

A Retrospective Economic Loss Trend Analysis of Illegal Animal Genetic Resources Trafficking In Custom Checkpoints of Western Tigray, Northwestern Ethiopia

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Abstract: Animal genetic resource trafficking is the illicit cross-border trade of animal genetic resources and their derivatives which is one of the conservation challenges facing the sustainability of animal genetic biota. The study was conducted from February-April, 2017 with the aim to assess the economic losses owing to the illegal animal genetic resource trafficking in the border custom checkpoints (Lugdi, Dima and Bereket) of Western Tigray. Secondary data sources from 2005-2009 E.C were collected from the checkpoint's administration offices using secondary data sheets. The data were analyzed using descriptive statistics to value the economic losses owing to illicit animal trafficking. A total of 800 domestic animals were confiscated in the custom checkpoints. Bereket and Dima were the main exit routes followed by Lugdi custom checkpoint. Camels were the most illicitly trafficked animals followed by sheep and cattle. A total of 2, 398, 850.00 birr (in 2005, 408, 400 birr; in 2006, 127, 950.00 birr; in 2007, 638, 500.00 birr; in 2008, 1, 118, 000.00 birr and 106, 000.00 birr) was lost over the five years. Thus, strengthening enforcement bodies to fight against the illicit animal genetic resource trafficking should be a future concern in western Tigray, Northwestern Ethiopia.

Key words: Bereket • Dima • Exit • Lugdi • Confiscation • Genetic Resources • Illicit

INTRODUCTION

Effective management of animal genetic diversity is essential to global food security, sustainable development and the livelihoods of hundreds of millions of people [1]. Animal genetic resource trafficking is the illicit cross-border trade of animal genetic resources and their derivatives [2]. The illegal animal genetic resource trafficking is one of the fastest growing illicit trades today; it is repeatedly positioned among the trafficking of illegal drugs, arms and humans [3]. The extent of the international animal trafficking is immense, with estimates of billions of live animals and products traded globally each year [4]. Beyond the iconic animals, many species are affected by illicit trafficking [5]. Between 11 and 26 million tons of fish are caught illegally per annum, which corresponds to at least 15% of world catches [5]. Animal

genetic resource trafficking has several enforcement challenges in both source and destination countries [5]. In the source country poverty, poor governance, lack of enforcement rules, law priority among decision makers [2]. On the other hand, the steep increase of demand for animal genetic resources, lack of awareness on its impact are the key challenges operating against animal biota in the destination countries [5]. Animal genetic resource trafficking are scaling up the extinction of native animal resources [5]. In Ethiopia, there is poor coordination of national strategy, legislative authority to oversight the magnitude of illicit animal trafficking [4]. The economic losses of illicit animal resource trafficking is not yet extensively researched in border custom checkpoints of Western Tigray. Although, there are few studies dealing with the situation of bio-genetic resource trafficking in Ethiopia [2, 6-8]. The economic losses of illicit animal

resource trafficking is not yet extensively researched in border custom checkpoints of Western Tigray. Studies have shown the social network interfaces of illicit animal trafficking in the light of local security forces in Western Tigray [2]. Getachew Mulualem *et al.* [2] had noted the connective links of local residents and illicit animal trafficking in villages proximal to checkpoints of Western Tigray. Thus, this survey aimed to address the temporal economic losses exerted towards the animal genetic resource owing to illicit trafficking through the border custom checkpoints of Western Tigray, northwestern Ethiopia.

MATERIALS AND METHODS

Description of the Study Area: This study was carried out in three custom checkpoints of Western Tigray, Northwestern Ethiopia. The study sites were located 984 km northwest of Addis Ababa, the capital city of Ethiopia and 600 km from Mekelle, the capital city of Tigray National Regional State. Geographically, the study area was located between 130 50' and 140 23' N and 360 31' and 370 29' E [2].

The Western Tigray has three custom checkpoints administered under Humera custom and revenue branch office. Ludgi checkpoint is situated at the junction of Ethio-Sudan stretched along the highway of Dansha-Abdrafi-Maycadran ending in Humera. It is one of the trans-boundary transit hubs for import and export of commodities [2]. Dima is one of the custom checkpoints located in Kafta Humera woreda proximal to the border point of Sudan. Dima is an import and export hub of several goods and bio- genetic resources of economic importance [2]. Bereket is located in Kafta Humera woreda situated at Sudanese border. Animal husbandry is an important basis of livelihood for societies in the locality along dependence in seasonal crop production [2].

The agro-climatic zone of the study area was identified as qolla (Lowlands/hotter climate) with an inclination to semi-arid [2]. The altitude of the study site ranged from 568 to 1861 masl [9]. The dry season occurs during the months of October to May and the wet season June to September. It has a uni-modal rainfall pattern which 80 to 85% of the rain falling during the wet season [9]. The annual rainfall is 448.8 and 1102.5 mm for the lowland and highland areas of the district respectively.

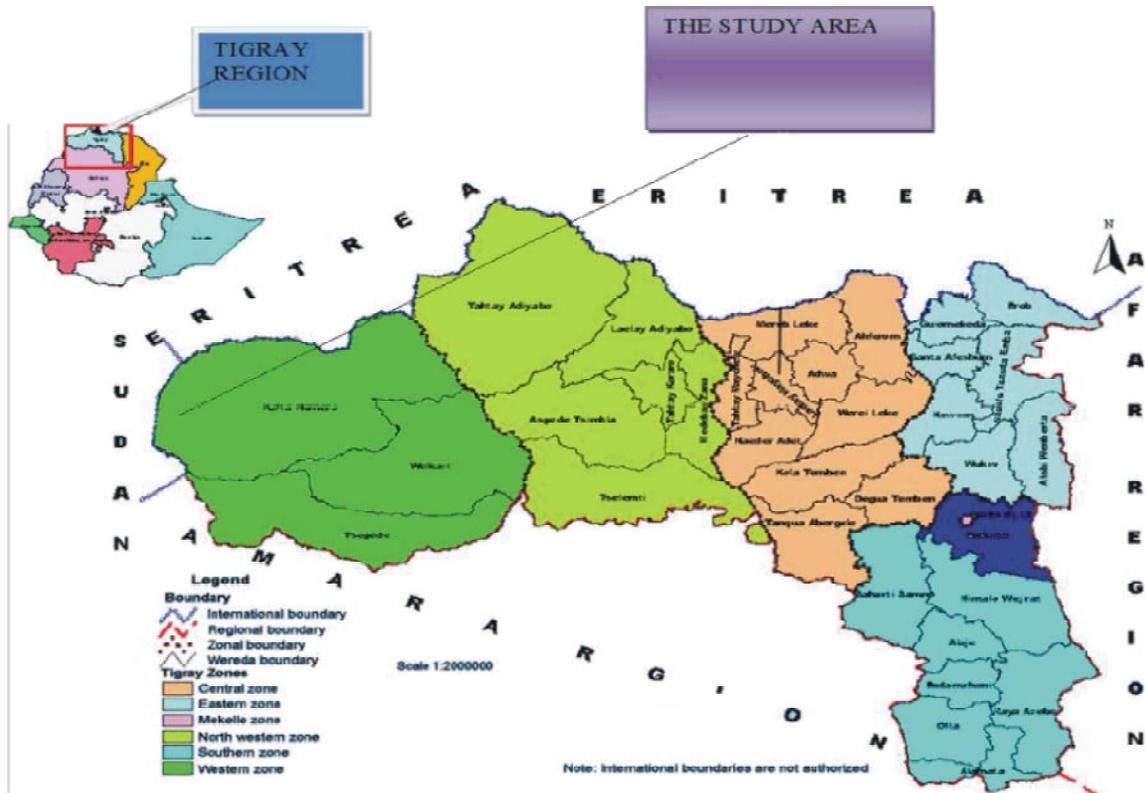


Fig. 1: Map of the study area, custom checkpoint of Western Tigray, northwestern Ethiopia

The mean annual temperature of the area is 25°C to 27°C in the lowlands and 20°C to 25°C in the highlands [10]. The study sites share the mean annual rainfall and mean annual temperature recorded in the lowland areas. Local communities of the study area depended on mixed farming systems as a means of sustaining their livelihood [9]. Livestock husbandry is the valuable components of the farming system contributing enormously towards ensuring food security in the study area [10].

Methods

Source of Data: Secondary data sources were used for the purpose of assessing the temporal trend of economic losses due to the illicit animal genetic resource trafficking. The collected data spans from 2005 to 2009 e.c.

Data Collection Methods: The consent of custom branch administration of Humera was confirmed being fully informed of the study objectives prior to the data access. Data sheet for scoring temporal trends of economic losses of the illicit animal genetic resources trafficking conservation crime records were used.

Statistical Analysis: The secondary data were analyzed using SPSS version 20.0. The study uses descriptive methods to value the economic losses happened owing to the illicit animal genetic resource trafficking practices. Inferential methods for detail analysis of the variables were also used.

RESULTS AND DISCUSSION

Illicit Animal Trafficking in 2005 E.C Confiscated by Checkpoint Enforcement Bodies of Western Tigray, Northwestern Ethiopia: In 2005, 225 domestic animals were illicitly smuggled through the custom checkpoint exit routes. About 35.1% of the illicitly trafficked animals were goats (Table 1). This might be linked with the increasing demand of goats in consumer countries. This could also be related to the over production of goats with less market accessibility, disease outbreak and drought. On the other hand, 22.7% of the trafficked domestic animals were cattle's. Bereket was the main illegal exit route followed by Lugdi and Dima custom checkpoints. This could be associated with the significant number of porous exit routes in Bereket and fewer enforcement staffs deployed within the checkpoints. The estimated annual economic loss of animal genetic resources is 408, 400 birr. This could be associated with the lesser emphasis given to the

enforcement practices of animal trafficking relative to other custom goods during prioritizing custom enforcement tasks in Western Tigray.

Illicit Animal Trafficking in 2006 E.C Confiscated by Checkpoint Enforcement Bodies of Western Tigray, Northwestern Ethiopia: In 2006, 24 domestic animals were illicitly smuggled through the custom checkpoint exit routes (Table 1). The illicit, trafficking of animals showed a decreasing trend compared with 2005 e.c. This might be connected with a decreased demand in the consumer countries accessing the animal genetic resources and tight patrolling. About 50% of the illicitly trafficked animals were cattle's. Bereket was the main illegal exit route followed by Dima custom checkpoints (Table 1). This might be related to the failure in regulation, enforcement and weak governance in the porous checkpoints. About 41.7% of the illicitly trafficked animal resources were camels. The estimated annual economic loss was 127, 950.00 birr (Fig. 3). The magnitudes of the estimated economic losses can be associated with the less emphasis given by the enforcement bodies towards the outlined enforcement targets of illicit animal trafficking.

Illicit Animal Trafficking in 2007 E.C Confiscated by Checkpoint Enforcement Bodies of Western Tigray, Northwestern Ethiopia: In 2007, 270 domestic animals were illicitly smuggled through the custom checkpoint exit routes. This could be associated with the emerging and escalating trends of demands in animal genetic resources. Bereket and Dima were the main exit routes followed by Lugdi and Humera checkpoints (Table 1). The illicit animal genetic resources trafficking through Bereket might be associated with the presence of numerous illicit exit routes and the absence of custom checkpoint administration within the physical geography. About 57.4% of the illicitly smuggled animals were sheep's. On the other hand, about 28.1% of the illegally trafficked animal genetic resources heads were cattle's. This might be related with the abundantly found sheep genetic resources of economic and conservation importance in the catchment area. The estimated annual economic loss of the animal genetic resource trafficking is 638, 500.00 birr (Fig. 3).

Illicit Animal Trafficking in 2008 E.C Confiscated by Checkpoint Enforcement Bodies of Western Tigray, Northwestern Ethiopia: In 2008, 253 domestic animals were illicitly smuggled through the custom checkpoint exit routes. This could be associated with the increasing

Table 1: Illicit animal genetic resource trafficking from 2005 – 2009 E.C through the border custom checkpoints of Western Tigray, Northwestern Ethiopia (B; Bereket L; Lugdi D; Dima) and CC; custom checkpoint)

List of animal species	Year (2005-2009 E.C)																		
	2005			2006			2007			2008			2009			Total			
	No of seized	%	CC	No of seized	%	CC	No of seized	%	CC	No of seized	%	CC	No of seized	%	CC	No of seized	%	Total loss in birr	
1. Goat	79	35.1	B	1	4.2	D	9	3.3	L	-	-	-	-	-	-	-	89	11.2	42,650.00
2. Sheep	48	21.3	DLB	-	-	-	155	57.4	DL	-	-	-	-	-	-	-	203	25.47	171,900.00
3. Camel	6	2.7	L	10	41.7	DB	20	7.4	DLB	247	97.6	DB	13	46.4	D	293	36.76	808,000.00	
4. Ox	25	11.1	D	-	-	-	-	-	-	-	-	-	-	-	-	-	25	3.13	75,000.00
5. Bull	14	6.2	B	-	-	-	-	-	-	-	-	-	-	-	-	-	14	1.75	28,000.00
6. Cattle	51	22.7	L	12	50	B	76	28.1	B	-	-	-	-	-	-	-	139	17.44	601,000.00
7. Donkey	2	0.9	B	1	4.2	DB	10	3.7	DLB	6	2.4	B	15	53.6	DB	34	4.25	45,808.00	

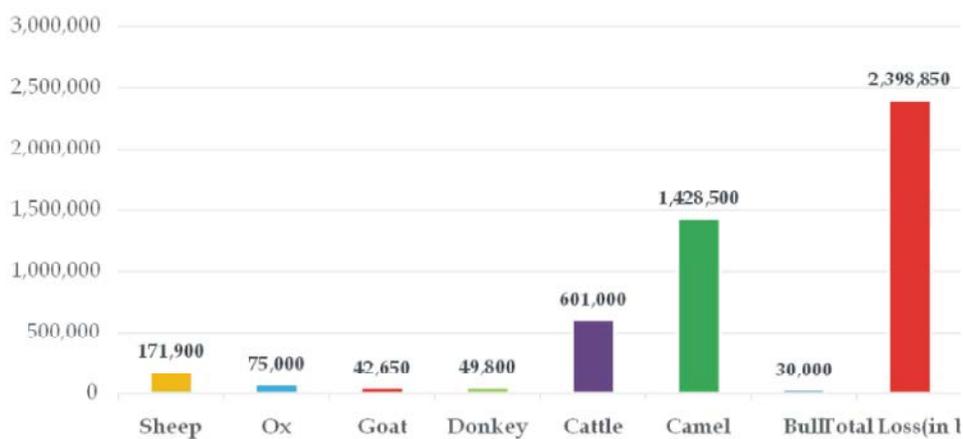


Fig. 2: Estimated economic loss of animal genetic resource per confiscated species (2005-2009) in western Tigray, northwestern Ethiopia

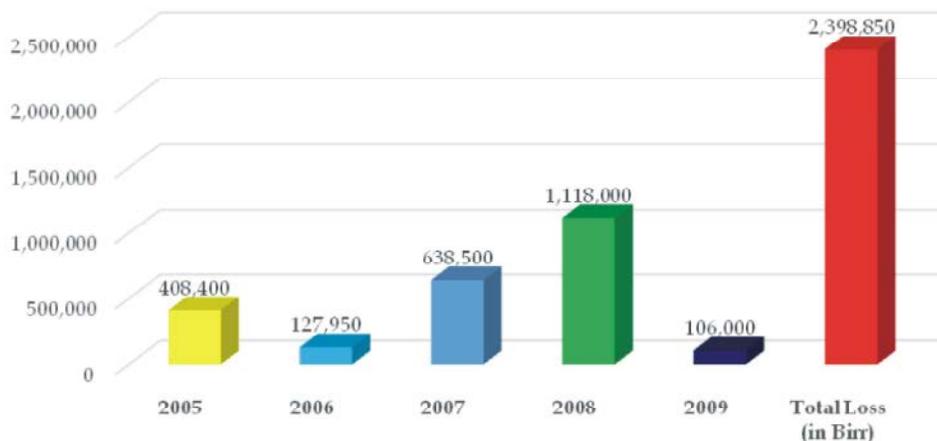


Fig. 3: Estimated economic loss of illicit animal genetic resources trafficking (2005-2009 E.C) through custom checkpoints of western Tigray, northwestern Ethiopia

demand of the animal genetic resources, the poor law enforcement practices and associated porous border point exit routes. Bereket and Dima were the main exit routes followed by Lugdi checkpoints (Table 1). This might be related with the absence of custom checkpoint administration and larger number of porous border point security. About 97.6% of camels were illicitly trafficked via

the exit routes. This might be associated with the highest demand of camels in nearby states for subsistence and commercial values. The estimated annual economic loss of the animal genetic resource trafficking is 1,118,000.00 birr (Fig. 3). This might be related with the increased commercial value of the illicitly trafficked animal genetic resources in the destination countries.

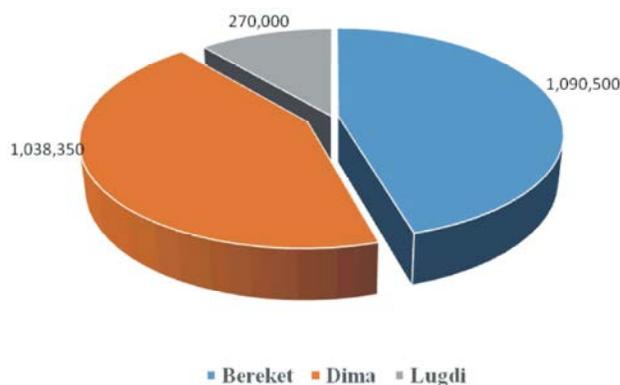


Fig. 4: Estimated economic loss of animal genetic resource trafficking across varied custom branch offices of western Tigray, northwestern Ethiopia

Illicit Animal Trafficking in 2009 E.C Confiscated by Checkpoint Enforcement Bodies of Western Tigray, Northwestern Ethiopia: In 2009, 28 domestic animals of commercial importance were illicitly smuggled through the custom checkpoint exit routes. The decreasing trend of smuggling could be associated with the declaration of the state of emergency in the border points. Dima was the main illicit exit route followed by Lugdi checkpoints (Table 1). About 36.76% of the illicitly trafficked domestic animals were camels. On the other hand, 4.25% of the illicitly trafficked animals belong to donkey. This might be associated with the market availability of camels in western Tigray border point villages. The estimated annual economic loss of the animal genetic resource trafficking is 106,000.00 birr (Fig. 3).

This might be related with the less emphasis given towards smuggling of animals of economic and conservation importance. Moreover, it might be associated with the less conservation law enforcement practices by custom tax clearing units in checkpoints of western Tigray, northwestern Ethiopia.

The estimated economic losses owing to the illicit animal genetic resource trafficking through the porous border points of western Tigray is 2,398,850 birr (Fig. 2). From the estimated total camel's account for 1,428,500 birr, cattle's 601,000 birr and sheep's accounts 171,900 birr.

Bereket is the illicit exit point with 1,090,500 birr loss as a result of the illicit animal genetic resource trafficking. On the other hand, Dima custom checkpoint accounts 1,038,350 birr valued economic loss of domestic animal trafficking loss. Likewise, Lugdi accounts for 270,000 birr estimated loss of animal resources (Fig. 4). Trend impact analysis of the economic losses due to the illicit animal genetic resources trafficking is a neglected research theme in bio-genetic resource trafficking. Thus,

it should be a research and development direction oriented with community livelihood and halting illegal trade of animals of conservation and economic importance.

CONCLUSIONS

From the current finding, it is possible to conclude that there is a number of domestic animals were illicitly trafficked through the exit routes found adjacent to the custom checkpoints of Western Tigray, Northwestern Ethiopia. The extent of the illicit animal genetic resource (In terms of year, checkpoints and species) smuggling is fluctuating due to the loose coordination of enforcement bodies and the contemporary socio-economic status of the border point local communities of Western Tigray, Northwestern Ethiopia.

Recommendations:

- Spatio-temporal field researches evaluating the magnitude of the illicit animal genetic resources trafficking via hidden smuggling corridors should be a focus of upcoming conservation crime field studies.
- Researches on economics of conservation crime should be scaled up so as to draw nationally comprehensive economic loss matrix.
- Organizing and maintaining animal genetic resource trafficking data processes to meet ongoing information needs of researchers, policy developers and decision makers should be a focus of custom enforcement bodies
- The situation underneath the illicit animal genetic resources trafficking of economic importance should be carefully investigated to enforce conservation laws accordingly.

- Satellite border custom checkpoints should be established and due emphasis should be given to effectively enforce the laws and strengthen sustainability of enforcement bodies.
- Law enforcement capacity should be built to technically equip them with the rapidly expanding illicit animal genetic resource trafficking of food, agriculture and livestock biodiversity conservation importance.
- Multi-location smugglers and their internal linkages of the illicit exit routes of the animal genetic resource trafficking should be aligned with the planned patrolling efforts.
- The extent of the illicit domestic animal trafficking and market seasonality should be taken into account during inspection and patrolling of the physical geography of the illicit exit routes.
- The patrolling efforts should be consistently integrated with local community, militia and other enforcement bodies working in and around the custom checkpoints of western Tigray.
- The trends of the illicit animal genetic resources trafficking of the area over five-years should be technically fitted to the upcoming management plan and patrolling efforts.
- The magnitude of the illicit animal trafficking practices should be consistently monitored via community oriented approaches
- As the sites and locations of the current checkpoints were set up years ago and road connections between rural villages is developed, evidence based studies should be established to build additional checkpoints to avert illegal trade of animal genetic resource.

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