

Conservation amidst political unrest: the case of Manas National Park, India

Across the world there exists a large overlap of biodiversity hotspots with areas experiencing high levels of socio-political and ethnic conflicts, making the impacts of such activities a critical factor for long-term conservation of biodiversity in these regions¹. India is no exception with many forested areas, including protected areas, experiencing conflicts of varying intensity owing to numerous complicated issues ranging from cultural identity to socio-political and environmental security. Such conflicts not only act as a major impediment to scientific monitoring, protection and management in the biodiversity-rich areas, but also lead to abuse of wildlife and natural areas by conflict parties and opportunistic elements in the absence of adequate protection and monitoring forces. Therefore, in the collective interest of biodiversity conservation, a greater challenge perhaps lies in devising new ways and methods to conserve landscapes in strife-torn areas, where emotions are often charged up and conservation of biodiversity does not figure among the immediate priorities.

The Manas National Park (henceforth Manas), a UNESCO World Heritage (WH) site (in danger) is a part of the Himalayan biodiversity hotspot in the northeastern region of India. It also forms the core of the Manas Tiger Reserve, which is recognized as an important tiger habitat. In 1985, when Manas was listed as a WH site, it not only had a large tiger population, but also other large carnivores as well as diverse and abundant populations of wild ungulates to sustain them². Soon Manas was engulfed in the politico-ethnic disturbance that started in and around the landscape in the late 1980s, whereby the Bodo community, the largest tribal group of Assam, was demanding greater political rights and powers. The violence that followed caused large-scale damage to Manas, with the habitat, wildlife, and management and protection activities suffering immensely. It also led to the local extinction of the great Indian one-horned rhino (*Rhinoceros unicornis*) and the swamp deer (*Cervus duvauceli rangitsinhi*). In 2003, after a long and strenuous period of political negotia-

tions, the Bodo Territorial Council (BTC) was established within Assam, which provided the local Bodo community legislative, administrative, executive and financial autonomy in the Bodo-dominated areas of northwestern Assam. This led to a decline in violence at all levels, thus paving way for return of peace and normalcy to the area. With the resolution of the political issues, the BTC leadership along with numerous local and non-local stakeholders took up the task of restoring and recovering the lost attributes of Manas. These efforts find mention in the monitoring mission report of the WH site committee of UNESCO, which recognized the will and motivation of the administration and the local leadership to reclaim the WH status for Manas³. However, the major handicap towards accomplishing this was the lack of reliable scientific data on the wildlife populations, which is critical to formulating proper monitoring plans for the park³.

We initiated a study in the national park (NP) region of Manas in 2008 to estimate the recovery of wildlife using the current scientific techniques after violence and political disturbance had ceased. Due to the absence of any previous estimates of the carnivore and prey abundances using similar methods, we tried comparing tiger and prey population densities from other tiger reserves that used similar methods to gain insights on the ongoing restorations and recovery interventions and processes (Figure 1).

The four protected areas of India that we chose for comparison were Pench Tiger Reserve (PTR), Kanha NP, Nagarhole NP and Kaziranga NP, as they were not experiencing any conflicts besides having comparable data^{4,5}. Though Manas recorded low abundances of both tiger (1.86 per 100 km⁻²) and its prey (36.7 km⁻²) compared to the other reserves, the prey abundances are comparable to those of PTR (40 km⁻²). The study was carried out in the central and eastern ranges (Bansbari and Bhuyanpara respectively) of Manas, which were fast-recovering areas with the protection and management regime being restored. We recommend further rigorous sampling of the entire NP (500 sq. km) and the Tiger

Reserve (2837 sq. km) to get a complete picture of the recovery patterns across the entire reserve.

Results from our study indicate some signs of improvement for ungulates in Manas, pointing towards a recovery in the animal populations. The preliminary sign encounter survey of carnivores and their prey carried out by us in 2006 as a planning exercise was lower than that carried out in 2008. Multiple captures of rare animals, viz. the clouded leopard (*Neofelis nebulosa*), pygmy hog (*Porcula salvania*), crab-eating mongoose (*Herpestes urva*) and leopard cat (*Prionailurus bengalensis*) through camera traps pointed to their survival through the conflict. On scrutinizing the visitor's register in the park, we saw a consistent increase in the number and frequency of the sightings. Numerous direct sightings of the rare, yellow-throated martens (*Martes flavigula*), smooth-coated otters (*Lutrogale perspicillata*), dholes (*Cuon alpinus*), and the Bengal florican (*Houbaropsis bengalensis*) during the survey were also significant indications of recovery. The unanimous perception of local villagers towards an improved wildlife scenario in recent years only substantiated the ominous signs of recovery. Management and protection is also bouncing back on track with several new protection schemes and patrols being launched. Repair and reconstruction of the old and damaged camps, and construction of newer anti-poaching camps are also being undertaken. Translocation of several wild rhinos to Manas in the past two years under the aegis of the Indian Rhino Vision 2020 and ongoing



Figure 1. Tiger (*Panthera tigris*) at the Manas National Park in March 2008.

plans of swamp-deer translocation in the near future are important steps towards restoration and recovery.

Recent news reports and developments suggest an emerging system and agreement of trans-boundary joint protection and management regime, which would be implemented jointly with Bhutan. It is a significant development since the forests of Bhutan, contiguous to Manas, not only provide critical corridors for movement of large animals, but also act as a safe refuge during disturbance and conflicts to which the Indian part remains vulnerable owing to higher population and developmental pressures. Currently, several organizations, including the World Wide Fund for Nature (WWF-India programme), Aaranyak and ATREE/UNESCO are collaborating to provide technical support to the government's

efforts at scientifically estimating the wildlife/tiger population in Manas.

Manas is recovering. However, to sustain this recovery combined efforts of the BTC, the Assam Forest Department, the local community along with stakeholders at several levels spanning local, regional to international agencies, governments, and academic and civil society institutions would be critical. With an extended favourable social and political climate and popular support for conservation activities and rigorous science informing political decision-making, we can hope for the emergence of a stronger and resilient Manas, which can remain secure and buffered from future setbacks.

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Misuse of scientometry for individual assessment

Many scientists in India, young and old, are getting preoccupied with scientometrics, and phrases such as 'impact factor', 'h-index' and 'number of citations' are being heard often in conversations among them. What is disturbing is that many times these factors weigh heavily in scientific hirings, promotions and awards in the country, and actual serious discussion of the scientific contributions which merit such recognitions is lacking. This trend is influencing and pressurizing young researchers into getting unduly concerned about citations-based recognition by pursuing scientific bandwagons at the cost of doing creative science which may not be fashionable at present.

Thankfully, for the most prestigious prize in science, it is heartening to see that scientometrics is not the basis of the award. Recent Nobel Prizes have been awarded to scientists who may not rank at the top either on the number of publications or on the h-index. Examples are Venky Ramakrishnan (2009 Nobel Prize in Chemistry) and Koichi Tanaka (2001 Nobel Prize in Chemistry). It is indeed well known that in some instances the work for which a Nobel Prize is awarded becomes highly cited only after the award, as the award highlights the importance of the work.

This state of affairs is reminiscent of the efforts to measure the intelligence of

humans in the 19th and 20th centuries, chronicled in the book, *The Mismeasure of Man* by Stephen Jay Gould¹. The intelligence of a human was reduced to a number by methods such as craniometry (measuring the skull volume) and psychological testing. Based on these studies, it was erroneously concluded that women were less intelligent than men and that whites were more intelligent than other races. The intelligence quotient (IQ) which was based on psychological testing and which was first introduced with the noble purpose of identifying children who required special attention in the Montessories, was twisted and misused. For instance, IQ became the basis on which lower immigration quotas were set for East Europeans compared to West Europeans for settling in the United States.

It has been shown that impact factors of journals can be raised by artificial means. So also can the ranking of institutions by methods which have a high weightage for scientometrics. Furthermore, citation to a work does not necessarily mean approval of the work and can often be a scathing criticism. It also does not mean that the work is original, since reviews which are just compilations of the work in a field often attract a large number of citations.

Scientometry can be helpful in assessing institutions and departments, instead of individuals. This is so because, like statistics, scientometric analysis is helpful when applied to large numbers. It can tell us about the state of activity of groups to make decisions regarding funding and remedial measures to improve a certain institution or department. But, using it to evaluate individual scientists for career advancements and recognitions must be stopped. Henceforth nominations for awards and fellowships, papers for promotion, and application forms for faculty positions should desist from asking for scientometric information of individuals. Assessments must be made solely on the merit of the scientific contributions of the individual concerned.

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