



HUMAN-WILDLIFE CONFLICT AND WILDLIFE WATERSHED MANAGEMENT

Dheeraj Kumar Mishra¹, Rathore SS² and Devendra Pandey^{3*}

¹Department of Civil Engineering, Manoharbai Patel Institute of Engineering & Technology, Gondia, Maharashtra State, INDIA

²Manoharbai Patel Institute of Engineering & Technology, Gondia, Maharashtra State, INDIA

³Department of Civil Engineering, Manoharbai Patel Institute of Engineering & Technology, Gondia, Maharashtra State, INDIA

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Abstract: In India, man-animal conflict is seen across the country in a variety of forms, including monkey menace in the urban areas, crop-raiding by ungulates and wild pigs, depredation by elephants and cattle & human killing by tigers and leopards. Damage to agricultural crops and property, killing of livestock and human beings are some of the worst forms of man-animal conflict. One of the main challenges in and around any reserve forest area is to avoid or at least to minimize the incidences of man-animal conflict. An attempt has been made to analyze one of the main reasons (acute shortage of water in forest areas) behind such conflicts and suggest remedial measures to minimize this menace by adopting appropriate watershed management techniques.

Key Words: Human Wildlife Conflict (HWC), Wildlife Watershed Management (WWM), Nagzira Wildlife Sanctuary (NWS), Non-Government Organization (NGO), Tarun Bharat Sangh (TBS)

INTRODUCTION

Forests are under the spotlight as never before. They are globally important in regulating climate and locally important in sustaining communities and supporting biodiversity. But with rapid industrialization and consequent population explosion, owing to unsustainable logging and people in general competing for land; forests and the people who depend on them, are under tremendous pressure.

As human population expands and natural habitats shrink, people and animals increasingly come into conflict over living space, food and water. The impacts of such conflicts are often huge. People lose their crops, livestock, property, and sometimes their lives. The animals, many of which are already threatened or endangered, are often killed in retaliation or sometimes to 'prevent' future conflicts.

Human-wildlife conflict (HWC) is one of the main threats to the continued survival of many species, in different parts of the world, and is also a significant threat to local human populations. And, if solutions to conflicts are not adequate, local support for conservation also declines.

It is utmost essential to reduce HWC and improve the livelihoods of the people affected. The solutions are often specific to the species or area concerned, and are often creative and simple. An important aspect of the work is that it benefits both the animals and local human communities, and actively involves these communities. This is about finding solutions that lead to mutually beneficial co-existence. In most cases, the exercise to reduce HWC has often

led to people being more enthusiastic and supportive of conservation.

The local community is the key factor since they are the ones who may wake up in the morning with a tiger or bear in their back yard. There are a number of practical field based solutions that can limit the damage done both to humans and human property, and to wildlife. These are solutions that aim to prevent wildlife entering crops or villages. But this is something on a case-by-case basis. What people see as solution in one place, they may resist in another. What works in one place, may have the opposite effect somewhere else.

News reports from different quarters suggest that the conflict between wild animals of various protected forest areas and villagers on the periphery has been found to escalate during summer. The root cause behind this rise in number of incidences of encroachment of wild animals of various reserve forests in the surrounding villages and agricultural farms is the acute shortage of water in the forest areas during summer [1,2]. Not just humans but wild animals also face problems during hot sunny days of summer when it becomes difficult for them to find the drinking water. During summer, it is the search for water that forces wild animals to enter into villages & agricultural farms and results in man - animal conflict sometimes. Making provisions for sufficient water availability for the wildlife within the forest itself seems to be a good solution to avoid such conflicts.

*Corresponding Author:

Professor Devendra Pandey,
Department of Civil Engineering,
Manoharbai Patel Institute of Engineering & Technology,
Gondia, Maharashtra State, INDIA- 441614.



In the wildlife sanctuaries of eastern Vidarbha, such as Tadoba Andhari Tiger Reserve (TATR) and Nagzira Wildlife Sanctuary (NWS), it is a general practice to employ tankers for supplying water in natural and man-made tanks and ponds starting right from the month of February up to the onset of monsoon i.e. mid-June [3]. This process of supplying water in waterholes using tankers is not only cumbersome but also incurs huge expenditure. It is not eco-friendly as it creates disturbance for the wildlife besides raising the pollution level of the surrounding area. At the same time, corruption and mismanagement in the exercise can also not be entirely ruled out.

Dr. Dinesh Chandra Pant, former Chief Wildlife Warden, Department of Forest and Wildlife, Maharashtra, India, instructed the concerned authorities of tiger projects, national parks and wildlife sanctuaries to make plans in advance for making water arrangements for wild animals during summer months, giving stress on watershed management. He asked the park managers to preserve available rain water in nallas (small drainage) in the protected forest areas in scientific manner [4].

“The likely rate of climate change over the next century will be ten times faster than that in the past 65 million years, the largest since dinosaurs became extinct” stated Noah Diffenbaugh and Chris Field, both Senior Fellows at the Stanford Woods Institute for the Environment, Stanford, California, U. S. A. Extreme weather events, such as heat waves and heavy rainfall, are expected to become more and more severe and frequent, the researchers said. They further observed that the continued emission of greenhouse gases at the high end of the scenario is the principal factor contributing to this situation [5,6]. These observations give a warning signal that the time is ripe enough for giving topmost priority to improve the green belts and to reduce the carbon footprint.

The first and the foremost prerequisite for the forest conservation exercise in any part of the world is the availability of sufficient water for the flora and fauna in the forest. It is high time to understand that in order to attain “water prosperity” for any part of land the adoption of watershed management practices is a must. Watershed management has emerged as a new paradigm for planning, development and management of the resource trinity “land, water and biomass” with a focus on social and environmental aspects following a participatory approach. Watershed Management is more a philosophy of comprehensive integrated approach to natural resources management. It aims at integration of social resource management with natural resource management. The approach is

generally preventive, progressive, corrective and curative. Watershed management involves the judicious use of natural resource with active participation of institutions, organizations, in harmony with the ecosystem [14].

It is a well-established fact that the mismanaged watersheds retain very little rainwater. Most of it quickly runs overland to streams and rivers causing floods due to excessive runoff. Rainwater, if soaked in soil profile, helps in improving crop production, grasslands and ground water recharge. A properly managed watershed system with appropriate soil and water conservation measures coupled with improved agriculture, grassland and forestry practices will help not only the enrichment of the flora & fauna in the Sanctuary but also the economic uplift of the people in the adjoining villages.

Dr. A. P. J. Abdul Kalam, former President of India, referring to the issue of farmer's suicide in Vidarbha region of Maharashtra commented, “One of the key issues in Vidarbha region is availability of water. Though the region gets 600 to 800 mm of monsoon rains, the region does not have adequate provision to contain water and use it during non-monsoon period. There is need to create small check-dams and additional water bodies in villages.” He made these observations during his Nagpur visit on January 22, 2010 [7].

Dr. V. M. Mayande, former Vice Chancellor of Dr. Punjabrao Deshmukh, Krishi Vidyapeeth sharing his views on the agricultural problems and degradation of natural resources stated, “Water conservation and proper management of rain water is an important parameter for sustainable agriculture. Measures like water conservation, tillage, disposal and storage of excess water, which are parts of watershed technology, should be adopted to utilize each drop of rainwater. Even for Eastern Vidarbha, region of assured heavy rains, farm ponds of larger size should be made to use water for paddy crops. Location based technologies should be implemented making it a public movement and campaign.” [8].

Dr. Rajendra Singh, a winner of 2001 Ramon Magsaysay Award For Community leadership, leads an NGO, TBS, which is supported by the United Nations, USAID (United States Agency for International Development), and the World Bank. He is highly appreciated and recognized worldwide for the commendable efforts he has made for harvesting rainwater by building check dams in Rajasthan. It is because of this, he is popularly known as the ‘Jal Purush’ or the ‘Water man of Rajasthan’.

Since 1985, TBS headed by Dr. Rajendra Singh, has been working in Alwar district of Rajasthan, focusing on the revival of Johads, streams and rivers in the area. They were of firm opinion that without water in the region, no other significant development could take place. With the successful implementation of watershed development program, today more than 4,500 working Johads dot Alwar and surrounding districts. The outcome is nonetheless but revitalization of the five rivers that went dry for long time. River Ruparel, that went dead, has started flowing again after a span of three decades. Even the Arvari River basin, which was once barren, became a perennial water source due to the active participation of the local villagers and hard work of the team members of TBS. Now women in the villages of Alwar district need not to travel to faraway places to collect water, fuel wood and fodder. The farmers are cultivating two crops per year including paddy, a water intensive crop [9].

The Maheshwara river of Kailadevi Sanctuary in Karauli district of Rajasthan flowed throughout the year in 2007 for the first time in twenty years. The mountain stream is the sixth in the category of rivers brought back to life by TBS. While the rest of the rivers are in Alwar district, 200 km away, this is the first river to turn perennial outside Alwar, the base of TBS[10].

The miracle of reviving dried rivers and making them perennial was performed by Dr. Rajendra Singh and his *Jal Yoddhas* (Water Warriors) by rainwater harvesting and subsequent groundwater replenishment. They have accomplished this Herculean task by restoring the traditional water harvesting structures, the *johad*, a crescent-shaped dam of earth and rocks, built to intercept runoff. A *johad* served two functions. On the surface, it held water for livestock, but like an iceberg, its most important action was below the surface. By holding water in place, it allowed the liquid to percolate down through the bedrock. It recharged the water table below, as far as a kilometer beyond the *johad*.

Dr. Rajendra Singh very firmly endorses the concept of people's participation in watershed management. He maintains, "It's far cheaper to help villages create and control their own water supplies than to build more gargantuan dams and ditches." With his inspiration, River Parliaments and *Paani Panchayats* have come up in the villages of Alwar district of Rajasthan to manage and maintain the revived water sources and to govern the distribution of their water as well [11].

Anna Hazare, a retired army personnel turned social worker, constructed many water harvesting structures with active people's participation in the

village Ralegan Siddhi in Maharashtra. So far, forty-eight nalla (small drainage) bunds, five concrete check dams and sixteen gabion structures have been constructed there. The villagers, under Hazare's guidance and inspiration, undertook fodder development, continuous contour trenches and loose boulder structures on 500 acres of land. After the success of watershed development program in Ralegan Siddhi, Hazare replicated it in the neighboring four villages. The results were so encouraging that now the same project is being replicated in more than 100 villages of Maharashtra.

The watershed development work in Ralegan Siddhi helped in conserving each drop of rainwater and recharging the groundwater aquifers, ultimately raising the water table of the region. Now the villagers of Ralegan Siddhi are harvesting two crops in 1500 acres of land as compared with earlier cultivation of single crop in 300-350 acres of land. The agricultural development has created lot of employment in the village itself. This has completely stopped the distress migration and now wage laborers have to be hired from other villages.

Earlier as food production was insufficient and no employment opportunities were available in the village, some villagers started brewing liquor to earn their livelihood. Gradually the number of breweries rose to 35. Today the villagers have completely given up brewing of liquor. Similarly only 300 liters of milk was sold from the village. Now the milk production has gone up to 4000 liters per day. The dairy business has flourished as a subsidiary to agriculture, which has provided a new income generation avenue to the unemployed youths of the village. The per capita income of the villagers has increased more than 10 times. This has completely transformed the economy of the village. The living conditions of the villagers have improved and the gap between the haves and have-nots has narrowed down. After the economic transformation of the village, villagers constructed buildings worth Rs. Ten millions for school, hostel & gymkhana and renovated the old village temple through financial contributions and *shramdan* [12].

Similar notable watershed development work has been taking place in Ufrankhal region in the district of Pauri Garhwal (Uttarakhand) under the leadership of Sachidanand Bharati for the last 30 years or so. Ufrankhal region was once considered one of the most backward areas in India. Today, it has been completely transformed and the person credited for this change is none other than Sachidanand Bharti, a retired school teacher. He started initially by mobilizing women to conserve forests. Gradually the villagers began to understand the need to conserve water, land and

forest together in an integrated manner. Initial setbacks like, dying of the saplings instigated Bharti to find a solution. After discussions with the local villagers, it was decided to dig small pits (*challs*) near the newly planted saplings to collect enough water during monsoon. The idea clicked. Today, the trees of many different species have become the most precious jewels of this forest. Solely through his efforts and collective action an astonishing 12,000 *challs* have been dug up in 140 villages. His work has helped in bringing long forgotten *challs* back into mainstream thinking. Most importantly, simply through *chall* construction he has managed to revive a river now being called Gadganga. Another significant point is that the local women who were mostly illiterate and not having any technical knowledge are the backbone of this success story [13].

It is a well-known fact that almost all the big dams are getting filled with silt due to soil erosion, which is the outcome of uncontrolled tree felling in the catchment areas and neglecting soil conservation and range development. The top loose soil is washed away by the rainwater and gets deposited in the big dams. The topsoil is supposed to be the creamy layer of the land. According to scientists, it takes more than hundred years to form one inch thick topsoil layer. On one hand, this precious resource of topsoil is being washed away; and on the other hand, it is getting deposited in big dams thereby reducing the life span of the dams. This is going to create serious problems in the near future. All the major cities are supplied drinking water from nearby dams. All the industries and factories are provided water from the same dams. The hydro-electric power generation plants are situated on big dams. The day is not far when these dams will get filled with silt completely and will meet the fate of death; say after 100 or 200 years and all these facilities will come to standstill. Nobody can avoid this sorry fate and nobody would be able to de-silt these big dams as the backwater spread of these dams is 60 – 90 km. It will be just impossible to remove the huge mountain of silt 60 - 90 km. in length and 200 – 300 feet in height from the dam site.

CONCLUSION

Taking into account all these facts, it becomes evident that the traditional methods of watershed development are more reliable, trustworthy and viable in comparison with the option of constructing mega structures like huge dams with large

canal networks. This is endorsed by the experts of the field who have worked at the grass-root level as well as the success stories of different watershed development programs. It is advised to adopt the construction of time tested traditional check dams (*Bandharas* or *Kolhapuri dams*) at appropriate locations to improve the availability of water in forest areas. This measure is expected to increase the percolation of water in subsoil layers thereby raising the water table not only in the Sanctuary but also in the villages on the periphery. The rise in water table in the Sanctuary will help improving the vegetation and grasslands in the Sanctuary thereby creating conditions favorable for survival of herbivores. This in turn will increase the number of carnivores, which feed on herbivores; thus resulting in overall enrichment of the flora and fauna in the Sanctuary. The villagers on the fringes too are expected to be benefitted by the improvement in the water table of the region. This improvement is expected to help in minimizing the HWC.

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