Habit: Herb

Nativity: Trop. America

Cassia absus L. (Caesalpiniaceae)

769

Habit: Herb

Nativity: Trop. America

Cassia alata L. (Caesalpiniaceae)

Habit: Shrub

Nativity: West Indies

Cassia hirsuta L. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. America

Cassia obtusifolia L. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. America

Top Home

Cassia occidentalis L. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. South America

Cassia pumila Lam. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. America

Cassia rotundifolia Pers. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. South America

Cassia tora L. (Caesalpiniaceae)

770

Habit: Herb

Nativity: Trop. South America

Cassia uniflora Mill. (Caesalpiniaceae)

Habit: Herb

Nativity: Trop. South America

Catharanthus pusillus (Murray) Don (Apocynaceae)

Habit: Herb

Nativity: Trop. America

Celosia argentea L. (Amaranthaceae)

Habit: Herb

Nativity: Trop. Africa

Chamaesyce hirta (L.) Millsp. (Euphorbiaceae)

Habit: Herb

Nativity: Trop. America

Top

Chamaesyce indica (Lam.) Croizat (Euphorbiaceae)

Habit: Herb

Nativity: Trop. South America

Chloris barbata Sw. (Poaceae)

Habit: Herb

Nativity: Trop. America

Chromolaena odorata (L.) King & Robinson (Asteraceae)

Habit: Herb

Nativity: Trop. America

Chrozophora rottleri (Geis.) Spreng. (Euphorbiaceae)

Habit: Herb

Nativity: Trop. Africa

Cleome gynandra L. (Cleomaceae)

Habit: Herb

Nativity: Trop. America

Cleome monophylla L. (Cleomaceae)

Habit: Herb

Nativity: Trop. Africa

Top

Cleome rutidosperma DC. (Cleomaceae)

Habit: Herb

Nativity: Trop. America

Cleome viscosa L. (Cleomaceae)

Habit: Herb

Nativity: Trop. America

Clidemia hirta (L.) D. Don (Melastomataceae)

Habit: Herb

Nativity: Trop. America

Conyza bipinnatifida Wall. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Corchorus aestuans L. (Tiliaceae)

Habit: Herb

Nativity: Trop. America

Corchorus fascicularis Lam. (Tiliaceae)

Habit: Herb

Nativity: Trop. America

Top

Corchorus tridens L. (Tiliaceae)

Habit: Herb

Nativity: Trop. Africa

Corchorus trilocularis L. (Tiliaceae)

Habit: Herb

Nativity: Trop. Africa

Crassocephalum crepidioides (Benth.) Moore (Asteraceae)

Habit: Herb

Nativity: Trop. America

Crotalaria pallida Dryand (Papilionaceae)

Habit: Herb

Nativity: Trop. America

Crotalaria retusa L. (Papilionaceae)

Habit: Herb

Nativity: Trop. America

Croton bonplandianum Boil. (Euphorbiaceae)

Habit: Herb

Nativity: Temperate South America

Top Home

Cryptostegia grandiflora R.Br. (Asclepiadaceae)

Habit: Herb

Nativity: Madagascar

Cuscuta chinensis Lam. (Cuscutaceae)

Habit: Herb

Nativity: Mediterranean

Cuscuta reflexa Roxb. (Cuscutaceae)

Habit: Herb

Nativity: Mediterranean

Cyperus difformis L. (Cyperaceae)

Habit: Herb

Nativity: Trop. America

Cyperus iria L. (Cyperaceae)

Habit: Herb

Nativity: Trop. America

Cytisus scoparius (L.) Link (Papilionaceae)

Habit: Herb

Nativity: Europe

Top

D

Datura innoxia Mill. (Solanaceae)

Habit: Shrub

Nativity: Trop. America

Datura metel L. (Solanaceae)

Habit: Shrub

Nativity: Trop. America

Dicoma tomentosa Cass. (Asteraceae)

Habit: Herb

Nativity: Trop. Africa

Digera muricata (L.) Mart. (Amaranthaceae)

Habit: Herb

Nativity: SW Asia

Dinebra retroflexa (Vahl) Panz. (Poaceae)

Habit: Herb

Nativity: Trop. America

Top Home

7875

E

Echinochloa colona (L.) Link (Poaceae)

Habit: Herb

Nativity: Trop. South America

Echinochloa crusgalli (L.) Beauv. (Poaceae)

Habit: Herb

Nativity: Trop. South America

Echinops echinatus Roxb. (Asteraceae)

Habit: Herb

Nativity: Afghanistan

Eclipta prostrata (L.) Mant. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Top

Eichhornia crassipes (C. Martius) Solms-Loub. (Pontederiaceae)

Habit: Herb

Nativity: Trop. America

Emilia sonchifolia (L.) DC. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Euphorbia cyathophora Murray (Euphorbiaceae)

Habit: Herb

Nativity: Trop. America

Euphorbia heterophylla L. (Convolvulaceae)

Habit: Herb

Nativity: Trop. America

Evolvulus nummularius (L.) L. (Convolvulaceae)

Habit: Herb

Nativity: Trop. America

Top

F

Flaveria trinervia (Spreng.) C. Mohr. (Asteraceae)

Habit: Herb

Nativity: Trop. Central America

Fuirena ciliaris (L.) Roxb. (Cyperaceae)

Habit: Herb

Nativity: Trop. America

Top

G

Galinosoga parviflora Cav. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Glossocardia bosvallea (L.f.) DC. (Asteraceae)

Habit: Herb

Nativity: East Indies

Gnaphalium coarctatum Willd. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Gnaphalium pensylvanicum Willd. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Gnaphalium polycaulon Pers. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Gomphrena serrata L. (Amaranthaceae)

Habit: Herb

Nativity: Trop. America

Grangea maderaspatana (L.) Poir. (Asteraceae)

Habit: Herb

Nativity: Trop. South America

H

Hyptis suaveolens (L.) Poit. (Lamiaceae)

Habit: Herb

Nativity: Trop. America

I

Impatiens balsamina L. (Balsaminaceae)

Habit: Herb

Nativity: Trop. America

Imperata cylindrica (L.) Raensch. (Poaceae)

Habit: Herb

Nativity: Trop. America

Indigofera astragalina DC. (Papilionaceae)

Habit: Herb

Nativity: Trop. America

Indigofera glandulosa Roxb. ex Willd. Papilionaceae

Habit: Herb

Nativity: Trop. America

Indigofera linifolia (L.f.) Retz. (Papilionaceae)

Habit: Herb

Nativity: Trop. South America

Indigofera linnaei Ali (Papilionaceae)

Habit: Herb

Nativity: Trop. Africa

Top

Indigofera trita L.f. (Papilionaceae)

Habit: Shrub

Nativity: Trop. Africa

Ipomoea carnea Jacq. (Convolvulaceae)

Habit: Shrub

Nativity: Trop. America

Ipomoea eriocarpa R.Br. (Convolvulaceae)

Habit: Herb

Nativity: Trop. Africa

Ipomoea hederifolia L. (Convolvulaceae)

Habit: Herb

Nativity: Trop. America

Ipomoea obscura (L.) Ker.-Gawl. (Convolvulaceae)

Habit: Herb

Nativity: Trop. Africa

Ipomoea pes-tigridis L. (Convolvulaceae)

Habit: Herb

Nativity: Trop. East Africa

Ipomoea quamoclit L. (Convolvulaceae)

Habit: Herb

Nativity: Trop. America

Ipomoea staphylina Roem. & Schult. (Convolvulaceae)

Habit: Herb

Nativity: Trop. Africa

Top

L

Lagascea mollis Cav. (Asteraceae)

Habit: Herb

Nativity: Trop. Central America

Lantana camara L. (Verbenaceae)

Habit: Herb

Nativity: Trop. America

Leonotis nepetiifolia (L.) R.Br. (Lamiaceae)

Habit: Herb

Nativity: Trop. Africa

Leucaena leucocephala (Lam.) de Wit (Mimosaceae)

Habit: Herb

Nativity: Trop. America

Ludwigia adscendens (L.) Hara (Onagraceae)

Habit: Herb

Nativity: Trop. America

Ludwigia octovalvis (Jacq.) Raven (Onagraceae)

Habit: Herb

Nativity: Trop. Africa

Ludwigia perennis L. (Onagraceae)

Habit: Herb

Nativity: Trop. Africa

Top Home

M

Macroptilium atropupureum (DC.) Urban (Papilionaceae)

Habit: Climber

Nativity: Trop. America

Macroptilium lathyroides (L.) Urban (Papilionaceae)

Habit: Climber

Nativity: Trop. Central America

Malachra capitata (L.) L. (Malvaceae)

Habit: Herb

782

Nativity: Trop. America

Malvastrum coromandelianum (L.) Garcke (Malvaceae)

Habit: Herb

Nativity: Trop. America

Martynia annua (Houstoun & Martyn) L. (Pedaliaceae)

Habit: Herb

Nativity: Trop. America

Mecardonia procumbens (Mill.) Small (Scrophulariaceae)

Habit: Herb

Nativity: Trop. North America

Melilotus alba Desv. (Papilionaceae)

Habit: Herb

Nativity: Europe

Melochia corchorifolia L. (Sterculiaceae)

Habit: Herb

Nativity: Trop. America

Merremia aegyptia (L.) Urban. (Convolvulaceae)

Habit: Herb

Nativity: Trop. America

Mikania micrantha Kunth (Asteraceae)

Habit: Climber

Nativity: Trop. America

Mimosa pigra L. (Mimosacceae)

Habit: Shrub

Nativity: Trop. North America

Mimosa pudica L. (Mimosacceae)

Habit: Herb

Nativity: Brazil

Mirabilis jalapa L. (Nyctaginaceae)

Habit: Herb

Nativity: Peru

Monochoria vaginalis (Burm.f.) C. Presl. (Pontederiaceae)

Habit: Herb

Nativity: Trop. America

Top Home

N

Nicotiana plumbaginifolia Viv. (Solanaceae)

Habit: Herb

Nativity: Trop. America

Top

784

O

Ocimum americanum L. (Lamiaceae)

Habit: Herb

Nativity: Trop. America

Opuntia stricta (Haw.) Haw. (Cactaceae)

Habit: Herb

Nativity: Trop. America

Oxalis corniculata L. (Oxalidaceae)

Habit: Herb

Nativity: Europe

Top

P

Parthenium hysterophorus L. (Asteraceae)

Habit: Herb

Nativity: Trop. North America

Passiflora foetida L. (Passifloraceae)

Habit: Herb

Nativity: Trop. South America

Pedalium murex L. (Pedaliaceae)

Habit: Herb

Nativity: Trop. America

785

Pennisetum purpureum Schum. (Poaceae)

Habit: Herb

Nativity: Trop. America

Peperomia pellucida (L.) Kunth (Piperaceae)

Habit: Herb

Nativity: Trop. South America

Peristrophe paniculata (Forssk.) Brummitt (Acanthaceae)

Habit: Herb

Nativity: Trop. America

Phyllanthus tenellus Roxb. (Euphorbiaceae)

Habit: Herb

Nativity: Mascarene Islands

Physalis angulata L. (Solanaceae)

Habit: Herb

Nativity: Trop. America

Physalis pruinosa L. (Solanaceae)

Habit: Herb

Nativity: Trop. America

Pilea microphylla (L.) Liebm. (Urticaceae)

Habit: Herb

Nativity: Trop. South America

786

Pistia stratiotes L. (Araceae)

Habit: Herb

Nativity: Trop. America

Portulaca oleracea L. (Portulacaceae)

Habit: Herb

Nativity: Trop. South America

Portulaca quadrifida L. (Portulacaceae)

Habit: Herb

Nativity: Trop. America

Prosopis juliflora (Sw.) DC. (Mimosaceae)

Habit: Shrub

Nativity: Mexico

Top Home

R

Rhynchelytrum repens (Willd.) C.E. Hubb. (Poaceae)

Habit: Herb

Nativity: Trop. America

Rorippa dubia (Pers.) Hara (Brassicaceae)

Habit: Herb

787

Nativity: Trop. America

Ruellia tuberosa L. (Acanthaceae)

Habit: Herb

Nativity: Trop. America

Top

S

Saccharum spontaneum L. (Poaceae)

Habit: Herb

Nativity: Trop. West Asia

Salvinia molesta D. S. Mitch. (Salviniaceae)

Habit: Herb

Nativity: Brazil

Scoparia dulcis L. (Scrophulariaceae)

Habit: Herb

Nativity: Trop. America

Sesbania bispinosa (Jacq.) Wight (Papilionaceae)

Habit: Shrub

Nativity: Trop. America

Sida acuta Burm.f. (Malvaceae)

Habit: Herb

788

Nativity: Trop. America

Solanum americanum Mill. (Solanaceae)

Habit: Herb

Nativity: Trop. America

Solanum seaforthianum Andrews (Solanaceae)

Habit: Climber

Nativity: Brazil

Solanum torvum Sw. (Solanaceae)

Habit: Shrub

Nativity: West Indies

Solanum viarum Dunal (Solanaceae)

Habit: Herb

Nativity: Trop. America

Sonchus asper Hill (Asteraceae)

Habit: Herb

Nativity: Mediterranean

Sonchus oleraceus L. (Asteraceae)

Habit: Herb

Nativity: Mediterranean

Spermacoce hispida L. (Rubiaceae)

Habit: Herb

789

Nativity: Trop. America

Spilanthes radicans Jacq. (Asteraceae)

Habit: Herb

Nativity: Trop. South America

Stachytarpheta jamaicensis (L.) Vahl (Verbenaceae)

Habit: Herb

Nativity: Trop. America

Stachytarpheta urticaefolia (Salisb.) Sims (Verbenaceae)

Habit: Herb

Nativity: Trop. America

Stylosanthes hamata (L.) Taub. (Papilionaceae)

Habit: Herb

Nativity: Trop. America

Synadenium grantii Hook. f. (Euphorbiaceae)

Habit: Shrub

Nativity: Trop. America

Synedrella nodiflora (L.) Gaertn. (Asteraceae)

Habit: Herb

Nativity: West Indies

Top Home

T

Torenia fournieri Linden ex E. Fournier (Scrophulariaceae)

Habit: Herb

Nativity: Australia

Tribulus lanuginosus L. (Zygophyllaceae)

Habit: Herb

Nativity: Trop. America

Tribulus terrestris L. (Zygophyllaceae)

Habit: Herb

Nativity: Trop. America

Tridax procumbens L. (Asteraceae)

Habit: Herb

Nativity: Trop. Central America

Triumfetta rhomboidea Jacq. (Tiliaceae)

Habit: Herb

Nativity: Trop. America

Turnera subulata J.E. Smith (Turneraceae)

Habit: Herb

Nativity: Trop. America

Turnera ulmifolia L. Turneraceae Herb Trop. America

Habit:

Nativity:

Typha angustata Bory. & Choub. (Typhaceae)

Habit: Herb

Nativity: Trop. America

Top

U

Ulex europaeus L. (Papilionaceae)

Habit: Shrub

Nativity: Western Europe

Urena lobata L. (Malvaceae)

Habit: Shrub

Nativity: Trop. Africa

Top

W

Waltheria indica L. (Sterculiaceae)

Habit: Herb

Nativity: Trop. America

X

Xanthium strumarium L. (Asteraceae)

Habit: Herb

Nativity: Trop. America

Y

Youngia japonica (L.) DC. (Asteraceae)

Habit: Herb

Nativity: Trop. South America

[**Source:** C. Sudhakar Reddy, G. Bagyanarayana, K.N. Reddy & Vatsavaya S. Raju. 2008. Invasive Alien Flora of India. National Biological Information Infrastructure, Usgs, USA]

Top Home

ANNEXURE-VIII

INDIA

LAND AREA 3,165,596 km² HUMAN POPULATION 1,006,800,000 (318 per km²)
NUMBER OF IBAs 465 TOTAL AREA OF IBAs 164,118 km² STATUS OF IBAs 266 protected; 199 unprotected

793

Montane grassland and shola forest in Grass Hills (IBA 263), the typical habitats of many restricted-range species in the Western Ghats Endemic Bird Area. (PHOTO: ASAD RAHMANI)

KEY HABITATS AND BIRDS

- The Himalayan mountains in northern India have extensive forests and alpine grasslands and scrub which support many specialised montane birds, including some with restricted ranges (*Biome AS05 Eurasian high montane – Alpine and Tibetan*, *Biome AS07: Sino-Himalayan temperate forest*, *Biome AS08. Sino-Himalayan subtropical forest*, *EBA 128: Western Himalayas*, *EBA 130: Eastern Himalayas* and *EBA 133: Southern Tibet*). Many threatened species are confined to these montane habitats, including Chestnut-breasted Partridge *Arborophila mandellii*, Himalayan Quail *Ophrysia superciliosa*, Blyth's Tragopan *Tragopan blythii*, Cheer Pheasant *Catreus wallichi*, Rusty-throated Wren-babbler *Spelaeornis badeigularis* and Snowy-throated Babbler *Stachyris oglei*.
- The moist forests in the Indian peninsula (*Biome AS10: Indian peninsula tropical moist forest*, *EBA 123: Western Ghats* and *SA 075: Central Indian forests*) have a distinctive avifauna. They support several threatened species, notably the recently rediscovered Forest Owlet *Heteroglaux blewitti* which inhabits a few forest fragments in Central India, and four species endemic to the Western Ghats, including Rufous-breasted Laughingthrush *Garrulax cachinnans* and Broad-tailed Grassbird *Schoenicola platyura*.
- There were once extensive tropical forests on the plains and foothills of north-east India (*Biome AS09: Indochinese tropical moist forest* and *SA 079: North Myanmar lowlands*), but large areas have been felled. The remaining blocks of forest support important populations of the threatened White-bellied Heron *Ardea insignis* and White-winged Duck *Cairina scutulata*.
- The oceanic Andaman and Nicobar islands (*EBA 125: Andaman Islands* and *EBA 126: Nicobar Islands*) have rich tropical forests and support many endemic bird species, including the threatened Nicobar Megapode *Megapodius nicobariensis*, Narcondam Hornbill *Aceros narcondami* and Nicobar Bulbul *Hypsipetes nicobariensis*.
- A band of tropical grasslands (locally known as the terai and duars), now highly fragmented, extends across the plains of the Ganges and Brahmaputra rivers and into the adjacent Himalayan foothills (*Biome AS12: Indo-Gangetic plains* and *EBA 131: Assam plains*). These grasslands are strongholds for several threatened species, including Bengal Florican *Houbaropsis bengalensis*, Swamp Francolin *Francolinus gularis*, Marsh Babbler *Pellorneum palustre*, Black-breasted Parrotbill *Paradoxornis flavirostris* and Finn's Weaver *Ploceus megarhynchus*.
- The typical habitats of much of the Indian peninsula are dry forest, arid thorn scrub and a variety of open habitats, including grasslands and deserts (*Biome AS11: Indo-Malayan tropical dry zone*, *Biome AS13: Sahara-Sindian desert*, *SA 071: Eastern Andhra Pradesh* and *SA 072: Southern Deccan plateau*). The grasslands and semi-deserts of western and central India are the breeding grounds of the highly threatened Great Indian Bustard *Ardeotis nigriceps* and Lesser Florican *Sypheotides indica*, and arid thorn forests in the south support the poorly known Jerdon's Courser *Rhinoptilus bitorquatus* and several other threatened birds.
- The wetlands of northern India support more breeding Sarus Cranes *Grus antigone* (on shallow wetlands and associated agricultural land) and Indian Skimmers *Rynchops albicollis* (on the vast system of rivers) than anywhere else in the world. The scattered lakes and reservoirs also provide habitat for non-breeding flocks of many other waterbirds and significant numbers of breeding and wintering Pallas's Fish-eagle *Haliaeetus leucoryphus*. Further south in the Indian peninsula, the water storage reservoirs or "tanks" on the Deccan plateau are a stronghold for the threatened Spot-billed Pelican *Pelecanus philippensis*.

794

- Relatively large areas of natural wetland remain on the Brahmaputra river plains in Assam and other north-east Indian states. These are the global stronghold of Greater Adjutant *Leptoptilos dubius*, and support important breeding and wintering populations many waterbirds, including the threatened Lesser Adjutant *Leptoptilos javanicus*, Baer's Pochard *Aythya baeri* and Pallas's Fish-eagle *Haliaeetus leucoryphus*.

CONSERVATION INFRASTRUCTURE AND PROTECTED AREAS SYSTEM

India has a long tradition of nature conservation, which is reflected not only in its literature and culture, but also in the national constitution, policies and legislation. In 1952, the National Commission on Agriculture published a policy document which promoted the concept of social forestry as a means of reducing pressure on forests and wildlife, but this proved to be inadequate. Subsequent efforts by the Government of India to strengthen conservation legislation culminated in the Wildlife (Protection) Act of 1972 and the Forest (Conservation) Act of 1980. In addition, some Indian states have declared independent wildlife protection acts and rules. The Wildlife (Protection) Act (1972) provides legal guidelines for the protection and management of wildlife in India, including through the establishment and management of protected areas, and the control of hunting and wildlife trade. Under the Act, the Ministry of Environment and Forests and state forest departments are responsible for the management of protected areas, including through enforcement of the regulations that control activities within them.

Historically, natural areas have been protected in a variety of ways in India. Sacred groves are scattered throughout the country, and have found expression in every culture and religion. *Abharanya* ("forest without fear") were established by many Indian kings, where hunting of animals was prohibited, and almost all large temples have sacred groves, sacred trees (generally *Ficus* spp.) and tanks where hunting is banned. Many rulers established sanctuaries, mainly for hunting, which protected large tracts of natural habitats. Following India's Independence (in 1947) and the merger of semi-autonomous states with the Indian Union, many of these former hunting grounds were established as protected areas, including Ranthambore National Park and Keoladeo National Park in Rajasthan and Bandavgarh National Park in Madhya Pradesh.

Until recently, two main categories of protected areas were recognised in India, national parks and sanctuaries; at June 2000, there were 86 national parks with a total area of 37,649 km² and 480 wildlife sanctuaries with a total area of 115,352 km². There are also 27 tiger reserves, with a total area of 37,761 km², and India has established 12 biosphere reserves. In total, just over 6% of the land area of the country is included in protected areas. A recent amendment to the Wildlife (Protection) Act (1972) created two new categories of protected areas, "community reserves" (to be established in areas where land is owned privately or by the community) and "conservation reserves" (to be established in government-owned areas). In addition to protected areas designated specifically for biodiversity conservation, large areas of India are notified as "reserve forest" under the Indian Forest Act or state forest acts, which are also of considerable conservation value.

OVERVIEW OF THE INVENTORY

- Of the 465 IBAs in India, 435 support globally threatened species, 208 have restricted-range species, 123 have biome-restricted species and 141 qualify as IBAs because they hold large congregations of waterbirds or migratory raptors.
- The IBAs in India cover just over 5% of the total land area of the country. They include some large sites in parts of the country with relatively low population density where extensive areas of intact natural habitat remain, notably in the Himalayas and the deserts of north-western India. In many parts of the country the IBAs tend to be much smaller, reflecting the fragmentation of natural habitats.
- Forest is the dominant habitat in about 56% of India's IBAs, wetlands in 27%, grasslands in 10% and desert in 7%.
- In the mountains of northern India, 33 IBAs have been identified in the Western Himalayas EBA, 61 in the Eastern Himalayas EBA and four in the Southern Tibet EBA. These IBAs include large areas of the habitats characteristic of the Eurasian high montane, Sino-Himalayan temperate forest and Sino-Himalayan subtropical forest biomes. They include the following IBAs that are outstanding for globally threatened species: Overa–Aru Wildlife Sanctuary (IBA 14) in Jammu and Kashmir; Great Himalayan National Park (IBA 29) and Majathal Wildlife Sanctuary (IBA 36) in Himachal Pradesh; Mehao Wildlife Sanctuary (IBA 351) and Namdapha–Kamlang (IBA 355) in Arunachal Pradesh; and Cherapunjee: cliffs, gorges and sacred groves (IBA 420) in Meghalaya.
- In the moist forests of the Indian peninsula, 65 IBAs have been identified in the Western Ghats EBA and three in the Central Indian forests Secondary Area. These include the following IBAs that are outstanding for globally threatened species: Toranmal Reserve Forest (IBA 173) in Maharashtra; Kudremukh National Park (IBA 196) in Karnataka; Periyar Wildlife Sanctuary (IBA 248) in Kerala; and Avalanche (Nilgiri) (IBA 256), Indira Gandhi Wildlife Sanctuary and National Park (IBA 265), Kalakkad-Mundanthurai Tiger Reserve (IBA 265) and Shola around Kodaikanal (IBA 277) in Tamil Nadu.
- In north-east India, eleven IBAs contain significant areas of the tropical lowland forests characteristic of the Indochinese tropical moist forest biome, including the Upper Dihing Complex (IBAs 409 and 410) which is of outstanding importance for White-winged Duck and several other globally threatened species.
- There are 16 IBAs in the tropical forests in the Andaman islands EBA, and three IBAs in the Nicobar islands EBA, including the following which are of outstanding importance for globally threatened species: Great Nicobar, Little Nicobar (IBA 451), Narcondam Island Wildlife Sanctuary (IBA 460) and Tilangchong, Camorta, Katchal, Nancowry, Trinkat (IBA 465).
- In north-east India, 18 IBAs have been identified in the grasslands of the Assam plains EBA. Outstanding IBAs for globally threatened grassland species are: Dudwa National Park (IBA 113) in Uttar Pradesh; Jaldapara Wildlife Sanctuary (IBA 320) in West Bengal; D'Ering Memorial Wildlife Sanctuary (IBA 340) in Arunachal Pradesh; and Dibru–Saikhowa Complex (IBA 378), Kaziranga National Park (IBA 390) and Manas National Park (IBA 396) in Assam.
- Four IBAs have been selected in north-west India to represent the Sahara-Sindian desert biome, and a total of 33 IBAs have been identified throughout India to represent the Indo-Malayan tropical dry zone biome. Outstanding IBAs for globally threatened species in these arid habitats are: Harike Lake Bird Sanctuary (IBA 49) in Punjab; Desert National Park (IBA 60) and Mount Abu Wildlife Sanctuary (IBA 67) in Rajasthan; Banni Grassland and Chhari Dhand (IBA 82) and Velavadar National Park (IBA 95) in Gujarat; Biligiri Rangaswamy Temple Wildlife Sanctuary and Hills (IBA 184) in Karnataka; and Rollapadu Wildlife Sanctuary (IBA 225) and Sri Lankamalleswara Wildlife Sanctuary (IBA 226) in Andhra Pradesh.
- A total of 136 IBAs have been identified throughout India because they support important congregations of waterbirds. They include the following IBAs that are outstanding for globally threatened species: Sultanpur National Park (IBA 55) in Haryana; Keoladeo National Park and Ajan Bande (IBA 64) in Rajasthan; Kurra Jheel (IBA 118) and National Chambal Wildlife Sanctuary (IBAs 68 and 122) in Uttar Pradesh and Madhya Pradesh; Kokkare Bellur (IBA 194) in Karnataka; Nellapattu Bird Sanctuary (IBA 221) and Pulicat Lake Wildlife Sanctuary (IBA 224) in Andhra Pradesh; Chitragudi and Kanjirankulam Bird Sanctuary (IBA 261), Kunthangulam Bird Sanctuary (IBA 269) and Point Calimere Wildlife Sanctuary (IBA 275) in Tamil Nadu; Nalabana Bird Sanctuary (Chilika Lake) (IBA 312) in Orissa; Sundarbans Biosphere Reserve (IBA 326) in West Bengal; and Nagaon district (IBAs 376 and 393), Dipor Beel Bird Sanctuary (IBA 379) and Orang National Park (IBA 398) in Assam.

795

CONSERVATION ISSUES

- The key threat to the Indian IBAs is agricultural expansion and intensification, which affects 321 of them. In a country with more than one billion people, the pressure for human settlement and encroachment for agriculture in natural areas is immense. Agricultural intensification is affecting many IBAs through pollution and poisoning associated with increased use of agrochemicals, changes in cropping patterns, and the effects of irrigation schemes (e.g. changes to water levels in wetlands).
- Unsustainable exploitation is considered to be a threat in 259 of India's IBAs, including hunting, egg collecting and trapping for the wild bird trade.
- Disturbance to birds by man and domestic animals is a threat in about 250 IBAs, including through tourism and recreation activities.
- Timber extraction and the collection of firewood and other non-timber forest products is a problem in about 240 IBAs. The Andaman Islands are under particular pressure from deforestation, as the human population has grown rapidly on some of the larger islands, leading to increased logging and extraction of other forest products (as well as conversion of forests to agriculture).
- Overgrazing by livestock is a major problem throughout India and affects 193 IBAs, particularly in grassland areas where the habitats of specialised grassland birds such as floricans are being degraded (including by illegal grazing inside some protected areas).
- Industrial and urban development (and associated pollution), together with construction of new roads and other infrastructure, is a threat at about 180 IBAs.
- Other threats are introduced animals and plants, including invasive plants such as lantana *Lantana camara* and water hyacinth *Eichhornia crassipes* (in 80 IBAs); fire, which is widely used to clear vegetation for grazing (59 IBAs); aquaculture and fisheries (64 IBAs); the impact of dams and their associated hydroelectric projects, especially in the north-east India (33 IBAs); and mining (31 IBAs).
- Of the 465 IBAs in India, 266 (57%) are protected and 199 (43%) are unprotected. Many of these unprotected IBAs have been proposed for establishment as new reserves, including by Rodgers *et al.* (2000) who suggested that 74 new national parks could be created as entirely new protected areas or by upgrading existing sanctuaries to national park status. Many unprotected IBAs are suitable for establishment as "community reserves" under the recent amendment to the Wildlife (Protection) Act.

SOURCES OF IBA DATA

The information presented here is taken from Islam and Rahmani (2004). The principal contributors to that directory were A. R. Rahmani, A. Choudhury, K. Lahkar, U. Lachungpa, M. Kulshreshtha, B. Pandav, V. Kannan, A. Mishra, R. Kaul, T. Gandhi, S. Laad and A. Malekar. The India and Asia IBA directories were completed at almost the same time, and last-minute changes may have caused some minor inconsistencies between them.

REFERENCES

ISLAM, M. Z. AND RAHMANI, A. R. (2004) *Important Bird Areas in India: priority sites for conservation*. Indian Bird Conservation Network, Bombay Natural History Society (India) and BirdLife International (UK).

RODGERS, W. A., PANWAR, H. S. AND MATHUR, V. B. (2000) *Wildlife protected area network in India: a review* (executive summary). Dehra Dun: Wildlife Institute of India.

Table 1. Important Bird Areas in Jammu and Kashmir (see Map 1)

R = IBA is wholly or partially a Ramsar Site

1 Chushul marshes — Unprotected — A1

Admin region Ladakh, Leh. Coordinates 33°35'N 78°45'E. Altitude 4,385 m. Area 1,500 ha. Habitats Grassland; Wetlands.
Threatened species *Grus nigricollis*

2 Dachigam National Park — Protected — A1, A2, A3

Admin region Anantnag. Coordinates 34°12'N 74°51'E. Altitude 1,642–4,289 m. Area 17,125 ha. Habitats Forest, Grassland, Shrubland.
Threatened species *Gyps bengalensis, Aquila heliaca, Ficedula subrubra*. Endemic Bird Areas 128: Western Himalayas. Biomes AS07: Sino-Himalayan temperate forest

3 Dehra Gali (DKG) forest — Unprotected — A1, A2

Admin region Poonch, Rajouri. Coordinates 33°34'N 74°24'E. Altitude 1,650–2,396 m. Area 1,800 ha. Habitats Forest.
Threatened species *Tragopan melanocephalus, Ficedula subrubra*. Endemic Bird Areas 128: Western Himalayas

4 Gulmar Wildlife Sanctuary — Protected — A1, A2, A3

Admin region Baramulla. Coordinates 34°16'N 74°13'E. Altitude 2,400–4,300 m. Area 13,925 ha. Habitats Forest, Grassland, Shrubland.
Threatened species *Ficedula subrubra*. Endemic Bird Areas 128: Western Himalayas. Biomes AS07: Sino-Himalayan temperate forest

5 Haigam Rakh (marshes) — Unprotected — A1, A4iii

Admin region Baramulla. Coordinates 34°17'N 74°36'E. Altitude 1,580 m. Area 1,400 ha. Habitats Shrubland, Wetlands.
Threatened species *Haliaeetus leucoryphus*

6 Hanle Plains (Hanle River marshes) — Unprotected — A1

Admin region Ladakh, Leh. Coordinates 32°48'N 79°0'E. Altitude 4,250–4,350 m. Area 8,000 ha. Habitats Grassland; Wetlands.
Threatened species *Aquila clanga, Grus nigricollis*

7 Hemis National Park — Protected — A3

Admin region Ladakh. Coordinates 34°1'N 77°32'E. Altitude 3,140–5,854 m. Area 410,000 ha. Habitats Grassland, Shrubland, Wetlands.
Biomes AS05: Eurasian high montane

8 Hirapora Wildlife Sanctuary — Protected — A1

Admin region Pulwama. Coordinates 33°47'N 74°58'E. Altitude 2,557–4,745 m. Area 11,450 ha. Habitats Forest, Shrubland.
Threatened species *Ficedula subrubra*

9 Hokarsar — Unprotected — A1, A4iii

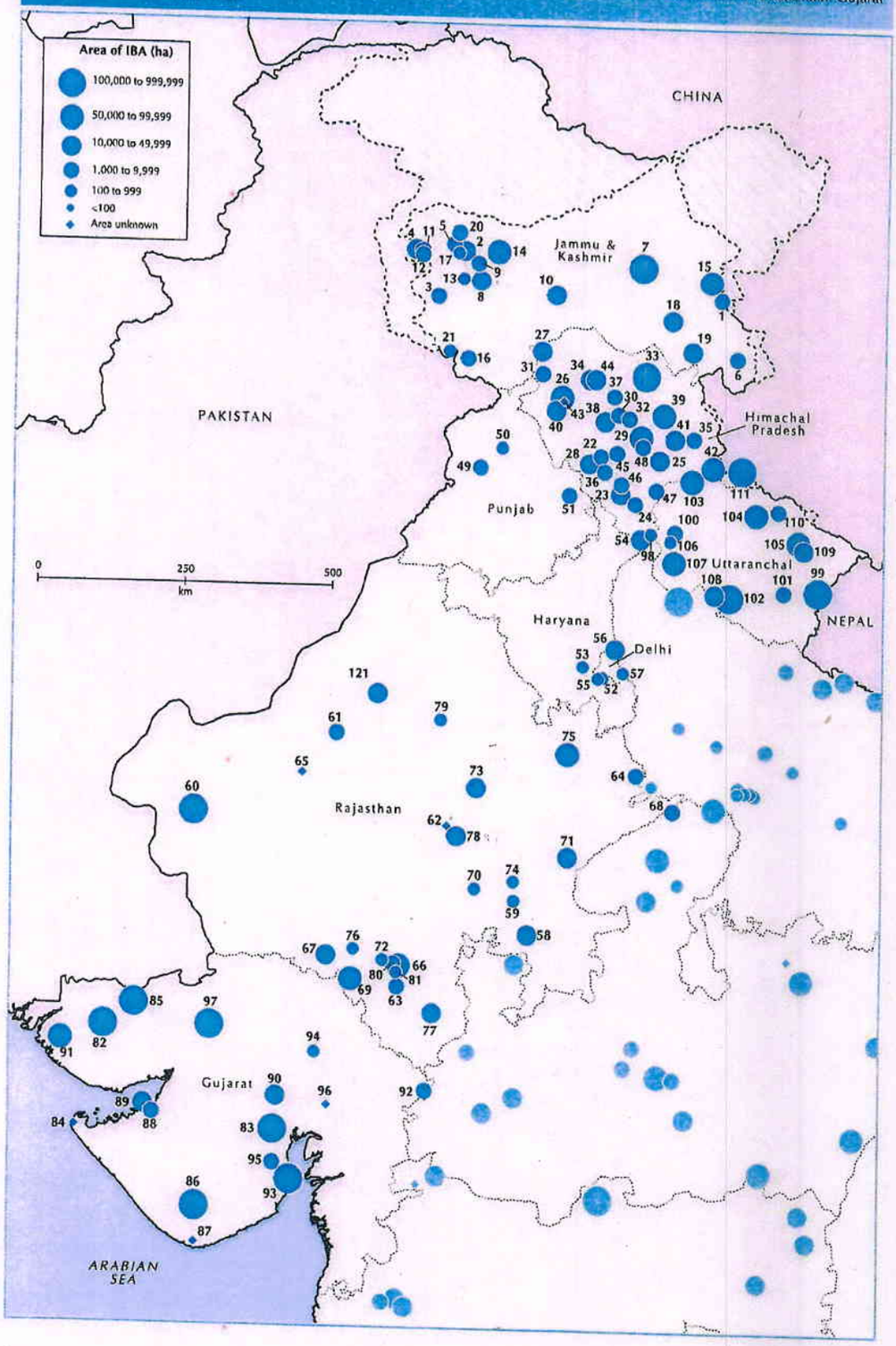
Admin region Srinagar, Budgam. Coordinates 34°0'N 74°56'E. Altitude 1,580 m. Area 1,375 ha. Habitats Wetlands.
Threatened species *Haliaeetus leucoryphus*

10 Kistwar National Park — Protected — A1, A2, A3

Admin region Doda. Coordinates 33°37'N 76°12'E. Altitude 1,700–4,800 m. Area 40,500 ha. Habitats Forest, Grassland; Scrubland.
Threatened species *Tragopan melanocephalus*. Endemic Bird Areas 128: Western Himalayas. Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest

796

Map 1. Location and size of Important Bird Areas in Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Rajasthan, Gujarat and Uttaranchal (see Tables 1-8)



797

Table 1 ... continued. Important Bird Areas in Jammu and Kashmir (see Map 1)

11 Lachipora Wildlife Sanctuary — Protected — A1 A2

Admin region Baramulla Coordinates 34°14'N 74°22'E Altitude 1,630–3,300 m Area 9,350 ha Habitats Forest; Grassland
Threatened species *Tragopan melanocephalus* Endemic Bird Areas 128: Western Himalayas

12 Limbar Valley Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Baramulla Coordinates 34°9'N 74°22'E Altitude 2,300–4,000 m Area 4,375 ha Habitats Forest, Grassland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian high montane, AS07: Sino-Himalayan temperate forest

13 Mirgund Jheel and Reserve — Unprotected — A1 A4i

Admin region Budgam Coordinates 33°47'N 74°46'E Altitude 1,580 m Area 300 ha Habitats Grassland; Shrubland; Wetlands
Threatened species *Grus antigone* Congregatory waterbirds *Grus antigone*

14 Overa–Aru Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Anantnag Coordinates 34°11'N 75°19'E Altitude 2,100–5,425 m Area 51,100 ha Habitats Forest, Shrubland
Threatened species *Ficedula subrubra* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian High Montane; AS07: Sino-Himalayan temperate forest

15 Pangong Tso — Unprotected — A1 A3

Admin region Ladakh, Leh Coordinates 33°50'N 78°35'E Altitude 4,218 m Area 65,000 ha Habitats Wetlands
Threatened species *Grus nigricollis* Biomes AS05: Eurasian high montane

16 Ramnagar Wildlife Sanctuary — Protected — A1

Admin region Jammu Coordinates 32°45'N 74°52'E Altitude 131–186 m Area 1,275 ha Habitats Forest, Shrubland
Threatened species *Gyps bengalensis, Gyps tenuirostris*

17 Shallabugh Conservation Reserve — Unprotected — A4iii

Admin region Anantnag Coordinates 34°10'N 74°42'E Altitude 1,580 m Area 700 ha Habitats Shrubland; Wetlands

18 Tso Kar Basin — Protected — A1

Admin region Ladakh, Leh Coordinates 33°18'N 78°0'E Altitude 4,530 m Area 10,000 ha Habitats Wetlands
Threatened species *Grus nigricollis*

19 Tso Morari Lake and adjacent marshes — Unprotected — A1 A4i

Admin region Leh Coordinates 32°53'N 78°19'E Altitude 4,650 m Area 20,000 ha Habitats Grassland, Wetlands
Threatened species *Grus nigricollis* Congregatory waterbirds *Anthya nyroca*

20 Wular Lake and associated marshes — Unprotected R — A1 A4iii

Admin region Baramulla Coordinates 34°26'N 74°42'E Altitude 1,580 m Area 2,400 ha Habitats Grassland, Shrubland, Wetlands
Threatened species *Marmaronetta angustirostris, Haliaeetus leucoryphus*

21 Gharana Wetland Reserve — Unprotected — A4iii

Admin region Jammu Coordinates 32°50'N 74°35'E Altitude 400 m Area 300 ha Habitats Wetlands

Table 2. Important Bird Areas in Himachal Pradesh (see Map 1)

R = IBA is wholly or partially a Ramsar Site

22 Bandli Wildlife Sanctuary — Protected — A1 A2

Admin region Mandi Coordinates 31°29'N 76°56'E Altitude 762–1,260 m Area 4,132 ha Habitats Forest
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

23 Chail Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Shimla, Solan Coordinates 30°58'N 77°14'E Altitude 701–2,408 m Area 10,854 ha Habitats Forest, Grassland
Threatened species *Gyps bengalensis, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest

24 Churdhar Wildlife Sanctuary — Protected — A3

Admin region Sirmaur Coordinates 30°51'N 77°28'E Altitude 2,000–3,647 m Area 5,615 ha Habitats Forest, Grassland
Biomes AS07: Sino-Himalayan temperate forest

25 Daranghati Wildlife Sanctuary — Protected — A1 A2

Admin region Shimla Coordinates 31°26'N 77°50'E Altitude 2,100–3,315 m Area 16,700 ha Habitats Forest, Grassland, Shrubland
Threatened species *Tragopan melanocephalus* Endemic Bird Areas 128: Western Himalayas

26 Dhauludhar Wildlife Sanctuary and McLeod Gunj — Protected — A1 A2

Admin region Kangra Coordinates 32°15'N 76°19'E Altitude 1,600–4,400 m Area 94,398 ha Habitats Forest, Grassland; Shrubland
Threatened species *Gyps bengalensis, Aquila clanga, Aquila heliaca, Tragopan melanocephalus, Catreus wallichi, Gallinago nemoricola*
Endemic Bird Areas 128: Western Himalayas

27 Gamgul Siahbehi Wildlife Sanctuary — Protected — A1 A2

Admin region Chamba Coordinates 32°51'N 76°0'E Altitude 1,800–3,919 m Area 10,885 ha Habitats Forest, Grassland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

28 Gobind Sagar and Naina Devi Wildlife Sanctuary — Protected — A1

Admin region Bilaspur, Mandi Coordinates 31°23'N 76°45'E Altitude 350–1,019 m Area 22,334 ha Habitats Forest; Wetlands
Threatened species *Gyps bengalensis, Gyps tenuirostris*

29 Great Himalayan National Park — Protected — A1 A2

Admin region Kullu Coordinates 31°44'N 77°33'E Altitude 1,500–5,805 m Area 75,400 ha Habitats Forest, Grassland; Shrubland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

798

Table 2 ... continued. Important Bird Areas in Himachal Pradesh (see Map 1).

30 Kais Wildlife Sanctuary — Protected — A1 A2

Admin region Kullu Coordinates 32°2'N 77°12'E Altitude 2,800–3,680 m Area 1,419 ha Habitats Forest, Grassland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

31 Kalatop Khajjiar Wildlife Sanctuary — Protected — A1 A2

Admin region Chamba Coordinates 32°34'N 76°1'E Altitude 1,158–2,768 m Area 6,100 ha Habitats Forest, Grassland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

32 Kanawar Wildlife Sanctuary — Protected — A1 A2

Admin region Kullu Coordinates 31°59'N 77°22'E Altitude 1,800–4,833 m Area 5,400 ha Habitats Forest; Grassland; Shrubland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

33 Kibber Wildlife Sanctuary — Protected — A3

Admin region Lahaul and Spiti Coordinates 32°33'N 77°36'E Altitude 4,000–5,600 m Area 140,050 ha Habitats Grassland; Shrubland
Biomes AS05: Eurasian high montane

34 Kugti Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Chamba Coordinates 32°30'N 76°45'E Altitude 2,250–6,044 m Area 37,886 ha Habitats Forest, Grassland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest

35 Lippa Asrang Wildlife Sanctuary — Protected — A3

Admin region Kinnaur Coordinates 31°44'N 78°21'E Altitude 4,000–5,022 m Area 3,090 ha Habitats Forest, Grassland, Shrubland
Biomes AS05: Eurasian high montane

36 Majathal Wildlife Sanctuary — Protected — A1 A2

Admin region Shimla; Solan Coordinates 31°16'N 76°59'E Altitude 575–1,985 m Area 4,000 ha Habitats Forest
Threatened species *Gyps bengalensis, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

37 Manali Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Kullu Coordinates 32°16'N 77°8'E Altitude 2,273–5,173 m Area 3,180 ha Habitats Forest
Threatened species *Tragopan melanocephalus* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

38 Nargu Wildlife Sanctuary — Protected — A3

Admin region Mandi Coordinates 31°56'N 76°59'E Altitude 970–4,034 m Area 27,837 ha Habitats Forest
Biomes AS07: Sino-Himalayan temperate forest

39 Pin Valley National Park — Protected — A3

Admin region Lahul and Spiti Coordinates 32°2'N 77°53'E Altitude 4,300 m Area 67,500 ha Habitats Grassland
Biomes AS05: Eurasian high montane

40 Pong Dam Lake Wildlife Sanctuary — Protected[R] — A1 — A4iii

Admin region Kangra Coordinates 32°4'N 76°14'E Altitude 335–436 m Area 30,729 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Gyps tenuirostris*

41 Rupi Bhaba Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Kinnaur Coordinates 31°43'N 78°4'E Altitude 909–5,605 m Area 26,900 ha Habitats Forest, Grassland, Wetlands
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

42 Sangla (Raksham Chitkul) Wildlife Sanctuary — Protected — A1 A2

Admin region Kinnaur Coordinates 31°20'N 78°39'E Altitude 3,200–5,486 m Area 65,000 ha Habitats Forest, Grassland
Threatened species *Tragopan melanocephalus* Endemic Bird Areas 128: Western Himalayas

43 Sarah Valley, Lower Dharamshala — Unprotected — A1 A3

Admin region Kangra Coordinates 32°12'N 76°21'E Altitude 700–1,400 m Area Unknown Habitats Forest, Shrubland
Threatened species *Gyps bengalensis, Gyps tenuirostris* Biomes AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

44 Sechu Tuan Nala Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Chamba Coordinates 32°30'N 76°50'E Altitude 2,550–6,072 m Area 10,295 ha Habitats Forest, Shrubland
Threatened species *Tragopan melanocephalus* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest

45 Shikari Devi Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Mandi Coordinates 31°31'N 77°11'E Altitude 1,800–3,359 m Area 7,200 ha Habitats Forest, Shrubland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest

46 Shimla Water Catchment Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Kufri, Shimla Coordinates 31°6'N 77°14'E Altitude 1,500–3,324 m Area 1,025 ha Habitats Forest
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest

47 Talra Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Shimla Coordinates 31°2'N 77°47'E Altitude 1,500–3,324 m Area 2,600 ha Habitats Forest
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

48 Tirthan Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Kullu Coordinates 31°37'N 77°34'E Altitude 2,100–4,875 m Area 6,112 ha Habitats Forest; Grassland, Shrubland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest

799

Table 3. Important Bird Areas in Punjab (see Map 1)

R = IBA is wholly or partially a Ramsar Site

49 Harike Lake Bird Sanctuary — Protected[R] — A1 — A4i,iii

Admin region Amritsar, Firozpur, Kapurthala Coordinates 31°18'N 75°5'E Altitude 210 m Area 8,600 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Oxyura leucocephala, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Aquila heliaca, Rynchops albicollis, Chaetornis striatus, Ficedula subrubra* Congregatory waterbirds *Anhinga melanogaster, Mycteria leucocephala, Ephippiorhynchus asiaticus, Threskiornis melanocephalus, Aythya nyroca*

50 Kanjli Lake — Unprotected[R] — A1 — A4i,iii

Admin region Amritsar, Kapurthala Coordinates 31°34'N 75°25'E Altitude 210 m Area 490 ha Habitats Wetlands
Threatened species *Pelecanus crispus* Congregatory waterbirds *Anas strepera, Anas platyrhynchos, Anas clypeata, Anas acuta, Anas crecca, Aythya nyroca, Aythya fuligula*

51 Ropar Lake — Unprotected[R] — A4iii

Admin region Ropar Coordinates 30°56'N 76°27'E Altitude 1,500 m Area 1,365 ha Habitats Wetlands

Table 4. Important Bird Areas in Haryana (see Map 1)

52 Basai wetlands — Unprotected — A1 — A4i,iii

Admin region Gurgaon Coordinates 28°29'N 76°59'E Altitude 216–219 m Area 100 ha Habitats Wetlands
Threatened species *Marmaronetta angustirostris, Gyps bengalensis, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone*
Congregatory waterbirds *Anser indicus*

53 Bhindawas Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Rohtak Coordinates 28°37'N 76°41'E Altitude 200 m Area 412 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Anser erythropus, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Falco naumanni, Grus antigone, Saxicola macrorhyncha* Congregatory waterbirds *Anser anser, Anser indicus*

54 Kalesar Wildlife Sanctuary — Protected — A1 — A3

Admin region Kurukshetra Coordinates 30°22'N 77°33'E Altitude 240–700 m Area 10,088 ha Habitats Forest
Threatened species *Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Falco naumanni* Biomes AS11 Indo-Malayan tropical dry zone; AS12 Indo-Gangetic plains; AS13 Sahara-Sindian desert

55 Sultanpur National Park — Protected — A1 — A4i,iii

Admin region Gurgaon Coordinates 28°28'N 76°55'E Altitude 220 m Area 143 ha Habitats Forest, Grassland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Saxicola macrorhyncha, Ploceus megarhynchus* Congregatory waterbirds *Anser anser*

56 Wetlands of Yamuna River — Unprotected — A4iii

Admin region Yamunanagar Coordinates 28°52'N 77°11'E Altitude 210 m Area 20,000 ha Habitats Wetlands

Table 5. Important Bird Areas in Delhi (see Map 1)

57 Okhla Bird Sanctuary — Protected — A1 — A4iii

Admin region Gautam Buddh Nagar Coordinates 28°33'N 77°18'E Altitude 200 m Area 400 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Anas formosa, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Grus antigone, Vanellus gregarius, Rynchops albicollis, Chaetornis striatus, Ploceus megarhynchus*

Table 6. Important Bird Areas in Rajasthan (see Map 1)

R = IBA is wholly or partially a Ramsar Site, WH = IBA is wholly or partially a World Heritage Site

58 Alniya Dam — Unprotected — A1 — A4iii

Admin region Kota Coordinates 25°0'N 75°52'E Altitude 260 m Area 20,143 ha Habitats Wetlands
Threatened species *Grus antigone, Rynchops albicollis*

59 Bardha Dam — Unprotected — A1 — A3 — A4i

Admin region Bundi Coordinates 25°27'N 75°39'E Altitude 390 m Area 300 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Grus antigone* Biomes AS11 Indo-Malayan tropical dry zone Congregatory waterbirds *Pelecanus onocrotalus, Pelecanus crispus, Platalea leucorodia, Anser indicus, Sarkidiornis melanotos, Anas strepera, Grus antigone, Philomachus pugnax*

60 Desert National Park — Protected — A1 — A3

Admin region Barmer, Jaiselmer Coordinates 26°35'N 70°45'E Altitude 242 m Area 316,200 ha Habitats Desert
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Ardeotis nigriceps, Chlamydotis undulata, Saxicola macrorhyncha*
Biomes AS13 Sahara-Sindian desert

61 Diyatra Closed Area — Unprotected — A1

Admin region Bikaner Coordinates 27°40'N 72°55'E Altitude 235 m Area 5,019 ha Habitats Desert; Forest, Grassland, Shrubland
Threatened species *Gyps bengalensis, Gyps indicus, Ardeotis nigriceps, Saxicola macrorhyncha*

62 Gawana Arain, Mangaliyawas, Ramsar, Goyal, Ratakot, Badar — Unprotected — A1

Admin region Ajmer Coordinates 26°26'N 74°37'E Altitude 470 m Area Unknown Habitats Grassland
Threatened species *Grus antigone, Sypheotides indica*

Table 6 ... continued. Important Bird Areas in Rajasthan (see Map 1)

63 Jaisamand Lake and Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Udaipur Coordinates 24°16'N 73°53'E Altitude 572–697 m Area 7,300 ha Habitats Forest, Wetlands
Threatened species *Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus* Congregatory waterbirds *Fulica atra*

64 Keoladeo National Park and Ajan Bande — Protected [R,WH] — A1 — A4i,iii

Admin region Bharatpur Coordinates 27°10'N 77°31'E Altitude 172–175 m Area 2,873 ha Habitats Forest, Wetlands
Threatened species *Pelecanus crispus, Pelecanus philippensis, Leptoptilos javanicus, Anser erythropus, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Grus leucogeranus, Grus antigone, Vanellus gregarius, Rynchops albicollis, Saxicola macrorhyncha*

65 Khichan — Unprotected — A1 — A4i

Admin region Jodhpur Coordinates 27°7'N 72°24'E Altitude 219 m Area Unknown Habitats Desert; Forest; Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Ardeotis nigriceps, Saxicola macrorhyncha*

66 Kumbalgarh Wildlife Sanctuary — Protected — A1

Admin region Pali; Rajsamand; Udaipur Coordinates 24°33'N 73°54'E Altitude 910 m Area 57,825 ha Habitats Forest
Threatened species *Gyps indicus, Grus antigone, Rynchops albicollis, Parus nuchalis, Amandava formosa*

67 Mount Abu Wildlife Sanctuary — Protected — A1

Admin region Sirohi Coordinates 24°41'N 72°47'E Altitude 1,219 m Area 28,884 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Parus nuchalis, Amandava formosa*

68 National Chambal Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Bundi; Kota Coordinates 26°40'N 78°5'E Altitude 252 m Area 5,200 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Haliaeetus leucoryphus, Aquila clanga, Grus antigone, Rynchops albicollis*

69 Phulwari Wildlife Sanctuary — Protected — A1

Admin region Udaipur Coordinates 24°22'N 73°10'E Altitude 291 m Area 51,114 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Parus nuchalis*

70 Ramsagar Lake — Unprotected — A1 — A4iii

Admin region Bundi Coordinates 25°36'N 75°3'E Altitude 295 m Area 400 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone*

71 Ranthambore National Park and Tiger Reserve — Protected — A1 — A3

Admin region Sawai Madhopur Coordinates 26°2'N 76°29'E Altitude 215–500 m Area 39,200 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Aquila heliaca, Grus antigone, Saxicola macrorhyncha* Biomes AS11: Indo-Malayan tropical dry zone, AS13: Sahara-Sindian desert

72 Sajjangarh Wildlife Sanctuary — Protected — A1 — A3

Admin region Udaipur Coordinates 24°38'N 73°39'E Altitude 936 m Area 519 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Parus nuchalis* Biomes AS11: Indo-Malayan tropical dry zone

73 Sambhar Lake — Unprotected [R] — A1 — A4i,iii

Admin region Ajmer; Jaipur; Nagaur Coordinates 26°57'N 75°4'E Altitude 360 m Area 19,000 ha Habitats Wetlands
Threatened species *Pelecanus crispus, Gyps bengalensis, Gyps indicus, Parus nuchalis* Congregatory waterbirds *Phoenicopterus roseus*

Keoladeo National Park (IBA 64) in Rajasthan supports very large concentrations of breeding and migratory waterbirds, including several threatened species. (PHOTO: PAUL GORIUP)

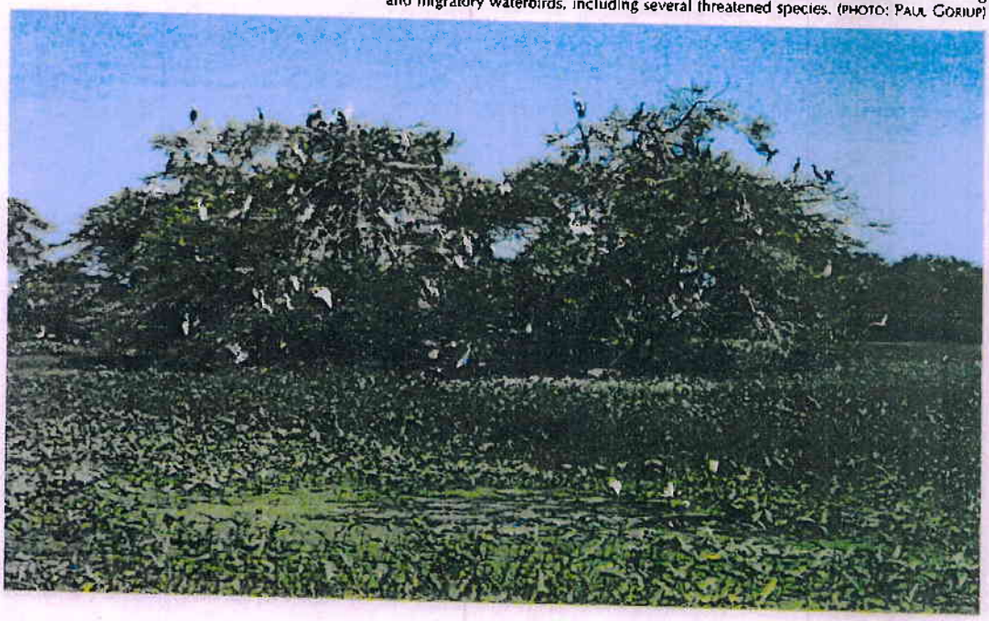


Table 6 ... continued. Important Bird Areas in Rajasthan (see Map 1)

74 Sareri Bandh — Unprotected — A1 — A4iii

Admin region Bhilwara Coordinates 25°42'N 75°38'E Altitude 380 m Area 300 ha Habitats Wetlands
Threatened species *Pelecanus crispus, Gyps bengalensis, Gyps indicus, Grus antigone*

75 Sariska Tiger Reserve — Protected — A1

Admin region Alwar Coordinates 27°26'N 76°28'E Altitude 400–777 m Area 86,600 ha Habitats Forest
Threatened species *Pelecanus crispus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Grus antigone*

76 Sei Dam reservoir and surrounding environs — Unprotected — A1

Admin region Udaipur Coordinates 24°46'N 73°12'E Altitude 291 m Area 300 ha Habitats Forest; Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone, Parus nuchalis, Amandava formosa*

77 Sitamata Wildlife Sanctuary — Protected — A1 — A3

Admin region Chittaurgarh; Udaipur Coordinates 23°55'N 74°25'E Altitude 524 m Area 42,294 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus* Biomes AS11 Indo-Malayan tropical dry zone

78 Sonkhaliya Closed Area — Unprotected — A1

Admin region Ajmer Coordinates 26°18'N 74°46'E Altitude 470 m Area 17,134 ha Habitats Forest; Shrubland
Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone, Ardeotis nigriceps, Sypheotides indica, Saxicola macrorhyncha*

79 Tal Chhapar Wildlife Sanctuary — Protected — A1

Admin region Churu Coordinates 27°52'N 74°31'E Altitude 305 m Area 790 ha Habitats Desert
Threatened species *Gyps bengalensis, Gyps indicus, Aquila heliaca*

80 Udaipur Lakes Complex — Unprotected — A1 — A4i

Admin region Udaipur Coordinates 24°35'N 73°49'E Altitude 526 m Area 3,030 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Grus antigone, Parus nuchalis* Congregatory waterbirds *Pelecanus philippensis*

81 Bagdarrah Closed Area — Unprotected — A1 — A3

Admin region Udaipur Coordinates 24°28'N 73°52'E Altitude 508 m Area 342 ha Habitats Forest, Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone* Biomes AS11 Indo-Malayan tropical dry zone

Table 7. Important Bird Areas in Gujarat (see Map 1)

82 Banni Grassland and Chhari Dhand — Unprotected — A1 — A4i,iii

Admin region Kachchh Coordinates 23°42'N 69°24'E Altitude 2–5 m Area 384,700 ha Habitats Forest, Grassland; Shrubland; Wetlands
Threatened species *Pelecanus crispus, Marmaronetta angustirostris, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Grus antigone, Ardeotis nigriceps, Chlamydotis undulata, Sypheotides indica, Rynchops albicollis, Parus nuchalis* Congregatory waterbirds *Grus grus*

83 Bhal area — Unprotected — A1

Admin region Bhavnagar Coordinates 22°20'N 72°0'E Altitude Unknown Area 259,000 ha Habitats Forest, Grassland; Shrubland
Threatened species *Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Sypheotides indica, Saxicola macrorhyncha*

84 Charakla Salt Works — Unprotected — A1 — A4iii

Admin region Jamnagar Coordinates 22°21'N 68°58'E Altitude Sea-level Area Unknown Habitats Coastline
Threatened species *Gyps bengalensis*

85 Flamingo city — Unprotected — A1 — A4iii

Admin region Kachchh Coordinates 24°0'N 69°52'E Altitude 15–438 m Area 750,722 ha Habitats Forest; Wetlands
Threatened species *Pelecanus crispus, Aquila clanga, Aquila heliaca, Vanellus gregarius, Rynchops albicollis*

86 Gir National Park and Wildlife Sanctuary — Protected — A1

Admin region Amreli, Junagadh Coordinates 21°18'N 70°49'E Altitude 150–642 m Area 141,213 ha Habitats Forest; Grassland; Shrubland
Threatened species *Pelecanus crispus, Pelecanus philippensis, Aythya baeri, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Grus antigone, Sypheotides indica, Rynchops albicollis*

87 Kaj Lake Pipalava Bandharo — Unprotected — A1 — A4i

Admin region Junagadh Coordinates 20°49'N 70°48'E Altitude 1–2 m Area Unknown Habitats Coastline; Wetlands
Threatened species *Pelecanus crispus, Aquila clanga, Aquila heliaca*

88 Khijadiya Lake and Bird Sanctuary — Protected — A1 — A4i,iii

Admin region Jamnagar Coordinates 22°32'N 70°9'E Altitude 0–2 m Area 1,650 ha Habitats Coastline; Forest; Wetlands
Threatened species *Pelecanus crispus, Aythya baeri, Aquila clanga, Grus antigone, Rynchops albicollis* Congregatory waterbirds *Rynchops albicollis*

89 Marine National Park and Wildlife Sanctuary — Protected — A1 — A4i,iii,iv

Admin region Jamnagar Coordinates 22°39'N 70°1'E Altitude 0–21 m Area 45,792 ha Habitats Coastline; Desert; Forest; Wetlands
Threatened species *Pelecanus crispus, Pelecanus philippensis, Aquila clanga, Rynchops albicollis*

90 Nalsarovar Wildlife Sanctuary — Protected — A1 — A4i,iii,iv

Admin region Ahmedabad; Surendranagar Coordinates 22°47'N 72°2'E Altitude 10–15 m Area 12,082 ha Habitats Wetlands
Threatened species *Pelecanus crispus, Haliaeetus leucoryphus, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Rynchops albicollis*

91 Naliya Grassland (Lala Bustard Wildlife Sanctuary) — Protected — A1

Admin region Kachchh Coordinates 23°30'N 68°45'E Altitude 15 m Area 50,000 ha Habitats Grassland
Threatened species *Aquila heliaca, Ardeotis nigriceps, Sypheotides indica, Vanellus gregarius, Saxicola macrorhyncha*

92 Rampura Grassland — Unprotected — A1

Admin region Dahod Coordinates 22°53'N 74°19'E Altitude 484 m Area 2,000 ha Habitats Grassland
Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone, Sypheotides indica*

802

Table 7 ... continued. Important Bird Areas in Gujarat (see Map 1)

93 Saltpans of Bhavnagar — Unprotected — A1 — A4iii
Admin region Bhavnagar Coordinates 21°40'N 72°15'E Altitude Sea-level Area 357,540 ha Habitats Coastline, Forest
Threatened species *Pelecanus crispus*

94 Thol Lake Wildlife Sanctuary — Protected — A1 — A4i,iii
Admin region Mehsana Coordinates 23°23'N 72°38'E Altitude 20 m Area 700 ha Habitats Wetlands
Threatened species *Pelecanus crispus, Gyps bengalensis, Gyps indicus, Aquila clanga, Grus antigone, Rynchops albicollis* Congregatory waterbirds *Phoenicopterus roseus*

95 Velavadar National Park — Protected — A1 — A4ii
Admin region Bhavnagar Coordinates 21°53'N 72°0'E Altitude 1–6 m Area 3,408 ha Habitats Forest; Grassland; Wetlands
Threatened species *Leptoptilos javanicus, Aquila clanga, Aquila heliaca, Grus antigone, Sypheotides indica, Saxicola macrorhyncha*

96 Wetlands of Kheda — Unprotected — A1
Admin region Kheda Coordinates 22°41'N 72°49'E Altitude Unknown Area Unknown Habitats Forest, Wetlands
Threatened species *Grus antigone, Rynchops albicollis*

97 Wild Ass Wildlife Sanctuary — Protected — A1 — A3 — A4i,iii
Admin region Banaskantha, Kachchh, Mehsana, Rajkot, Surendranagar Coordinates 23°43'N 71°1'E Altitude 3–75 m Area 495,371 ha
Habitats Coastline; Desert; Forest; Wetlands
Threatened species *Pelecanus crispus, Pelecanus philippensis, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Chlamydotis undulata, Rynchops albicollis, Saxicola macrorhyncha, Parus nuchalis* Biomes AS13: Sahara-Sindian desert Congregatory waterbirds *Pelecanus onocrotalus, Mycteria leucocephala, Anastomus oscitans, Phoenicopterus roseus, Phoenicopterus minor, Anas clypeata, Grus grus, Limosa limosa, Recurvirostra avosetta*

Table 8. Important Bird Areas in Uttaranchal (see Map 1)

BR = IBA is wholly or partially a Biosphere Reserve. **WH** = IBA is wholly or partially a World Heritage Site

98 Asan Barrage — Unprotected — A1 — A4i
Admin region Dehradun Coordinates 30°26'N 77°42'E Altitude 400 m Area 250 ha Habitats Wetlands
Threatened species *Marmaronetta angustirostris, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga*
Congregatory waterbirds *Tadorna ferruginea*

99 Askot Wildlife Sanctuary and Goriganga Basin — Protected — A1 — A2
Admin region Pithora Garh Coordinates 29°41'N 80°16'E Altitude 700–7,000 m Area 209,993 ha Habitats Forest; Grassland; Shrubland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

100 Binog Sanctuary – Bhadraj – Jharipani — Protected — A1 — A2
Admin region Dehradun Coordinates 30°28'N 78°4'E Altitude 1,800–2,200 m Area 1,082 ha Habitats Forest
Threatened species *Ophrysia superciliosa, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

101 Binsar Wildlife Sanctuary — Protected — A3
Admin region Almora Coordinates 29°40'N 79°45'E Altitude 900–2,450 m Area 4,559 ha Habitats Forest
Biomes AS07: Sino-Himalayan temperate forest

102 Corbett Tiger Reserve — Protected — A1
Admin region Nainital; Pauri Garhwal Coordinates 29°35'N 78°55'E Altitude 400–1,210 m Area 131,854 ha Habitats Forest
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Aquila heliaca, Grus antigone, Vanellus gregarius, Gallinago nemoricola, Prinia cinereocapilla*

103 Govind National Park and Wildlife Sanctuary, Sandra, Kotinad and Singtur ranges (Tons forest division) — Protected — A1 — A2
Admin region Uttarkashi Coordinates 31°10'N 78°20'E Altitude 1,290–6,387 m Area 95,308 ha Habitats Forest; Grassland
Threatened species *Tragopan melanocephalus, Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

104 Kedarnath Musk Deer Sanctuary and surrounding Reserve Forests — Protected — A1 — A2 — A3
Admin region Chamoli Coordinates 30°43'N 79°19'E Altitude 1,400–7,068 m Area 98,524 ha Habitats Forest, Grassland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS05: Eurasian high montane, AS07: Sino-Himalayan temperate forest, AS08: Sino-Himalayan subtropical forest

105 Nanda Devi Biosphere Reserve — Protected — A1 — A2
Admin region Bageshwar; Chamoli Coordinates 30°21'N 79°58'E Altitude 2,100–7,817 m Area 62,462 ha Habitats Forest; Shrubland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas

106 New Forest Campus — Unprotected — A3
Admin region Dehradun Coordinates 30°20'N 78°0'E Altitude 670 m Area 450 ha Habitats Forest; Shrubland
Biomes AS08: Sino-Himalayan subtropical forest; AS11: Indo-Malayan tropical dry zone

107 Rajaji National Park — Protected — A1
Admin region Dehradun; Garhwal; Haridwar Coordinates 30°3'N 78°4'E Altitude 302–1,000 m Area 82,000 ha Habitats Forest
Threatened species *Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga*

108 Sonanadi Wildlife Sanctuary — Protected — A1
Admin region Bijnor; Garhwal Coordinates 29°38'N 78°41'E Altitude Unknown Area 30,118 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps tenuirostris*

109 Upper Pindar Catchment in East Almora Forest Division — Unprotected — A1 — A2 — A3
Admin region Almora Coordinates 30°15'N 80°3'E Altitude Unknown Area 20,000 ha Habitats Forest; Grassland
Threatened species *Catreus wallichi* Endemic Bird Areas 128: Western Himalayas Biomes AS07: Sino-Himalayan temperate forest

803

Table 8 ... continued. Important Bird Areas in Uttaranchal (see Map 1)

110 Valley of Flowers National Park — Protected — A1

Admin region Chamoli Coordinates 30°46'N 79°40'E Altitude 3,200–6,590 m Area 8,750 ha Habitats Forest, Grassland, Shrubland

111 Gangotri National Park — Protected — A1 A2

Admin region Uttarkashi Coordinates 31°19'N 79°6'E Altitude 1,800–7,000 m Area 155,200 ha Habitats Forest
Threatened species *Catreus wallichi* Endemic Bird Areas 128 Western Himalayas

Table 9. Important Bird Areas in Uttar Pradesh (see Map 2)

112 Bakhira Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Sant Kabir Nagar Coordinates 26°35'N 83°0'E Altitude Unknown Area 2,894 ha Habitats Wetlands
Threatened species *Grus antigone*

113 Dudwa National Park — Protected — A1 — A3 — A4i

Admin region Lakhimpur Kheri Coordinates 28°29'N 80°43'E Altitude 150–184 m Area 49,000 ha Habitats Grassland
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Marmaronetta angustirostris, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Grus antigone, Houbaropsis bengalensis, Sypheotides indica, Gallinago nemoricola, Prinia cinereocapilla* Biomes AS12. Indo-Gangetic plains

114 Hastinapur Wildlife Sanctuary — Protected — A1

Admin region Bijnor; Ghaziabad; Jyotiba Phule Nagar; Meerut; Muzaffarnagar Coordinates 29°32'N 78°9'E Altitude 100–120 m Area 207,300 ha Habitats Forest; Grassland; Shrubland
Threatened species *Aquila clanga, Francolinus gularis, Grus antigone, Ploceus megarhynchus*

115 Katerniaghat Wildlife Sanctuary and Girijapur Barrage — Protected — A1

Admin region Bahraich Coordinates 28°15'N 81°11'E Altitude 170–190 m Area 40,069 ha Habitats Forest; Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Haliaeetus leucoryphus, Aquila clanga, Francolinus gularis, Grus antigone, Houbaropsis bengalensis*

116 Kishanpur Wildlife Sanctuary — Protected — A1

Admin region Lakhimpur Kheri Coordinates 28°24'N 80°22'E Altitude 200 m Area 22,700 ha Habitats Forest, Grassland; Wetlands
Threatened species *Leptoptilos javanicus, Francolinus gularis, Grus antigone, Houbaropsis bengalensis*

117 Kudaiyya marshland — Unprotected — A1 — A4iii

Admin region Mainpuri Coordinates 27°0'N 78°59'E Altitude Unknown Area 300 ha Habitats Wetlands
Threatened species *Grus antigone*

118 Kurra Jheel — Unprotected — A1 — A4iii

Admin region Etawah; Mainpuri Coordinates 27°1'N 79°6'E Altitude Unknown Area 200 ha Habitats Wetlands
Threatened species *Aquila clanga, Grus antigone, Vanellus gregarius, Ploceus megarhynchus*

119 Lagga-Bagga Reserve Forest — Unprotected — A1

Admin region Pilibhit Coordinates 28°37'N 79°48'E Altitude Unknown Area 1,160 ha Habitats Forest, Grassland
Threatened species Francolinus gularis, Grus antigone, Houbaropsis bengalensis

120 Lakh-Bahosi Bird Sanctuary — Protected — A1 — A4iii

Admin region Farrukkhabad Coordinates 27°30'N 79°30'E Altitude Unknown Area 8,024 ha Habitats Wetlands
Threatened species *Haliaeetus leucoryphus, Aquila clanga, Grus antigone*

121 Narora — Unprotected — A1 — A4iii

Admin region Budaun; Bulandshahr Coordinates 28°13'N 78°33'E Altitude Unknown Area 12,700 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Grus antigone*

122 National Chambal Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Agra; Etawah Coordinates 26°43'N 78°43'E Altitude Unknown Area 63,500 ha Habitats Wetlands
Threatened species *Haliaeetus leucoryphus, Aquila clanga, Grus antigone, Rynchops albicollis*

123 Nawabganj Bird Sanctuary — Protected — A1 — A4iii

Admin region Unnao Coordinates 26°35'N 80°40'E Altitude 110 m Area 225 ha Habitats Wetlands
Threatened species *Aquila clanga, Grus antigone*

124 Parvati Aranga Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Gonda Coordinates 27°25'N 82°20'E Altitude Unknown Area 1,084 ha Habitats Wetlands
Threatened species *Grus antigone*

125 Patna Bird Sanctuary — Protected — A1 — A4i,iii

Admin region Etah Coordinates 27°35'N 78°45'E Altitude Unknown Area 109 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Grus antigone* Congregatory waterbirds *Anas strepera, Anas clypeata, Anas acuta, Anas querquedula, Aythya fenna*

126 Pyagpur and Sitadwar Jheel — Unprotected — A1 — A4iii

Admin region Bahraich Coordinates 27°31'N 81°54'E Altitude 125 m Area 2,950 ha Habitats Wetlands
Threatened species *Grus antigone*

127 Saman Bird Sanctuary — Protected — A1 — A4i,iii

Admin region Mainpuri Coordinates 27°5'N 79°0'E Altitude Unknown Area 525 ha Habitats Wetlands
Threatened species *Aquila clanga, Grus antigone* Congregatory waterbirds *Pelecanus onocrotalus, Dendrocygna javanica, Anas acuta, Anas crecca*

128 Samaspur Bird Sanctuary — Protected — A1 — A4i,iii

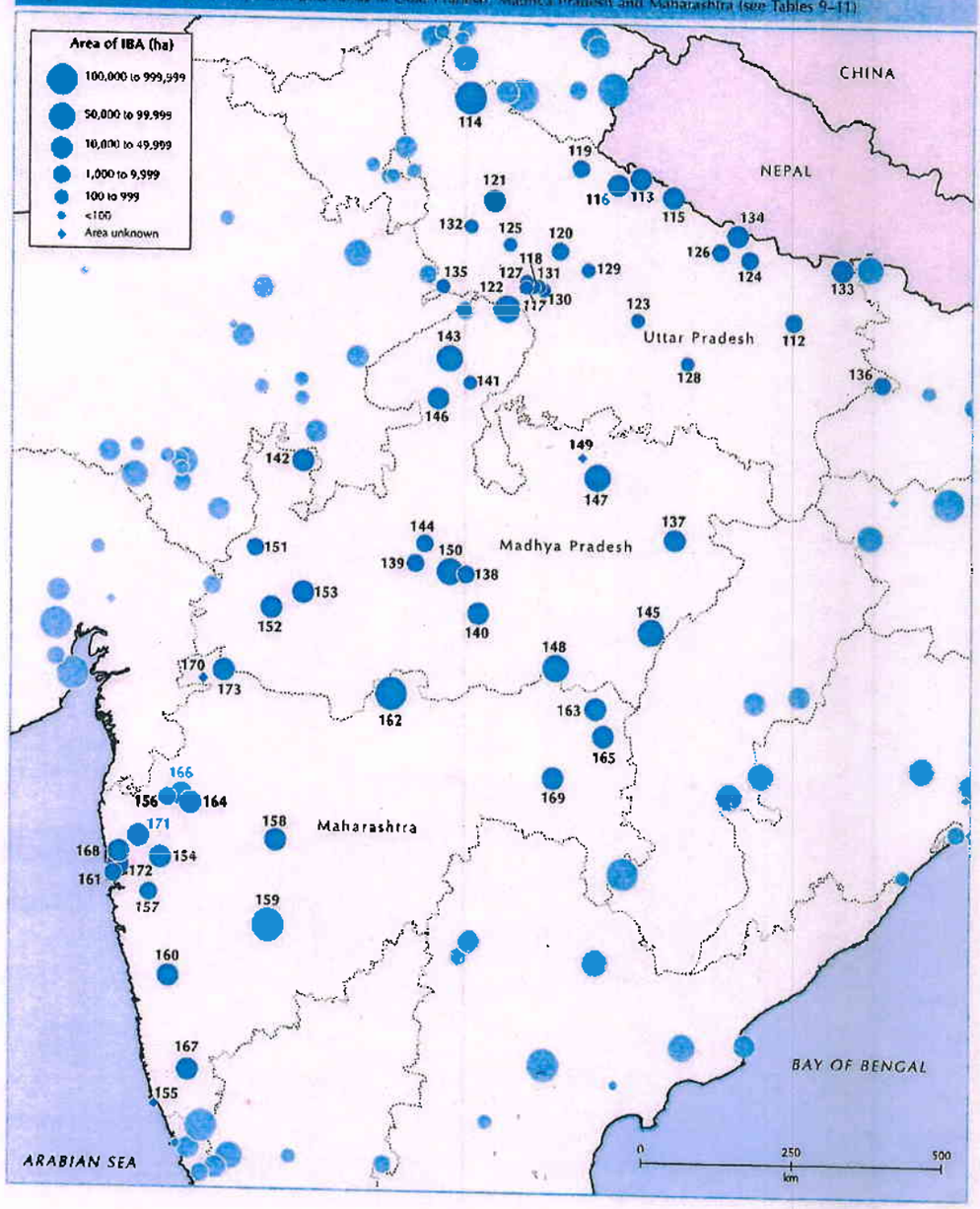
Admin region Rae Bareilly Coordinates 26°0'N 81°25'E Altitude Unknown Area 799 ha Habitats Wetlands
Threatened species *Haliaeetus leucoryphus, Aquila clanga, Grus antigone*

804

Table 9 ... continued. Important Bird Areas in Uttar Pradesh (see Map 2)

129 Sandi Wildlife Sanctuary	**Protected**	A1	A4i,iii
Admin region Hardoi Coordinates 27°15'N 79°55'E Altitude Unknown Area 309 ha Habitats Wetlands Threatened species *Grus antigone* Congregatory waterbirds *Grus antigone*			
130 Sarsai Nawar Lake	**Unprotected**	A1	A4i,iii
Admin region Etawah Coordinates 26°58'N 79°1S'E Altitude Unknown Area 690 ha Habitats Wetlands Threatened species *Grus antigone*			
131 Sauj Lake	**Unprotected**	A1	A4i,iii
Admin region Mainpuri Coordinates 27°1'N 79°11'E Altitude 140 m Area 400 ha Habitats Wetlands Threatened species *Grus antigone* Congregatory waterbirds *Pelecanus onocrotalus*			

Map 2. Location and size of Important Bird Areas in Uttar Pradesh, Madhya Pradesh and Maharashtra (see Tables 9–11)



805

Table 9 ... continued. Important Bird Areas in Uttar Pradesh (see Map 2)

132 Sheikha Jheel — Unprotected — A1 — A4i,iii

Admin region Aligarh Coordinates 27°49'N 78°10'E Altitude Unknown Area 250 ha Habitats Wetlands
■ Threatened species *Aquila clanga, Grus antigone* ■ Congregatory waterbirds *Grus antigone*

133 Sohangibarwa Wildlife Sanctuary — Protected — A1

Admin region Maharajganj Coordinates 27°18'N 83°44'E Altitude 95–103 m Area 42,820 ha Habitats Forest, Wetlands
■ Threatened species *Francolinus gularis, Grus antigone*

134 Soheldev Wildlife Sanctuary — Protected — A1

Admin region Balrampur; Shravasti Coordinates 27°44'N 82°9'E Altitude 120–202 m Area 45,247 ha Habitats Forest
■ Threatened species *Francolinus gularis*

135 Sur Sarovar Bird Sanctuary — Protected — A1 — A4iii

Admin region Agra Coordinates 27°0'N 77°45'E Altitude Unknown Area 403 ha Habitats Wetlands
■ Threatened species *Leptoptilos javanicus, Aquila clanga, Grus antigone*

136 Surha Tal Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Ballia Coordinates 25°45'N 84°20'E Altitude Unknown Area 3,432 ha Habitats Wetlands
■ Threatened species *Grus antigone*

Table 10. Important Bird Areas in Madhya Pradesh (see Map 2)

R = IBA is wholly or partially a Ramsar Site

137 Bandhavgarh National Park — Protected — A1 — A3

Admin region Shahdol Coordinates 23°36'N 81°14'E Altitude 440–800 m Area 44,885 ha Habitats Forest, Grassland
■ *Threatened species Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Grus antigone* ■ Biomes AS11: Indo-Malayan tropical dry zone

138 Barna Reservoir — Unprotected — A1 — A4iii

Admin region Raisen Coordinates 23°5'N 78°7'E Altitude 349 m Area 7,690 ha Habitats Wetlands
■ Threatened species *Grus antigone*

139 Bhoj wetland — Unprotected R — A1 — A4i,iii

Admin region Bhopal Coordinates 23°14'N 77°22'E Altitude 523 m Area 3,072 ha Habitats Forest; Shrubland; Wetlands
■ Threatened species *Haliaeetus leucoryphus, Grus antigone* ■ Congregatory waterbirds *Grus antigone, Fulica atra*

140 Bori Wildlife Sanctuary — Protected — A1 — A3

Admin region Hoshangabad Coordinates 22°33'N 78°18'E Altitude 300–1 352 m Area 48,572 ha Habitats Forest
■ *Threatened species Gyps bengalensis, Gyps indicus* ■ Biomes AS11: Indo-Malayan tropical dry zone

141 Dihaila Jheel and other wetlands — Unprotected — A1 — A4i,iii

Admin region Shivpuri Coordinates 25°42'N 78°10'E Altitude 370 m Area 371 ha Habitats Wetlands
■ Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Grus antigone, Vanellus gregarius* ■ Congregatory waterbirds *Anser indicus*

142 Gandhi Sagar Wildlife Sanctuary and reservoir — Unprotected — A4i,iii

Admin region Mandsaur; Neemuch Coordinates 24°36'N 75°41'E Altitude 399 m Area 36,862 ha Habitats Forest, Wetlands

143 Ghatigaon Bustard Sanctuary — Protected — A1

Admin region Gwalior Coordinates 26°2'N 77°52'E Altitude Unknown Area 51,100 ha Habitats Desert, Forest
■ Threatened species *Ardeotis nigriceps*

144 Halali Reservoir — Unprotected — A1 — A4iii

Admin region Bhopal, Raisen Coordinates 23°30'N 77°30'E Altitude 458 m Area 2,528 ha Habitats Wetlands
■ Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone*

145 Kanha National Park — Protected — A1

Admin region Balaghat; Mandla Coordinates 22°20'N 80°53'E Altitude 600–900 m Area 94,000 ha Habitats Forest; Grassland
■ Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Grus antigone, Sypheotides indica*

146 Madhav National Park — Protected — A1

Admin region Shivpuri Coordinates 25°29'N 77°41'E Altitude 360–480 m Area 37,522 ha Habitats Forest
■ Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Rynchops albicollis*

147 Panna National Park — Protected — A1

Admin region Chhattarpur; Panna Coordinates 24°26'N 80°5'E Altitude 200–550 m Area 54,267 ha Habitats Forest
■ Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus*

148 Pench Tiger Reserve — Protected — A1

Admin region Chhindwara, Seoni Coordinates 21°51'N 79°28'E Altitude 425–630 m Area 75,789 ha Habitats Forest
■ Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Falco naumanni, Amandava formosa*

149 Rangawa Reservoir — Unprotected — A4iii

Admin region Chhattarpur Coordinates 24°42'N 79°51'E Altitude 257 m Area Unknown Habitats Wetlands

150 Ratapani Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Raisen, Sehore Coordinates 23°7'N 77°53'E Altitude 300–690 m Area 82,384 ha Habitats Forest; Wetlands
■ Threatened species *Gyps bengalensis, Gyps indicus, Grus antigone*

151 Sailana Kharmor Sanctuary — Protected — A1

Admin region Ratlam Coordinates 23°24'N 74°58'E Altitude 484 m Area 1,296 ha Habitats Grassland
■ Threatened species *Gyps bengalensis, Gyps indicus, Falco naumanni, Grus antigone, Sypheotides indica, Rynchops albicollis*

806

Table 10 ... continued. Important Bird Areas in Madhya Pradesh (see Map 2)

152 Sardarpur Wildlife Sanctuary — Protected — A1

Admin region Dhar Coordinates 22°36'N 75°12'E Altitude 500 m Area 34,812 ha Habitats Grassland
Threatened species *Sypheotides indica*

153 Yeshwantsagar Reservoir — Unprotected — A1 — A4i

Admin region Indore Coordinates 22°49'N 75°41'E Altitude 535 m Area 14,000 ha Habitats Wetlands
Threatened species *Grus antigone* Congregatory waterbirds *Grus antigone*

Table 11. Important Bird Areas in Maharashtra (see Map 2)

154 Bhimashankar Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Pune, Raigad; Thane Coordinates 19°14'N 73°35'E Altitude 650–1,140 m Area 13,078 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Falco naumanni, Columba elphinstonii* Endemic Bird Areas 123 Western Ghats Biomes AS10: Indian peninsula tropical moist forest

155 Burnt Island (Bandra) Vengurla Rocks — Unprotected — A3 — A4iii

Admin region Sindhudurga Coordinates 15°55'N 73°30'E Altitude 25–45 m Area Unknown Habitats Coastline, Forest; Shrubland
Biomes AS10 Indian peninsula tropical moist forest

156 Gangapur Dam and grasslands — Unprotected — A1 — A4i,iii

Admin region Nashik Coordinates 20°3'N 73°41'E Altitude 600 m Area 4,000 ha Habitats Grassland; Wetlands
Threatened species *Anser erythropus, Gyps bengalensis, Gyps indicus, Aquila heliaca, Falco naumanni, Sypheotides indica* Congregatory waterbirds *Phalacrocorax niger, Aythya ferina*

157 S–Shivaji and adjoining areas, Lonavla — Unprotected — A1 A2 A3

Admin region Pune, Raigad Coordinates 18°46'N 73°25'E Altitude 100–1,100 m Area 1,000 ha Habitats Forest
Threatened species *Gyps indicus, Columba elphinstonii, Schoenicola platyura* Endemic Bird Areas 123 Western Ghats Biomes AS10: Indian peninsula tropical moist forest

158 Jaikwadi Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Ahmednagar, Aurangabad Coordinates 19°30'N 75°18'E Altitude 465 m Area 34,105 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Falco naumanni* Congregatory waterbirds *Grus virgo*

159 Jawaharlal Nehru Bustard Sanctuary — Protected — A1

Admin region Ahmednagar, Solapur Coordinates 18°21'N 75°12'E Altitude Unknown Area 849,644 ha Habitats Forest
Threatened species *Ardeotis nigriceps, Sypheotides indica*

160 Koyna Wildlife Sanctuary — Protected — A1 A2

Admin region Satara Coordinates 17°38'N 73°43'E Altitude 1,800 m Area 42,652 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats

161 Mahul – Sewree Creek — Unprotected — A1 — A4i,iii

Admin region Mumbai Coordinates 19°1'N 72°53'E Altitude Sea-level Area 1,000 ha Habitats Coastline; Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Tringa guttifer* Congregatory waterbirds *Phoenicopterus roseus, Phoenicopterus minor, Charadrius mongolus*

162 Melghat Tiger Reserve — Protected — A1 A2 A3

Admin region Amravati Coordinates 21°28'N 77°0'E Altitude 312–1,178 m Area 115,003 ha Habitats Forest; Grassland
Threatened species *Gyps bengalensis, Falco naumanni, Heteroglaux blewitti, Amandava formosa* Endemic Bird Areas 075 Central Indian forests Biomes AS11: Indo-Malayan tropical dry zone

Sanjay Gandhi National Park (IBA 168) retains extensive forests and rich biodiversity despite being on the outskirts of Mumbai (Bombay), and is of great ecological and recreational value to the people of the city. (PHOTO: PAUL GORIUP)

807

Table 11 ... continued Important Bird Areas in Maharashtra (see Map 2)

163 Nagzira Wildlife Sanctuary — Protected — A1

Admin region Bhandara Coordinates 21°19'N 80°4'E Altitude Unknown Area 15,281 ha Habitats Forest, Grassland, Wetlands
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Columba punicea, Amandava formosa*

164 Nandur Madhmeshwar Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Nashik Coordinates 19°59'N 74°2'E Altitude Unknown Area 10,012 ha Habitats Forest, Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila heliaca* Congregatory waterbirds *Ciconia ciconia, Grus virgo*

165 Nawegaon National Park — Protected — A1 — A3

Admin region Bhandara, Gondia Coordinates 20°57'N 80°11'E Altitude 275–481 m Area 13,388 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Amandava formosa* Biomes AS11: Indo-Malayan tropical dry zone

166 Ozar and adjoining grassland — Unprotected — A1

Admin region Nashik Coordinates 20°6'N 73°54'E Altitude 593 m Area 20,000 ha Habitats Forest, Grassland
Threatened species *Ardeotis nigriceps, Sypheotides indica*

167 Radhanagari Wildlife Sanctuary — Protected — A1 — A2 — A3

Admin region Kolhapur Coordinates 16°23'N 74°0'E Altitude 972 m Area 35,116 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS11: Indo-Malayan tropical dry zone

168 Sanjay Gandhi National Park — Protected — A1 — A2 — A3

Admin region Mumbai; Thane Coordinates 19°19'N 72°58'E Altitude 0–500 m Area 10,308 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Rynchops albicollis, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest, AS11: Indo-Malayan tropical dry zone

169 Tadoba National Park and Andhari Tiger Reserve — Protected — A1 — A3

Admin region Chandrapur Coordinates 20°23'N 79°26'E Altitude 212–360 m Area 11,655 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Aquila clanga, Grus antigone, Amandava formosa* Biomes AS11: Indo-Malayan tropical dry zone

170 Taloda Reserve Forest — Unprotected — A1 — A2

Admin region Nandurbar Coordinates 21°38'N 74°12'E Altitude 500–600 m Area Unknown Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Heteroglaux blewitti* Endemic Bird Areas s075: Central Indian forests

171 Tansa Wildlife Sanctuary — Protected — A1 — A3

Admin region Thane Coordinates 19°31'N 73°16'E Altitude 70–300 m Area 30,481 ha Habitats Forest
Threatened species *Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus* Biomes AS11: Indo-Malayan tropical dry zone

172 Thane Creek — Unprotected — A1 — A4i,iii

Admin region Mumbai; Thane Coordinates 19°8'N 72°57'E Altitude Sea-level Area 12,200 ha Habitats Coastline, Forest, Wetlands
Threatened species *Aquila clanga*

173 Toranmal Reserve Forest — Unprotected — A1 — A2

Admin region Nandurbar Coordinates 21°45'N 74°30'E Altitude 350–1,200 m Area 26,000 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Falco naumanni, Heteroglaux blewitti, Amandava formosa* Endemic Bird Areas s075: Central Indian forests

Table 12. Important Bird Areas in Goa (see Map 3)

174 Bhagwan Mahavir Wildlife Sanctuary — Protected — A1 — A2 — A3

Admin region South Goa Coordinates 15°20'N 74°1'E Altitude 780 m Area 14,852 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Columba elphinstonii, Brachypteryx major* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

175 Carambolim Wetlands — Unprotected — A1 — A4i,iii

Admin region North Goa Coordinates 15°23'N 73°50'E Altitude 72 m Area 72 ha Habitats Coastline, Wetlands
Threatened species *Leptoptilos javanicus, Gyps indicus, Aquila clanga* Congregatory waterbirds *Anas querquedula*

176 Cotigao Wildlife Sanctuary — Protected — A1 — A2 — A3

Admin region South Goa Coordinates 14°59'N 74°12'E Altitude 500 m Area 8,565 ha Habitats Forest
Threatened species *Gyps bengalensis, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

177 Mhadei Wildlife Sanctuary — Protected — A1 — A2 — A3

Admin region North Goa Coordinates 15°38'N 74°12'E Altitude Unknown Area 158,000 ha Habitats Coastline, Forest, Wetlands
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

Table 13. Important Bird Areas in Karnataka (see Map 3)

BR = IBA is wholly or partially a Biosphere Reserve

178 Adichunchunagiri Wildlife Sanctuary — Protected — A1 — A2

Admin region Mandya Coordinates 12°55'N 76°40'E Altitude 800 m Area 88 ha Habitats Forest
Threatened species *Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

179 Anshi National Park — Protected — A1 — A2 — A3

Admin region Uttar Kannad Coordinates 15°4'N 74°25'E Altitude 200–927 m Area 25,000 ha Habitats Forest
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

808

Table 13 ... continued. Important Bird Areas in Karnataka (see Map 3)

180 Bandipur National Park — **Protected**[NR] — A1 A2 A3

Admin region Mysore **Coordinates** 11°50'N 76°22'E **Altitude** 690–1,450 m **Area** 87,420 ha **Habitats** Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Columba elphinstonii, Pycnonotus xantholaemus, Parus nuchalis* **Endemic Bird Areas** 123 Western Ghats **Biomes** AS10 Indian peninsula tropical moist forest

181 Bannerghataa National Park — **Protected** — A1 A2 A3

Admin region Bangalore **Coordinates** 12°47'N 77°37'E **Altitude** 740–1,034 m **Area** 10,427 ha **Habitats** Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Columba elphinstonii, Pycnonotus xantholaemus* **Endemic Bird Areas** 123 Western Ghats **Biomes** AS10 Indian peninsula tropical moist forest

182 Bhadra Wildlife Sanctuary — **Protected** — A1 A2

Admin region Chikmangalur, Shimoga **Coordinates** 13°34'N 75°36'E **Altitude** 750–2,100 m **Area** 49,246 ha **Habitats** Forest
Threatened species *Leptoptilos javanicus, Columba elphinstonii* **Endemic Bird Areas** 123 Western Ghats

183 Bhimgad Forests — **Unprotected** — A1 A2 A3

Admin region Belgaum **Coordinates** 15°33'N 74°18'E **Altitude** 60–810 m **Area** Unknown **Habitats** Forest
Threatened species *Gyps bengalensis, Gyps indicus* **Endemic Bird Areas** 123 Western Ghats **Biomes** AS10 Indian peninsula tropical moist forest

184 Biligiri Rangaswamy Temple Wildlife Sanctuary and Hills — **Protected** — A1 A2 A3

Admin region Chamrajnagar **Coordinates** 11°50'N 77°5'E **Altitude** 600–1,800 m **Area** 53,952 ha **Habitats** Forest
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii, Pycnonotus xantholaemus, Brachypteryx major, Schoenicola platyura, Parus nuchalis* **Endemic Bird Areas** 123 Western Ghats **Biomes** AS10 Indian peninsula tropical moist forest

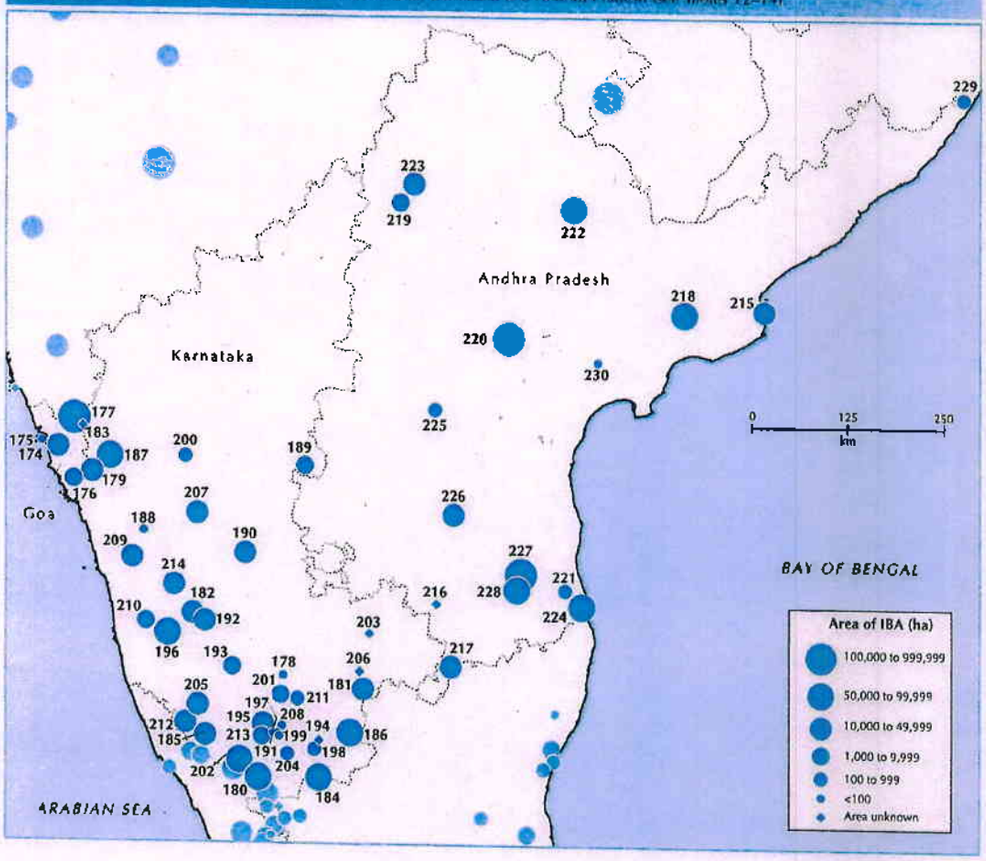
185 Bramhagiri Wildlife Sanctuary — **Protected** — A1 A2 A3

Admin region Kodagu **Coordinates** 12°17'N 75°45'E **Altitude** 65–1,607 m **Area** 18,129 ha **Habitats** Forest, Grassland
Threatened species *Gyps bengalensis, Columba elphinstonii, Brachypteryx major* **Endemic Bird Areas** 123 Western Ghats **Biomes** AS10 Indian peninsula tropical moist forest

186 Cauvery Wildlife Sanctuary — **Protected** — A1 A2 A3

Admin region Bangalore, Mandya, Mysore **Coordinates** 12°19'N 77°27'E **Altitude** 125–1,514 m **Area** 52,696 ha **Habitats** Forest, Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Columba elphinstonii, Pycnonotus xantholaemus, Parus nuchalis*
Endemic Bird Areas 123 Western Ghats **Biomes** AS11 Indo-Malayan tropical dry zone

Map 3. Location and size of important Bird Areas in Goa, Karnataka and Andhra Pradesh (see Tables 12–14)



809

Table 13 ... continued. Important Bird Areas in Karnataka (see Map 2).

187 Dandeli Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Uttar Kannad Coordinates 15°13'N 74°38'E Altitude 100–970 m Area 84,316 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest, AS11: Indo-Malayan tropical dry zone

188 Gudavi Bird Sanctuary — Protected — A1 A2 A4i

Admin region Shimoga Coordinates 14°26'N 75°2'E Altitude 560 m Area 74 ha Habitats Forest, Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga* Endemic Bird Areas 123: Western Ghats Congregatory waterbirds *Threskiornis melanocephalus*

189 Hampi Ruins — Unprotected — A1 A2

Admin region Bellary Coordinates 15°9'N 76°55'E Altitude 450 m Area 2,600 ha Habitats Forest; Shrubland
Threatened species *Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

190 Jogimatti State Forest — Unprotected — A1 A2

Admin region Chitradurga Coordinates 14°13'N 76°13'E Altitude 500–1,100 m Area 10,718 ha Habitats Forest
Threatened species *Gyps bengalensis, Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

191 Karanji Lake — Unprotected — A1 A4i

Admin region Mysore Coordinates 12°18'N 76°36'E Altitude 750 m Area 65 ha Habitats Forest, Shrubland, Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Threskiornis melanocephalus*

192 Kemmangundi and Bababudan Hills — Unprotected — A1 A2 A3

Admin region Chikmangalur Coordinates 13°29'N 75°44'E Altitude 700–1,920 m Area 10,292 ha Habitats Forest; Grassland
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii, Brachypternx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

193 Kemphole Reserve Forest — Unprotected — A2 A3

Admin region Dakshin Kannad, Hassan Coordinates 13°0'N 76°4'E Altitude 100–1,100 m Area 1,200 ha Habitats Forest
Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

194 Kokkare Bellur — Unprotected — A1 A4i

Admin region Mandya Coordinates 12°14'N 77°5'E Altitude 850 m Area Unknown Habitats Forest; Shrubland, Wetlands
Threatened species *Pelecanus philippensis, Gyps bengalensis*

195 Krishnarajasagar Reservoir — Unprotected — A1 A4i,iii

Admin region Mandya, Mysore Coordinates 12°24'N 76°26'E Altitude 400 m Area 12,500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Gyps bengalensis, Aquila clanga* Congregatory waterbirds *Anser indicus, Anas acuta, Calidris minuta, Calidris temminckii, Larus brunnicephalus*

196 Kudremukh National Park — Protected — A1 A2 A3

Admin region Chikmangalur Coordinates 13°21'N 75°18'E Altitude 134–1,892 m Area 56,328 ha Habitats Forest; Grassland
Threatened species *Gallinago nemoricola, Columba elphinstonii, Brachypternx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

197 Kukkarahalli Tank — Unprotected — A1 A3

Admin region Mysore Coordinates 12°18'N 76°33'E Altitude 760 m Area 58 ha Habitats Forest; Grassland, Shrubland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus* Biomes AS11: Indo-Malayan tropical dry zone

198 Kunthur–Kallur Lakes — Unprotected — A1 A4i,iii

Admin region Chamrajnagar Coordinates 12°8'N 77°2'E Altitude 600 m Area 460 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Gyps bengalensis, Aquila clanga* Congregatory waterbirds *Sarkidiornis melanotos, Anas querquedula, Limosa limosa*

199 Lingambudhi Lake and environs — Unprotected — A1 A4i,iii

Admin region Unknown Coordinates 12°16'N 76°37'E Altitude 780 m Area 76 ha Habitats Desert; Forest; Shrubland; Wetlands
Threatened species *Pelecanus philippensis, Gyps bengalensis, Aquila clanga, Aquila heliaca* Congregatory waterbirds *Pelecanus philippensis*

200 Magadi and Shetikere Wetlands — Unprotected — A1 A4iii

Admin region Unknown Coordinates 15°14'N 75°31'E Altitude 600 m Area 192 ha Habitats Wetlands

201 Melkote Temple Wildlife Sanctuary — Protected — A1

Admin region Mandya Coordinates 12°43'N 76°38'E Altitude 880–1,127 m Area 4,982 ha Habitats Forest; Shrubland
Threatened species *Gyps bengalensis, Gyps indicus, Pycnonotus xantholaemus*

202 Nagarahole National Park — Protected — A1 A2 A3

Admin region Kodagu, Mysore Coordinates 12°1'N 76°9'E Altitude 701–959 m Area 64,339 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Aquila clanga, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest, AS11: Indo-Malayan tropical dry zone

203 Nandi Hills — Unprotected — A1 A2 A3

Admin region Kolar Coordinates 13°22'N 77°40'E Altitude 1,400 m Area Unknown Habitats Forest; Shrubland
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii, Pycnonotus xantholaemus* Endemic Bird Areas 123: Western Ghats Biomes AS11: Indo-Malayan tropical dry zone

204 Narasambudhi Lake — Unprotected — A1 A4i

Admin region Mysore Coordinates 12°5'N 76°43'E Altitude 500 m Area 809 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Gyps bengalensis, Aquila clanga* Congregatory waterbirds *Pelecanus philippensis, Plegadis falcinellus, Threskiornis melanocephalus, Anser indicus*

205 Pushpagiri Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Dakshin Kannad, Kodagu Coordinates 12°36'N 75°40'E Altitude 160–1,712 m Area 10,292 ha Habitats Forest; Grassland
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

810

Table 13 ... continued. Important Bird Areas in Karnataka (see Map 3)

206 Ramanagara Reserve Forest — Unprotected — A1 A2

Admin region Bangalore Coordinates 12°58'N 77°34'E Altitude 913 m Area Unknown Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

207 Rannebenur Blackbuck Sanctuary — Protected — A1

Admin region Dharwad Coordinates 14°38'N 75°39'E Altitude 546–762 m Area 11,900 ha Habitats Forest
Threatened species *Gyps bengalensis, Ardeotis nigriceps*

208 Ranganathittu Bird Sanctuary — Protected — A1 — A4i

Admin region Mysore Coordinates 12°23'N 76°39'E Altitude 690–715 m Area 68 ha Habitats Wetlands
Threatened species *Gyps bengalensis, Aquila clanga* Congregatory waterbirds *Mycteria leucocephala*

209 Sharavathi Valley Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Shimoga Coordinates 14°9'N 74°53'E Altitude 94–1,102 m Area 43,123 ha Habitats Forest
Threatened species *Gyps bengalensis* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

210 Someshwara Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Udupi Coordinates 13°28'N 75°3'E Altitude 75–870 m Area 8,640 ha Habitats Forest; Grassland
Threatened species *Leptoptilos javanicus* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

211 Sutekere Lake — Unprotected — A1 — A4i,iii

Admin region Mandya Coordinates 12°40'N 76°50'E Altitude 400 m Area 500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Anas clypeata, Larus brunnicephalus, Chlidonias hybrida*

212 Talakaveri Wildlife Sanctuary — Protected — A1 A2

Admin region Kodagu Coordinates 12°24'N 75°31'E Altitude 64–1,659 m Area 10,501 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats

213 Arabhithittu Wildlife Sanctuary — Protected — A1

Admin region Mysore Coordinates 12°16'N 76°25'E Altitude 780–856 m Area 1,350 ha Habitats Forest
Threatened species *Pycnonotus xantholaemus*

214 Shettihalli Wildlife Sanctuary — Protected — A1 — A3

Admin region Shimoga Coordinates 13°52'N 75°23'E Altitude 600–1,031 m Area 39,560 ha Habitats Forest
Threatened species *Gyps bengalensis* Biomes AS11: Indo-Malayan tropical dry zone

Table 14. Important Bird Areas in Andhra Pradesh (see Map 3)

R = IBA is wholly or partially a Ramsar Site

215 Coringa Wildlife Sanctuary and Godavari estuary — Protected — A1 — A4iii

Admin region East Godavari Coordinates 16°50'N 82°20'E Altitude Unknown Area 23,570 ha Habitats Coastline, Forest
Threatened species *Pelecanus philippensis, Gyps bengalensis, Gyps indicus*

216 Horsely Hills — Unprotected — A1 A2

Admin region Chittoor Coordinates 13°41'N 78°28'E Altitude 1,265 m Area Unknown Habitats Forest
Threatened species *Gyps bengalensis, Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

217 Kaundinya Wildlife Sanctuary — Protected — A1 A2

Admin region Chittoor Coordinates 13°2'N 78°39'E Altitude Unknown Area 35,670 ha Habitats Forest, Shrubland
Threatened species *Pycnonotus xantholaemus* Endemic Bird Areas s072: Southern Deccan plateau

The grasslands in Rollapadu Wildlife Sanctuary (IBA 225) support populations of the threatened Great Indian Bustard *Ardeotis nigriceps* and Lesser Florican *Sypheotides indica*. (PHOTO ASAD RAHMANI)

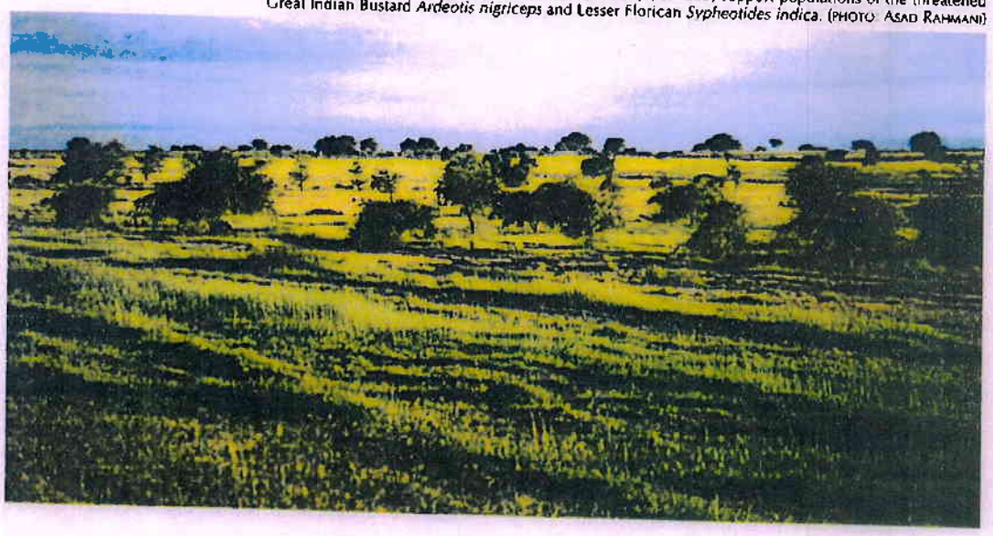


Table 14 ... continued. Important Bird Areas in Andhra Pradesh (see Map 4)

218 Kolleru Lake Wildlife Sanctuary — Protected[R] — A1 — A4i,iii

Admin region Krishna, West Godavari Coordinates 16°48'N 81°23'E Altitude 0–5 m Area 67,300 ha Habitats Forest; Shrubland, Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Anastomus oscitans, Anas querquedula*

219 Manjira Wildlife Sanctuary — Protected — A1 — A4i,iii

Admin region Medak Sangareddi Coordinates 17°58'N 78°2'E Altitude 915 m Area 2,000 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Rynchops albicollis* Congregatory waterbirds *Anser indicus, Tadorna ferruginea*

220 Nagarjunasagar-Srisailam Rajeev National Park (Tiger Reserve) — Protected — A1

Admin region Guntur, Kurnool, Mahbubnagar, Nalgonda, Prakasam Coordinates 16°31'N 79°19'E Altitude 100–917 m Area 356,809 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Pycnonotus xantholaemus*

221 Nellapattu Bird Sanctuary — Protected — A1 — A4i

Admin region Nellore Coordinates 13°50'N 79°59'E Altitude 30 m Area 440 ha Habitats Coastline; Forest, Shrubland
Threatened species *Pelecanus philippensis*

222 Pakhal Lake Wildlife Sanctuary — Protected — A3 — A4iii

Admin region Warangal Coordinates 17°54'N 80°5'E Altitude 250 m Area 87,930 ha Habitats Forest
Biomes AS11 Indo-Malayan tropical dry zone

223 Pocharam Wildlife Sanctuary — Protected — A1 — A3

Admin region Medak Sangareddi, Nizamabad Coordinates 18°10'N 78°12'E Altitude 450 m Area 13,000 ha Habitats Forest
Threatened species *Gyps indicus, Rynchops albicollis* Biomes AS11 Indo-Malayan tropical dry zone

224 Pulicat Lake Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Nellore Coordinates 13°40'N 80°11'E Altitude 0–10 m Area 60,000 ha Habitats Coastline; Forest
Threatened species *Pelecanus philippensis, Gyps bengalensis, Aquila clanga*

225 Rollapadu Wildlife Sanctuary — Protected — A1 — A4ii

Admin region Kurnool Coordinates 15°45'N 78°27'E Altitude Unknown Area 614 ha Habitats Grassland; Wetlands
Threatened species *Ardeotis nigriceps, Sypheotides indica*

226 Sri Lankamalleswara Wildlife Sanctuary — Protected — A1 — A2

Admin region Cuddapah Coordinates 14°38'N 78°40'E Altitude 150–784 m Area 46,400 ha Habitats Forest, Shrubland
Threatened species *Rhinoptilus bitorquatus* Endemic Bird Areas s071 Eastern Andhra Pradesh

227 Sri Peninsula Narasimha Wildlife Sanctuary — Protected — A1 — A2

Admin region Cuddapah; Nellore Coordinates 14°1'N 79°28'E Altitude 150–900 m Area 103,085 ha Habitats Forest; Shrubland
Threatened species *Rhinoptilus bitorquatus, Pycnonotus xantholaemus* Endemic Bird Areas s071 Eastern Andhra Pradesh, s072 Southern Deccan plateau

228 Sri Venkateswara Wildlife Sanctuary and National Park — Protected — A1 — A2

Admin region Chittoor, Cuddapah Coordinates 13°51'N 79°25'E Altitude 150–1,130 m Area 50,694 ha Habitats Forest
Threatened species *Gyps bengalensis, Pycnonotus xantholaemus* Endemic Bird Areas s072 Southern Deccan plateau

229 Telinegalapuram — Unprotected — A3

Admin region Srikakulam Coordinates 19°7'N 84°41'E Altitude 27 m Area 460 ha Habitats Coastline; Wetlands
Threatened species *Pelecanus philippensis*

230 Uppalapadu — Unprotected — A1 — A4i,iii

Admin region Guntur Coordinates 16°16'N 80°22'E Altitude 33 m Area 15 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Pelecanus philippensis*

Table 15. Important Bird Areas in Lakshadweep (see Map 4)

231 Pitti Island — Unprotected — A4iii

Admin region Lakshadweep Island Coordinates 11°0'N 72°5'E Altitude 2–6 m Area 1 ha Habitats Coastline; Forest, Shrubland

Table 16. Important Bird Areas in Kerala (see Map 4)

BR = IBA is wholly or partially a Biosphere Reserve; R = IBA is wholly or partially a Ramsar Site

232 Amarambalam Reserved Forest–Nilambur — Unprotected — A1 — A2 — A3

Admin region Malappuram Coordinates 11°14'N 76°11'E Altitude 40–2,554 m Area 26,572 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Columba elphinstonii* Endemic Bird Areas 123 Western Ghats Biomes AS10 Indian peninsula tropical moist forest

233 Aralam Wildlife Sanctuary — Protected — A1 — A2

Admin region Kannur Coordinates 12°3'N 75°42'E Altitude 50–1,145 m Area 5,500 ha Habitats Forest
Threatened species *Columba elphinstonii* Endemic Bird Areas 123 Western Ghats

234 Chimmony Wildlife Sanctuary — Protected — A1 — A2 — A3

Admin region Thrissur Coordinates 10°24'N 76°36'E Altitude 1,126–2,500 m Area 9,000 ha Habitats Forest, Shrubland
Threatened species *Columba elphinstonii, Schoenicola platyura* Endemic Bird Areas 123 Western Ghats Biomes AS10 Indian peninsula tropical moist forest

235 Chinnar Wildlife Sanctuary — Protected — A1 — A2

Admin region Idukki Coordinates 10°21'N 77°12'E Altitude 400–2,400 m Area 9,044 ha Habitats Forest, Grassland, Wetlands
Threatened species *Columba elphinstonii, Pycnonotus xantholaemus* Endemic Bird Areas s072 Southern Deccan plateau

812

Table 16 ... continued. Important Bird Areas in Kerala (see Map 4)

236 Eravikulam National Park — Protected — A1 A2 A3
Admin region Idukki Coordinates 10°15'N 77°6'E Altitude 1,400–2,694 m Area 9,700 ha Habitats Forest; Grassland
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

237 Idukki Wildlife Sanctuary — Protected — A1 A2
Admin region Idukki Coordinates 9°58'N 77°0'E Altitude 450–746 m Area 7,000 ha Habitats Forest; Shrubland
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats

238 Kattampally — Unprotected — A1
Admin region Kannur Coordinates 11°55'N 75°20'E Altitude 0–5 m Area 750 ha Habitats Coastline; Forest; Shrubland; Wetlands
Threatened species *Aquila clanga*

239 Kole Wetland — Unprotected — A1 A4i,iii
Admin region Malappuram, Thrissur Coordinates 10°11'N 76°11'E Altitude 0–1 m Area 13,632 ha Habitats Coastline; Wetlands
Threatened species *Pelecanus philippensis, Aquila clanga* Congregatory waterbirds *Egretta garzetta, Anas querquedula, Sterna nilotica, Chlidonias hybrida*

240 Konni Reserve Forest — Unprotected — A1 A2
Admin region Pathanamthitta, Quilon Coordinates 9°3'N 76°53'E Altitude 60–997 m Area 33,176 ha Habitats Forest; Grassland
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats

241 Kottiyoor Reserve Forest — Unprotected — A1 A2 A3
Admin region Kannur Coordinates 12°5'N 75°35'E Altitude 70–1,361 m Area 3,500 ha Habitats Forest
Threatened species *Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

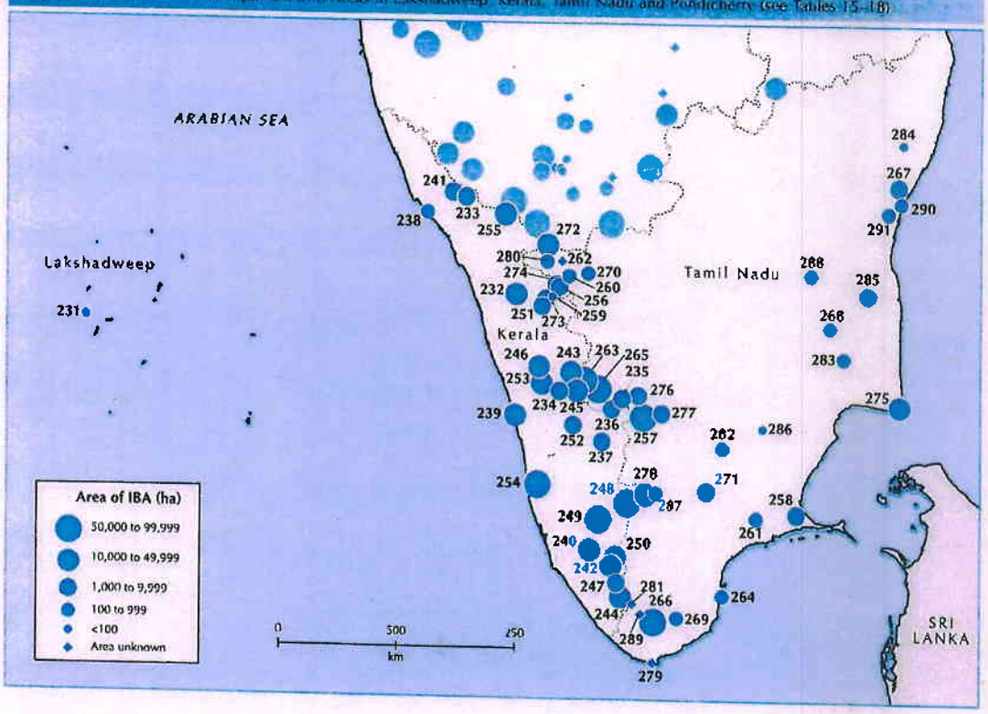
242 Kulahupuzha Reserved Forest — Unprotected — A1 A2
Admin region Kollam, Quilon Coordinates 8°55'N 77°6'E Altitude 500 m Area 21,900 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major* Endemic Bird Areas 123: Western Ghats

243 Nelliyampathy (Nemmara Division) — Unprotected — A1 A2
Admin region Palghat Coordinates 10°34'N 76°42'E Altitude 1,050 m Area 20,005 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats

244 Neyyar Wildlife Sanctuary — Protected — A1 A2 A3
Admin region Thiruvananthapuram Coordinates 8°39'N 77°11'E Altitude 90–1,858 m Area 12,800 ha Habitats Forest
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

245 Parambikulam Wildlife Sanctuary — Protected — A1 A2 A3
Admin region Palghat Coordinates 10°25'N 76°46'E Altitude 500–1,444 m Area 28,500 ha Habitats Forest
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

Map 4. Location and size of Important Bird Areas in Lakshadweep, Kerala, Tamil Nadu and Pondicherry (see Tables 15–18)



813

Table 16 ... continued. Important Bird Areas in Kerala (see Map 4)

246 Peechi – Vazhani Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Thrissur Coordinates 10°37'N 76°24'E Altitude 186–922 m Area 12,500 ha Habitats Forest
Threatened species *Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

247 Peppara Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Thiruvananthapuram Coordinates 8°46'N 77°9'E Altitude 90–1,717 m Area 5,300 ha Habitats Forest, Grassland
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

248 Periyar Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Idukki Coordinates 9°27'N 77°15'E Altitude 150–2,019 m Area 77,700 ha Habitats Forest; Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Gallinago nemoricola, Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

249 Ranni Reserve Forest — Unprotected — A1 A2 A3

Admin region Quilon Coordinates 9°19'N 76°59'E Altitude 46–1,920 m Area 87,738 ha Habitats Forest, Grassland
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

250 Shendurney Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Quilon Coordinates 8°59'N 77°8'E Altitude 200–1,500 m Area 10,032 ha Habitats Forest
Threatened species *Falco naumanni, Gallinago nemoricola, Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

251 Silent Valley National Park — Protected — A1 A2 A3

Admin region Palakaad Coordinates 11°8'N 76°26'E Altitude 658–2,383 m Area 8,952 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

252 Thattekkad Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Idukki Coordinates 10°7'N 76°44'E Altitude 35–523 m Area 2,516 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

253 Vazhachal Forest Division — Unprotected — A1 A2 A3

Admin region Ernakulam, Thrissur Coordinates 10°28'N 76°26'E Altitude 200–1,300 m Area 41,300 ha Habitats Forest
Threatened species *Columba elphinstonii* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

254 Vembanad Lake — Unprotected R — A4i,iii

Admin region Alleppey, Ernakulam, Kottayam, Pathanamthitta Coordinates 9°36'N 76°23'E Altitude Unknown Area 79,400 ha
Habitats Coastline, Forest, Grassland, Wetlands
Congregatory waterbirds *Phalacrocorax niger, Anas querquedula, Chlidonias hybrida*

255 Waynaad Wildlife Sanctuary — Protected BR — A1 A2 A3

Admin region Wayanad Coordinates 11°54'N 76°5'E Altitude 640–1,158 m Area 34,444 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Falco naumanni, Gallinago nemoricola, Columba elphinstonii, Garrulax cachinnans, Schoenicola platyura, Parus nuchalis* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

Table 17. Important Bird Areas in Tamil Nadu (see Map 4)

BR = IBA is wholly or partially a Biosphere Reserve; R = IBA is wholly or partially a Ramsar Site

256 Avalanche (Nilgiri) — Unprotected — A1 A2 A3

Admin region Nilgiris Coordinates 11°18'N 76°36'E Altitude 2,200 m Area 7,846 ha Habitats Forest, Grassland, Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans, Ficedula subrubra* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

257 Berijam (Kodaikonal) — Unprotected — A1 A2

Admin region Dindigul Coordinates 10°11'N 77°24'E Altitude 1,500–2,654 m Area 62,000 ha Habitats Forest, Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major* Endemic Bird Areas 123: Western Ghats

258 Big Tank (Peria Kanmai) and Sakkarakotai Kanmai — Unprotected — A1 — A4iii

Admin region Ramanathapuram Coordinates 9°22'N 78°52'E Altitude Unknown Area 2,541 ha Habitats Coastline; Wetlands
Threatened species *Pelecanus philippensis*

259 Bison Swamp (Nilgiri) — Unprotected — A1 A2

Admin region Nilgiris Coordinates 11°13'N 76°32'E Altitude 2,300 m Area 12 ha Habitats Forest, Grassland, Shrubland; Wetlands
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats

260 Cairn hill Reserve Forest (Nilgiri) — Unprotected — A1 A2

Admin region Nilgiris Coordinates 11°24'N 76°41'E Altitude 2,200 m Area 243 ha Habitats Forest, Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats

261 Chitragudi and Kanjirankulam Bird Sanctuary — Protected — A1 — A4i

Admin region Ramanathapuram Coordinates 9°20'N 78°29'E Altitude 15 m Area 152 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Pelecanus philippensis*

262 Governor's Shola (Nilgiri) — Unprotected — A1 A2

Admin region Nilgiris Coordinates 11°31'N 76°37'E Altitude 2,200 m Area Unknown Habitats Forest, Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats

263 Grass Hills — Unprotected — A1 A2

Admin region Coimbatore Coordinates 10°30'N 76°50'E Altitude 1,800 m Area 65,700 ha Habitats Grassland
Threatened species *Aquila clanga, Falco naumanni, Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats

814

Table 17 ... continued. Important Bird Areas in Tamil Nadu (see Map 4)

264 Gulf of Mannar Marine National Park — Protected[BR] — A1 — A4iii
Admin region Ramanathapuram, Tuticorin Coordinates 8°40'N 78°10'E Altitude 0–6 m Area 623 ha Habitats Coastline, Forest, Shrubland
Threatened species *Pelecanus philippensis*

265 Indira Gandhi Wildlife Sanctuary and National Park — Protected — A1 A2 A3
Admin region Coimbatore Coordinates 10°25'N 76°58'E Altitude 350–2,500 m Area 98,700 ha Habitats Forest; Grassland; Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

266 Kalakkad-Mundanthurai Tiger Reserve — Protected — A1 A2
Admin region Tirunelveli Coordinates 8°26'N 77°30'E Altitude 60–1,775 m Area 81,800 ha Habitats Forest; Grassland, Wetlands
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats

267 Kaliveli Tank and Yeduyanthittu estuary — Unprotected — A1 — A4i,iii
Admin region Cuddalore Coordinates 12°10'N 79°50'E Altitude 0–1 m Area 7,500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Aquila clanga* Congregatory waterbirds *Pelecanus philippensis, Anastomus oscitans, Phoenicopterus roseus, Tadorna ferruginea, Netta rufina, Charadrius mongolus, Calidris minuta, Calidris ferruginea*

268 Karaivetti Wildlife Sanctuary — Protected — A1 — A4i,iii
Admin region Tiruchchirappalli Coordinates 10°58'N 79°11'E Altitude Unknown Area 454 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Pelecanus philippensis, Anser indicus*

269 Kunthangulam Bird Sanctuary — Protected — A1 — A4i
Admin region Tirunelveli Coordinates 8°28'N 77°44'E Altitude Unknown Area 129 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Pelecanus philippensis, Plegadis falcinellus*

270 Longwood Shola–Kothagiri — Unprotected — A1 A2
Admin region Nilgiris Coordinates 11°25'N 76°52'E Altitude 1,900 m Area 116 ha Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats

271 Kullur Sandai Reservoir — Unprotected — A1
Admin region Virudunagar Coordinates 9°34'N 78°1'E Altitude 80 m Area 1 362 ha Habitats Wetlands
Threatened species *Pelecanus philippensis*

272 Mudumalai National Park — Protected[BR] — A1 A2 A3
Admin region Nilgiris Coordinates 11°39'N 76°29'E Altitude 690–1,400 m Area 32,100 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps indicus, Columba elphinstonii, Pycnonotus xantholaemus, Schoenicola platyura, Parus nuchalis* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest; AS11: Indo-Malayan tropical dry zone

273 Mukurthi National Park (Nilgiris) — Protected — A1 A2
Admin region Nilgiris Coordinates 11°12'N 76°28'E Altitude 2,400 m Area 7,846 ha Habitats Forest; Grassland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats

274 Naduvattam — Unprotected — A1 A2
Admin region Nilgiris Coordinates 11°19'N 76°34'E Altitude 1,500 m Area 3,538 ha Habitats Forest, Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans, Ficedula subrubra* Endemic Bird Areas 123: Western Ghats

275 Point Calimere Wildlife Sanctuary — Protected[R] — A1 — A4i,iii
Admin region Nagappattinam Coordinates 10°18'N 79°51'E Altitude 0–3 m Area 37,733 ha Habitats Coastline; Forest
Threatened species *Pelecanus philippensis, Tringa guttifer, Eurynorhynchus pygmeus* Congregatory waterbirds *Pelecanus philippensis, Phoenicopterus roseus, Anas querquedula*

276 Poomparai and Kukkal — Unprotected — A1 A2
Admin region Dindigul Coordinates 10°22'N 77°21'E Altitude 1,600–2,100 m Area 6,450 ha Habitats Artificial landscapes (terrestrial); Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Ficedula subrubra* Endemic Bird Areas 123: Western Ghats

277 Shola around Kodaikanal — Unprotected — A1 A2
Admin region Dindigul Coordinates 10°13'N 77°34'E Altitude 1,500–2,700 m Area 1,600 ha Habitats Forest, Grassland
Threatened species *Columba elphinstonii, Brachypteryx major* Endemic Bird Areas 123: Western Ghats

278 Shrivilliputhur Wildlife Sanctuary — Protected — A1 A2
Admin region Virudunagar Coordinates 9°31'N 77°25'E Altitude 200–1,200 m Area 48,520 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Columba elphinstonii, Brachypteryx major, Garrulax cachinnans, Schoenicola platyura*
Endemic Bird Areas 123: Western Ghats

279 Suchindram Therur, Vembanoor — Unprotected — A1 — A4i
Admin region Kanniyakumari Coordinates 8°5'N 77°30'E Altitude 5–200 m Area Unknown Habitats Coastline; Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Anas querquedula*

280 Thaishola — Unprotected — A1 A2 A3
Admin region Nilgiris Coordinates 11°31'N 76°29'E Altitude 2,200 m Area 603 ha Habitats Forest; Shrubland
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

281 Tirunelveli Reserve Forest — Unprotected — A1 A2 A3
Admin region Kanniyakumari; Tirunelveli Coordinates 8°35'N 77°18'E Altitude 1,829 m Area Unknown Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Schoenicola platyura* Endemic Bird Areas 123: Western Ghats Biomes AS10: Indian peninsula tropical moist forest

282 Vandivoorand Kunnathur Tanks (Madurai) — Unprotected — A1
Admin region Madurai Coordinates 9°55'N 78°9'E Altitude Unknown Area 278 ha Habitats Wetlands
Threatened species *Pelecanus philippensis*

815

Table 17 ... continued. Important Bird Areas in Tamil Nadu (see Map 4)

283 Vaduvoor Lake Bird Sanctuary — Protected — A1

Admin region Tiruvarur Coordinates 10°42'N 79°19'E Altitude Unknown Area 126 ha Habitats Wetlands
Threatened species *Pelecanus philippensis*

284 Vedanthangal and Karikili Bird Sanctuary — Protected — A1 — A4iii

Admin region Chengalpattu Coordinates 12°32'N 79°52'E Altitude 25 m Area 80 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Aquila clanga*

285 Veeranam Lake — Unprotected — A1 — A4i,iii

Admin region Cuddalore Coordinates 11°15'N 79°33'E Altitude 72 m Area 3,885 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Anastomus oscitans, Limosa limosa*

286 Vettangudi Bird Sanctuary — Protected — A1 — A4i

Admin region Sivaganga Coordinates 10°6'N 78°32'E Altitude 70 m Area 38 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Threskiornis melanocephalus*

287 Watrap Periakulam and Virakasamuthrakulam — Unprotected — A1 — A4i,iii

Admin region Virudunagar Coordinates 9°32'N 77°31'E Altitude 2 m Area 251 ha Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Phalacrocorax niger, Anhinga melanogaster*

288 Wellington Reservoir — Unprotected — A1 — A4iii

Admin region Cuddalore Coordinates 11°25'N 79°0'E Altitude 72–320 m Area 650 ha Habitats Wetlands
Threatened species *Pelecanus philippensis*

289 Muthukuzhi — Unprotected — A1 — A2

Admin region Kanniyakumari Coordinates 8°30'N 77°23'E Altitude Unknown Area Unknown Habitats Forest
Threatened species *Columba elphinstonii, Brachypteryx major, Garrulax cachinnans, Schoenicola platyura* Endemic Bird Areas 123. Western Ghats

Table 18. Important Bird Areas in Pondicherry (see Map 4)

290 Bahour Lake — Unprotected — A4i,iii

Admin region Pondicherry Coordinates 12°2'N 79°51'E Altitude 8 m Area 618 ha Habitats Coastline, Wetlands
Congregatory waterbirds *Tachybaptus ruficollis, Anas penelope*

291 Ousteri Lake — Unprotected — A4i,iii

Admin region Pondicherry Coordinates 11°57'N 79°44'E Altitude 10 m Area 800 ha Habitats Wetlands
Congregatory waterbirds *Phalacrocorax niger, Nettapus coromandelianus, Anas penelope*

Table 19. Important Bird Areas in Bihar (see Map 5)

292 Chaurs of North Bihar — Unprotected — A4iii

Admin region Darbhanga Coordinates 26°8'N 86°10'E Altitude 30–75 m Area Unknown Habitats Wetlands

293 Danapur cantonment area — Unprotected — A1 — A4i

Admin region Patna Coordinates 25°39'N 85°2'E Altitude 50 m Area 400 ha Habitats Wetlands
Threatened species *Falco naumanni* Congregatory waterbirds *Anastomus oscitans*

294 Gogabil Pakshi Vihar, Baghar Beel and Baldia Chaur — Unprotected — A1 — A4iii

Admin region Katihar Coordinates 25°24'N 87°45'E Altitude Unknown Area 200 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus*

295 Kawar or Kabar Lake Wildlife Sanctuary — Protected — A1 — A4iii

Admin region Begusarai Coordinates 25°41'N 86°5'E Altitude 50 m Area 6,311 ha Habitats Forest, Shrubland, Wetlands
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Grus antigone*

296 Kurseala River Course and Diyara Flood Plains — Unprotected — A4iii

Admin region Katihar Coordinates 25°27'N 87°15'E Altitude 50 m Area Unknown Habitats Wetlands

297 Kusheshwarsthan — Unprotected — A1

Admin region Darbhanga Coordinates 26°10'N 86°3'E Altitude 49 m Area 2,932 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus*

298 Mokama Taal (Barah) Wetlands — Unprotected — A1 — A4i,iii

Admin region Begusarai, Patna, Samastipur Coordinates 25°28'N 85°42'E Altitude 50 m Area 1,000 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Falco naumanni* Congregatory waterbirds *Anastomus oscitans*

299 Nagi Dam and Nakti Dam Bird Sanctuary — Protected — A1 — A4i,iii

Admin region Jamui Coordinates 24°49'N 86°25'E Altitude 200 m Area 523 ha Habitats Wetlands
Congregatory waterbirds *Anser indicus*

300 Reservoirs of Chotanagpur Plateau — Unprotected — A4i,iii

Admin region Unknown Coordinates 24°10'N 84°31'E Altitude 1,000 m Area Unknown Habitats Wetlands

301 Valmiki Tiger Reserve and Saraiyaman Lake — Protected — A1 — A3

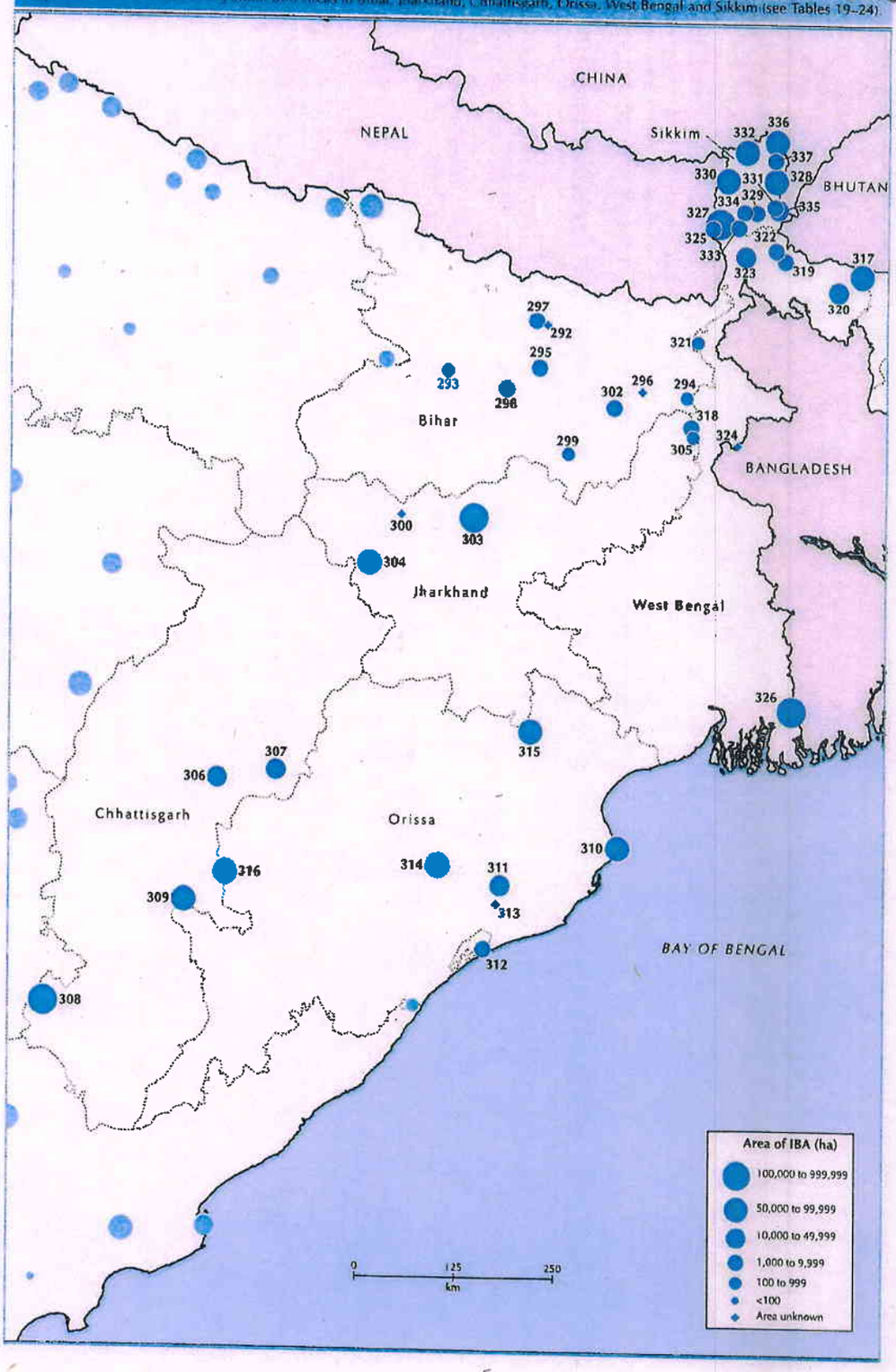
Admin region Pashchim Champaran Coordinates 27°19'N 84°9'E Altitude 125–880 m Area 88,078 ha Habitats Forest, Grassland, Wetlands
Threatened species *Leptoptilos javanicus, Francolinus gularis, Grus antigone, Vanellus gregarius* Biomes AS12. Indo-Gangetic plains

302 Vikramshila Gangetic Dolphin Sanctuary — Protected — A1

Admin region Bhagalpur Coordinates 25°17'N 86°56'E Altitude Unknown Area 5,000 ha Habitats Wetlands
Threatened species *Haliaeetus leucoryphus, Gyps bengalensis, Aquila clanga, Falco naumanni, Rynchops albicollis*

816

Map 5. Location and size of Important Bird Areas in Bihar, Jharkhand, Chhattisgarh, Orissa, West Bengal and Sikkim (see Tables 19–24).



817

Table 20. Important Bird Areas in Jharkhand (see Map 5)

303 Hazaribagh Wildlife Sanctuary and North Karanpur Valley Protected A1
Admin region Hazaribagh Coordinates 24°8'N 85°20'E Altitude Unknown Area 198,625 ha Habitats Forest
Threatened species *Gyps bengalensis*

304 Palamau Tiger Reserve Protected A1 A3
Admin region Palamau Coordinates 23°40'N 84°10'E Altitude 300–1,140 m Area 79,433 ha Habitats Forest, Grassland, Wetlands
Threatened species *Gyps bengalensis, Aquila clanga, Falco naumanni, Amandava formosa* Biomes AS11 Indo-Malayan tropical dry zone

305 Udhwa Lake Bird Sanctuary Protected A1
Admin region Sahebganj Coordinates 25°0'N 87°49'E Altitude Unknown Area 565 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus, Gyps bengalensis*

Table 21. Important Bird Areas in Chhattisgarh (see Map 5)

306 Barnawapara Wildlife Sanctuary Protected A1 A3
Admin region Raipur Coordinates 21°25'N 82°27'E Altitude 265–400 m Area 24,466 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Falco naumanni, Amandava formosa* Biomes AS11 Indo-Malayan tropical dry zone

307 Gomarda Wildlife Sanctuary Protected A1 A3
Admin region Raipur Coordinates 21°30'N 83°7'E Altitude 400 m Area 27,791 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Amandava formosa* Biomes AS11 Indo-Malayan tropical dry zone

308 Indravati National Park and Tiger Reserve Protected A1 A3
Admin region Bastar; Dantewada Coordinates 19°7'N 80°29'E Altitude 607–2,110 m Area 125,837 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Amandava formosa* Biomes AS11 Indo-Malayan tropical dry zone

309 Udanti and Sitanadi Wildlife Sanctuaries Protected A1 A3
Admin region Dhamtari, Raipur Coordinates 20°10'N 82°5'E Altitude 327–736 m Area 80,096 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Amandava formosa* Biomes AS11 Indo-Malayan tropical dry zone

Table 22. Important Bird Areas in Orissa (see Map 5)

BR = IBA is wholly or partially a Biosphere Reserve; R = IBA is wholly or partially a Ramsar Site

310 Bhitarkanika Wildlife Sanctuary and National Park Protected[R] A1 A4i
Admin region Cuttack, Kendrapara Coordinates 20°45'N 87°0'E Altitude 0–50 m Area 81,700 ha Habitats Coastline, Forest, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga, Falco naumanni, Rynchops albicollis* Congregatory waterbirds *Limosa limosa*

311 Chandka-Dampara Wildlife Sanctuary Protected A1 A3 A4i
Admin region Cuttack, Khorda Coordinates 20°21'N 85°40'E Altitude 40–202 m Area 17,579 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Columba punicea* Biomes AS11 Indo-Malayan tropical dry zone Congregatory waterbirds *Anastomus oscitans*

312 Nalabana Bird Sanctuary (Chilika Lake) Protected[R] A1 A4i,iii
Admin region Ganjam, Khorda, Puri Coordinates 19°43'N 85°29'E Altitude 0–50 m Area 1,553 ha Habitats Coastline, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Anser erythropus, Aythya baeri, Haliaeetus leucoryphus, Eurynorhynchus pygmeus, Rynchops albicollis* Congregatory waterbirds *Pelecanus philippensis, Dendrocygna javanica, Anser indicus, Tadorna ferruginea, Anas strepera, Anas penelope, Anas acuta, Limosa limosa, Larus brunnicephalus*

313 Mangal Jodi Unprotected A1 A4i,iii
Admin region Khorda Coordinates 20°10'N 85°37'E Altitude 74 m Area Unknown Habitats Wetlands
Threatened species *Pelecanus philippensis* Congregatory waterbirds *Anastomus oscitans, Dendrocygna bicolor, Dendrocygna javanica, Nettapus coromandelianus, Aythya fuligula, Porphyrio porphyrio, Gallinula chloropus, Vanellus cinereus*

314 Satkosia Gorge Wildlife Sanctuary Protected A1 A3
Admin region Cuttack, Dhenkanal, Phulbani, Puri Coordinates 20°33'N 84°37'E Altitude 63–926 m Area 79,552 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Rynchops albicollis, Chaetornis striatus* Biomes AS11 Indo-Malayan tropical dry zone

315 Simlipal National Park Protected[BR] A1 A3
Admin region Mayurbhanj Coordinates 21°56'N 86°0'E Altitude 500–1,200 m Area 84,570 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus, Aquila clanga, Columba punicea, Amandava formosa* Biomes AS10 Indian peninsula tropical moist forest; AS11 Indo-Malayan tropical dry zone

316 Sunabeda Wildlife Sanctuary Protected A1 A3
Admin region Nuapada Coordinates 20°27'N 82°33'E Altitude 350–1,000 m Area 50,000 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps indicus* Biomes AS11 Indo-Malayan tropical dry zone

Table 23. Important Bird Areas in West Bengal (see Map 5)

BR = IBA is wholly or partially a Biosphere Reserve; WH = IBA is wholly or partially a World Heritage Site

317 Buxa Tiger Reserve (National Park) Protected A1 A2
Admin region Jalpaiguri Coordinates 26°41'N 89°44'E Altitude 152–1,800 m Area 76,087 ha Habitats Forest, Grassland, Wetlands
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Perdicula manipurensis, Arborophila mandelli, Grus nigricollis, Gallinago nemoricola, Rynchops albicollis, Aceros nipalensis, Chrysomma altirostre, Paradoxornis flavirostris, Ponia cinereocapilla, Chaetornis striatus, Sitta formosa, Ploceus megarhynchus* Endemic Bird Areas 131 Assam plains

818

Table 23 ... continued. Important Bird Areas in West Bengal (see Map 5).

318 Farakka Barrage and adjoining area — Unprotected — A1 — A4i,iii

Admin region Malda Coordinates 25°6'N 87°48'E Altitude 30 m Area 2,000 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Aythya baeri, Gyps bengalensis, Gyps indicus, Rynchops albicollis* Congregatory waterbirds *Dendrocygna bicolor, Aythya fuligula*

319 Gorumara National Park — Protected — A1 A2

Admin region Jalpaiguri Coordinates 26°49'N 88°52'E Altitude 25–275 m Area 7,995 ha Habitats Forest, Grassland
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus, Gyps bengalensis, Aquila heliaca, Francolinus gularis, Houbaropsis bengalensis, Stachyris oglei, Paradoxornis flavirostris* Endemic Bird Areas 131 Assam plains

320 Jaldapara Wildlife Sanctuary — Protected — A1 A2

Admin region Jalpaiguri Coordinates 26°31'N 89°20'E Altitude 60–130 m Area 21,651 ha Habitats Forest, Grassland
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus, Falco naumanni, Houbaropsis bengalensis, Paradoxornis flavirostris, Pluvialis megarhynchus* Endemic Bird Areas 131 Assam plains

321 Kulik (Raiganj) Bird Sanctuary — Protected — A1 — A4i,iii

Admin region Uttar Dinajpur Coordinates 25°58'N 87°53'E Altitude 35 m Area 130 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus* Congregatory waterbirds *Anastomus oscitans*

322 Lava–Neora Valley National Park — Protected — A1 A2 A3

Admin region Darjeeling Coordinates 26°56'N 88°45'E Altitude 183–3,200 m Area 8,800 ha Habitats Forest; Grassland; Shrubland
Threatened species *Aquila heliaca, Falco naumanni, Columba punicea, Aceros nipalensis, Brachypteryx hyperythra, Paradoxornis flavirostris, Sitta formosa* Endemic Bird Areas 131 Assam plains Biomes AS07 Sino-Himalayan temperate forest, AS08 Sino-Himalayan subtropical forest

323 Mahananda Wildlife Sanctuary — Protected — A1 A2 A3

Admin region Darjeeling Coordinates 26°52'N 88°25'E Altitude 45–1,750 m Area 12,772 ha Habitats Forest; Grassland
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris, Falco naumanni, Francolinus gularis, Houbaropsis bengalensis, Aceros nipalensis, Brachypteryx hyperythra, Paradoxornis flavirostris* Endemic Bird Areas 130: Eastern Himalayas; 131 Assam plains Biomes AS08 Sino-Himalayan subtropical forest

324 Naya Bandh Wetland Complex — Unprotected — A1

Admin region Malda Coordinates 24°55'N 88°20'E Altitude 30–35 m Area Unknown Habitats Forest, Shrubland, Wetlands
Threatened species *Leptoptilos javanicus, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps indicus, Aquila clanga*

325 Singhalila National Park — Protected — A1 A2

Admin region Darjeeling Coordinates 27°9'N 88°2'E Altitude 2,600–3,650 m Area 7,860 ha Habitats Forest; Shrubland
Threatened species *Aquila clanga, Arborophila mandellii, Gallinago nemoricola, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 133 Southern Tibet

326 Sundarbans Biosphere Reserve (National Park) — Protected BR,WH — A1

Admin region North 24-Parganas, South 24-Parganas Coordinates 22°11'N 88°58'E Altitude 0–5 m Area 133,010 ha
Habitats Coastline, Forest; Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Aquila clanga, Francolinus gularis, Heliopais personata, Eurynorhynchus pygmeus*

Table 24. Important Bird Areas in Sikkim (see Map 5).

BR = IBA is wholly or partially a Biosphere Reserve

327 Barsey Rhododendron Sanctuary — Protected — A1 A2 A3

Admin region West Sikkim Coordinates 27°12'N 88°7'E Altitude 2,000–4,100 m Area 104,000 ha Habitats Forest
Threatened species *Haliaeetus leucoryphus, Brachypteryx hyperythra, Paradoxornis flavirostris* Endemic Bird Areas 130 Eastern Himalayas Biomes AS05 Eurasian high montane, AS07 Sino-Himalayan temperate forest

328 Dombang Valley–Lachung–Lema–Tsungthang — Unprotected — A1 A2 A3

Admin region North Sikkim Coordinates 27°38'N 88°45'E Altitude 2,679 m Area 60,000 ha Habitats Forest
Threatened species *Gallinago nemoricola, Sitta formosa* Endemic Bird Areas 130 Eastern Himalayas Biomes AS05 Eurasian high montane, AS07 Sino-Himalayan temperate forest, AS08 Sino-Himalayan subtropical forest

329 Fambong Lho Wildlife Sanctuary–Himalayan Zoological Park–Ratey Chu Reserve Forest — Protected — A1 A2 A3

Admin region East Sikkim Coordinates 27°19'N 88°32'E Altitude 1,375–2,650 m Area 5,381 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps tenuirostris, Arborophila mandellii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa*
Endemic Bird Areas 130 Eastern Himalayas Biomes AS07 Sino-Himalayan temperate forest, AS08 Sino-Himalayan subtropical forest

330 Khangchendzonga National Park and Biosphere Reserve — Protected BR — A1 A2 A3

Admin region North Sikkim Coordinates 27°38'N 88°12'E Altitude 1,300–8,598 m Area 84,950 ha Habitats Forest, Shrubland
Threatened species *Aythya baeri, Haliaeetus leucoryphus, Falco naumanni, Paradoxornis flavirostris* Endemic Bird Areas 130 Eastern Himalayas Biomes AS05 Eurasian high montane, AS07 Sino-Himalayan temperate forest

331 Kyongnosla Alpine Sanctuary–Tsoingo–Tamze–Chola Complex — Protected — A1 A2 A3

Admin region East Sikkim Coordinates 27°23'N 88°44'E Altitude 1,375–2,750 m Area 3,100 ha Habitats Forest; Grassland
Threatened species *Haliaeetus leucoryphus, Aquila clanga, Gallinago nemoricola* Endemic Bird Areas 130: Eastern Himalayas Biomes AS07 Sino-Himalayan temperate forest, AS08 Sino-Himalayan subtropical forest

332 Lhonak Valley — Unprotected — A1 A2 A3

Admin region North Sikkim Coordinates 27°55'N 88°25'E Altitude 4,260–7,459 m Area 50,000 ha Habitats Forest, Grassland
Threatened species *Falco naumanni, Grus nigricollis, Gallinago nemoricola* Endemic Bird Areas 133 Southern Tibet Biomes AS05 Eurasian high montane

819

Table 24 ... continued. Important Bird Areas in Sikkim (see Map 5)

333 Lowland forests of South Sikkim (Melli-Baguwa-Kitam, Jorethang-Namchi, Sombarey) — Unprotected — A1 A2 A3

Admin region South Sikkim; West Sikkim Coordinates 27°9'N 88°20'E Altitude 400–1,000 m Area 2,000 ha Habitats Forest, Shrubland
Threatened species *Gyps bengalensis, Gyps tenuirostris, Arborophila mandellii, Aceros nipalensis, Brachypteryx hyperythra, Turdoides longirostris, Paradoxornis flavirostris, Prinia cinereocapilla, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas Biomes AS08: Sino-Himalayan subtropical forest; AS09: Indochinese tropical moist forest

334 Maenam Wildlife Sanctuary–Tendong Reserve Forest — Protected — A1 A2 A3

Admin region South Sikkim Coordinates 27°19'N 88°24'E Altitude 2,100–3,300 m Area 3,534 ha Habitats Forest
Threatened species *Aquila clanga, Arborophila mandellii, Tragopan blythii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa*
Endemic Bird Areas 130: Eastern Himalayas Biomes AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

335 Pangolakha Wildlife Sanctuary–Zuluk–Berlang Tso–Natula Complex — Protected — A1 A2 A3

Admin region East Sikkim Coordinates 27°20'N 88°47'E Altitude 1,300–4,000 m Area 12,400 ha Habitats Forest
Threatened species *Haliaeetus leucoryphus, Aquila clanga, Arborophila mandellii, Gallinago nemoricola, Aceros nipalensis, Turdoides longirostris, Paradoxornis flavirostris, Prinia cinereocapilla* Endemic Bird Areas 130: Eastern Himalayas; 133: Southern Tibet Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

336 Tso Lhamo Plateau–Lashar–Sebu La–Yumesamdong Complex — Unprotected — A1 A2 A3

Admin region North Sikkim Coordinates 28°2'N 88°45'E Altitude 4,500–7,000 m Area 50,000 ha Habitats Grassland
Threatened species *Aquila clanga, Falco naumanni, Grus nigricollis, Gallinago nemoricola* Endemic Bird Areas 130: Eastern Himalayas; 133: Southern Tibet Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest

337 Yumthang–Shingba Rhododendron Wildlife Sanctuary — Protected — A1 A2 A3

Admin region North Sikkim Coordinates 27°50'N 88°44'E Altitude 3,234–3,700 m Area 4,300 ha Habitats Forest
Threatened species *Gallinago nemoricola* Endemic Bird Areas 130: Eastern Himalayas Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest

Table 25. Important Bird Areas in Arunachal Pradesh (see Map 6)

BR = IBA is wholly or partially a Biosphere Reserve

338 Chaglagaum–Denning–Walong — Unprotected — A1 A2

Admin region Lohit Coordinates 27°50'N 96°50'E Altitude 1,000–5,000 m Area 200,000 ha Habitats Forest; Shrubland
Threatened species *Gallinago nemoricola, Aceros nipalensis, Brachypteryx hyperythra, Stachyris oglei, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

339 Chayang Tajo–Khenewa–Lada — Unprotected — A1 A2

Admin region East Kameng Coordinates 27°36'N 93°5'E Altitude 1,000–5,000 m Area Unknown Habitats Forest
Threatened species *Arborophila mandellii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

340 D'Ering Memorial Wildlife Sanctuary — Protected — A1 A2 A4i

Admin region East Siang Coordinates 27°56'N 95°27'E Altitude 150 m Area 19,000 ha Habitats Grassland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Cairina scutulata, Haliaeetus leucoryphus, Aquila clanga, Falco naumanni, Francolinus gularis, Houbaropsis bengalensis, Rynchops albicollis, Chrysomma altirostre, Paradoxornis flavirostris* Endemic Bird Areas 131: Assam plains Congregatory waterbirds *Cairina scutulata*

341 Dibang Reserve Forest and adjacent areas — Unprotected** — A1 A2

Admin region Lower Dibang Valley Coordinates 28°6'N 95°38'E Altitude 100–400 m Area 20,200 ha Habitats Forest; Grassland
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Houbaropsis bengalensis, Pelliorneum palustre, Chrysomma altirostre, Paradoxornis flavirostris* Endemic Bird Areas 131: Assam plains

342 Dibang Wildlife Sanctuary — Protected** — A1 A2

Admin region Upper Dibang Valley Coordinates 29°16'N 96°12'E Altitude 2,000–5,356 m Area 414,900 ha Habitats Forest
Threatened species *Arborophila mandellii, Tragopan blythii, Lophophorus sclateri, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

343 Ditchu Reserve Forest — Unprotected — A1 A2

Admin region Lohit Coordinates 28°12'N 97°21'E Altitude 1,100–3,800 m Area 179,200 ha Habitats Forest
Threatened species *Columba punicea, Aceros nipalensis, Brachypteryx hyperythra, Stachyris oglei, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

344 Eaglenest and Sessa Sanctuaries — Protected — A1 A2

Admin region West Kameng Coordinates 27°9'N 92°22'E Altitude 200–3,200 m Area 31,700 ha Habitats Forest
Threatened species *Tragopan blythii, Aceros nipalensis, Brachypteryx hyperythra, Pelliorneum palustre, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

345 Itanagar Wildlife Sanctuary — Protected — A1 A2

Admin region Papumpare Coordinates 27°6'N 93°30'E Altitude 250–460 m Area 14,030 ha Habitats Forest
Threatened species *Cairina scutulata, Falco naumanni, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

346 Kane Wildlife Sanctuary — Protected — A1 A2

Admin region West Siang Coordinates 27°40'N 94°39'E Altitude 120–1,500 m Area 5,500 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

347 Koloriang–Sarli–Damin area — Unprotected — A1 A2

Admin region Lower Subansiri Coordinates 27°40'N 93°18'E Altitude 800–5,000 m Area 200,000 ha Habitats Forest; Shrubland
Threatened species *Aceros nipalensis, Brachypteryx hyperythra* Endemic Bird Areas 130: Eastern Himalayas

348 Magu Thingbu — Unprotected — A1 A2 A3

Admin region Tawang Coordinates 27°40'N 92°10'E Altitude 2,000–4,000 m Area Unknown Habitats Forest
Threatened species *Cairina scutulata, Haliaeetus leucoryphus, Lophophorus sclateri, Columba punicea, Aceros nipalensis, Sitta formosa*
Endemic Bird Areas 130: Eastern Himalayas Biomes AS05: Eurasian high montane; AS07: Sino-Himalayan temperate forest; AS08: Sino-Himalayan subtropical forest

820

Map 6. Location and size of Important Bird Areas in Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur, Tripura, Mizoram, and the Andaman and Nicobar Islands (see Tables 25–32).

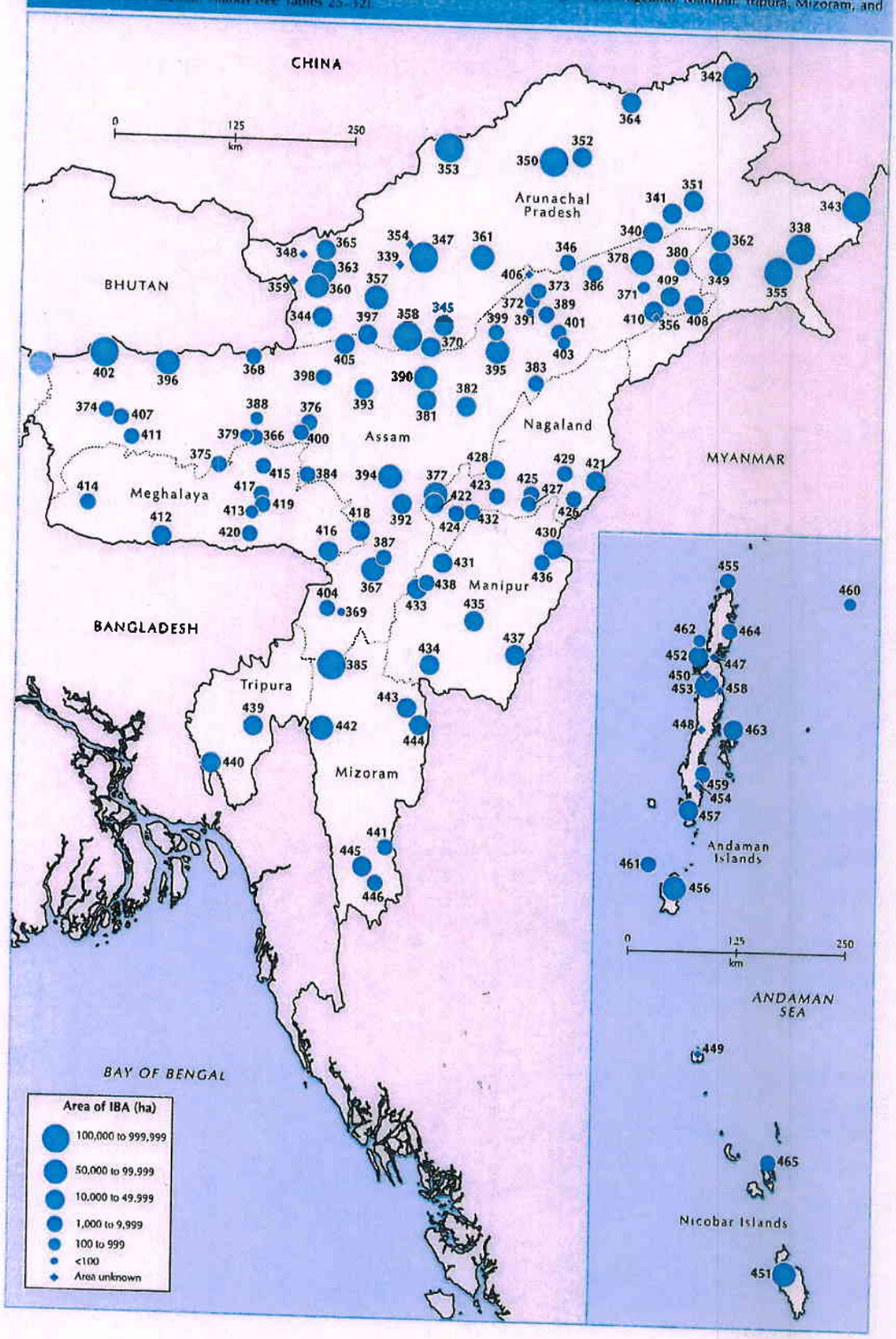


Table 25 ... continued. Important Bird Areas in Arunachal Pradesh (see Map 6)

349 Manabum and Tengapani Reserve Forests — Unprotected — A1 — A4i

Admin region Lohit Coordinates 27°42'N 96°5'E Altitude 100–400 m Area 58,000 ha Habitats Forest; Wetlands
Threatened species *Ardea insignis, Cairina scutulata, Heliopais personata, Columba punicea, Aceros nipalensis*

350 Mechuka–Monigong–Jorgging — Unprotected — A1 A2

Admin region Upper Subansiri; West Siang Coordinates 28°30'N 94°30'E Altitude 1,300–5,000 m Area 250,000 ha
Habitats Forest; Grassland
Threatened species *Aquila heliaca, Tragopan blythii, Lophophorus sclateri, Aceros nipalensis, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

351 Mehao Wildlife Sanctuary — Protected — A1 A2

Admin region Lower Dibang Valley Coordinates 28°12'N 95°49'E Altitude 400–3,560 m Area 28,150 ha Habitats Forest
Threatened species *Cairina scutulata, Arborophila mandellii, Tragopan blythii, Columba punicea, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

352 Mouling National Park — Protected — A1 A2

Admin region East Siang; Upper Subansiri; West Siang Coordinates 28°32'N 94°46'E Altitude 750–3,064 m Area 48,300 ha
Habitats Forest
Threatened species *Arborophila mandellii, Tragopan blythii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

353 Nacho–Limeking–Taksing–Majha — Unprotected — A1 A2

Admin region Upper Subansiri Coordinates 28°35'N 93°31'E Altitude 800–4,500 m Area 200,000 ha Habitats Forest
Threatened species *Arborophila mandellii, Lophophorus sclateri, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 130 Eastern Himalayas

354 Nafra–Lada area — Unprotected — A1 A2

Admin region East Kameng; West Kameng Coordinates 27°46'N 93°10'E Altitude 600–7,000 m Area Unknown
Habitats Forest; Grassland; Shrubland
Threatened species *Arborophila mandellii, Tragopan blythii, Lophophorus sclateri, Aceros nipalensis, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

355 Namdapha–Kamlang — Protected — A1 A2

Admin region Changlang; Lohit Coordinates 27°38'N 96°38'E Altitude 200–4,578 m Area 259,082 ha Habitats Forest; Shrubland
Threatened species *Ardea insignis, Cairina scutulata, Gyps indicus, Aquila clanga, Tragopan blythii, Syrmaticus humiae, Aceros nipalensis, Brachypteryx hyperythra, Stachyris oglei, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

356 Namsangmukh–Borduria — Unprotected — A1 A2

Admin region Tirap Coordinates 27°13'N 95°30'E Altitude 120–400 m Area Unknown Habitats Forest
Threatened species *Ardea insignis, Cairina scutulata, Columba punicea, Aceros nipalensis, Sitta formosa* Endemic Bird Areas 131: Assam plains

357 Pakhui or Pakke Wildlife Sanctuary — Protected — A1 A2

Admin region East Kameng Coordinates 27°19'N 92°52'E Altitude 100–2,000 m Area 86,195 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis, Pelforneum palustre* Endemic Bird Areas 130: Eastern Himalayas

358 Papum Reserve Forest — Unprotected — A1

Admin region East Kameng Coordinates 27°0'N 93°10'E Altitude 100–1,600 m Area 106,300 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis*

359 Sangti Valley — Unprotected — A1 A2

Admin region West Kameng Coordinates 27°27'N 92°5'E Altitude 1,000–3,000 m Area Unknown Habitats Forest
Threatened species *Grus nigricollis, Tragopan blythii* Endemic Bird Areas 130: Eastern Himalayas

360 Shergaon, Mandla–Phudung and Kalaktang — Unprotected — A1 A2

Admin region West Kameng Coordinates 27°24'N 92°18'E Altitude 1,000–3,700 m Area 50,000 ha Habitats Forest
Threatened species *Tragopan blythii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

361 Taley Valley Wildlife Sanctuary — Protected — A1 A2

Admin region Lower Subansiri Coordinates 27°41'N 93°51'E Altitude 120–3,000 m Area 51,587 ha Habitats Forest
Threatened species *Arborophila mandellii, Tragopan blythii, Aceros nipalensis, Brachypteryx hyperythra, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

362 The Chapories of Lohit Reserve — Unprotected — A1 A2 A4i

Admin region Lohit Coordinates 27°53'N 96°5'E Altitude 150 m Area 20,000 ha Habitats Forest; Grassland; Wetlands
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Houbaropsis bengalensis* Endemic Bird Areas 131: Assam plains Congregatory waterbirds *Phalacrocorax carbo, Mergus merganser*

363 Thungri–Chaglang–Poshingla Maji, Basti and Liak area — Unprotected — A1 A2

Admin region West Kameng Coordinates 27°32'N 92°22'E Altitude 2,000–3,500 m Area 50,000 ha Habitats Forest
Threatened species *Arborophila mandellii, Tragopan blythii, Lophophorus sclateri, Brachypteryx hyperythra* Endemic Bird Areas 130: Eastern Himalayas

364 Yardi–Rabe Supse Wildlife Sanctuary — Protected — A1

Admin region West Siang Coordinates 29°1'N 95°13'E Altitude 1,500–2,500 m Area 49,600 ha Habitats Forest
Threatened species *Arborophila mandellii, Aceros nipalensis*

365 Zemithang–Nelya — Unprotected — A1 A2

Admin region West Kameng Coordinates 27°42'N 92°23'E Altitude 2,000–5,000 m Area 30,000 ha
Habitats Forest; Shrubland; Wetlands
Threatened species *Grus nigricollis, Schoenicola platyura, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

§22

Table 26. Important Bird Areas in Assam (see Map 6)

BR = IBA is wholly or partially a Biosphere Reserve, R = IBA is wholly or partially a Ramsar Site, WH = IBA is wholly or partially a World Heritage Site

366 Amchang Hills — Unprotected — A1

Admin region Kamrup Coordinates 26°6'N 91°45'E Altitude 50–569 m Area 7,400 ha Habitats Forest
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Gyps bengalensis, Gyps tenuirostris*

367 Barail Range — Unprotected — A1 A2 A3

Admin region Cachar, North Cachar Hills Coordinates 25°0'N 92°53'E Altitude 100–1,959 m Area 80,000 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Francolinus gularis, Tragopan blythii* Endemic Bird Areas 130 Eastern Himalayas Biomes AS08 Sino-Himalayan subtropical forest, AS09 Indochinese tropical moist forest

368 Barnadi Wildlife Sanctuary — Protected — A1

Admin region Darrang Coordinates 26°48'N 91°44'E Altitude 100–200 m Area 2,622 ha Habitats Forest; Grassland
Threatened species *Houbaropsis bengalensis*

369 Bauwwa Beel — Unprotected — A1

Admin region Hailakandi Coordinates 24°38'N 92°35'E Altitude 60 m Area 70 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Gyps bengalensis, Aquila clanga*

370 Behali Reserve Forest — Unprotected — A1 A3

Admin region Sonitpur Coordinates 26°55'N 93°23'E Altitude 80–150 m Area 14,000 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Aceros nipalensis* Biomes AS09 Indochinese tropical moist forest

371 Bherjan–Borajan–Podumoni Wildlife Sanctuary — Protected — A1

Admin region Tinsukia Coordinates 27°29'N 95°23'E Altitude 119–122 m Area 774 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris*

372 Bordoibam–Bilmukh Bird Sanctuary — Protected — A1

Admin region Dhemaji, Lakhimpur Coordinates 27°20'N 94°20'E Altitude 90–95 m Area 1,125 ha Habitats Grassland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus, Gyps bengalensis, Aquila clanga, Falco naumanni, Francolinus gularis*

373 Bordoloni–Sampora — Unprotected — A1 A2 A4i

Admin region Dhemaji, Lakhimpur Coordinates 27°25'N 94°23'E Altitude 90 m Area 3,000 ha Habitats Grassland
Threatened species *Pelecanus philippensis, Ardea insignis, Leptoptilos javanicus, Leptoptilos dubius, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Paradoxornis flavirostris* Endemic Bird Areas 131 Assam plains Congregatory waterbirds *Pelecanus philippensis*

374 Chakrasila Complex — Protected — A1 A4i,iii

Admin region Dhuburi, Kokrajhar Coordinates 26°19'N 90°22'E Altitude 30–455 m Area 5,300 ha Habitats Forest; Grassland, Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga* Congregatory waterbirds *Aythya nyroca, Aythya baeri*

375 Chandubi Lake and adjoining areas — Unprotected — A1

Admin region Kamrup Coordinates 25°52'N 91°25'E Altitude 70–150 m Area 2,000 ha Habitats Forest; Wetlands
Threatened species *Leptoptilos javanicus, Haliaeetus leucoryphus*

376 Deobali Jalah — Unprotected — A1 A4i

Admin region Nagaon Coordinates 26°15'N 92°16'E Altitude 60 m Area 1,000 ha Habitats Grassland; Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Francolinus gularis, Houbaropsis bengalensis, Chaetornis striatus*

377 Dhansiri Reserve Forest — Unprotected — A1 A4i

Admin region Karbi Anglong Coordinates 25°40'N 93°27'E Altitude 150–598 m Area 77,000 ha Habitats Forest; Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Pavo muticus, Aceros nipalensis*

378 Dibru–Saikhowa Complex — Protected BR — A1 A2

Admin region Dhemaji, Dibrugarh, Tinsukia Coordinates 27°41'N 95°21'E Altitude 90–100 m Area 80,000 ha Habitats Forest; Grassland
Threatened species *Pelecanus philippensis, Ardea insignis, Leptoptilos javanicus, Leptoptilos dubius, Cairina scutulata, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Perdicula manipurensis, Grus antigone, Houbaropsis bengalensis, Tringa guttifer, Rynchops albicollis, Columba punicea, Pelfomeum palustre, Chrysomma altirostre, Paradoxornis flavirostris, Ploceus megarhynchus* Endemic Bird Areas 131 Assam plains

379 Dipor Beel Bird Sanctuary — Protected R — A1 A4iii

Admin region Kamrup Coordinates 26°7'N 91°40'E Altitude 53 m Area 414 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Eurynorhynchus pygmeus*

380 Dum Duma–Dangori–Kumsong Reserve Forests — Unprotected — A1

Admin region Tinsukia Coordinates 27°40'N 95°44'E Altitude 140 m Area 6,050 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Heliopais personata*

381 East and North Karbi Anglong Wildlife Sanctuaries — Protected — A1

Admin region Karbi Anglong Coordinates 26°28'N 93°22'E Altitude 80–500 m Area 11,818 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Columba punicea, Aceros nipalensis*

382 Garampani, Nambor and Doigrung — Protected — A1

Admin region Karbi Anglong Coordinates 26°25'N 93°44'E Altitude 100–120 m Area 15,000 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata*

383 Gibbon (Hollongapar) Sanctuary — Protected — A1

Admin region Jorhat Coordinates 26°38'N 94°23'E Altitude 119 m Area 2,098 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris*

Table 26 ... continued. Important Bird Areas in Assam (see Map 6)

384 Habang — Unprotected — A4ii

Admin region Karbi Anglong Coordinates 25°48'N 92°15'E Altitude 700–900 m Area 1,000 ha Habitats Forest; Grassland

385 Inner Line, Kathakal and Barak Reserve Forests — Unprotected — A1

Admin region Cachar, Hailakandi Coordinates 24°11'N 92°30'E Altitude 50–600 m Area 130,000 ha Habitats Forest
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Pavo muticus, Heliopais personata*

386 Jamjing and Sengajan — Unprotected — A1

Admin region Dhemaji Coordinates 27°35'N 94°54'E Altitude 90–100 m Area 9,500 ha Habitats Grassland, Wetlands
Threatened species *Pelecanus philippensis, Ardea insignis, Leptoptilos javanicus, Cairina scutulata, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis*

387 Jatinga — Unprotected — A1 — A4iv

Admin region North Cachar Hills Coordinates 25°6'N 92°59'E Altitude 500–1,000 m Area 1,000 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis, Turdus feae, Spelaeornis longicaudatus, Sitta formosa*

388 Jengdia Beel and Satgaon — Unprotected — A1

Admin region Kamrup Coordinates 26°16'N 91°46'E Altitude 45–50 m Area 500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus*

389 Jhanjimukh–Kokilamukh — Unprotected — A1 — A4i

Admin region Jorhat Coordinates 27°13'N 94°28'E Altitude 90 m Area 2,500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis*

390 Kaziranga National Park — Protected [WH] — A1 — A2 — A4i,iii

Admin region Golaghat; Nagaon; Sonitpur Coordinates 26°39'N 93°21'E Altitude 67–80 m Area 84,980 ha Habitats Forest; Grassland; Wetlands
Threatened species *Pelecanus crispus, Pelecanus philippensis, Ardea insignis, Leptoptilos javanicus, Leptoptilos dubius, Anser erythropus, Marmaronetta angustirostris, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Aquila heliaca, Falco naumanni, Francolinus gularis, Houbaropsis bengalensis, Tringa guttifer, Rynchops albicollis, Columba punicea, Saxicola insignis, Pellorneum palustre, Chrysomma altirostre, Turdoides longirostris, Paradoxornis flavirostris, Ploceus megarhynchus* Endemic Bird Areas 131: Assam plains Congregatory waterbirds *Anser indicus*

391 Kuarbari–Dalani — Unprotected — A1

Admin region Lakhimpur Coordinates 27°14'N 94°19'E Altitude 90 m Area 15 ha Habitats Grassland
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Gyps bengalensis, Gyps tenuirostris*

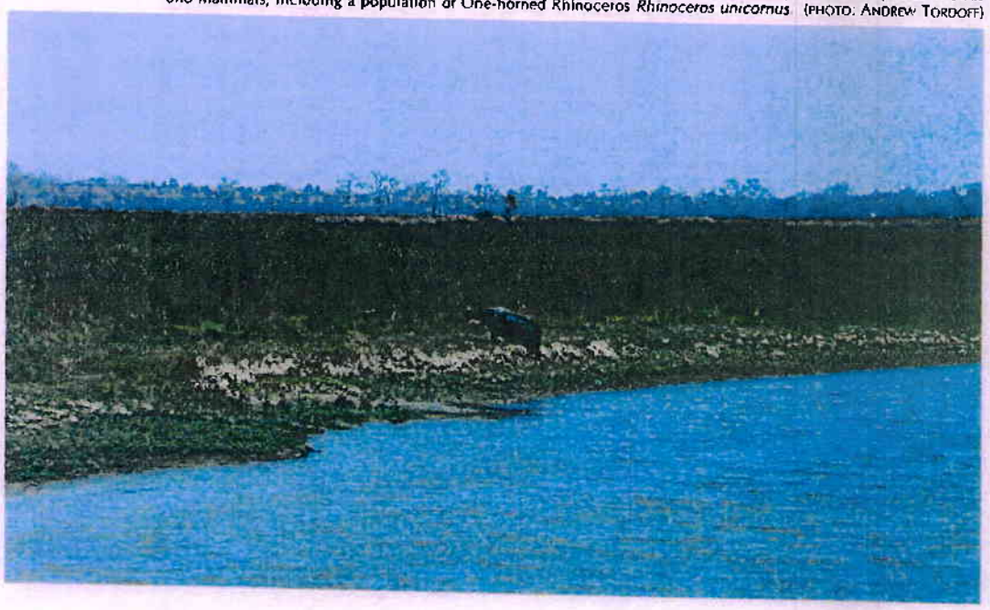
392 Langting-Mupa Reserve Forest — Unprotected — A1

Admin region North Cachar Hills Coordinates 25°34'N 93°8'E Altitude 150–500 m Area 49,300 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis*

393 Laokhowa and Burbachapori Sanctuaries — Protected — A1 — A2

Admin region Nagaon Sonitpur Coordinates 26°33'N 92°46'E Altitude 60–70 m Area 11,417 ha
Habitats Forest; Grassland; Shrubland; Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Houbaropsis bengalensis, Tringa guttifer, Pellorneum palustre* Endemic Bird Areas 131: Assam plains

The grasslands and wetlands in Kaziranga National Park (IBA 390) in Assam support many threatened species of birds and mammals, including a population of One-horned Rhinoceros *Rhinoceros unicornis*. (PHOTO: ANDREW TORDOFF)



824

Table 26 ... continued. Important Bird Areas in Assam (see Map 6)

394 Lumding–Marat Longri — Protected — A1

Admin region Karbi Anglong, Nagaon Coordinates 25°48'N 93°1'E Altitude 100–500 m Area 67,400 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Pavo muticus*

395 Majuli — Unprotected — A1 — A4iii

Admin region Jorhat Coordinates 26°54'N 94°1'E Altitude 85 m Area 88,000 ha Habitats Forest, Grassland, Shrubland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Houbaropsis bengalensis, Pellorneum palustre, Chrysomma altirostre, Paradoxornis flavirostris*

396 Manas National Park — Protected PR,WH — A1 — A2

Admin region Barpeta, Bongaigaon Coordinates 26°43'N 90°56'E Altitude Unknown Area 50,000 ha Habitats Forest, Grassland; Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Falco naumanni, Francolinus gularis, Houbaropsis bengalensis, Aceros nipalensis, Saxicola insignis, Pellorneum palustre, Chrysomma altirostre, Turdoides longirostris, Paradoxornis flavirostris, Prinia cinereocapilla, Chaetornis striatus, Ploceus megarhynchus* Endemic Bird Areas 131 Assam plains

397 Nameri National Park — Protected — A1 — A2

Admin region Sonitpur Coordinates 27°1'N 92°47'E Altitude 100–350 m Area 20,000 ha Habitats Forest, Grassland; Wetlands
Threatened species *Ardea insignis, Leptoptilos javanicus, Cairina scutulata, Haliaeetus leucoryphus, Gyps tenuirostris, Aquila clanga, Aquila heliaca, Falco naumanni, Francolinus gularis, Arborophila mandellii, Ardeotis nigriceps, Houbaropsis bengalensis, Columba punicea, Aceros nipalensis, Saxicola insignis, Pellorneum palustre, Turdoides longirostris, Prinia cinereocapilla* Endemic Bird Areas 130 Eastern Himalayas, 131 Assam plains

398 Orang National Park — Protected — A1 — A4ii

Admin region Darrang, Sonitpur Coordinates 26°38'N 92°23'E Altitude 40–50 m Area 7,881 ha Habitats Forest, Grassland, Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Houbaropsis bengalensis, Chaetornis striatus, Ploceus megarhynchus*

399 Pabho Reserve Forest — Unprotected — A1 — A2

Admin region Lakhimpur Coordinates 27°3'N 94°0'E Altitude 90 m Area 4,900 ha Habitats Forest; Grassland; Shrubland; Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Paradoxornis flavirostris* Endemic Bird Areas 131 Assam plains

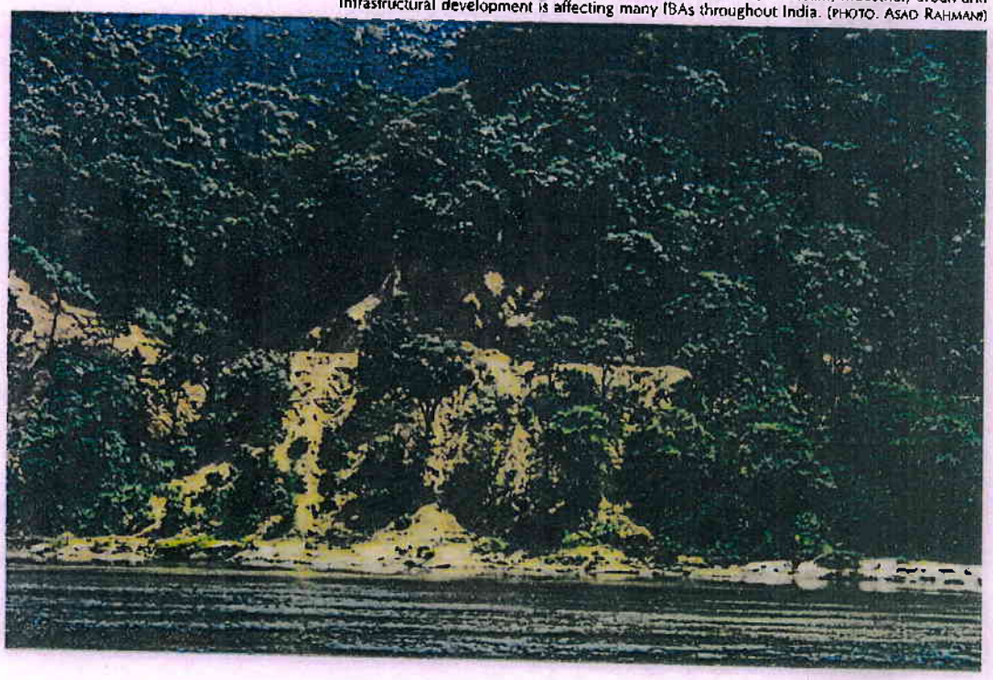
400 Pabitora Wildlife Sanctuary — Protected — A1 — A2 — A4iii

Admin region Marigaon Coordinates 26°9'N 92°11'E Altitude 50 m Area 3,883 ha Habitats Forest; Grassland; Wetlands
Threatened species *Pelecanus philippensis, Ardea insignis, Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Falco naumanni, Francolinus gularis, Houbaropsis bengalensis, Tringa guttifer, Pellorneum palustre, Ploceus megarhynchus* Endemic Bird Areas 131 Assam plains

401 Pani-Dihing Bird Sanctuary — Protected — A1 — A4iii

Admin region Sibsagar Coordinates 27°4'N 94°35'E Altitude 90 m Area 4,000 ha Habitats Grassland; Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Paradoxornis flavirostris*

A new road under construction at Subansiri (IBA 406) in Assam; industrial, urban and infrastructural development is affecting many IBAs throughout India. (PHOTO. ASAD RAHMANI)



825

Table 26 ... continued Important Bird Areas in Assam (see Map 6)

402 Ripu and Chirang Reserve Forest — Unprotected — A1 A2

Admin region Kokrajhar Coordinates 26°48'N 90°20'E Altitude 100–300 m Area 120,000 ha Habitats Forest, Grassland
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis, Houbaropsis bengalensis, Aceros nipalensis, Saxicola insignis, Pellorneum palustre, Chrysomma altirostre, Paradoxornis flavirostris* Endemic Bird Areas 131 Assam plains

403 Sibsagar Tanks — Unprotected — A1 A4i

Admin region Sibsagar Coordinates 26°59'N 94°38'E Altitude 100 m Area 150 ha Habitats Forest, Shrubland, Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Gyps bengalensis, Gyps tenuirostris, Anser anser, Anser indicus* Congregatory waterbirds

404 Son Beel — Unprotected — A1

Admin region Karimganj Coordinates 24°40'N 92°27'E Altitude 40 m Area 1,500 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Francolinus gularis*

405 Sonai-Rupai Wildlife Sanctuary — Protected — A1

Admin region Sonitpur Coordinates 26°55'N 92°35'E Altitude 100–300 m Area 22,000 ha Habitats Forest, Grassland
Threatened species *Cairina scutulata, Gyps tenuirostris, Francolinus gularis, Houbaropsis bengalensis, Aceros nipalensis*

406 Subansiri — Unprotected — A1 A2 A3

Admin region Dhemaji, Lakhimpur Coordinates 27°34'N 94°18'E Altitude 100–1,000 m Area Unknown Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Cairina scutulata, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris, Francolinus gularis, Arborophila mandellii, Houbaropsis bengalensis, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas Biomes AS09: Indochinese tropical moist forest

407 Tamaranga–Dalani–Bhairab Complex — Unprotected — A1 A4iii

Admin region Bongaigaon Coordinates 26°15'N 90°30'E Altitude 30–499 m Area 4,600 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus, Leptoptilos dubius, Aythya baeri, Haliaeetus leucoryphus, Gyps bengalensis, Gyps tenuirostris*

408 Tirap–Burhidihing — Unprotected — A1 A3

Admin region Tinsukia Coordinates 27°20'N 95°51'E Altitude 100–250 m Area 15,450 ha Habitats Forest
Threatened species *Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Heliopais personata* Biomes AS09: Indochinese tropical moist forest

409 Upper Dihing (East) Complex — Unprotected — A1 A2

Admin region Tinsukia Coordinates 27°24'N 95°38'E Altitude 120–200 m Area 19,200 ha Habitats Forest, Shrubland
Threatened species *Ardea insignis, Leptoptilos javanicus, Leptoptilos dubius, Cairina scutulata, Anas formosa, Gyps bengalensis, Gyps tenuirostris, Aquila clanga, Heliopais personata, Columba punicea, Aceros nipalensis, Stachyris oglei* Endemic Bird Areas 130: Eastern Himalayas, s079: Northern Myanmar lowlands

410 Upper Dihing (West) Complex — Unprotected — A1 A2

Admin region Dibrugarh, Tinsukia Coordinates 27°16'N 95°29'E Altitude 120–474 m Area 46,775 ha Habitats Forest
Threatened species *Ardea insignis, Leptoptilos javanicus, Cairina scutulata, Gyps bengalensis, Gyps tenuirostris, Columba punicea, Aceros nipalensis, Sitta formosa* Endemic Bird Areas 130: Eastern Himalayas

411 Urpod Beel — Unprotected — A1 A4iii

Admin region Goalpara Coordinates 26°5'N 90°36'E Altitude 40 m Area 1,000 ha Habitats Wetlands
Threatened species *Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris*

Table 27. Important Bird Areas in Meghalaya (see Map 6)

BR = IBA is wholly or partially a Biosphere Reserve

412 Balpakram Complex — Protected — A1 A2 A4i

Admin region South Garo Hills Coordinates 25°15'N 90°53'E Altitude 50–1,026 m Area 26,947 ha Habitats Forest, Grassland, Wetlands
Threatened species *Cairina scutulata, Gyps bengalensis* Endemic Bird Areas 130: Eastern Himalayas

413 Mawphlang Sacred Grove — Unprotected — A1 A2

Admin region East Khasi Hills Coordinates 25°28'N 91°44'E Altitude 1,800 m Area 100 ha Habitats Forest
Threatened species *Spelaeornis longicaudatus* Endemic Bird Areas 130: Eastern Himalayas

414 Nokrek National Park — Protected[BR] — A1 A2 A3

Admin region East Garo Hills, West Garo Hills Coordinates 25°31'N 90°12'E Altitude 600–1,412 m Area 4,748 ha Habitats Forest
Threatened species *Gyps bengalensis, Gyps tenuirostris* Endemic Bird Areas 130: Eastern Himalayas Biomes AS08: Sino-Himalayan subtropical forest; AS09: Indochinese tropical moist forest

415 Nongkhyllem Wildlife Sanctuary — Protected — A1

Admin region Ri-Bhoi Coordinates 25°52'N 91°50'E Altitude 200–950 m Area 2,900 ha Habitats Forest, Grassland
Threatened species *Gyps bengalensis, Gyps tenuirostris, Galimago nemoricola, Aceros nipalensis*

416 Norpuh Reserve Forests — Unprotected — A1 A2

Admin region Jaintia Hills Coordinates 25°9'N 92°27'E Altitude 100–1,000 m Area 16,110 ha Habitats Forest
Threatened species *Aceros nipalensis, Spelaeornis longicaudatus* Endemic Bird Areas 130: Eastern Himalayas

417 Riat Khwan – Umiam Lake — Unprotected — A1 A2

Admin region East Khasi Hills, Ri-Bhoi Coordinates 25°37'N 91°49'E Altitude 900–1,400 m Area 1,500 ha Habitats Forest, Wetlands
Threatened species *Aquila clanga* Endemic Bird Areas 130: Eastern Himalayas

418 Saipung — Unprotected — A3

Admin region Jaintia Hills Coordinates 25°20'N 92°45'E Altitude Unknown Area 15,000 ha Habitats Forest
Biomes AS08: Sino-Himalayan subtropical forest; AS09: Indochinese tropical moist forest

826

Table 27 ... continued. Important Bird Areas in Meghalaya (see Map 6)

419 Upper Shillong — Unprotected — A1 A2
Admin region East Khasi Hills Coordinates 25°32'N 91°50'E Altitude 1,800–1,961 m Area 1,296 ha Habitats Forest
Threatened species *Spelaeornis longicaudatus* Endemic Bird Areas 130: Eastern Himalayas

420 Cherapunjee: cliffs, gorges and sacred groves — Unprotected — A1 A2 A3
Admin region East Khasi Hills Coordinates 25°17'N 91°43'E Altitude 1,350 m Area 1,000 ha Habitats Forest; Grassland; Rocky Areas
Threatened species *Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas Biomes AS08: Sino-Himalayan subtropical forest

Table 28. Important Bird Areas in Nagaland (see Map 6)

421 Fakim Wildlife Sanctuary and Saramati area — Protected — A1 A2
Admin region Tuensang Coordinates 25°49'N 94°57'E Altitude 2,000–3,842 m Area 30,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

422 Intaki National Park — Protected — A1 A3
Admin region Dimapur, Kohima Coordinates 25°35'N 93°26'E Altitude 100–1,000 m Area 20,202 ha Habitats Forest
Threatened species *Cairina scutulata, Aceros nipalensis* Biomes AS08: Sino-Himalayan subtropical forest; AS09: Indochinese tropical moist forest

423 Khonoma Nature Conservation and Tragopan Sanctuary — Protected — A1 A2
Admin region Kohima Coordinates 25°40'N 94°2'E Altitude 1,900–2,750 m Area 2,500 ha Habitats Forest
Threatened species *Tragopan blythii, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

424 Mount Paona — Unprotected — A1 A2
Admin region Kohima Coordinates 25°30'N 93°39'E Altitude 1,400–2,062 m Area 3,000 ha Habitats Forest
Threatened species *Tragopan blythii, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

425 Mount Zanibu — Unprotected — A1 A2
Admin region Phek Coordinates 25°41'N 94°21'E Altitude 1,600–2,426 m Area 4,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Columba punicea, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

426 Mount Ziphu — Unprotected — A1 A2
Admin region Phek Coordinates 25°39'N 94°45'E Altitude 1,500–2,500 m Area 5,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Gallinago nemoricola, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

427 Pfutsero-Chizami — Unprotected — A1 A2
Admin region Phek Coordinates 25°36'N 94°20'E Altitude 1,400–2,300 m Area 7,000 ha Habitats Forest; Shrubland
Threatened species *Tragopan blythii, Syrmaticus humiae* Endemic Bird Areas 130: Eastern Himalayas

428 Puliebadze-Dzukou-Zapfu — Protected — A1 A2
Admin region Kohima Coordinates 25°53'N 94°0'E Altitude 1,600–3,048 m Area 10,923 ha Habitats Forest
Threatened species *Tragopan blythii, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

429 Satoi Range — Unprotected — A1 A2
Admin region Phek, Zunheboto Coordinates 25°52'N 94°40'E Altitude 1,800–2,400 m Area 5,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

Table 29. Important Bird Areas in Manipur (see Map 6)

R = IBA is wholly or partially a Ramsar Site

430 Ango or Anko Hills — Unprotected — A1 A2
Admin region Ukhrul Coordinates 25°13'N 94°34'E Altitude 500–2,000 m Area 40,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Pavo muticus, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

431 Bunning Wildlife Sanctuary — Protected — A1 A2
Admin region Tamenglong Coordinates 25°4'N 93°32'E Altitude 1,000–1,800 m Area 11,580 ha Habitats Forest
Threatened species *Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

432 Dzuku Valley — Unprotected — A1 A2
Admin region Senapati Coordinates 25°31'N 93°38'E Altitude 1,500–2,990 m Area 2,500 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

433 Jiri–Makru Wildlife Sanctuary — Protected — A1
Admin region Imphal East, Tamenglong Coordinates 24°51'N 93°17'E Altitude 80–500 m Area 19,800 ha Habitats Forest
Threatened species *Cairina scutulata, Pavo muticus, Aceros nipalensis*

434 Kailam Wildlife Sanctuary — Protected — A1 A2
Admin region Churachandpur Coordinates 24°12'N 93°25'E Altitude 500–2,018 m Area 18,750 ha Habitats Forest
Threatened species *Syrmaticus humiae, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

435 Loktak Lake and Keibul Lamjao National Park — Protected R — A1 A4iii
Admin region Bishnupur, Imphal West Coordinates 24°35'N 93°50'E Altitude 767–813 m Area 20,000 ha Habitats Wetlands
Threatened species *Pelecanus philippensis, Leptoptilos javanicus, Aquila clanga*

436 Shiroi Community Forest — Unprotected — A1 A2
Admin region Ukhrul Coordinates 25°6'N 94°28'E Altitude 1,500–2,570 m Area 5,000 ha Habitats Forest, Grassland
Threatened species *Tragopan blythii, Syrmaticus humiae, Aceros nipalensis* Endemic Bird Areas 130: Eastern Himalayas

827

Table 29 ... continued. Important Bird Areas in Manipur (see Map 6)

437 Yangoupokpi-Lokchao Wildlife Sanctuary — Protected — A1

Admin region Chandel Coordinates 24°18'N 94°13'E Altitude Unknown Area 18,480 ha Habitats Forest
Threatened species *Pavo muticus*

438 Zeilad Lake Sanctuary — Protected — A1

Admin region Tamenglong Coordinates 24°54'N 93°23'E Altitude 200–240 m Area 2,100 ha Habitats Forest, Wetlands
Threatened species *Cairina scutulata*

Table 30. Important Bird Areas in Tripura (see Map 6)

439 Gumti Wildlife Sanctuary — Protected — A1 — A4i

Admin region Dhalai, South Tripura Coordinates 23°39'N 91°47'E Altitude Unknown Area 38,954 ha Habitats Forest, Wetlands
Threatened species *Leptoptilos javanicus*

440 Trishna Wildlife Sanctuary — Protected — A3

Admin region South Tripura Coordinates 23°20'N 91°23'E Altitude 200 m Area 19,470 ha Habitats Forest
Biomes AS09: Indochinese tropical moist forest

Table 31. Important Bird Areas in Mizoram (see Map 6)

441 Blue Mountain (Phawngpui) National Park — Protected — A1 — A2

Admin region Saiha Coordinates 22°39'N 93°2'E Altitude 1,360–2,157 m Area 5,000 ha Habitats Forest
Threatened species *Tragopan blythii, Syrmaticus humiae, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

442 Dampa Tiger Reserve — Protected — A2

Admin region West Phaileng Coordinates 23°39'N 92°25'E Altitude 500–1,100 m Area 50,000 ha Habitats Forest, Grassland
Endemic Bird Areas 130: Eastern Himalayas

443 Lengteng Wildlife Sanctuary — Protected — A1 — A2

Admin region Champhai Coordinates 23°50'N 93°13'E Altitude 400–2,141 m Area 12,000 ha Habitats Forest
Threatened species *Syrmaticus humiae, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

444 Murlen National Park — Protected — A1 — A2

Admin region Champhai Coordinates 23°41'N 93°20'E Altitude 400–1,700 m Area 20,000 ha Habitats Forest
Threatened species *Syrmaticus humiae, Apus acuticauda* Endemic Bird Areas 130: Eastern Himalayas

445 Ngengpui Wildlife Sanctuary — Protected — A3

Admin region West Phaileng Coordinates 22°29'N 92°49'E Altitude 170–550 m Area 11,000 ha Habitats Forest
Biomes AS09: Indochinese tropical moist forest

446 Palak Dil — Unprotected — A3

Admin region Saiha Coordinates 22°20'N 92°57'E Altitude 650 m Area 2,000 ha Habitats Forest, Grassland, Wetlands
Threatened species *Cairina scutulata* Biomes AS09: Indochinese tropical moist forest

Table 32. Important Bird Areas in the Andaman and Nicobar Islands (see Map 6)

BR = IBA is wholly or partially a Biosphere Reserve

447 Austin Strait — Unprotected — A1 — A2

Admin region Andaman Islands Coordinates 12°56'N 92°52'E Altitude 272 m Area Unknown Habitats Coastline, Forest
Endemic Bird Areas 125: Andaman Islands

448 Baranglang–Raiters Creek — Unprotected — A1 — A2

Admin region Andaman Islands Coordinates 12°15'N 92°45'E Altitude Unknown Area Unknown Habitats Coastline, Forest
Endemic Bird Areas 125: Andaman Islands

449 Car Nicobar — Unprotected — A1 — A2

Admin region Nicobar Islands Coordinates 9°12'N 92°46'E Altitude Unknown Area Unknown Habitats Forest
Threatened species *Accipiter butleri* Endemic Bird Areas 126: Nicobar Islands

450 Chainpur and Hanspuri — Unprotected — A1 — A2

Admin region Andaman Islands Coordinates 12°46'N 92°48'E Altitude Unknown Area Unknown Habitats Forest
Endemic Bird Areas 125: Andaman Islands

451 Great Nicobar, Little Nicobar — Unprotected BR — A1 — A2

Admin region Nicobar Islands Coordinates 7°10'N 93°42'E Altitude Unknown Area 85,319 ha Habitats Coastline; Forest
Threatened species *Megapodius nicobariensis* Endemic Bird Areas 126: Nicobar Islands

452 Interview Island Wildlife Sanctuary — Protected — A1 — A2

Admin region Andaman Islands Coordinates 12°56'N 92°43'E Altitude 0–87 m Area 13,387 ha Habitats Forest
Endemic Bird Areas 125: Andaman Islands

453 Jarawa Reserve (Middle Andaman and South Andaman) — Unprotected — A1 — A2

Admin region Andaman Islands Coordinates 12°40'N 92°48'E Altitude 7 m Area 91,108 ha Habitats Coastline; Forest
Endemic Bird Areas 125: Andaman Islands

454 Kadakachang — Unprotected — A1 — A2

Admin region Andaman Islands Coordinates 11°44'N 92°44'E Altitude Unknown Area Unknown Habitats Coastline; Forest
Endemic Bird Areas 125: Andaman Islands

828

Table 12 ... continued. Important Bird Areas in the Andaman and Nicobar Islands (see Map 6)

458 Landfall Island Wildlife Sanctuary — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 13°40'N 93°0'E Altitude Unknown Area 2,948 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

456 Little Andaman — Unprotected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 10°45'N 92°30'E Altitude Unknown Area 52,000 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

457 Mahatma Gandhi Marine National Park (Wandoor National Park) — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 11°30'N 92°38'E Altitude 0–85 m Area 28,150 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

458 Mount Diavalo/Cuthbert Bay — Unprotected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 12°37'N 92°56'E Altitude 272 m Area Unknown Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

459 Mount Harriett National Park — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 11°50'N 92°47'E Altitude 0–481 m Area 4,662 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

460 Narcondam Island Wildlife Sanctuary — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 13°28'N 94°17'E Altitude 0–40 m Area 681 ha Habitats Coastline, Forest
■ Threatened species *Aceros narcondami* ■ Endemic Bird Areas 125 Andaman Islands

461 North and South Sentinel — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 10°58'N 92°13'E Altitude 0–40 m Area 4,700 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

462 North Reef Island Wildlife Sanctuary — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 13°05'N 92°43'E Altitude 0–27 m Area 348 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

463 Rani Jhansi Marine National Park — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 12°15'N 93°5'E Altitude Unknown Area 25,614 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

464 Saddle Peak National Park — Protected — A1 ■ A2 ■
Admin region Andaman Islands Coordinates 13°11'N 93°2'E Altitude 0–739 m Area 3,254 ha Habitats Coastline, Forest
■ Endemic Bird Areas 125 Andaman Islands

465 Tilangchong, Camorta, Katchal, Nancowry, Trinkat — Protected — A1 ■ A2 ■
Admin region Nicobar Islands Coordinates 8°12'N 93°31'E Altitude 0–323 m Area 1,683 ha Habitats Coastline, Forest, Grassland
■ Threatened species *Accipiter butleri, Megapodius nicobariensis, Hypsipetes nicobariensis* ■ Endemic Bird Areas 126 Nicobar Islands

ANNEXURE-2

THE ART OF LIVING

VVKI - NORTH APEX BODY

829

14th December, 2015

To,
Shri Arun Goel (IAS),
Vice Chairman, DDA

Sub: Construction Debris / Malba at The World Culture Festival venue

Dear Shri Goel,

Greetings from the Art of Living.

This is regarding The World Culture Festival that is being organised on the 11th, 12th and 13th of March 2016 in New Delhi, India for which Delhi Development Authority (DDA) has allotted us land vide letter No. F.10 (25) 2015 / PS / 2015 / 4827 dated 11/12/15.

We would like to bring to the notice of your good office that Construction Debris / Malba is spread over 25-30 acres at The World Culture Festival venue. If it is of any use to DDA, the same may be removed by DDA or we shall remove the same or we shall use the same for levelling of the ground.

This is for your kind information so that no issue is made out of this later on.

Warm Regards

Dhawan

Tripta Dhawan
Trustee, Vyakti Vikas Kendra – India

Enclosed: Photos of Construction Debris / Malba at The World Culture Festival venue

Apex Body Office Address:
B-182A, Sector-48, Noida - 201301 Tel.: 0120-4333616, 4333618
Mobile: 08586973701, 09582220524 E-mail: northapex@vvki.net
Head Office Address:
VYAKTI VIKAS KENDRA, INDIA (Registered Charitable Trust - Regn. No. 3255/IV/95-96, PAN NO: AAATV 1617L)
No 19, 39th 'A' Cross, 11th Main, 4th T Block, Jayanagar, Bangalore - 560041
Tel.: 91-80-67433600 Web: www.artofliving.org

P30

831

832

835

836

838

842

843

844

B45

846

ANNEXURE-3

847

Delhi Development Authority
Office of the Chief Engineer (East Zone)
16th floor, Vikas Minar, New Delhi.

No.F.10(25)SE(HQ)EZ/FS/DDA/ 4957 Dated:-21.12.15.

To

Ms. Tripta Dhawan,
Trustee, Vyakti Vikas Kendra-India,
B-182A, Sector-48,
NOIDA-201301.

Sub: World Culture Festival Venue.
Ref: Your letter dated 14.12.15 addressed to Vice-Chairman, DDA.

Madam,

Kindly refer to your letter cited above. In this context, I have been directed to convey the decision of Engineer Member on your reference as below:-

"Please convey them that VVKI may remove debris/malba at their cost. Regarding leveling, they should consult NGT directions."

You are requested to take action accordingly.

(Rippen Sharma)
S.E.(HQ)EZ

Copy to:-
1. Engineer Member, DDA, for kind information.
2. Chief Engineer (EZ), DDA, for kind information.

S.E.(HQ)EZ

MCS PROJECTS PVT. LTD

U-22, SECTOR-71, NOIDA-201307

446 MCS

ANNEXURE-4

848

To,
VVKI,
B-Block, Sector-48
Noida-201301
Kind Attn: Gautam Ji

SUB: Clearance of Construction Debris (Malba)

Dear Sir,

As per Verbal Contract given to us, we gave cleaned the site and collected the construction debris in the trucks. We have taken it away for filling at my construction site which we are constructing and put it to an eco-friendly use. Kindly clear my dues of Rs. 24000/- and oblige.

Sir Kindly release payment

I have inspected the site and found that work has been carried out satisfactorily.
Gautam 28.12.2015
GAUTAM VIG

Thanking You,

Your's Sincerely

For MCS Projects Pvt. Ltd

(Auth. Signatory)

260

ANNEXURE-5

849

शशि शेखर
SHASHI SHEKHAR, IAS
सचिव
SECRETARY
Tl. : 23710305
Fax : 23731563
E-mail : secy-mowr@nic.in

सत्यमेव जयते

भारत सरकार
जल संसाधन, नदी विकास और
गंगा संरक्षण मंत्रालय
श्रम शक्ति भवन,
रफी मार्ग, नई दिल्ली-110 001
GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT &
GANGA REJUVENATION
SHRAM SHAKTI BHAWAN,
RAFI MARG, NEW DELHI-110 001
http://www.wrmin.nic.in

Om Ple of Court

Respected Sir, 1/4/16.

1st April 2016

In accordance with order of Hon'ble NGT dated 09.03.2016 in case of OA 65 of 2016, Principal Committee has been asked to submit a report in relation to the steps required to be taken for restoration, restitution and rejuvenation of the flood plains damaged by holding of World culture Festival by Art of Living Foundation.

2. A meeting of Expert Member with the Chairman of Principal Committee was held on 30.03.2016 to discuss the steps & activities required to be studied for submitting a scientifically proper report to the Hon'ble NGT. It was decided in the meeting first to send a small team to the site to verify whether Art of Living foundation has vacated the land or not.

3. Accordingly a small team visited the site on 31.03.2016 and found that Art of Living Foundation has still not vacated the land. Photographs taken by the team are enclosed herewith clearly bring out that various structures are still standing on the site.

4. Assessment of extent of damage and activities required to be undertaken for ecological restoration of flood plains is only possible after the site is vacated by Art of Living Foundation to enable the Expert members to visit the site for detail assessment and recommendations.

5. Therefore, Principal Committee urges the Hon'ble NGT to :

a) direct DDA to inform Principal Committee when Art of Living Foundation vacates the site and assist the Principal Committee in every manner to undertake the site visits and for estimating the financial estimation of the restoration works.

b) extension of time of one month after DDA intimates that Art of Living Foundation has completely vacated the site, may kindly be considered for the Principal Committee to submit the report as directed in Order dated 9.3.2016.

Warm & Personal Regards,

Yours sincerely,

Shashi Shekhar

(Shashi Shekhar)

National Green Tribunal New Delhi

Hon'ble Justice Swatantar Kumar
Chairman,
National Green Tribunal

PRS/NGT/593
1/4/16

जल

TRUE COPY

National Green Tribunal

TRUE COPY

THE ART OF LIVING

ANNEXURE-6

VVKI - NORTH APEX BODY

(Annexure 1 to the affidavit dated 30.05.2016)

28th March, 2016

To,
The Vice Chairman,
Delhi Development Authority,

Subject – The World Culture Festival

Dear Sir,

Greetings from the Art of Living.

This is to bring to the notice of your good-office that we are in the process of cleaning up the venue / dismantling the stage etc. The same shall take a couple of weeks or so.

We would also like to bring to the notice of your good-office that the venue is now free from illegal encroachments, etc and we thus request your good office to ensure adequate security at the venue so that no illegal encroachment takes place.

Warm regards

Tripta Dhawan
Trustee, Vyakti Vikas Kendra - India

Apex Body Office Address:
B-182A, Sector-48, Noida - 201301 Tel.: 0120-4333616, 4333618
Mobile: 08586973701, 09582220524 E-mail: northapex@vvki.net
Head Office Address:
VYAKTI VIKAS KENDRA, INDIA (Registered Charitable Trust - Regn. No. 3255/IV/95-96, PAN NO: AAATV1617L)
No 19, 39th 'A' Cross, 11th Main, 4th T Block, Jayanagar, Bangalore -560041
Tel.: 91-80-67433600 Web: www.artofliving.org

www.ddadelhi.com

DELHI DEVELOPMENT AUTHORITY
(Receipt & Despatch Cell)

Acknowledgement

851

Receipt Number : REC / M / 16 / 2,788 Date: 28/03/2016 11:21:26AM

Letter Date : 28-03-20

Subject : SUBMISSION

DDA file Number : NIL

Received From : TRIPTA DHAWAN

Addressed To : M VICE-CHAIRMAN, DDA

The correctness of the above enclosures are subject to verification by the concerned Department

2. For any type of clarification and inquiry, please contact the branch officer concerned on any working Monday,Tuesday & Thursday between 2.30 PM to 5.00 P.M.

Received By : PRASHOTAM

R & D SYSTEMS

THE ART OF LIVING

VVKI - NORTH APEX BODY

18th April, 2016

852

The Vice Chairman,
Delhi Development Authority

Sub: Handing over of World Culture Festival Event Site

Dear Sir,

We, at Vyakti Vikas Kendra - India ('VVKI'), are pleased to express our gratitude to you for your kind support in hosting The World Culture Festival to celebrate Art of Living's 35 years of service, humanity, spirituality and human values on March 11th, 12th and 13th 2016. This global event has been successfully concluded with positive notes across the globe. In this relation we would like to bring to your kind notice:

1. That the site allotted to VVKI for organising The World Culture Festival on March 11th, 12th and 13th 2016 through your letter No. F.10 (25) 2015 / FS / 2015 / 4861 dated 15/12/15 has been cleared from all our temporary' structural units including stage infrastructure, scaffoldings, carpets, tents, toilet blocks, chairs, furniture and all other temporary fixtures.
2. That the pontoon bridges assembled for the event by Public Works Department, Government of Uttar Pradesh and the Indian Army, Ministry of Defence, Government of India; have been dissembled and removed from the site in totality.
3. That VVKI and / or its associate organisations has not constructed any permanent structure, therefore there is no question of leaving any debris or remnants at the event site
4. That the volunteers of Art of Living have cleared the site by handpicking all the accidental litters whatsoever that was left at the site. We also engaged professional cleaning organizations such as BVG, SPML & Zero Waste for the said purpose. With their combined efforts, the venue is now free from any waste and garbage including plastic bottles, snack wrappers etc.
5. That all the activities were confined within the land parcel allotted to us for the said event.
6. That no earthen material has ever been brought at the event site, except for borrowed earth from the same site.
7. That except for the sediments and / or inert earthen material originating from the same land parcel, nothing has been left over the flood plain.
8. That the topography of the land parcel allotted for the event has been kept unaltered to the extent possible.
9. That any further alteration / clearing is possible only by direction of Hon'ble National Green Tribunal in the matter of O.A. 65 / 2016.

Apex Body Office Address:
B-182A, Sector-45, Noida-201301 Tel: 0120-[illegible]
Mobile: [illegible], E-mail: [illegible]
Head Office Address:
VYAKTI VIKAS KENDRA INDIA (Registered Charitable Trust, Regd. No. [illegible]) PAN NO: [illegible]
No. 19, 39th 'A' Cross, 11th Main, 4th T Block, Jayanagar, Bangalore - 560041
Tel: 91-80-67433600 Web: www.artofliving.org

THE ART OF LIVING

VVKI - NORTH APEX BODY

853

10. That the land parcel allotted to VVKI for the captioned festival is not protected from trespassers and groups. Our volunteers have noticed several groups at this site (including but not limited to) professional and / or amateur kite flying groups; cricket playing groups; leisure biking, horse riding and grazing cattle in the area. That they are littering the ground with various kind of non-biodegradable rappers and plastic bottles; threads etc. Controlling and managing their activities is beyond the capacity of VVKI and in future their littering should not be blamed on us. (Annexure 1, 2, 3, 4) We had also brought to the notice of your good offices the lack of security at the venue via the attached letter. (Annexure 5) The concern still stands.
11. That we would further like to bring to your notice that certain farmers have been using JCB's on the portion of the land which they use for farming activities. This is to bring the same on record for your information.
12. That VVKI has complied with the conditions outlined by your good offices during the grant of permission and also with the directions of Hon'ble NGT in its orders dated 09.03.2016 and 11.03.2016 in its true spirit before, during and after the event.

Warm regards

Tripta Dhawan
Trustee, Vyakti Vikas Kendra – India

Enclosed: Annexure 1
Annexure 2
Annexure 3
Annexure 4
Annexure 5

cc : The Chairperson,
Hon. NGT

Apex Body Office Address:
B-192A, Sector-18, Noida - 201301 Tel.: 0120-4333516, 4333518
Mobile: 08586972701, 09582220021 E-mail: [illegible]
Head Office Address:
VYAKTI VIKAS KENDRA, INDIA [illegible]
No 19, 39th 'A' Cross, [illegible]
Tel.: 91-80-[illegible]

DELHI DEVELOPMENT AUTHORITY
दिल्ली विकास प्राधिकरण
(Receipt & Despatch Cell)
प्राप्ति और प्रेषण सेल

www.dda.org.in

Acknowledgement
प्राप्ति सूचना

854

Receipt Number : REC / M / 167 5168 Date: 18/04/2016 11:34:15
रसीद संख्या

Letter Date : 18/4/16
पत्र की तिथि

Subject : SUBMISSION
विषय

DDA file Number : NIL
द की ए फाईल संख्या

Received From : TRIPTA DHAWAN (TRUSTEE VVK-IND
से प्राप्त

Addressed To : M VICE CHAIRMAN, DDA
को संबोधित

Enclosures Attached :
संलग्न

Serial no. क्रम संख्या	code कोड	Copy. प्रतियां	Description विवरण
1	24	1	MISCELLANEOUS
2	68	4	PHOTOGRAPHS

Total Pages : 5
कुल पृष्ठ

1.The correctness of the above enclosures are subject to verification by the concerned Department
उपर्युक्त संलग्नों की परिशुद्धता संबंधित विभाग द्वारा सत्यापन के अधीन है।

2.Visiting Hours for general public to visit various departments on Public Dealing Days i.e. every working Monday, Tuesday and Thursday.

(i) 2.30 p.m. to 3.30 p.m.:Only allottees/applicants having prior appointment in writing from the concerned branches of Housing, Lands, etc. will be allowed.

(ii) 3.30 p.m. to 5.00 p.m.:All (without appointment) will be allowed.

Received By : SHRI KRISHAN
प्राप्त कर्ता

855

THE ART OF LIVING

VVKI - NORTH APEX BODY

28th April, 2016

To,
Vice Chairman,
Delhi Development Authority.

Subject: 'World Cultural Festival' venue handover - Photos

Dear Sir,

This is in regard to the request made to DDA Senior Standing Counsel Shri Rajiv Bansal & Shri V.K. Kashyap, Executive Engineer, Eastern Division No. 8, DDA during the hearing of O.A. 65/2016 on 22nd April, 2016 at the Hon. NGT for a joint visit to the WCF site to complete the official formalities in regard to the handing over of the site. While we wait for the same to be done, to put the status of the site on record, as on the day it was vacated / handed over by us on 18th April, 2016, please find enclosed 42 documented pictures (Annexure 1) highlighting the venue which were clicked on 17th April, 2016.

It has also come to our knowledge that subsequent to our vacating the site, there have been some construction debris / malba dumping activities at the site. This could be because of the lack of security which has already been brought to the notice of your good office vide our attached letters dated 28th March, 2016 & 18th April, 2016. (Annexure 2 & 3)

Under the circumstances, it is requested to kindly expedite the joint visit to the site by fixing a date / time and complete the official formalities in regard to the handing over of the site if any.

Warm regards

Dhawan

Tripta Dhawan
Trustee, Vyakti Vikas Kendra – India

Annexure 1 - 42 pictures
Annexure 2 – Letter dated 28th March, 2016
Annexure 3 – Letter dated 18th April, 2016

Copy to: Hon. Chairperson, NGT

Apex Body Office Address:
B-182 A, Sector 48, Noida - 201301 Tel: 0120-4333616 / 4333618
Mobile: 08586973701 / 09582220524 E-mail: northapex@vvki.net
Head Office Address:
VYAKTI VIKAS KENDRA, INDIA (Registered Charitable Trust, Regn. No. 3255/IV/95-96, PAN NO. AAATV 1617L)
No. 19, 39th A Cross, 11th Main, 4th T Block, Jayanagar, Bangalore - 560041
Tel: 91-80-67433600, Web: www.artofliving.org

DELHI DEVELOPMENT AUTHORITY
दिल्ली विकास प्राधिकरण
(Receipt & Despatch Cell)
प्राप्ति और प्रेषण कक्ष

www.dda.org.in

856

Acknowledgement
प्राप्ति सूचना

Receipt Number : REC / M / 16 / 3372 Date: 28/04/2016 2:15:41P
रसीद संख्या

Letter Date : 28/4/16
पत्र की तिथि

Subject : SUBMISSION
विषय

DDA file Number : NIL
डी डी ए फिसिल संख्या

Received From : TRIPTA DHAWAN
से प्राप्त

Addressed To : M VICE CHAIRMAN, DDA
को संबोधित

Enclosures Attached :-
संलग्न

Serial no. क्रम संख्या	code कोड	Copy प्रतिलिपि	Description विवरण
1	24	10	MISCELLANEOUS
2	68	42	PHOTOGRAPHS

Total Pages 52
कुल पृष्ठ

1.The correctness of the above enclosures are subject to verification by the concerned Department
उर्पुक्त संलग्नों की परिशुद्धता संबंधित विभाग द्वारा सत्यापन के अधीन है।

2.Visiting Hours for general public to visit various departments on Public Dealing Days i.e. every working Monday, Tuesday and Thursday,
(i) 2.30 p.m. to 3.30 p.m.:Only allottees/applicants having prior appointment in writing from the concerned branches of Housing, Lands, etc. will be allowed.
(ii) 3.30 p.m. to 5.00 p.m.:All (without appointment) will be allowed.

Received By : AJAY
प्राप्त कर्ता

857

THE ART OF LIVING

VVKI - NORTH APEX BODY

28th April, 2016

To,
Vice Chairman,
Delhi Development Authority.

Subject: 'World Cultural Festival' venue handover - Photos

Dear Sir,

This is in regard to the request made to DDA Senior Standing Counsel Shri Rajiv Bansal & Shri V.K. Kashyap, Executive Engineer, Eastern Division No. 8, DDA during the hearing of O.A. 65/2016 on 22nd April, 2016 at the Hon. NGT for a joint visit to the WCF site to complete the official formalities in regard to the handing over of the site. While we wait for the same to be done, to put the status of the site on record, as on the day it was vacated / handed over by us on 18th April, 2016, please find enclosed 42 documented pictures (Annexure 1) highlighting the venue which were clicked on 17th April, 2016.

It has also come to our knowledge that subsequent to our vacating the site, there have been some construction debris / malba dumping activities at the site. This could be because of the lack of security which has already been brought to the notice of your good office vide our attached letters dated 28th March, 2016 & 18th April, 2016. (Annexure 2 & 3)

Under the circumstances, it is requested to kindly expedite the joint visit to the site by fixing a date / time and complete the official formalities in regard to the handing over of the site if any.

Warm regards

Dhawan

Tripta Dhawan
Trustee, Vyakti Vikas Kendra – India

Annexure 1 - 42 pictures
Annexure 2 – Letter dated 28th March, 2016
Annexure 3 – Letter dated 18th April, 2016

RECEIPT
Date. 28/4/16 11:15 AM
Receipt & Issue Branch
National Green Tribunal
Principal Bench, New Delhi

Copy to: Hon. Chairperson, NGT

Apex Body Office Address:
[illegible] B-152A, Sector-48, Noida - 201301, Tel: 0120-4393616, 4393618, [illegible]
Mobile: 08586973701, 09582220524, E-mail: northapex@vvki.net
Head Office Address:
VYAKTI VIKAS KENDRA INDIA (Registered Charitable Trust) (Regn. No. 4255/IV/95-96), PAN NO. AAATV2617[illegible]
No.19, 39th A Cross, 11th Main, 4th T Block, Jayanagar, Bangalore - 560041
Tel: 91-80-67433600, Web: www.artofliving.org

Annexure 2 to Affidavit dated 30.05.2016

858

Issues Pertaining Three Approach Ramps Laid to Access Event Venue of World Culture Festival from DND Flyway

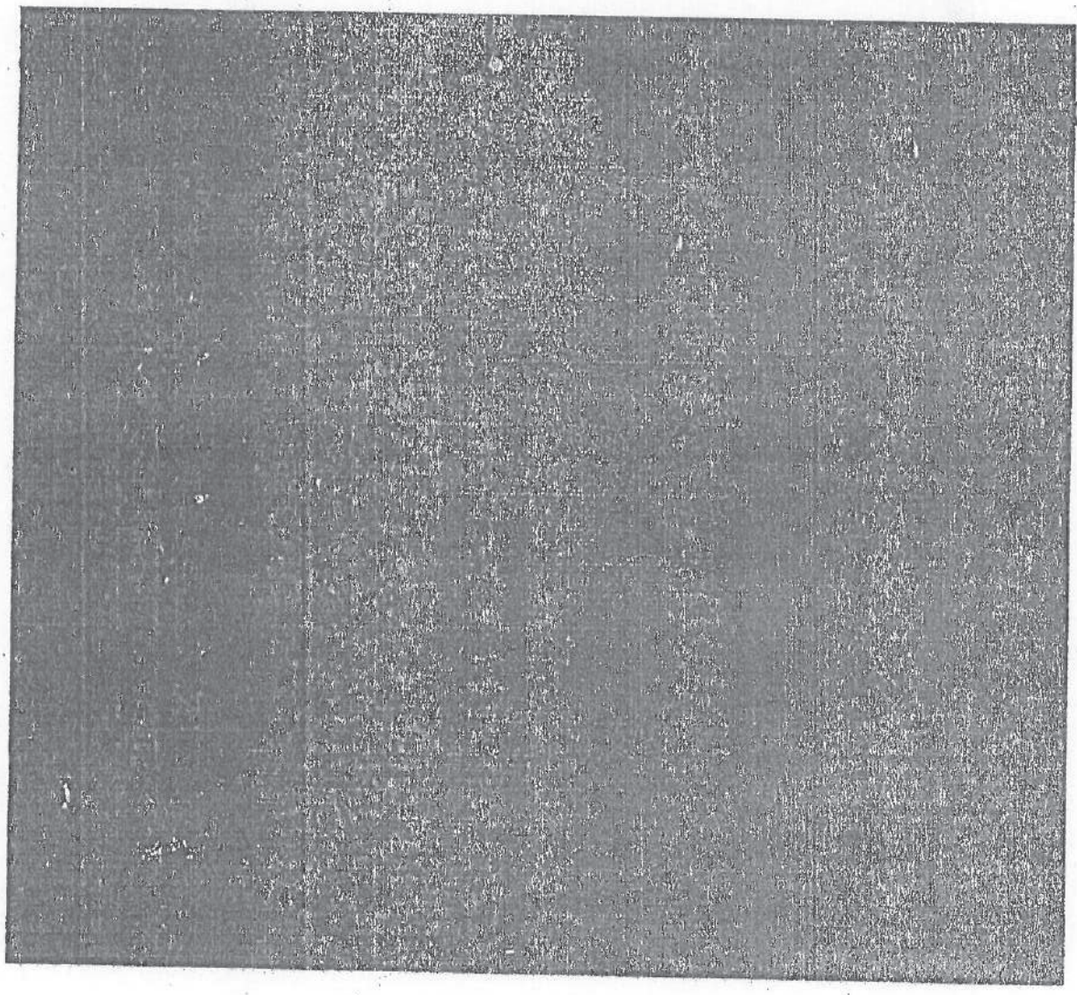


Photo-1: Earthen Ramp at the Event Venue

A. General Assessment

Based on three site visits, it has been ascertained that:

1. All the three earthen ramps were constructed as temporary structure at event venue of World Culture Festival 2016, with an aim to facilitate entry into the event venue from DND Flyway.
2. All the three earthen ramps are within the right-of-way (ROW) of DND Flyway and not over virgin land-parcel of Yamuna floodplain.
3. Approach level of all the three ramps from DND-Flyway side matches with the level of soft-shoulder of road and on the event venue side approach level matches with natural ground level. The gradient of the ramp is slightly varying but they are within comfort and safety limits for pedestrians as well as for slow movement of motorised vehicle.
4. All the three earthen ramps made up of inert earthen material with an environment friendly soil top. At any point of time during or prior to the event, no hard or soft pavement was laid over the earthen ramps.
5. **The embankment of DND flyway is a mechanically compacted earthen structure (manmade-ground) protected by stone pitching and gabion boxes on either side, with adequate design to sustain dynamic and static load of DND flyway along with adequate factor of safety in engineering terms.**
6. All the three ramps are constructed over (on top of) stone-pitched mechanically compacted earthen embankment of DND flyway (without altering or disturbing the embankment of DND flyway), consequently they are not on natural ground of floodplain, except for few centimetres (if any) along the approach with natural ground level.
7. Therefore entire mechanical load of these three earthen ramps (including the vehicular movement over it), is being transferred over mechanically compacted embankment of DND flyway and it has apparently no loading or physical impact over the natural floodplain of Yamuna at the event venue. As a result actual impact due to earthen ramps prior, during or after the event is likely to be insignificantly small.

8. Any attempt to relate earthen ramps as a permanent structure over virgin floodplain is erroneous and misrepresentation of the facts.

589

B. Environmental Impact(s) of These Three Ramps:

Environmental impacts (in qualitative and quantitative terms) as a result of these three earthen ramps appears to be either neutral or positive; nevertheless that needs to be assessed by an expert during the detailed assessment of event induced environmental impacts as per the direction of Honourable National Green Tribunal in the matter of 'Original Application No. 65/2016'.

In qualitative terms the ramps are likely to cast following positive impacts:

1. In post event period these three ramps would support more vegetation (grasses and small trees) compared to the stone pitched compacted earthen embankment of DND-flyway. They are likely to be naturalised in a very short span of time with arrival of monsoon in Delhi.
2. Due to the advantage of slope, these ramps are likely to facilitate future ecological management of the site, by providing an easy access to the site during restoration and rejuvenation works.
3. These three ramps would prevent health and safety hazards of humans as well as wildlife in case of any emergency and/or needs associated with capturing and evacuation of estranged wildlife.
4. These three ramps would facilitate policing, par-military and military operations in times of emergency.
5. These ramps would also support entry of ambulance and vehicle mounted medical support system in times of emergency.

C. Environmental Issues Associated with Immediate Removal of These Three Earthen Ramps:

Removal of these ramps would require:

1. Entry of earthmoving equipment and dumpers in the floodplain area, which is not advisable in light of the issues raised before Honourable National Green Tribunal in the matter of 'Original Application No. 65/2016'.
2. Removal of these ramps in dry and windy season of April-May 2016, is likely to generate plumes of fugitive dust despite precautions, which would cast its own impacts on ambient air quality as defined in 'THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981 No. 14 of 1981 [29th March, 1981], within an area under litigation (and populated areas) before Honourable National Green Tribunal in the matter of 'Original Application No. 65/2016'.

Therefore any plan pertaining removal of these ramps should be implemented with prior direction of Honourable National Green Tribunal.

860

Pic -II

Pg 1/5 of Pictures

Pic - TV

Pg 2/8 of pictures

Pic - V

862

Pic - VI

Pic - VII

863

Pic - VIII

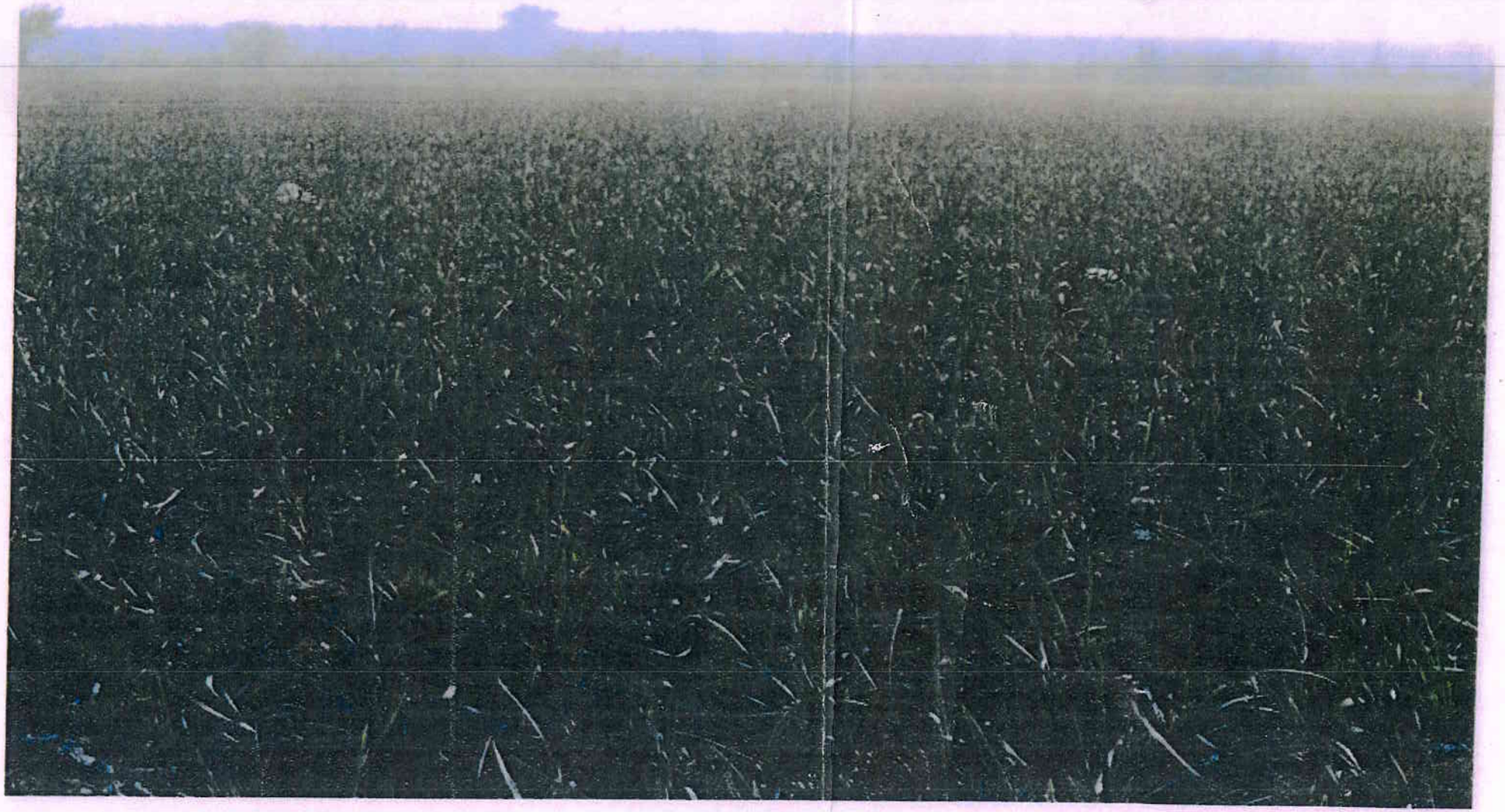
Pg 418 of PICTURES

Pic - IX

864

Pg 5/8 of Pictures

865



18th May, 2016

Pg 8/8 of Pictures

866

18th May, 2016

Pg 7/8 of Pictures

867

18th May, 2016

Pg 8/8 of Pictures