

Proceedings of the Bangladesh Workshop

Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza



Proceedings of the Bangladesh Workshop

Role of Wild Birds in the Persistence and Spread
of Highly Pathogenic Avian Influenza

Organized by
IUCN Bangladesh Country Office

Supported by
USDA and FAO

Date
17-19 March 2009

IUCN, International Union for Conservation of Nature
United States Department of Agriculture (USDA)
Food and Agriculture Organization of the United Nations (FAO)
May 2009

The designation of geographical entities in this book, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN concerning the legal status of any country, territory, administration, or concerning the delimitation of its frontiers or boundaries. The views expressed in this publication are authors' personal views and do not necessarily reflect those of IUCN.

This document is published with financial support received from United States Department of Agriculture (USDA) and Food and Agriculture Organization (FAO) under the workshop on the 'Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza'.

Published by: IUCN, International Union for Conservation of Nature, United States Department of Agriculture (USDA), Food and Agriculture Organization of the United Nations (FAO)



Copyright: © 2009 International Union for Conservation of Nature and Natural Resources, USDA and FAO

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission of the copyright holders.

Citation: IUCN, USDA, FAO, 2009. Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza: Proceedings of the Bangladesh Workshop. IUCN, International Union for Conservation of Nature, United States Department of Agriculture (USDA), Food and Agriculture Organization of the United Nations (FAO), Dhaka, Bangladesh, pp xii+40

ISBN: 978 - 984 - 33 - 0246 - 5

Design & Layout: Sheikh Asaduzzaman

Cover Photo : A flock of Lesser Whistling-Duck *Dendrocygna javanica*

Cover Photo by: Subrata Biswas

Printed by: Mamun Printing Press

Available from: IUCN, International Union for Conservation of Nature
Bangladesh Country Office
House 11, Road 138, Gulshan 1
Dhaka 1212, Bangladesh
Tel: 880-2-9890423, 9890395
Fax: 880-2-9892854
E-mail: info@iucnbd.org

Table of Contents

Foreword	v
Executive Summary	vii
CHAPTER 1: OPENING SESSION	1
1.1 Welcome Address by Dr. Ainun Nishat	1
1.2 Mark Gilkey, USDA/APHIS/ International Service	1
1.3 Major Themes	2
1.3.1 Highly Pathogenic Avian Influenza (HPAI) and wild birds	2
Dr. Dale Nolte, <i>USDA/APHIS/Wildlife Services</i>	2
Dr. Taej Mundkur, <i>FAO and Wetlands International</i>	4
Dr. Md Afzal Hossain, <i>DLS</i>	5
Dr. Mohammad Mostafa Feeroz, <i>Jahangirnagar University</i>	6
1.3.2 Regional perspectives on HPAI and its relationship with wild birds	6
Dr. Ronald Halder, <i>Ornithologist</i>	6
Dr. Taej Mundkur, <i>FAO and Wetlands International</i>	7
Dr. Shankar Mondal, <i>STOP AI Bangladesh</i>	7
1.3.3 Wild bird conservation and HPAI surveillance	8
Dr. Zandra Hollaway André, <i>USAID</i>	8
Dr. Taej Mundkur, <i>FAO and Wetlands International</i>	9
Dr. Leo Loth, <i>FAO</i>	10
CHAPTER 2: GROUP WORK	13
2.1 Group 1 – Awareness, communication and capacity development	13
2.2 Group 2 – Participatory response to wild bird mortality	14
2.3 Group 3 – Surveillance, research and technology transfer	15
2.4 Group 4 – Regional cooperation	16
CHAPTER 3: CONCLUDING SESSION	17
3.1 Dr. Ainun Nishat, Country Representative, IUCN Bangladesh	19
3.2 Dr. Dale Nolte, USDA/APHIS/Wildlife Services	19
3.3 Dr. Mihir Kanti Mazumder, Secretary, Ministry of Environment and Forests	19
3.4 Mr Mohammad Shah Alam, Secretary, Ministry of Fisheries and Livestock	20
CHAPTER 4: FIELD TRIP	23
Workshop Agenda	29
List of Participants of the Workshop	31

List of Abbreviations

AI	Avian Influenza
BLRI	Bangladesh Livestock Research Institute
BNHS	Bombay Natural History Society
CAF	Central Asian Flyway
CD	Compact Disk
CMS	The Convention on the Conservation of Migratory Species of Wild Animals
DLS	Department of Livestock Services
FAO	Food and Agriculture Organization of the United Nations
FAO EMPRES	Food and Agriculture Organization Emergency Prevention System
GoB	Government of Bangladesh
HPAI	Highly Pathogenic Avian Influenza
IVRI	Indian Veterinary Research Institute
IUCN	International Union for Conservation of Nature
JU	Jahangirnagar University
LPAI	Low Pathogenic Avian Influenza
MoEF	Ministry of Environment and Forests
MoFL	Ministry of Fisheries and Livestock
MoH	Ministry of Health
NAIPRP	National Avian and Pandemic Influenza Preparedness and Response Plan
NGOs	Non-Governmental Organizations
NIAID	National Institute of Allergy and Infectious Diseases
PBA	Poultry Breeders Associations
STOP AI	STamping Out Pandemic and AI
UNDP	United Nations Development Program
UNEP-CMS	United Nations Environment Program-The Convention on the Conservation of Migratory Species of Wild Animals
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
UN	United Nations
WI	Wetlands International
WWF	World Wildlife Fund
WRC	Wildlife Rescue Centre

FOREWORD

IUCN Bangladesh has organized the workshop on the 'Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza' on 17-18 March 2009, supported by the United States Department of Agriculture (USDA) and Food and Agriculture Organization of the United Nations (FAO).

This workshop report compiles and summarizes the papers, discussions and recommendations put forward by the participants to ensure better surveillance and effective implementation of the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011).

We would like to express our gratitude to the participants in the workshop, and particularly to the presenters for providing insights on such crucial and emerging issues of Avian Influenza.

We would also like to thank Mr. Mohammad Shah Alam, Secretary, Ministry of Fisheries and Livestock, and Dr. Mihir Kanti Mazumder, Secretary, Ministry of Environment and Forests to grace the Concluding Session of this workshop.

We would like to take the opportunity to thank Dr. Taej Mundkur, Wetlands International; Peter Benson, USDA/FAS/OCBD; Marc Gilkey, USDA/APHIS/International Services and Dr. Dale Nolte, USDA/APHIS/Wildlife Services for their valuable inputs for further enrichment of this report.

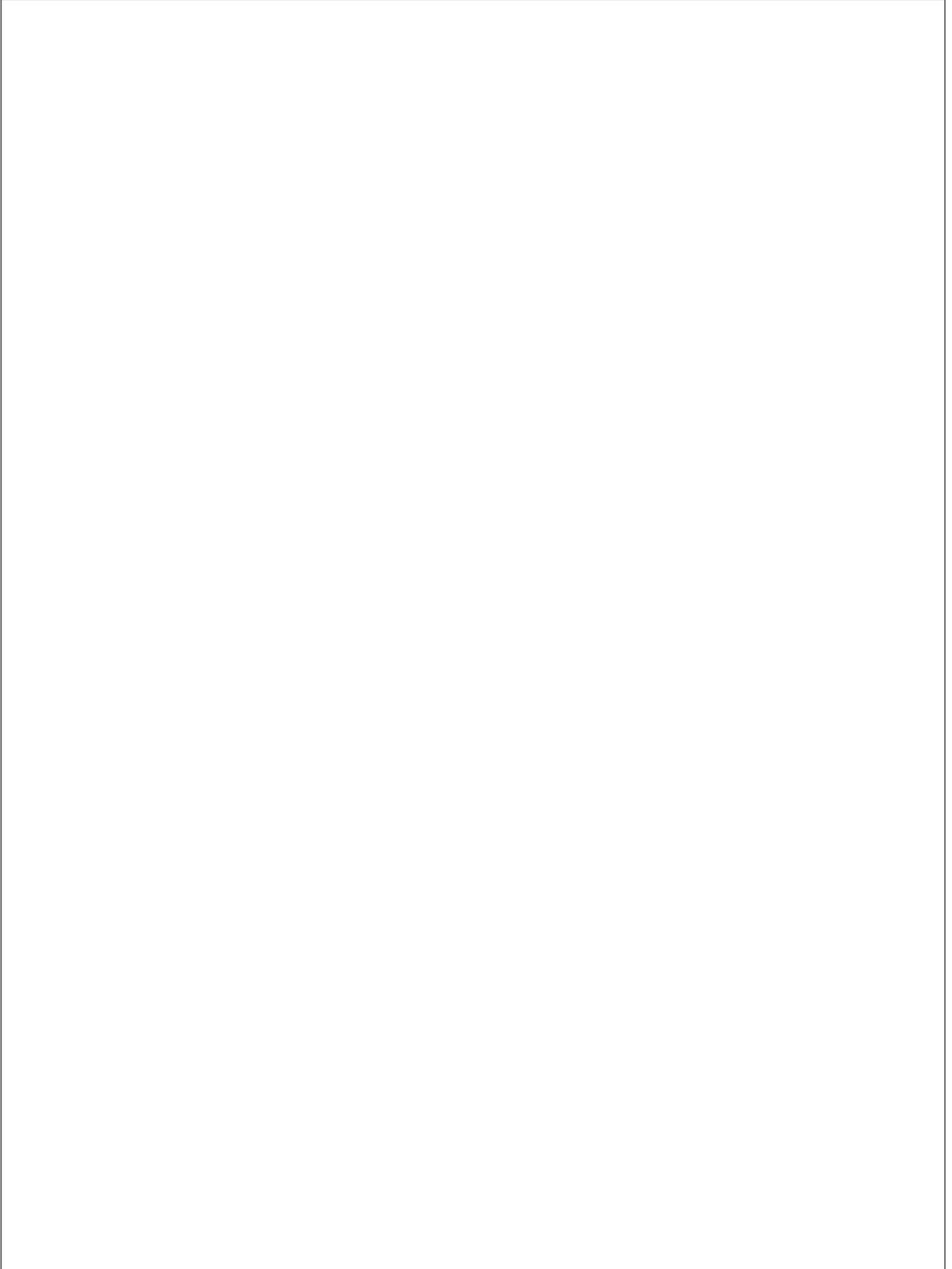
We also would like to thank our colleagues from IUCN Bangladesh Country Office, Raquibul Amin, Dr. Haseeb Md. Irfanullah, Ahana Adrika, Jennifer Namgyal and Shiekh Asaduzzaman for their contribution in compilation, editorial input and printing this report.

All the presentations including the outcome of the group works and the photographs taken during the workshop have been compiled in a CD which can be found on inner back cover of this proceeding. We have deliberately done this to reduce paper use as a part of our environmental responsibility.

We hope that the recommendations mentioned in this report would suffice the purpose of sustainable management and conservation, monitoring and surveillance of wild birds in Bangladesh.

Dhaka
May 2009

Ainun Nishat, PhD
Country Representative
IUCN Bangladesh Country Office



EXECUTIVE SUMMARY

IUCN Bangladesh organized a two day workshop on the Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza, (HPAI) on the 17-18 March 2009 at the Radisson Water Garden Hotel, Dhaka. The workshop was supported by the United States Department of Agriculture (USDA) and Food and Agriculture Organization of the United Nations (FAO), and was followed by a field visit to Jahangirnagar University and the Bangladesh Livestock Research Institute (BLRI) on the 19 March 2009.

Highly Pathogenic Avian Influenza (HPAI) subtype H5N1 was first reported in Bangladesh in 2007. Containment and control measures required to deal with this virus have negatively affected commercial and small scale domestic poultry production and impacted on the use of poultry and eggs as a cheap food source for the public. While to date it has not been reported in Bangladesh in large numbers of wild (resident and migratory) birds, the potential role of these birds is an issue that cuts across several key sectors including livestock and poultry, agriculture, environment and health. The workshop brought together these different stakeholders and provided a neutral platform to encourage debate and identify a way forward. Attending stakeholders from these sectors included government departments (Department of Livestock Services, BLRI, Forest Department, Health Services, Environment), industry bodies (Poultry Industry Association, Poultry Breeders Association), research organizations, public and private universities, Non-Governmental Organisations (NGO) and development partners.

Outcomes

Key observations and recommendations made in the workshop include:

- An increased understanding of interactions between wild migratory and resident species and domestic poultry and bidirectional movement of AI and related zoonotic disease is needed to improve national responses and control measures. Collaborative studies should be initiated to address this.
- Attempts to control HPAI through responses such as culling or disturbing wild birds, or destroying wetland habitats are not feasible and diversionary, and thus should not be attempted, not least since it may exacerbate the problem by causing further dispersion of potentially infected birds. This follows international consensus of the Ramsar Convention and Convention on the Conservation of Migratory Species of Wild Animals (CMS) to which Bangladesh is a signatory.
- Effective implementation of the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011) will require increased allocations of resources to implement field monitoring, disease surveillance activities and related studies in wild birds.

- A national committee should be formed to review the Plan and monitor its implementation to ensure that adequate emphasis is placed on AI and wildlife, particularly wild birds.
- Establishing long term strategic field monitoring and disease surveillance programmes of wild birds across the high risk areas is essential. Such efforts require capacity building of wildlife staff, veterinarians and NGOs in field monitoring techniques, capture, handling and sampling of healthy wild birds, and through environmental sampling such as fecal samples, collection of dead birds etc.
- Improving and intensifying communication with all stakeholders of the multiple means of spread and persistence of HPAI H5N1 and other zoonotic diseases and practical methods of control will help to increase support from the public and industry to deal with the outbreaks. Improvement of biosecurity of poultry production and marketing systems should be a key issue to be addressed under the Plan.
- Review and updating of Bangladesh Wildlife (Preservation) (Amendment) Act 1974, and Animal Disease Control and Quarantine Act 2005, is needed to respond to the threat of HPAI H5N1 and other zoonotic diseases that affects the health of wild bird species.
- Conducting of comprehensive epidemiological investigations of HPAI H5N1 outbreaks in domestic poultry is required that involve those with relevant scientific expertise including specialist ornithologists.
- Timely sharing of wildlife surveillance information at the regional and international level, particularly of migratory species is necessary to improve our understanding of the disease and better focus surveillance activities. The FAO zoonotic disease tracking and surveillance networks provide a basis for this information sharing.
- Engaging with existing international platforms such as the *Scientific Task Force on Avian Influenza and Wild Birds* and the *Asia-Pacific Working Group on Migratory Waterbirds and Avian Influenza* will be beneficial for information exchange and awareness raising.

HPAI and wild birds

HPAI in wild and migratory birds is not yet well understood, and these birds are often blamed for the possible transmission and spread of the disease into domestic poultry, without substantive evidence. This workshop was fruitful in conveying the message to the stakeholders of the so far limited role wild birds have played in transmitting HPAI H5N1 globally and regionally, and also suggested effective management techniques and mechanisms, and policy recommendations to restrict the spread of AI in Bangladesh.

Dr Taej Mundkur, representing FAO and Wetlands International, provided an overview of the papers presented at the workshop, noting that wild birds are natural hosts of Low Pathogenic Avian Influenza (LPAI) subtypes. Most avian influenza strains are low pathogenic and are not considered a health concern for either domestic poultry or humans. However, the circulation of LPAI in domestic poultry can lead to mutations that cause the illness or death in poultry. The normal understanding is that LPAI to HPAI mutations tend to occur only in domestic poultry. Mutation of the virus from LPAI to HPAI in wild birds is not well understood at this stage.

So why worry about avian influenza in wild birds?

HPAI causes high mortality in domestic poultry, as a result of which over 155 million poultry have been culled worldwide. The economic impacts of HPAI are significant for Bangladesh's poultry industry as a result of AI outbreaks.

The other key concern is HPAI in humans. HPAI is a zoonotic disease, and can be fatal in humans. There is concern that viral mutation and reassortment could lead to human-to-human transmission, leading to a pandemic. There is no evidence to date that HPAI H5N1 has achieved human-to-human transmission yet.

H5N1 HPAI in wild birds in Asia

H5N1 appears to be very rare in wild birds. Sampling of several hundred thousand wild birds in Asia and elsewhere carried out by national institutions and international agencies including FAO indicated that very few tested positive for H5N1, and the majority of these were dead birds. There is only one known case of wild-bird to human transmission of the virus, when people collected and were in very close contact with dead infected swans.

The small number of positive cases in wild birds can be categorized into two broad types: waterbirds, and human-associated-species. Waterbirds include resident and migratory species, while human-associated species include birds like pigeons and sparrows, and cage birds such as magpies, robins etc.

The HPAI H5N1 virus is anticipated to transmit in domestic poultry and subsequently spilled over into wild birds. However, no wild bird reservoir has been identified, although the domestic mallard appears to be a domestic reservoir. The domestic duck – wild bird interface requires further study to ascertain risk factors for viral exchange, in particular, rice grazing wetlands, live bird markets, low-biosecurity farms and backyard flocks, and at AI outbreak sites.

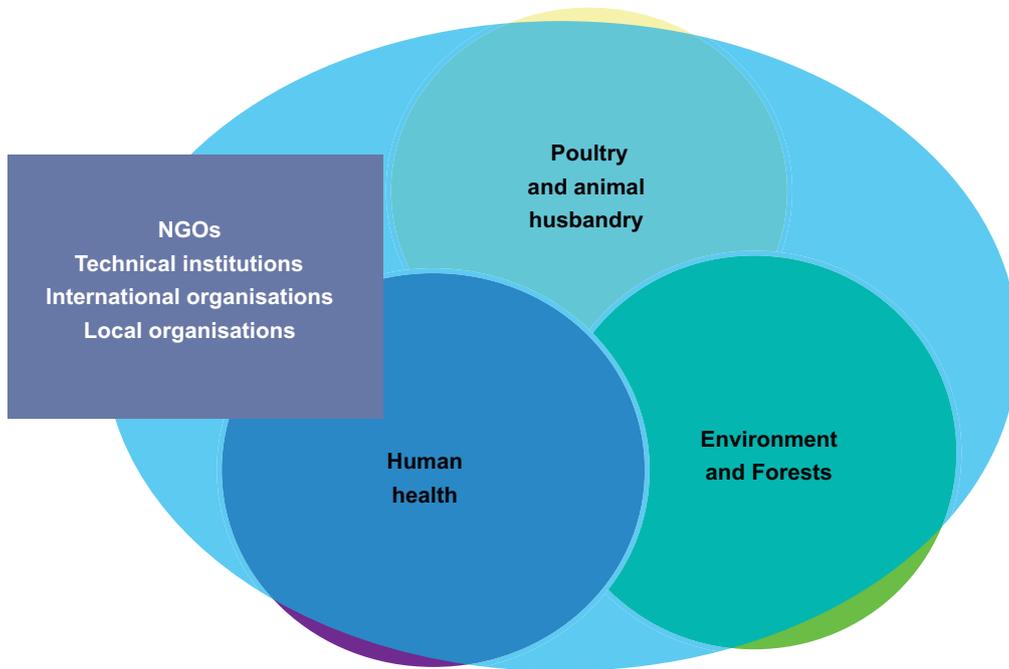
Potential routes of introduction to the virus include the trade of poultry and poultry products, contaminated people and materials, smuggling, the legal and illegal pet trade, transcontinental air travel and wild bird migration (particularly along flyways and staging/resting points).

Surveillance issues to consider

The following issues emerged in the group discussions of the workshop. Workshop participants urged the Secretaries of the Ministry of Livestock and Fisheries (MoLF) and Ministry of Environment and Forests (MoEF) to review the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011) based on these recommendations.

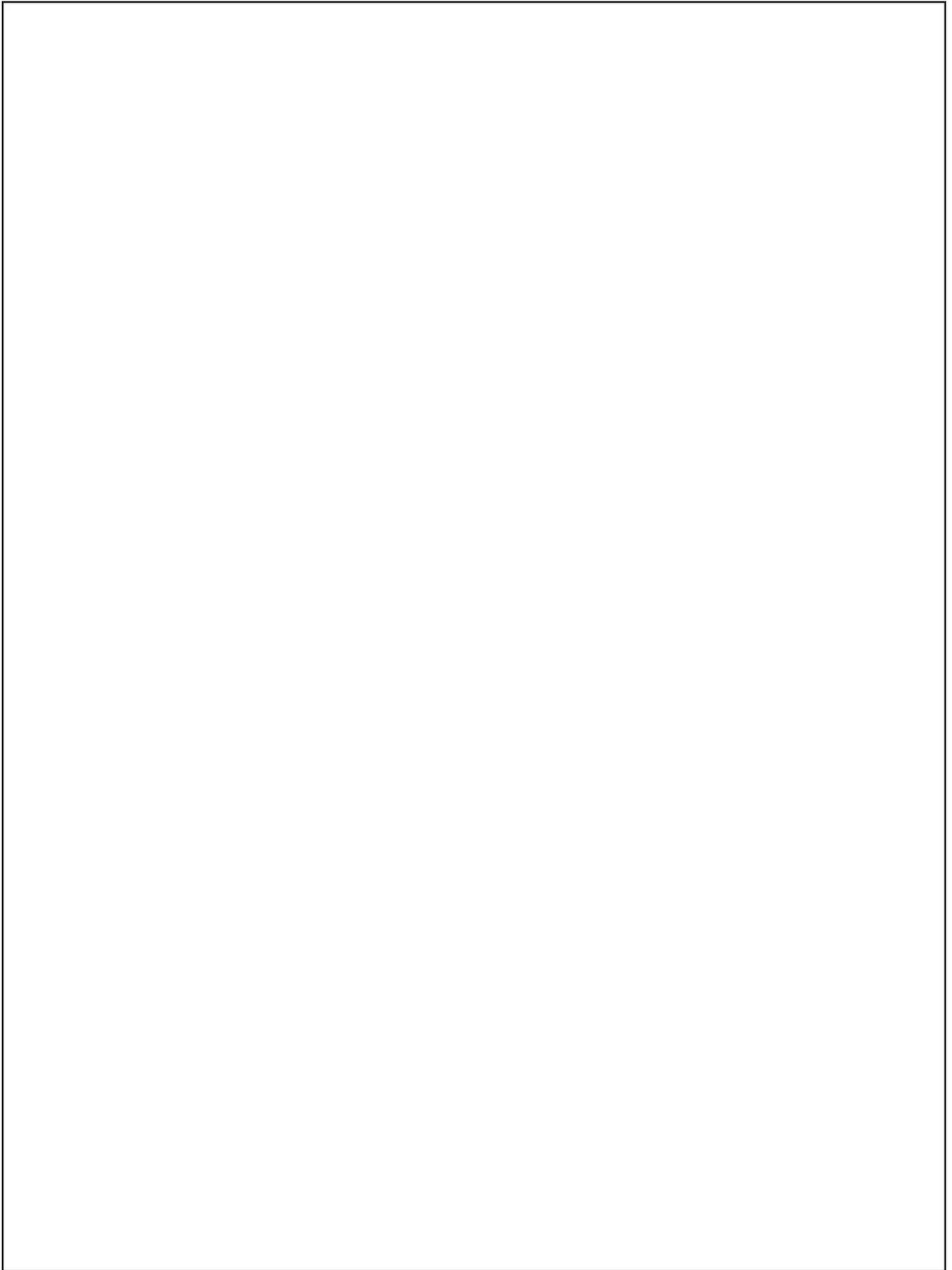
- Wild bird monitoring and surveillance should be a standard part of a country's overall national HPAI preparedness and response plans, so it should cover poultry, humans and wild birds, especially given that wild birds are the reservoir for all other low pathogenic avian influenza viruses.
- Wildlife surveillance and monitoring should always accompany domestic poultry outbreak investigations and control activities taking place at farms and backyard outbreaks.
- Results of national wildlife surveillance activities are integral to conduct disease prediction, modelling and to guide future management and response decisions.
- If surveillance is conducted, a wildlife contingency plan should exist, and a mechanism to respond to positive test results should be in place.
- To understand disease ecology a combination of wildlife surveillance, better and timely data sharing, clinical studies and incorporated ecological information is required.
- Wildlife surveillance does not provide an early warning system of H5N1 into a location, but the monitoring programme for sick and dead birds at wetlands may help.
- Timely sharing of wildlife surveillance information, particularly of migratory species is necessary
- Increased capacity and collaboration between government universities, NGOs and the poultry sector is needed to improve disease surveillance and field monitoring of wild birds.

Key stakeholders include the domestic poultry and animal husbandry industries, the government agencies for environment, forests, livestock and human health, NGOs, research institutions, local organizations, international agencies and development partners.



Government response

The Secretary of the Ministry of Environment and Forest (MoEF) expressed the commitment of the Government of Bangladesh to restrict the spread of AI and emphasized the recommendations made in the workshop to be incorporated into the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011). The Secretary of the Ministry of Fisheries and Livestock also noted the importance of incorporating the workshop recommendations into the Plan, and urged IUCN and other organizations to study wild bird populations and their role in AI.



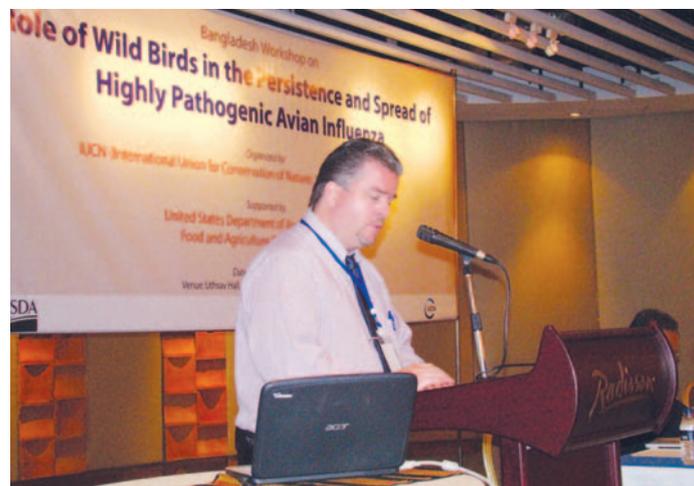
CHAPTER 1

1. OPENING SESSION

1.1 Welcome Address by Dr. Ainun Nishat

Dr. Ainun Nishat, Country Representative of IUCN Bangladesh Country Office welcomed all the participants to the workshop, mentioning that there is a correlation between people, environment and poverty. The livelihoods of thousands of people have been affected due to the transmission of Avian Influenza (AI) into the poultry sector of Bangladesh. Dr. Nishat also stated that, the initiative taken by FAO and USDA as well as the Ministry of Environment and Forests (MoEF) to sensitize the various stakeholders of the poultry sector on the issues related to AI is remarkable. He also emphasized on identification of the possible ways of transmission and to control and prevent further spread of AI in Bangladesh since reflections on the increasing seriousness of the problem and spread of HPAI through Migratory birds as carriers of AI.

1.2 Mark Gilkey USDA/APHIS/International Services



Mr. Gilkey, congratulate the organizers and the diversified audience to be involved in combating AI and addressed that disease control and prevention should be the highest agenda. He also emphasized on how does wild bird contribute to epidemiology in the field. He also mentioned that, controlling AI is meant to decrease risk to human health, while protecting livelihoods and the ecosystem as well. For Instance, restoration of wetlands reduces the likelihood of wild birds interacting with domestic fowl and hence the transmission of AI.

1.3 Major Themes

The workshop was divided into three technical sessions on HPAI and wild birds, regional perspectives on HPAI and wild bird conservation and HPAI surveillance. Following the technical sessions, the workshop divided for group work. This section captures the major issues highlighted by the experts under the themes such as, Highly Pathogenic Avian Influenza (HPAI) and wild birds, regional perspectives on HPAI and its relationship with wild birds and wild bird conservation and HPAI surveillance.

1.3.1 Highly Pathogenic Avian Influenza (HPAI) and wild birds

The first technical session was chaired by Dr. Sabbir Ahmed, Deputy Director General, DLS, and provided an overview of HPAI, international programmes and an assessment of Bangladesh's HPAI situation. The session provided an introduction to the role of wild birds in the spread of HPAI H5N1. A large proportion of AI initiatives tend to focus rightly on the poultry sector rather than on wild bird populations. However, the workshop was convened with the intention of assessing the role of wildlife in the spread of the disease, and discussing recommendations to safeguard wild bird populations and minimize disease.



Dr. Dale Nolte, *USDA/APHIS/Wildlife Services*

Since the beginning of the epizootic in the mid 1990s, HPAI has developed into a global issue, appearing in countries across the world. The routes of introduction of the virus are thought to include international commerce in the trade of poultry and poultry products, contaminated people/materials, illegal wildlife trading, the pet trade and migratory birds. Multiple routes have probably been responsible for introductions, perhaps within a single event, some species may be reservoirs or bridge species may have been involved. Transmission risk factors also include commercial farms with low biosecurity and free range duck flocks.

Although wild birds are natural hosts of Low Pathogenic Avian Influenza (LPAI), circulation of LPAI in domestic poultry can lead to mutations that cause poultry death. HPAI H5N1 causes high mortality in poultry and HPAI can infect and be fatal for humans. There is real concern that viral mutation/reassortment could lead to human-to-human transmission.



Dr. Nolte noted that HPAI H5N1 appears to be rare in wild birds. Many wild birds have been tested across Asia, but very few have returned positive tests. Of these, the majority were dead birds. There have been no records of wild bird-to-human transmission of the virus. The small number of positive cases detected have fallen into two broad categories: human associated species, and water associated species. In spite of this, there is some evidence that wild birds may play some role in moving the virus, although it is not clear what this role is. Evidence from an outbreak in Erhel Lake in Mongolia in 2006 suggests that migratory birds may be able to carry and transmit HPAI H5N1, the number of birds that do so is probably very small.

In order to address this issue, Dr. Nolte said it is important to carry out appropriate targeted surveillance of wild bird populations to improve understanding of AI ecology. Sampling strategies include:

1. Investigating mortality in wild birds
2. Sampling live wild birds
3. Sampling hunter-harvested birds
4. Using sentinel animals
5. Environmental sampling
6. Captive wild birds

The growing public and political concern over AI provides an opportunity to make serious investments in broad surveillance capacity that will enable countries to face current and future zoonotic disease threats. It will also begin to alter the ways in which humans and animals interact to reduce the threat from zoonotic diseases.

Dr. Taej Mundkur, *FAO and Wetlands International*

Following Dr. Nolte's paper, Dr. Taej Mundkur gave a presentation on FAO activities on AI and wildlife. FAO Global Strategy states that "wildlife is a vital part of understanding the epidemiology and ecology of HPAI". It is important to recognize that many infectious diseases emerging from livestock and poultry are increasing in scale and intensity with greater interactions between humans and their environments.



FAO EMPRES Wildlife Disease Program seeks to establish collaborations that enable FAO to promote, coordinate, finance, technically support, & implement the following:

- Co-coordinate AI Scientific Task Force with UNEP-CMS
- Wildlife Capacity Building & Trainings
- Publications-manuals/web-based/manuscripts
- Wildlife Disease Surveillance
- Migratory and disease ecology studies to understand details about the livestock-wildlife interface
- Wildlife and AI Information & Data Sharing-Outreach

The HPAI H5N1 virus is thought to have started in poultry and spilled over into wild birds, and is now circulating in both domestic and wild birds. At this stage no wild bird reservoir has been identified, but the domestic mallard appears to be a domestic reservoir. The domestic duck-wild bird interface presents risk factors for viral

exchange that require further study, including rice grazing wetlands, live bird markets, low biosecurity farms and backyard flocks, and at domestic bird outbreak sites, concurrent with stamping out.

Dr. Md Afzal Hossain, DLS



An overview of the poultry production system by Dr. Hossain revealed 210 million chickens and 38 million ducks make up the industry here. Of these, roughly half are raised in backyard and informal settings, with the remaining half in commercial farms. The marketing system is mostly informal, with most live birds sold, slaughtered and dressed at wet markets, and an unregulated system of transport for live birds and eggs.

In terms of wild birds, no outbreak of HPAI has been recorded in wild bird populations in Bangladesh to date. Catching, hunting and selling of migratory birds is illegal in Bangladesh.

Since HPAI H5N1 was first declared in Bangladesh, there have been three waves, and a total of 314 outbreaks in the country. Control initiatives undertaken include:

- The first and second National Avian Influenza and Pandemic Influenza Preparedness and Response Plans
- National Avian Influenza and Human Pandemic Influenza Risk Communication Strategy 2007-2008
- Bangladesh has Diseases of Animal Act, 2005 and Bangladesh Animal and Animal Product Quarantine Act, 2005
- An Epidemiology Unit has been established with the technical and financial support from FAO and USAID

Dr. Hossain also outlined the processes for diagnosis, response and quarantine to AI in Bangladesh. Full details of these processes can be seen in the provided CD.

Dr. Mohammad Mostafa Feeroz, Jahangirnagar University

The final paper presented in the opening technical session was on wildlife and zoonosis in Bangladesh. Bangladesh's ecological diversity is under pressure from human habitats, increasing the contact between humans and wildlife. This interface is compounded by socioeconomic factors such as dense populations, poverty and existing health issues.



There are 244 species of migratory bird in Bangladesh, of which 21 are duck species. The spread or transmission trends of AI in Bangladesh are unclear. It was thought that bar-headed geese were vectors of the virus in the Quinghai Lake outbreak. These geese were found in Jamuna and Sonadia Island, but these locations don't correspond to recorded outbreaks of AI in domestic poultry across the country. Jahangirnagar University in collaboration with St Jude's Children Research Hospital and with support from NIAID collected some 1650 samples for testing. No HPAI H5N1 was detected in these tests.

1.3.2 Regional perspectives on HPAI and its relationship with wild birds

Given the transboundary nature of HPAI in wild birds, regional approaches to addressing the problem are appropriate. Dr. Taej Mundkur noted, the Asia-Pacific Working Group on Migratory Waterbirds and Avian Influenza was seeking representation from Bangladesh. This technical session was chaired by Dr. Dale Nolte, USDA/APHIS/Wildlife Services.

Dr. Ronald Halder, Ornithologist

Most efforts to control or monitor AI tend to be focussed on the poultry industry. Dr. Halder called for consideration of the welfare of wild birds as part of these monitoring activities. There are three subcategories of migratory birds; local migrants, sub-continental migrants (migrate to the south of India, then to Bangladesh in summer to breed), and intercontinental migrants (mainly ducks and waders).

Dr. Taej Mundkur, *FAO and Wetlands International*

Dr. Mundkur's presentation focussed on HPAI and wildlife conservation in India. He reported that the earliest instances of outbreaks of the virus in India occurred in central south India in what were considered biosecure farms, then subsequently in an area close to the Myanmar border, across which very limited trade takes place. It is not clear how the virus arrived in the country, and it is difficult to interpret the available information. Thus far, the only cases have been identified in domestic poultry, and there are no records of HPAI H5N1 in wild birds.

Priority actions include improving biosecurity in the poultry industry and developing strategies to limit the risk of transmission between domestic birds, wild birds and humans. Internationally agreed quarantine and health standards for cross border transport of birds need to be ensured, and the illegal transport of bird products and captive birds must be cracked down. Importantly, the public and authorities must understand that culling wild birds and draining wetlands will not prevent the spread of HPAI.

Initiatives taken to date include identifying high risk areas, priority actions to determine the role of waterbirds for response development, field training, capacity building, sample collection and transportation. Recommendations for further action include:

- Increase active and passive wild bird surveillance
- Improve regular waterbird monitoring at selected locations
- Strengthen capacity to implement wild bird surveillance
- Improve understanding of domestic-wild bird interactions and high risk sites
- Increase awareness of AI and need for control measures

Dr. Shankar Mondal, *STOP AI Bangladesh*

STOP AI (STamping Out Pandemic and AI) is an initiative present in 33 countries worldwide, with the intent of developing systems, practices and procedures to prepare for, detect, respond to and recover from HPAI outbreaks. STOP AI is a collaboration between a wide range of international organizations, with a number of subcontracting partners.

STOP AI's activities in Bangladesh focus on improving biosecurity capacity on farms, transport, markets, and consumer processing. In terms of wildlife and HPAI, Dr. Mondal identified a range of wildlife that should be considered in addressing HPAI, including migratory birds, crows, pigeons, rodents and flies.

The major activities STOP AI has undertaken to date in Bangladesh are to improve biosecurity capacity, and includes wet market training, focusing on the divisional headquarters of Dhaka, Khulna and Rajshahi. There has been notable success in large animal processing in some of the training areas, however, all indications are that it will take some time to achieve similar levels of biosecurity training for poultry processing.

STOP AI's expanded program includes the following features:

1. Using a value chain approach– thoroughly understand the incentives, structure, and movement of birds/business models and trends within the industry and how these affect the risk factors for spread
2. Collaborate with stakeholders, public, private, and NGOs to target vulnerable points of value chain
3. Two program areas– Improved biosecurity and on-demand assistance at national level
4. Pilot proof of concept in two districts Gaizipur and Dinajpur

1.3.3 Wild bird conservation and HPAI surveillance

The issue of wild bird conservation and HPAI surveillance underpinned most of the papers presented in the technical sessions of the workshop. Prof. Md. Anwarul Islam, Zoology Department, University of Dhaka chaired the technical session.

Dr. Zandra Hollaway André, USAID

Dr. André noted that the focus in programs addressing HPAI tend to be on the poultry industry and less so on wild birds. The trend has been towards a decline in bird flu outbreaks in most affected areas, although South Asia has gone against trend in increasing numbers of AI outbreaks in recent years.



USAID's activities in Bangladesh include planning and preparedness programs, communications improvements, early warning surveillance and epidemiology, diagnostics and response programs. USAID is also involved in corresponding programs in nearby countries. Cross border program issues include:

- Advocacy
- Coordination
- Data-sharing
- Communication
- Standard or common approaches
 - Surveillance
 - Response and control
 - Laboratory diagnostics

Going forward, USAID-funded activities will continue with a geographically focused and risk-based approach to enhance in-country capacity to deal with AI prior to upcoming season:

- Maintain high level of engagement with GoB and have flexibility to be able to respond to immediate needs of the GoB as identified
- Coordinate with USAID missions and partners in the sub-region for cross-border program

Dr. Taej Mundkur, *FAO and Wetlands International*

Wildlife surveillance is essential to adequately address HPAI. As part of this, training is needed for those who will handle wild birds. Dr. Mundkur identified two types of surveillance, passive and active. Passive surveillance refers to opportunistic sampling (sanctioned hunting, ongoing research or ringing projects, wildlife rescue centres, zoological collections), while active sampling involves captures for AI sampling, a monitoring program that facilitates dead birds being collected for sampling. The criteria for selection for sampling include:

- Species that have died from HPAI H5N1
- Species that are known to be carriers of other AI viruses
- Species that are social and occur in high aggregations at certain times of year
- Species that use habitat near poultry farms
- Species that have seasonal movements or patterns that might explain previous outbreaks

The reasons for surveillance include:

- To detect the presence of disease
- Determine the prevalence of disease
- Determine its significance to the population
- Describe & characterize the environmental variables associated with disease emergence and maintenance
- Identify factors that may lead to disease emergence

Broader reasons for surveillance include determining which farming activities may have higher risk for disease transmission, and to identify management steps that can be taken to minimize disease transmission with an emphasis on preventing transmission to agricultural species and humans.

Wildlife surveillance should be a standard part of a country's overall surveillance strategy and included in the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011), especially given that wildlife are the reservoir for all other LPAI viruses. Wildlife surveillance and monitoring should always accompany outbreak investigations or stamping out and control activities taking place at farms and backyard outbreaks.

Conducting wildlife surveillance and obtaining results of national wildlife surveillance activities are necessary to conduct disease prediction, modelling, and to guide future management and response decisions.

Strengthening of national, regional and global networks for surveillance and training, building on FAO's approach of working in partnership with governments, other UN agencies, NGOs, technical institutions and others.

Dr. Leo Loth, FAO, Bangladesh

Dr. Loth's presentation covered the world HPAI situation, HPAI in South Asia, epidemiology and FAO activities at national and regional levels. He noted that the disease spreads through trade, movement of goods, animals and services, and through wildlife and migratory birds. Dr. Loth also noted that climate change could have an impact on the spread of the virus. The spread of HPAI H5N1 is concentrated in a limited number of countries, with early peaks in outbreaks, but declining in number as time passes. The outbreaks have coincided with areas with high poultry populations.



Risk factors in the global spread of HPAI include high population density of poultry, substantial duck populations, the internal movement of poultry through live bird markets, illegal movements across districts and international borders and migratory waterfowl.

Wild birds may have a role in the spread of the disease, but less so for its persistence. However, it is difficult to prove either way.

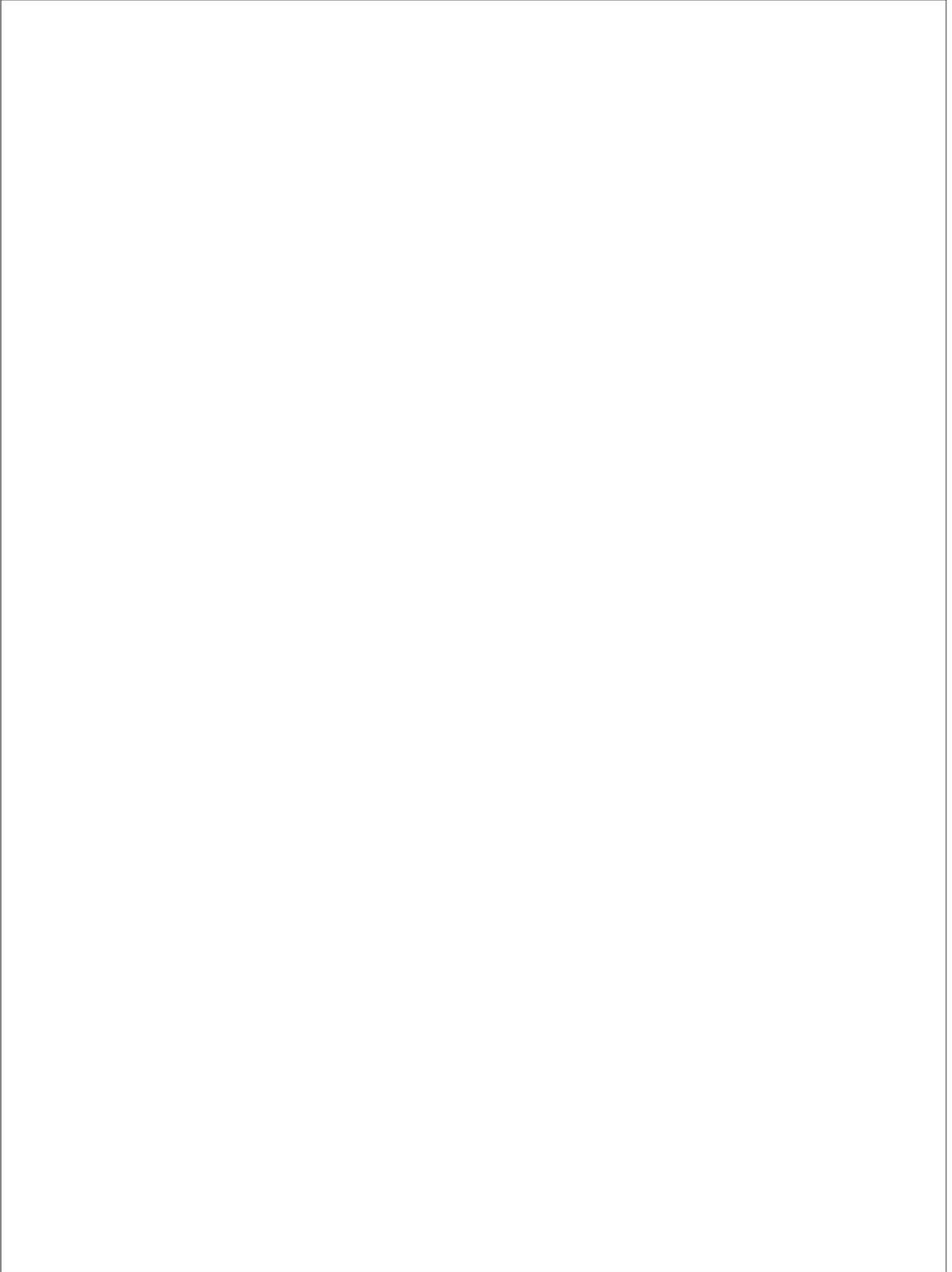
Control programs will have to address the following:

- Surveillance
- Diagnostic capacity
- Government involvement (legislation)
- Veterinary services and structure
- Response measures
 - Movement control
 - Stamping out
 - Vaccination
 - Biosecurity
- Compensation

FAO's HPAI activities in Bangladesh to improve policy and coordination include:

- A functional Avian Influenza Unit staffed by international and national consultants established within the premises of the Veterinary Services working in close collaboration with Government.
- Collaboration with other development partners including donors in the coordination of HPAI control.
- FAO staff actively participate in the various technical committees (Multisectoral Task Force, Communication Wing, compensation and Technical Working Group on communication).
- FAO enhances laboratory activities and diagnostic capacity.

FAO envisages a world with greatly reduced number of H5N1 virus infection in poultry and humans, a reduced chance for a human pandemic, secured national, regional and global markets and trade in poultry and poultry products, and the protection of an important element of the livelihoods of poor farming communities.



CHAPTER 2

2. GROUP WORK

2.1 Group 1-Awareness, communication and capacity development

Group 1 was charged with discussing awareness communication and capacity development. Following discussions, the group decided on its goal:

Awareness and capacity development in different stakeholders and general people of Bangladesh for HPAI in wild birds with special regard to wildlife conservation (to contain/prevent the spread of the virus).

In order to achieve this goal, the group decided on five specific aims: amending the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011), to specify activities and involvement of stakeholders to coordinate awareness and communication initiatives, identifying target groups and messages for dissemination, developing capacity, identifying channels of communication and developing effective feedback mechanisms.



Under each specific aim, the group decided on several actions, all of which are listed in the power point presentations. Some of the key suggestions included creating a toll free number for community leaders to report possible outbreaks, taking action for rumour verification and investigations, and developing a common symbol or monogram for communication material.

2.2 Group 2 – Participatory response to wild bird mortality

Group 2 discussed participatory responses to wild bird mortality, citing the need for capacity building in the immediate response to an outbreak and wild bird mortality. Possible actions include identifying responsible organizations, training stakeholders, making personal protection equipment available to concerned personnel, and making a Rapid Antigen Detection kit available.



To improve coordination and policy, the group suggested establishing a network for immediate response to wild bird mortality, seeking financial support and incorporating global strategies into wild bird mortality responses.

Lastly, Group 2 suggested that the incorporation of HPAI, emphasizing wild bird mortality into the formal and informal education system can be achieved through additions to the school syllabus, training, demonstrations for teachers and through communication materials.

2.3 Group 3 – Surveillance, research and technology transfer

Group 3 was responsible for discussing surveillance, research and technology transfer, and identified the following key areas for future work:

1. Ecology of AI in wild birds
2. Investigate AI epidemiology (vector, transmission, mode of infection, etc.)
3. Combat AI outbreak
4. Strengthen AI research and facilities
5. Human resource development on AI issues



Group 3 also identified specific activities to achieve the outputs, and suitable partners for each. It also noted that the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011), should be adjusted where appropriate, updated Standard Operating Procedures should be followed, and the Bangladesh Wildlife (Preservation) (Amendment) Act 1974 and Animal Disease Control and Quarantine Act 2005 should be revised. The group also recommended that all technical training should be coordinated by FAO.

2.4 Group 4 – Regional cooperation

The task of Group 4 was to address regional cooperation. This group identified four objectives:

1. To initiate regional cooperation to address AI and role of wild birds by establishing effective platform / network
2. To formulate guiding principles for regional collaboration in wild bird issues in AI management
3. To improve knowledge generation, management and sharing mechanism to enhance national capacity
4. To minimize the risk of AI from wild birds



It recommended defining the 'region', taking transnational flyways into account and identifying key issues as first steps. Further, existing regional platforms should be explored, and links made with global organizations. Information needs to be shared, and an integrated approach to AI communications taken.

Power point presentations of each of the groups' work are available in a CD.

CHAPTER 3

3. CONCLUDING SESSION

The closing session of the workshop was held on the second day of the workshop on 18 March 2009. The session was graced by Mr. Mohammad Shah Alam, the Honorable Secretary to the Ministry of Fisheries and Livestock, People's Republic of Bangladesh and Dr. Mihir Kanti Mazumder, the Honorable Secretary to the Ministry of Environment and Forests, People's Republic of Bangladesh. Dr. Dale Nolte, USDA/APHIS/ Wildlife Services was also present as the Special Guest along with Dr. Ainun Nishat, Country Representative, IUCN Bangladesh Country Office.



In the beginning Dr. Taej Mundkur, FAO and Wetlands International, provided an overview on the presentations made by the various resource persons from the respective field during the technical sessions on the first day of the workshop. After Dr. Taej's presentation, representatives from each of the four groups also presented their group recommendations to the dignitaries. During the closing session Dr. Mundkur emphasized the issues to address to reduce the incidences of AI in Bangladesh which include:

- Increasing AI surveillance of wild birds
- Field training for wildlife staff, veterinarians and NGOs in capture, handling and sampling wild birds
- Increase understanding of migratory behaviours of wild birds and interactions with poultry
- Improving understanding of interactions between domestic and wild birds- potential routes for virus movements

A detailed framework for the development of an integrated National Response Programme to AI and wild bird health and management has also been prescribed by Dr. Mundkur, with an example of institutions and organisations in India:

Principal project components	Potential implementation groups
Study of precise migration routes of waterbirds and locations	BNHS, WI and Forest Department
2. Serological testing of waterbirds	MoFL, MoEF, BNHS and Forest Department
3. Regular monitoring of waterbirds in the field (looking sick and dead birds)	BNHS, WI, State Forest Department, national networks of bird watchers and ornithologists
4. Training courses for waterbird monitoring and serological testing	MoFL, MoEF, Forest Department, BNHS, WI, national networks of bird watchers and ornithologists
5. Development of guidelines	MoFL, MoEF, IVRI for collecting birds
6. Quick response team to collect samples of dead/sick birds	MoFL, MoEF, State Forest Depts, BNHS
7. Communication and awareness (Website)	WWF, MoFL, MOEF, State Forest Department
8. Coordination (Task Force)	MoEF, MoFL, MoH, BNHS, WWF, WI, UNDP, FAO



3.1 Dr. Ainun Nishat, *Country Representative, IUCN Bangladesh*



Dr. Nishat thanked all the participants for their valuable input during the workshop including the technical sessions and group work. He also noted that the recommendations provided by the participants should be incorporated in the existing 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011). Moreover, it is high time to pay attention on the issue such as surveillance of wild birds along with domestic poultry birds to ensure sustainability of the poultry industry of Bangladesh. In this regard, IUCN is willing to provide all kinds of support and to work in collaboration with other international organizations such as FAO, USDA and Wetlands International. He also mentioned that the ultimate responsibility lies with the Ministry of Fisheries and Livestock to take up such initiatives.

3.2 Dr. Dale Nolte, *USDA/APHIS/Wildlife Services*

Dr. Nolte appreciated the effort of IUCN Bangladesh for taking the lead in organizing this event on such crucial issue. This workshop has been very successful in bringing a wide range of stakeholders who have shared their thoughtful ideas. This event will be very useful for better understanding of the various issues related to AI. He also mentioned that willingness to cooperate and technology transfer can actually minimize the risk of AI transmission and outbreak in future. The suggestions provided by the participants will be a future guideline for what needs to be done to address AI issues.

3.3 Dr. Mihir Kanti Mazumder, *Secretary, Ministry of Environment and Forests*

Dr. Mazumder thanked the organizers for organizing this important event.

Dr. Mazumder noted that, - 'We have inherited poverty, huge population. On the other hand, we are also blessed by a rich biodiversity including vast wetlands'. The wetlands of Bangladesh are considered to be of international ecological importance due to the extensive waterfowl population that uses these wetlands as habitat. Bangladesh is

within the Central Asian Flyway (CAF) of migratory birds providing resting points on its resourceful wetlands such as Tanguar Haor, Hakaluki Haors, Baikka beel and many more. Recognizing the importance of these unique wetlands, the Government of Bangladesh is fully committed to protect and conserve these ecosystems. Bangladesh is a signatory to the Ramsar Convention. Currently, a project is being implemented by the MoEF in association with IUCN Bangladesh Country office to ensure sustainable management of Tanguar Haor in Sunamganj.



Often it is said that the migratory birds have the potential to increase the risk of transmitting Avian Influenza. Bangladesh Government should take immediate action on the surveillance of influenza virus both in humans and animals. Regarding this, the Wildlife Wing of the Forest Department and the MoEF, Ministry of Fisheries and Livestock and Department of Livestock can work together towards developing an effective surveillance programme focusing wild bird in Bangladesh.

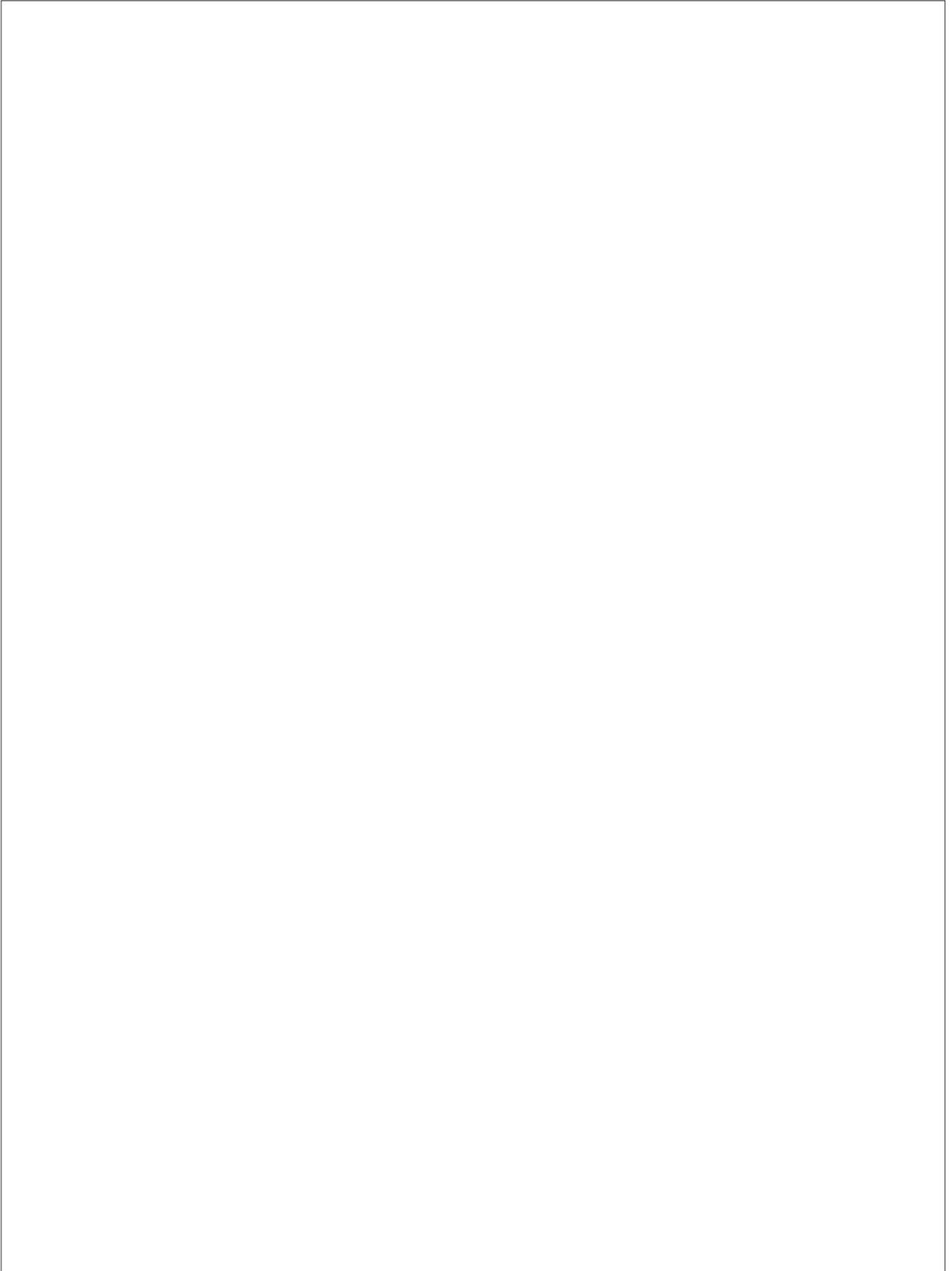
At the end, the Secretary of the MoEF expressed the commitment of the Government of Bangladesh to restrict the spread of AI and emphasized on the recommendations to be incorporated into the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011).

3.4 Mr. Mohammad Shah Alam, Secretary, Ministry of Fisheries and Livestock

The Secretary of the Ministry of Fisheries and Livestock also noted the importance of incorporating the workshop recommendations into the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011) and urged IUCN and other organizations to study wild bird populations and their role in AI. He also emphasized the importance of collaborative efforts involving the Ministry of Health and Family Welfare, Ministry of Environment and Forests and Department of Livestock Services towards effective surveillance programme on wild birds. At the end, Mr. Alam thanked the organizers of this event, IUCN Bangladesh, FAO and USDA as well as the participants for their valuable inputs to make this event a success.



Mr. Alam appreciated the recommendations provided by the four groups and once again highlighted the importance of incorporation of those in to the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009-2011).



CHAPTER 4

4. FIELD TRIP

The two day long workshop on the Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza, on the 17-18 March 2009 was also followed by a field trip to Jahangirnagar University (JU) and Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka on 19 March 2009. This field trip was organized in collaboration with the Wildlife Rescue Centre (WRC) of the Wildlife Branch, Department of Zoology, JU, and BLRI.

Visit at the WRC, Wildlife Branch, Department of Zoology, JU

At first a discussion session took place at the Wildlife Rescue Centre (WRC), Wildlife Branch, Department of Zoology, JU where Dr. Feeroz gave an overview of the activities of WRC. The major objectives of WRC include; rescue wild animals and birds, captive breeding, re-introduction, awareness raising and ecotourism and research.



Dr. Feeroz also noted that amongst the on-going activities of WRC, the research on behavioral ecology of different wildlife and wild bird species and study on the transmissible diseases from primates and birds are the areas of focus currently. The unique biodiversity of the JU area makes it the most suitable place to develop a centre for wildlife research he added. Keeping this in mind, in October 2004 WRC was formally established, particularly devoted to carry out research on wildlife and wild birds.

The field visit to JU was mainly aimed at knowledge generation of the participants on the sample collection techniques from wild birds. In addition to that, capturing and safe handling and releasing the wild birds into the nature have also been highlighted.

Presentations on the sample collection from the wild birds

Md. Kamrul Hassan, *Department of Zoology, JU*

A presentation was made by Md. Kamrul Hassan, Assistant Professor, Department of Zoology, JU, on the sample collection techniques from wild birds. Mr. Hassan stated that samples can be collected from wild bird commonly available in the wetlands of Bangladesh such as Asian open bills, egret, herons, cormorants and migratory ducks as well as from domestic birds for example, domestic chicken and ducks, pigeons, quail and pet birds.

In addition to that Mr. Hassan also mentioned the probable sampling sites which include: lakes and ponds, capturing wild bird, roosting place, heronries and incidental sampling. The sample sites for domestic birds are: poultry farms, retail poultry markets and pet shops. He also highlighted the safety measures and equipment that are required for sample collection. The equipments required for this purpose includes: gloves, mask, screw cap cryovials with transport media (2-2.5 ml), fiber tipped collection sticks, disposable syringes and ice box with ice or coolant.



At the end of the presentation, Mr. Hassan emphasized that the labeling and data recording is an essential part of the overall procedure of sample collection. Each of the vials must be labeled by a unique number and code. Moreover, types of samples, the name of the bird and other relevant information must be recorded carefully.

Dr. Taej Mundkur, *FAO and Wetlands International*

Dr. Taej Mundkur, also provided an insight on the sample collection methods from wild birds. He stated that many international organizations including FAO are trying to provide training on the crucial issue such as collection of samples from wild birds to raise awareness in a wide range of stakeholders who usually deal with wild birds worldwide. In the process, through a presentation, various sample collection techniques have been described by Dr. Mundkur to the participants which include; trachea and cloacal swab collection, handling of wild birds, preservation and transportation of samples as well as releasing wild birds back into nature. Repeatedly it was mentioned in the presentation that enhanced awareness and experience on the issue related to handling wild birds is very important. The things that need to be considered while collection of samples from wild birds are the following:

- The wings of the bird should be handled gently
- To collect the cloacal swab the stick to be turned gently inside the cloaca, so that the bird does not get hurt
- Different sizes of swabs sticks should be used to collect swab samples from different types of birds.
- Avoid wooden sticks to collect samples
- Avoid any kind of body contact while collecting the samples
- Use of safety measures such as; mask, gloves, polythene bag
- Possible contamination from the environment like; fluid on the ground should be taken care of
- Double check/security : samples to be collected twice from each case to avoid any kind of anomalies

Dr. Mundkur added that governments of many countries have initiated collaborations with several international organizations to provide training to relevant personnel on the issue of sample collection from wild birds. He also mentioned that, there is a good opportunity for the Government of Bangladesh as well where collaborative efforts can be made with various international organizations in order to provide training on such an issue and enhance capacity of the general public in future.

Along with the presentations, the most interesting part of the field visit was the demonstration by WRC members on various techniques of capturing wild birds, using nets and traps, sample collection methods and the equipment as well as accessories to collect samples for better understanding of the issues. This day long field visit was undoubtedly very successful in providing the participants with experience in sample collection, capturing, handling and releasing the birds back in nature.

Visit to BLRI

The last half day of the field visit was spent at BLRI, where Dr. Giasuddin, Senior Scientific Officer, BLRI has delivered a presentation on the research area epidemiology, phylogenetic study (to identify the sources), circulation of strains and economic assessment, available laboratory facilities and equipments. He also mentioned that the laboratory of the BLRI has been declared as the National Reference Laboratory in the year 2006 by the Ministry of Fisheries and Livestock in order to carry out research in accordance to the international protocol. Equipments and technical support have been provided by the FAO and other countries. Representatives from many International laboratories have calibrated and certified the National Reference Laboratory of BLRI.



Dr. Giasuddin also said that in Bangladesh the outbreak of HPAI H5N1 was severe in the years 2007 and 2008. During December 2007–March 2008, several mortalities in the poultry bird were observed. It has also been anticipated that the outbreak in the year 2009 and 2010 would be less than the previous year. One of the main reasons behind this is development of antibodies in the domestic as well as in the wild bird population, which makes the bird population naturally resistant to the virus. Since new generation birds will not have these antibodies to fight against the virus, the outbreak might occur once again in the year of 2011.

Symptoms of infected birds were discussed at the presentation which include; chicken combs turning black, hanging wattles, blood clots underneath the spur etc. There is another symptom of infection, eggs will not hatch if there is any affected chicken in the flock. Dr. Giasuddin mentioned that the poultry farmers need to be aware of these symptoms to identify the infected birds amongst the flock, before separating them and informing the local DLS officer immediately for further clarification and identification of the disease.



Emphasis was also given to provide maximum bio-security to the existing poultry farms and back yard poultry to restrict transmission and outbreak of HPAI H5N1 in the poultry population in future. An epidemiological study shows that in most cases mortality in backyard chickens preceded the outbreak in commercial farms. Poor management and breaches in biosecurity practices appeared to have significant role in the spread of HPAI. Significant association was observed between the incursion of HPAI in a farm and the risk factors like ad hoc farm workers, visits by feed and medicine suppliers, entry of vehicles within the farm premises, sharing of egg trays, other poultry equipment and vehicles. Most of the important risk factors had a strong link with the market chain.

The importance of improved bio-security as well as systemic farming is inevitable in securing the poultry population from transmission of HPAI in our country, stated Dr. Giasuddin. The systematic farming methods include:

- Avoid jungle, roadside, and places near reservoirs of wild birds to establish farms
- Two step barriers should be maintained
- Create a buffer zone around the shade by putting net approximately 5'/6' height

The recommendations suggested by the floor are the following:

- Standardized reference laboratory should be established all over Bangladesh
- Increase the number of investigation laboratories in Bangladesh
- Surveillance in the poultry sector as well as in wild bird should be prioritized
- Bio-security in the case of poultry and backyard poultry needs to be improved

At the end, the Director General of BLRI stated that, both nature and wild bird conservation and poultry industry are the priorities of the Government of Bangladesh. Moreover, Bangladesh Government is committed to make an effort to restrict the transmission of HPAI and its impact on the poultry sector of Bangladesh. He also thanked IUCN Bangladesh Country Office for initiating the process in time to avoid misconception about wild birds amongst the public that wild bird are the root causes of Avian Influenza. Awareness among the public on this particular issue will eventually change the negative attitude toward the wild bird in Bangladesh.

Workshop Agenda

Bangladesh Workshop on the Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza, 17-18 March 2009, Dhaka

Venue: Utshav Hall, Water Garden Radisson Hotel

Date: 17-18 March 2009

Day One: 17 March 2009, Tuesday

08:30-09:00 Registration

09:00-09:15 **Welcome and Introduction**

Dr. Ainun Nishat, *Country Representative, IUCN Bangladesh*

Mr. Marc Gilkey, *USDA-APHIS-International Services*

TECHNICAL SESSION 1. Highly Pathogenic Avian Influenza (HPAI) and Wild Birds

Chairperson: Dr. Muhammad Salehuddin Khan, *Director General, Bangladesh Department of Livestock Services (DLS)*

09:15-09:45 **Paper 1:** Introduction to HPAI

Dr. Dale Nolte, *USDA/APHIS/Wildlife Services*

09:45-10:15 **Paper 2:** Overview of FAO Programmes on AI and wildlife

Dr. Taej Mundkur

10.15-10.30 Tea break

10:30-10:50 **Paper 3:** Appraisal on Bangladesh HPAI situation

DLS Representative

10:50-11:10 **Paper 4:** Wildlife and zoonosis in Bangladesh: Special Emphasis on AI

Prof. M. Mostafa Feeroz, *Jahangirnagar University*

11:10-11:30 Open Discussion

TECHNICAL SESSION 2. Regional perspectives on HPAI and its relationship with Wild Birds

Chairperson: Dr. Dale Nolte, *USDA/APHIS/Wildlife Services*

11:30-11:50 **Paper 5:** Wild bird conservation in Bangladesh

Dr. Ronald Halder, *Ornithologist*

11:50-12:10 **Paper 6:** Overview on HPAI and wildlife conservation situation in India

Dr. Taej Mundkur, *Wetlands International*

12:10-12:30 **Paper 7:** STOP AI initiatives: Improved biosecurity in controlling bird flu

Dr. Shankar Mondal, *STOP AI Bangladesh*

12:30-13:00 Open Discussion

13:00-14:00 Lunch break

TECHNICAL SESSION 3. Wild Bird Conservation and HPAI Surveillance

Chairperson: Prof. Md. Anwarul Islam, *University of Dhaka*

14:00-14:30 **Paper 8:** Updates on USAID activities on AI in Bangladesh

Dr. Zandra Hollaway André, *USAID Bangladesh*

14:30-15:00 **Paper 9:** Principles, practices and global updates on surveillance of wild birds

Dr. Taej Mundkur, *Wetlands International*

15:00-15:30 **Paper 10:** Updates on FAO activities on AI in Bangladesh
Dr. Leo Loth, *FAO Bangladesh*

15:30-15:45 Open discussion

15:45-16:00 Tea break

16:00-17:00 GROUP WORK

Group 1: Awareness, communication and capacity development

Group 2: Participatory response to wild bird mortality

Group 3: Surveillance, research and technology transfer

Group 4: Regional cooperation

Day Two: 18 March 2009, Wednesday

09:00-10:30 GROUP WORK (continues)

10:30-11:00 Tea break

11:00-11:20 Group 1 Presentation

11:20-11:40 Group 2 Presentation

11:40-12:00 Group 3 Presentation

12:00-12:20 Group 4 Presentation

12:20-13:00 Open discussion

13:00-14:00 Lunch break

14:00-14:30 Synthesis of group work

15:00-17:00 CLOSING CEREMONY

15:00-15:30 Presentation on the synthesis of group work

15:30-15:40 Speech by Special Guest, Dr. Mihir Kanti Mazumder, *Secretary, Ministry of Environment and Forests*

15:40-15:50 Speech by Special Guest, Mr. Mohammad Shah Alam, *Secretary, Ministry of Fisheries and Livestock*

15:50-16:00 Speech by Chief Guest, Mr. Md. Mustafizur Rahman, *Honorable State Minister, Ministry of Environment and Forests*

16:00-16:10 Speech by Chairperson, Dr. Ainun Nishat, *Country Representative, IUCN Bangladesh*

16:10-16:20 Vote of thanks by Dr. Dale Nolte, *USDA/APHIS/ Wildlife Services*

16.20-17:00 Tea and closing

Day Three: 19 March 2009, Thursday

A DAY TRIP: Jahangirnagar University (JU) and BLRI, Savar for selected participants *

08:00-09:00 Traveling to the field site, JU

09:00-10:30 Briefing on the field activities, exhibition along with refreshment

10:30-13:00 Practical demonstrations and presentations

13:00-14:00 Lunch (in the field)

14:00-16:00 Visit to BLRI Laboratory, Savar

16:00-17:00 Return to Dhaka

List of participants of the workshop

Bangladesh Workshop on the Role of Wild Birds in the Persistence and Spread of Highly Pathogenic Avian Influenza, 17-18 March 2009, Dhaka

Venue: Utshav Hall, Water Garden Radisson Hotel

Date: 17-18 March 2009

SI No	Name and organization MoFL
1.	<p>Mohammad Shah Alam Secretary Ministry of Fisheries and Livestock Government of the People's Republic of Bangladesh Bangladesh Secretariat, Dhaka</p>
MoEF	
2.	<p>Dr. Mihir Kanti Mazumder Secretary Ministry of Environment and Forest Government of People's Republic of Bangladesh Bangladesh Secretariat, Dhaka</p>
ERD	
3.	<p>A N M Rokon Uddin Senior Assistant Chief ERD Ministry of Finance Block-10, Room-23 Sher-e-Bangla Nagar, Dhaka</p>
Forest Department	
4.	<p>Md. Abul Kalam Deputy Conservator of Forests Planning Wing Banbhaban, Agargaon, Dhaka-1207</p>
5.	<p>Haque Mahbub Morshed Assistant Conservator of Forests Legal Unit Banbhaban, Agargaon, Dhaka-1207</p>
6.	<p>Shirina Khatun Divisional Forest Officer Social Forestry Division Baily Road, Dhaka</p>

SI No	BLRI & DLS
7.	Dr. Sabbir Ahmed Director (Research, Training & Evaluation) Livestock Research Institute Mohakhali, Dhaka
8.	Dr. Kazi Towhid Ali Deputy Director (Animal Health & Admin-1) Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
9.	Dr. Abdul Baki Deputy Director (Leave Reserve) & Project Director SSSCAIP Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
10.	Dr. Arabinda Kumar Shaha CVO CVH, 48 Quazi Alauddin Road
11.	Dr. Md. Ebrahim Hossain Project Director AIPRP Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
12.	Dr. Md. A.K.M. Nazrul Islam Deputy Curator Dhaka Zoo, Mirpur, Dhaka
13.	Dr. Malay Sankar Dey PSO, Veterinary Public Health Livestock Research Institute Mohakhali, Dhaka
14.	Dr. Ranjit Kumar Chakrabarty PSO CDIL 48 Quazi Alauddin Raod, Dhaka
15.	Dr. Bidhan Chandra Das Assistant Director (Animal Health & Admin.) Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
16.	Dr. Md. Mehedi Hossain DPD AIPRP Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
17.	Dr. Md. Abdur Rashid Assistant Director (Training) Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215

SI No	BLRI & DLS
18.	Dr. Md. Ruhul Amin LSO Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
19.	Dr. Shaikh Azizur Rahman ULO(LR) AIPRP Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
20.	Dr. Md. Afzal Hossain ULO, Epidemiology Unit Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
21.	Dr. Md. Nazrul Islam ULO Sirajikhan, Munsigonj
22.	Dr. Md. Idris Ali ULO, Epidemiology Unit Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
23.	Dr. ASSM Juberi DPA, AI Combating Project Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
24.	Dr. Abu Sayeed Md. Abdul Hannan S.O, Epidemiology Unit Department of Livestock Services Krishi Khamar Sarak Farmgate, Dhaka-1215
25.	Dr. TABM Muzaffar Goni Osmani S.O. Epidemiology Unit Department of Livestock Services Krishi Khamar Sarak, Farmgate, Dhaka-1215
26.	Dr. Md. Ahsan Habib SO, CDIL Dhaka
27.	Dr. Md. Fazla Rabbi Mandal V.S Savar, Dhaka
28.	Dr. Masood Alam Additional Director BLRI, Savar, Dhaka

SI No	DCC
29.	Dr. Md. Boyjer Rahman Veterinary Assistant Surgeon Veterinary Section Dhaka City Corporation Nagar Bhaban Dhaka
30.	Dr. Md. Azmat Ali Veterinary Officer Veterinary Section Dhaka City Corporation Nagar Bhaban, Dhaka
31.	Dr. Amirul Islam Veterinary Assistant Surgeon Veterinary Section Dhaka City Corporation Nagar Bhaban, Dhaka
32.	Dr. Shakhawat Hossain Veterinary Assistant Surgeon Veterinary Section Dhaka City Corporation Nagar Bhaban, Dhaka
University	
33.	Dr. Mohammed Mostafa Feeroz Professor Department of Zoology Jahangirnagar University Savar, Dhaka
34.	Md. A. Aziz Assistant Professor Jahangirnagar University Savar, Dhaka
35.	Md. Rabiul Alam Programme Officer EESRB-NIH Department of Zoology Jahangir Nagar University Savar, Dhaka
36.	Md. Kamrul Hasan Assistant Professor Department of Zoology Jahangir Nagar University Savar, Dhaka

SI No	University
37.	Sajeda Begum Associate Professor Department of Zoology Jahangir Nagar University Savar, Dhaka
38.	Professor Dr. Md. Salequzzaman Head, Environmental Science Discipline Khulna University, Khulna 9208 BANGLADESH
39.	Dr. Md. Nasiruzzaman Environmental Discipline Khulna University, Khulna
40.	Mr. Kazi Ahmed Kabir Lecturer School of Environmental Science & Management (SESM) Independent University of Bangladesh House 3, Road, 10, Baridhara, Dhaka-1212
41.	Sohana Haq Lecturer School of Environmental Science & Management (SESM) Independent University of Bangladesh House 3, Road, 10, Baridhara, Dhaka-1212
ICDDR,B	
42.	Dr. Salah Uddin Khan Veterinary Research Investigator ICDDR,B Dhaka
43.	Dr. Md. Jahangir Hossain Associate Scientist PIDVS and CSD ICDDR,B Dhaka
Bangladesh Poultry Breeder's Association	
44.	Moshiur Rahman President Bangladesh Poultry Breeder's Association Sports Zone Building(7 floor) 5 Mohakhali C/A, Dhaka-1212
45.	Saidur Rahman Babu Director Lion Agro Complex Ltd 126/131, Manipuripara(New) Tejgaon, Dhaka-1215

SI No	Bangladesh Poultry Breeder's Association
46.	Syed Abu Siddique President Bangladesh Poultry Industries Association Adamje Court (Ground Floor) 115-120, Motijheel C/A, Dhaka-1000
47.	Kh. Md. Mohsin United Agro Complex Sreepur, Gazipur
48.	Md. Mizanul Islam Khan Masum Dhaka
49.	Md. Taramia Danga Bazar, Narshingdi
50.	Md. Helal uddin Ahmed Bangladesh Poultry Industries Association Companigonj, Noakhali
51.	S M Farid Shirajganj
52.	Syed Azad S S Poultry Complex Shakhipur, Tangail
53.	Alamgir Hossain Shapan Bhuyapur, Tangail
54.	Abdul Maleq Bhuiyan M/S Creseent Chicks & Feed PO-Ahammed Nagar, Padur Bazar Comilla
55.	Jainal Abedin Kapasias, Gazipur
56.	Abdul Matin Shreepur, Gazipur
57.	Sajeda Sadek Agargaon, Dhaka
58.	Abdul Awal Harogram, Rajshahi Court, Rajshahi
59.	Shorab Hossain Eastren Poultry 38 K. D. A. Avenu, Khulna
60.	Captain Obaidullah Director Afil Farm, Jessore
61.	Julfiqar Ali Bhutto MA Poultry Noapara

SI No	Bangladesh Poultry Breeder's Association
62.	Mohd. Rafiqul Islam Mymanshing
63.	Aman Ullah Ghorashal, Norshidi
64.	Kamal Uddin Ahmed Gazipur
NGOs	
65.	Olena Reza Senior Research Officer Bangladesh Center for Advance Studies (BCAS) House #10, Road #16A, Gulshan 1, Dhaka 1212
66.	Dr. Dewan Zahid Hossain Senior Manager Poultry Farms, BRAC BRAC Centre 75, Mohakhali, Dhaka 1212
67.	Sanowar Hossain Sarker President Bangladesh Poush 10/10 Iqbal Road (2 nd Floor), Block-A Mohammadpur, Dhaka –1207
68.	Md. Alam Hossain Center for Natural Resource Studies (CNRS) House 19/B, Road 16, Block B, Banani, Dhaka 1213,
69.	Md. Hasibur Rahman Wildlife Biologist Nature Conservation Management (NACOM) Jafran Apartment Siraj Ahmed Najir Road North Baharchara, Cox's Bazar
70.	Mst. Tania Nahid Office Manager SHUSHILAN House #157, Road #1 Muigunni R/A, Khulna 9000
71.	Md. Salim Uddin Deputy Director (Program) Women's Environment and Development Organization (WEDO) House #13 B / 1B, Block #B Babar Road, Mohammedpur, Dhaka –1207
72.	Prof. Md. Anwarul Islam Chief Executive Wildlife Trust of Bangladesh (WTB) Cosmos Centre 69/1 New Circular Road, Malibagh, Dhaka 1217

SI No	NGOs
73.	Md. Shayeb Shaharriar Shakil Programme Officer ESDO Lalmatia, Dhaka
74.	Md. Sharifuzzaman NCC Rose View Plaza (6th Floor), 185 Elephant Road, Dhanmondi, Dhaka- 1205
Development Partners	
75.	Pieter Terpstra Second Secretary-Water Management Embassy of the Kingdom of the Netherlands Road 90, House 49 Gulshand, Dhaka
76.	Pialee Baidya Chevron Bay's Galleria (1 st floor) 57 Gulshan Avenue Gulshan 1, Dhaka 1212
STOP AI Bangladesh	
77.	Shankar P Mondal DVM, MS, PhD, DACPV Country Team Leader STOP AI Bangladesh
Wetland International	
78.	Taej Mundkur, Ph.D. Flyway Programme Manager Wetlands International Horapark 9 (2nd floor), Ede, The Netherlands
Ornithologist	
79.	Dr. Ronald Halder Conservationist Halder's Dental Clinic House-28, Rd-17/A Block-E, Banani, Dhaka, Bangladesh
USDA	
80.	Marc Gilkey USDA-APHIS International Services

SI No	USDA
81.	Dr. Dale L. Nolte USDA/APHIS/WS National Wildlife Disease Program
USAID	
82.	Dr. Zandra Hollaway André Technical Advisor for Avian and Pandemic Influenza: South Asia USAID/ Bangladesh US Embassy, Dhaka
FAO	
83.	Dr. Leo Loth International Consultant, Epidemics FAO Dhaka
84	Prof. Mahfuzul Bari FAO Dhaka, Bangladesh
85.	A.K.M.Mahbubul Hoque National Consultant FAO Dhaka, Bangladesh
86.	Dr. Paritosh K. Biswas FAO Dhaka, Bangladesh
IUCN Bangladesh	
87.	Ainun Nishat Country Representative IUCN Bangladesh
88.	Raquibul Amin Programme Coordinator IUCN Bangladesh
89.	Haseeb M. Irfanullah Senior Programme Officer IUCN Bangladesh
90.	Mahbubur Rahman Masum HR Focal Person IUCN Bangladesh
91.	Ahana Adrika Assistant Programme Officer IUCN Bangladesh

SI No	IUCN Bangladesh
92.	Subrata Biswas IT Officer IUCN Bangladesh
93.	Mohammad Abdul Motaleb Forestry Specialist IUCN Bangladesh
94.	Eshrat Sharmen Akand Technical Editor IUCN Bangladesh



IUCN, the International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges by supporting scientific research; managing field projects all over the world; and bringing governments, NGOs, the UN, international conventions and companies together to develop policy, laws and best practice.

The world's oldest and largest global environmental network, IUCN is a democratic membership union with more than 1,000 government and NGO member organizations, and almost 11,000 volunteer scientists and experts in some 160 countries. IUCN's work is supported by over 1,000 professional staff in 60 offices and hundreds of partners in public, NGO and private sectors around the world. IUCN's headquarters are located in Gland, near Geneva, in Switzerland.

