

A rapid assessment of wild birds in areas affected by Avian Influenza

- K. Sivakumar

Avian influenza or bird flu is caused by the subtype H5N1 of Influenza A viruses and all known subtypes are endemic to birds. However, H5N1 is dreaded for its capacity to cross species. It can infect humans and cause mortality in birds and human. Most birds are susceptible to avian influenza, but migratory birds, such as, geese and ducks show high resistance to infection. In domestic fowl an infection by this virus results in fatality. In its most virulent form, the strain transforms into Highly Pathogenic Avian Influenza (HPAI) and is likely to reach epidemic and pandemic levels. In the past there have been sporadic reports of this virus causing mortality in poultry birds and rarely on wild birds. The report of this virus infecting humans and causing death in the year 2003, drew international attention and a campaign was launched to contain the diseases and prevent human causality. In India, the first report of bird flu was made from Navapur in Nandurbar District of Maharashtra. It caused heavy mortality in poultry birds in February 2006. There are two possible explanations on how this virus infected the poultry, (i) through migratory birds carrying the virus and visiting this region, (ii) through transportation of live poultry or cages from one place to the other. Considering the magnitude of mortality in poultry the Ministry of Environment and Forests, Government of India requested the Wildlife Institute of India (WII) and the Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore, to gather first hand information on the status of resident and migratory birds in



A small wetland in Nandurbar attract several species of waterfowls.

Nandurbar District, Maharashtra and adjoining areas in Gujarat. A survey was carried out by these two organizations between February 24 and March 5, 2006, to examine dead wild birds for symptoms of bird flu. The survey covered 19 major wetlands within 100 km radius of Navapur and in four select Protected Areas. Local people were also interviewed for additional information. The survey team comprised of Drs. K. Sivakumar and K. Ramesh from WII, Drs. S. Muralidharan, S. Somasundaram and V. Dhananjayan from SACON.

The survey

Nineteen major wetlands and ~10 major roost sites were investigated in Nandurbar and Dhule districts of Maharashtra, and Surat, Dangs and Narmada districts of Gujarat. From nine wetlands in Nandurbar, two in Ahwadangs, four in Dhule, three in Narmada and one in Surat Districts, 40 species of water birds including ~20 migrants were recorded. The highest number of species was observed in the Ballab Sagar Sarovar (also known as Ukai reservoir), which is the large wetland with high bird density in Nakana Dam. In the wetlands and roosting sites that were surveyed dead wild birds were not detected and the local people did not report of dead birds in the recent past. No visible physical symptoms or abnormal behaviours indicative of bird flu were observed in wild birds. Protected Areas namely Purna Wildlife Sanctuary (WLS), Vansda National Park, Aner Dam WLS and Shoolpaneshwar WLS around the bird flu infected area were visited but no dead birds were found. Ever since, local forest staffs are keeping strict vigil on wild birds and in the past several days, no mortality of wild birds has been reported. In the roosting sites, egrets were reportedly dying over a period of 10 days prior to the survey. This raised concern among local people and the administration, implying an outbreak of bird flu in wild birds. Only in two roosting sites had dead little and cattle egrets, one in Navapur (4 birds), Maharashtra, and another in Narayanpur (3 birds), Uchal Tehsil, Gujarat. However, local people reported having seen about 30 dead wild birds in these sites. The carcasses were scavenged by domestic dogs, leaving no evidence. One dead wild bird was collected and sent for viral analysis at High Risk Animal Disease Laboratory

(HRADL), Bhopal through the state forest department. On February 27, 2006, a cattle egret was found dead under a roost site in Navapur and the carcass was also immediately sent to HRADL. The forensic report on these specimens are still awaited. A majority of the roosting sites were near human habitations. These roosting sites were also used by common myna, bank myna, black-headed ibis, night heron, common crow, large-billed crow and rosy starling. However, no dead birds of these above species were observed or reported.

Some residents in Dangs district, Gujarat reported sporadic death in crows and pigeons. They also mentioned that this was not unusual since it occurs during summer each year. Free ranging poultry in this region as reported by locals suffered considerable mortality probably due to 'Ranikhet Disease'. They also conveyed that, although the mortality in the current year was higher than usual, it may not be due to bird flu.



Bird flu affected poultry farm in Navapur, Maharashtra.

Given the fact that the virus is transmitted either through wild migratory birds, which act as reservoirs or from infected poultry, it is unclear how bird flu struck in this part of the country. As of now, there is no evidence to suggest that migratory birds are responsible for the epidemic at Navapur. It is important to note that the epidemic occurred at a time when migratory birds were on their way back to their breeding grounds. This does not support the wild migratory bird pathway. The region has large reservoirs interspersed with several small wetlands, that attracts large populations of migratory birds. It also has a high density of poultry farms, Navapur alone has ~50 farms, holding ~8 lakh birds. This coupled with unscientifically managed farms might encourage transmission of bird flu from wild migratory birds.



Dead cattle egret found in a roost site, Narayanpur, Gujarat.

Conservation implications

It is important to monitor mortality in wild birds (both resident and migrant), and outbreaks in poultry. A mechanism should be enabled where the concerned forest department official is informed of unusual mortality in wild birds. The migration route and distribution and status of migratory birds needs to be assessed in their breeding and wintering grounds. Apart from this, studies should also address epidemiological issues and other environmental stressors on wild birds such as pesticides and other contaminants.

Collaborative programmes involving various national and international agencies should be formulated. As there may be death of chicken in the farms for various reasons on regular basis, it is recommended that a proper disposal method is practiced. Incinerators are the best means. Disposal of faecal matter is also to be done in a scientific manner with necessary input from experts. Roosting trees of egrets in the vicinity of the farms should be unattractive. A team of poultry farmers from this region along with concerned officials may visit poultry farms, which are scientifically managed elsewhere in the country, e.g. Namakkal in Tamil Nadu. It is useful to explore the possibility of accommodating disease resistant breeds in poultry farms. Because of the outbreak, it is easy to relate any deaths in wild as well as domestic birds to H5N1 virus. However, to ascertain the cause accurately, it is necessary to undertake investigations not only for H5N1, but also for other diseases and chemical contaminants. In this direction, SACON has a program and samples of wild birds (if found dead) may be sent to SACON as per the laid out protocol. **Contact:** [ksivakumar @wii.gov.in](mailto:ksivakumar@wii.gov.in)

Wildlife Research in Two Decades – Achievements at a Glance

- K. Sankar

One of the primary objectives of Wildlife Institute of India (WII) is to conduct and co-ordinate wildlife research in selected priority areas and evolve appropriate management strategies for conservation of fauna & flora. Research activities are the means by which the Institute's faculty keeps abreast of current field situations, management needs and research trends.



Tiger radio-collaring

This ultimately helps in strengthening the Institute's teaching and training programmes. WII's research activities are guided by the Training, Research & Academic Council (TRAC) represented by eminent naturalists, scientists, wildlife managers and decision makers.

In the last two decades, about 115 research projects were executed by the Institute covering ecological studies, inventory surveys, management specific studies and landscape level studies. Of these, about 10% were on biology/ecology of species, 20% on floral & faunal inventories, 50% on applied research and 20% on human aspects. WII has published 150 reports, training manuals & books and more than 600 peer-reviewed scientific papers. It has produced more than 200 professionals in

wildlife science. Currently, the Institute is conducting 40 research projects in all major biogeography zones of the country.

Several surveys covering highly endangered species, taxonomic groups and their distribution range in different biogeographic zones have been undertaken till date. These surveys have provided valuable information on the conservation status and distribution of species, habitat use, potential threats, identification of important breeding sites, range extensions and discovery of new species and sub-species. The results of these surveys have ultimately helped in effective planning and prioritizing conservation measures. For instance, the survey on snow leopards in the Trans-Himalayan region has identified potential sites for conservation, generated baseline information and standardized methods to assess indirect evidence. The surveys for takin in Arunachal Pradesh, malabar civet in Western Ghats, clouded leopard in north-east India, herpetofauna in Western Ghats, pheasants in north-east India, orchids in Uttaranchal and Bihar and the country-wide survey for the sarus cranes were the other important surveys. The herpetofaunal survey in Western Ghats described a new species of flying frog (*Rhacophorus pseudomalabaricus*) and a new species of burrowing frog (*Nasikabatrachus sahyadrensis*). The pheasant survey in Arunachal Pradesh described a new sub-species of Sclater's monal pheasant (*Lophophorus sclateri arunachalensis*). The survey of potential



Radio-tracking