# Summary of Ph.D. dissertation

Laboratory of Forest Resources and Society
Department of Forest and Environmental Resources Sciences
Graduate School of Bioagricultural Sciences
Nagoya University

DAHAL Nabin Kumar

**Human wildlife conflict and policy towards coexistence in the Koshi Tappu Wildlife Reserve, Nepal**

（ネパール・コシタップ野生生物保護区における人間と野生生物のコンフリクトと共生に向けた政策）

Human wildlife conflict (HWC) is a growing concern globally and posing a threat to the lives and property of human beings, as well as a challenge to the protection of biodiversity. HWC usually occurs when human lives and properties are threatened; broadly this refers to the damages in agricultural production and their effects on livelihood of smallholding farmers including human casualties and injuries due to wildlife attack. Crop raiding, a form of HWC, is a common issue faced by communities living around protected areas (PA) . In Nepal, about 66% of population depend on agriculture for their livelihood where rice is cultivated and consumed as a primary food crop. Thus, crop raiding around PA has been a serious problem, and the number of reported incidents has been increasing constantly.

For this study, I chose Koshi Tappu Wildlife Reserve (KTWR) in the eastern region of Nepal because the intensity of human wildlife conflict incidents is high here due to wild elephant and buffalo (*Bubalus Arnee*). Besides this, this is the only wildlife

reserve in Nepal having the population of wild buffalo (*Bubalus Arnee*), which is enlisted in the IUCN red list. This reserve was established in 1976 and covers a core area of 175 sq. km, with a 173 sq. km buffer zone area. The reserve is located in the floodplains of the Koshi River in Southeastern Nepal, spanning the districts of Sunsari (in the east), Saptari (in the west), and Udayapur (in the north). The southern part of the reserve marks the Indo-Nepal border having a roughly rectangular shape with a 55 km surrounding area.

In 1976, the reserve was initially earmarked for preserving the habitat of wild buffalo, wild buffalo (*Bubalus arnee*). Later in 1987, Nepal declared Koshi Tappu an important Ramsar wetland site. Grassland constitutes approximately 53% of the reserve's total land, forest 10%, and river bank 37% (Koshi Tappu Wildlife Reserve, 2018). Along with wild water buffalo, other species, such as hog deer, wild boar, spotted deer, blue bulls, and rock pythons, are found in the KTWR. Additionally, the reserve is an important stopover site for many migratory birds.

Human wildlife conflict has been a prolong issue in KTWR as 12,000 families were forcefully relocated in the other areas initially in 1976 to declare this area as a protected area. And those who were relocated from their original place are still demanding fair compensation and seem to be negative towards the reserve authority.

For the household survey, I selected one village in each district (Sunsari, Saptari and Udayapur), which are boarding KTWR from three-sides: east, west and north. The study area comprises a Muslim community in Sunsari, Tharu, Madhesi in Saptari, Brahaman, and Chhetri, with a mixture of other groups in Udayapur. Majority (64%, n=236) of the respondents were engaged in agricultural activities as their major source of livelihood.

My first research result explored the impact of HWC on food security for smallholders and communities residing adjacent to the KTWR. The objectives of this research were to identify the wild animals involved in HWC and establish the types of crops mostly damaged. I further examined various strategies for coping with wildlife damage and evaluated people's interest in adopting preventative approaches.

From the household data, I found that nearly all the respondents (96%) had faced the wildlife related loss within last three years, out of which wild elephant related incidents were more frequent followed by wild buffalo and wild boar in the surveyed area. Rice was the key affected crop including the wheat and maize covering the cash crops such as sugarcane, vegetables and fruits. The result clearly indicated that the adjacent community had lost their one- third portion of the consumption of their food crops (300kg rice deficit per households annually) to wild animals. From the result I also noticed that the loss in Sunsari and Saptari was more than Udayapur district because of the settlement distance. Distance of houses in Sunsari and Saptari were found immediate to the reserve boundary whereas, in Udayapur were a bit away (1.5km) from reserve boundary. KTWR has made efforts to control the HWC through erecting the solar electric fencing however due to lacking it's follow up maintenance; it has less impact on the local livelihoods. Local respondents mentioned that elephants are so smart that they use dried logs to vandalize the solar fencing and come out to the reserve in search of food more often in dry season. According to the respondent's suggestion, the reserve needs a solar fencing to the total boundaries with proper care and maintenance.

From the result of my second research attempt, I explored the perception of the local community people regarding the existing problems of compensation policy, procedures and their interest to coexist with the wild animals. Result confirmed that corruption and the procedural hassle (layers of administrative process with number of documents as a proof) are the major hurdles of the current policy. Policy itself may be fewer problems than it's implementation mechanism. According

to the respondents, the damage assessment need to upgrade and improve based on rationality. Above 90% of the respondents suggested for fast track services with transparent system, hassle free procedures to apply for compensation payments, secure the lives and property of the adjacent community people with insurance and increase the local participation in the project of reserve to address of current problems.

In regards to coexist, our result confirmed that the respondents having principal alternative income other than the agricultural activities are much positive than the household having agriculture as the primary occupation. I can assume from the result that if the local people have alternative sources of their livelihood such as homestay, business as hotel and lodges or tourist related businesses could be helpful to promote coexist. Alternative way of agricultural activities also could be promoted in the area such as unpalatable foods for example citrus fruits so that the wild animals can be distracted. For this purpose households in the adjacent community were found pretty positive to cooperate to the reserve management if the authority takes initiatives.

Policies adopted to control HWC and its implementation has an important role to minimize the impact of human wildlife conflict. The research framework emphasizes that the volume of conflict incidents depends upon the implementation of the policies in the ground. Drafting a good policy may be one achievement however, if the implementation and monitoring body remains weak, the result of the policy implementation may not help to reduce the conflict related incidents; instead it remains same or increases. Conflicts may increase in the sense that the growing population particularly in the developing nations has created a pressure to maintain the natural habitat of wild animals. Thus, the implementing body (authority to execute the policy) determines whether HWC incidents come under control or get worsen the existing situation.

My third paper is an analysis of government policies on conservation with especial reference to human wildlife conflict and conservation in Nepal. From the policy prospective, Nepal has

experienced many ups and down in policy since the last half century.

Initially the government of Nepal adopted top-down approaches, which was more focused for conservation however, these types of approaches failed as it totally ignored the interest of the local community. The conflict between the conservation authority and the local community had been reached in the critical condition. As per the government Act (1973), the area of protected land had been expanded however the people protested against this decision continuously therefore the government again revised the Act in 1980s. This amendment allowed people to access the thatch and further allowed tourists within the protected areas. It further permitted indigenous people to continue their practices to access the forest products such as collecting grasses, medicinal herbs, vegetables and mushrooms to some extent.

Gradually the government started sharing the revenue for the infrastructure development of the buffer zone community. The top-down approaches adopted by the government slowly revised and replaced with the bottom-up strategy since the integrated conservation approach promoted in different protected areas in Nepal. Buffer zone was legally indorsed in 1993. Buffer zone area is the demarcated surface area of protected land determined by the government based on the impact of wildlife. Buffer zone is the sensitive area of conflict thus started to be compensated the local community people to some extent for the loss caused by wildlife. With the changes of the policy, the reserve started sharing their 30-50% of income for the infrastructures development in the local level. The policy of sharing the benefits of protected area has been contributing motivate the buffer zone community people for conserving the biodiversity. However, there are a lot of changes needed for administrative procedures, transparency and damage assessment system for fair and justifiable compensation to cover the direct loss caused by wild animals so that it could protect the livelihood of local community and successful conservation. Win-win situation can be the sustainable address of human wildlife conflict.