

farming areas nearer to ranches, more damage from elephants has been found (Chapter 8). Kenya Wildlife Service (KWS), a state corporation managing wildlife-related issues in Kenya, is dealing with reports of damage from residents and acting accordingly; thus, it has developed appropriate programmes to deal with the challenges. The number of damage reports from residents was high during the corn harvest season in July and August (a dry period). However, attitudes towards KWS are not positive, and the agency has received unfavourable evaluations (Chapter 9). The situation in Mahiga 'B' village was caused by a rapid population increase in Kenya. It is necessary to take prompt action to resolve the damage by installing new wildlife corridors and electric fencing, though elephants were translocated to a place with a low human population density (Chapter 10).

In many parts of the world, practically conserving wildlife is given more priority than ensuring the rights of people who dwell in the same area as wildlife. In particular, 'endangered species'—like elephants—become problem animals as the government must be cautious about handling them because of this categorisation. Population overcrowding and the development of human activities are the results of humans invading places inhabited by wildlife. This book quantitatively evaluates the damage caused by wildlife from the viewpoint of villagers; in addition, readers are able to listen to the live voices of farmers, which is important for understanding their situation and conditions. This book addresses various subjects and challenges to be considered by readers and the government: discussions cover compensation by the Kenyan government for damages and the installation of electric fences for the mitigation and translocation of elephants, among others. Although the research subject is wildlife, this book focuses keenly on the current conservation situation in Kenya and the need to manage and control for wildlife and people so that they can coexist 'in harmony'.

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Cultivating with Oxen: Futurability of the Indigenous Ploughing Agriculture in Ethiopia (*Usbi-to-tomonni Tagayasu: Echiopia-ni-okeru Zairaisukinoko-no Miraikanosei*). Toshikazu Tanaka, Kyoto: Shokado Shoten, 2018, pp. 154. (in Japanese)

Cultivating with Oxen: Futurability of the Indigenous Ploughing Agriculture in Ethiopia is a volume in the Kyoto University African Study Series. It comprises a revision of the author's doctoral thesis. Currently a research fellow at the Center for Northeast Asian Studies, Tohoku University, the

author graduated from Area Studies of Africa and Asia (ASAFAS), Kyoto University, in 2014. This work is based on his anthropological fieldwork in Ethiopia's central highlands regarding the current significance and future viability (futurability) of indigenous ox-ploughing agriculture practiced by the local Oromo farmers of the central Ethiopian highlands. It includes six chapters, a foreword and an afterword.

The first chapter reviews the previous studies on ox-ploughing agriculture and presents the study's theme with overviews of the history and characteristics of ox-ploughing agriculture in Ethiopia and throughout the world. The review of previous studies reveals that contemporary ox-ploughing agriculture in Ethiopia faces three challenges or limiting factors: (1) a shortage of feed caused by increasing human population pressures, (2) relatively low work efficiency compared to mechanized tractor farming, and (3) the presence of farmers who do not own oxen. The study's objective was to examine and assess the validity of these limiting factors by ascertaining the coping mechanisms of current ox-ploughing farmers.

The second chapter introduces the author's research: methods, period, location and people. Altogether, he conducted fieldwork among the Oromo farmers for 21 months between 2007 and 2012. His research site was the area named Gaagre, administratively within Woliso District, Southwest Shewa Zone, Oromia Region, southwest of Addis Ababa, Ethiopia's capital city. He randomly sampled 96 of the 180 households in the study site; interviewed those household heads regarding household composition, land holdings, animal husbandry and religion; and measured the lengths of their ploughs and yokes. He intensively studied the uses of oxen by six households during the farming season through interviews and participant observation. In 2005, about 36% of the cattle in 760 households in Woliso District were cows and about 24% was oxen (according to an administrative census), but, in the author's sample of 286 cattle in 96 households, about 36% was oxen for ploughing and about 25% was cows. Besides cattle, two horses, four mules, 11 donkeys, seven sheep, 50 goats and some poultry were being raised by the sampled households. It was very clear that cattle, particularly oxen, were important there. Later, Chapter 3 points out that about 71% of the 281 cattle of the 96 households in 2009 had been purchased at the local weekly market in Woliso town and the remaining 29% were obtained by birth. It might be useful to point out that, although the 96 households experienced only about a 3% net decrease in the number of cattle between 2009 and 2010, about 24% of the total was sold while about 15% of the total was purchased during that period. The

exchange of some for other oxen indicates that more or less 20% of the oxen were replaced each year. This high mobility of oxen, the most important livestock in the area, is significant, but the author did not fully discuss this point of oxen ownership.

The third chapter describes the ox-ploughing agriculture of Oromo farmers. Teff (*Eragrostis tef*, locally called *xaafi*) was the most important cereal cultivated by all 96 households. Before sowing, oxen plough the teff fields three to six times (usually, four times). In November, just three and one-half months after sowing, it is harvested. Donkeys transport the teff from the fields to the residences for drying, and, when the harvest is adequately dried (around January), cattle walk on it to thresh it. Teff straw (*cirii xaafii*) is an important by-product that is stored in the residence and fed to the oxen on working days during the rainy season. Other than teff, wheat, maize and sorghum are cultivated in the study area. Enset (*Ensete ventricosum*, *waraqee*), or 'false banana', is commonly brought from the surrounding Gurage areas and planted in the household garden as a food staple crop. Khat (*Catha edulis*) was introduced just three to four decades ago, but it now is the region's most important cash crop. Although enset and khat are deeply planted using a type of digging stick (*maresha*), most of the other cultivated fields are ploughed. About 72% to 89% of the cultivated areas of six observed households were ploughed.

The fourth chapter briefly explains the three features of ox ploughing: oxen, ploughs and operators. The ploughing technique uses a pair of oxen (*sangaa*), and the plough is the *gindi* comprising six parts explained regarding nomenclature, composition, size, duration, availability and so on. The *kambari* (yoke) is always made of wood from the Myrtaceae family (*Syzygium guineense*, locally *baddeesa*) because of its assumed strength. The operators are always males, and 98% of the 96 households had one or more plough operators.

The fifth chapter discusses ox ploughing in terms of techniques, efficiency, customs and management. The author measured starting times, ending times, ploughed area size and so on using GPS devices on almost 60 days between 2009 and 2011. His analysis found that, on average, a pair of oxen ploughed about 12.80 acres per day. It is interesting to note that the people's traditional belief in *wariiqaa* (the lightning god) strongly influences their behaviour and restricts the working days of the Orthodox Christians, who comprise about 59% of the local residents. During the 83 farming days in 2011, the Orthodox Christians were forbidden to work on the weekly holidays for Sabbath (11 days), monthly holidays to worship saints (21 days) and *wariiqaa* holidays (five days), but they somehow managed to accomplish ox ploughing

on those days. The remaining 39% of the residents in the study area were Protestants who had only weekly holidays for Sabbath (11 days) and could more easily accomplish their farming tasks.

Regarding ox ownership, just 22% of the studied households had a pair of oxen for ploughing, 3% had three oxen and 3% had four oxen. These households could independently plough their fields using their own oxen, but what about all of the others? According to the author, even farmers with one (or no) ox could plough their fields through customary lending or barter/trade. He pointed out five ways they combined oxen across households: (1) two equivalent households each brought one oxen to create a pair of oxen (*bu'ii*); (2) one rich household (household with many oxen) provided a pair of oxen, one receiving household provided fields for ploughing and the harvest was equally divided between them (*birtaa*); (3) one household traded its labour for a pair of oxen (*walgarugaaru*); (4) one household lent a young ox and the other household used its draughting power while raising and training it over a period of years (*lenjjisa*); and (5) one household rented a pair of oxen for cash (*sangaa kontraata*).

The last chapter integrates and summaries the discussions of the previous chapters. Here, the author challenges the three limiting factors on ox-ploughing agriculture. He argues that the farmers solve the feed shortage problem, particularly at the beginning of the rainy season, by feeding the teff straw created as a by-product of the teff harvesting process, which they store during the dry season. Teff fields are repeatedly ploughed by oxen that are well fed with that straw. Thus, teff cultivation and ox ploughing are deeply related. Regarding agricultural efficiency, ox ploughing seems inferior to modern mechanized techniques, such as tractors. However, the farmers who owned pairs of oxen did successfully cultivate their fields within the three-month farming season, and, therefore, the extent of efficiency of ox ploughing was not a limiting factor. Regarding farmers who owned fewer than two oxen, field cultivation was accomplished using various lending, trading and/or other social exchange practices.

The author found a uniquely developed indigenous type of ox-ploughing agriculture closely related to teff cultivation. He concludes that, by introducing enset as a food staple crop from neighbouring Gurage areas, adopting khat as a cash crop, and applying chemical fertilizers and pesticides purchased with the proceeds from selling khat, the farmers in the study area transformed and intensified their agricultural economy by blending modern agriculture, money economy, and traditional farming practices.

Cultivating with Oxen: Futurability of the Indigenous Ploughing Agriculture in Ethiopia is a valu-

able monograph that critically re-evaluates current ox-ploughing agriculture. Arguably, Shewa currently is the most extensive region of teff cultivation in Ethiopia, and this book might be useful for understanding the emergence of the extensive teff cultivation there. To reach a wider readership, the author

must publish articles drawn from this research in English.

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