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**ENVIRONMENTAL CRIMINOLOGY THEORIES:
AN ANALYSIS OF LIVESTOCK THEFT CASES**Willem J. Clack^{1,2}

ABSTRACT

This article describes the uniqueness of livestock theft as a rural crime that needs to be attended to in a more specialised manner than other crimes against property in rural areas. Specific livestock theft cases are used to demonstrate by means of environmental criminology theories that livestock theft occurs within a specific rural environment and that generalisation of the crimes is not always possible due to the type of crime that is committed. The events of the crimes create much awareness regarding crime, space and time and the involved social media and other technologies that can be used to detect livestock theft crimes in future. The importance of distinguishing between urban and rural crimes is strongly emphasised, as well as the different principles of Routine Activity Theory, Crime Pattern Theory, Rational Choice Theory and Buffer Zone Theory. It is found that these principles do have an impact on conceptions of how the crime of livestock theft is committed by a commuting style perpetrator. The fact that legislation needs to be adhered to by the public at large to reduce crime is also addressed, as well as the fact that the drafting of legislation needs to be absolutely clear and unambiguous; otherwise it creates confusion for the courts and contributes to offenders not being sentenced in accordance with the law. The findings of this article will, hopefully, provide some guidance to the criminal justice system, not only on how to detect crimes in rural settings, but also on how important the involvement of society is for crime reduction.

Keywords: *Livestock theft; rural crime; environmental criminology; Routine Activity Theory; Crime Pattern Theory; Rational Choice Theory; Buffer Zone Theory.*

INTRODUCTION

Since the scientific study of crime began, the goal has been to identify ways through which such behaviour could be prevented and controlled (Piquero, Farrington & Blumstein, 2007: ix). Therefore, insight into the crime situation in South Africa is required in order to ensure that crime prevention is effective, and South African criminology needs to focus on the needs of society using a more practical and participatory approach (Hesselink, 2013:138; Eloff & Prinsloo, 2009:25). Criminological research in South Africa – contrary to the urging of Hesselink and Prinsloo and Eloff – is largely limited to urban settings, and the vast rural environment is mostly neglected. Many well-known crime-reduction measures have been developed over many years for use in other, mainly developed, countries. Adaptation of these measures to the South African situation requires a particular understanding of local urban characteristics and dynamics (Eloff & Prinsloo, 2009:25). Globally this phenomenon of urban research has changed with the introduction of environmental criminology or rural criminology, in which crime and place become important (Donnermeyer, 2007:2). Brantingham (2011:199), a leading researcher in environmental criminology (among only a few others), mentions that the exploration of crime and place is a rapidly evolving area of research in the 21st century and cites aspects such as technology in computers, cellphones

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and social media as changes that have occurred. These changes express the importance of the concept of place in crime and how a variety of physical, sociological and economic dimensions are used to explain variations in crimes. Therefore a need has developed to focus more intensely on specific types of crime rather than crimes in general. Researching crime does provide the researcher with a choice of population in either an urban or a rural setting, but in some research the crime researched would dictate the choice. The focus of this article is on a specific crime, livestock theft, and as it is a crime that can be committed only in a rural environment, the challenge is that a different set of rules apply from those used in urban research.

PROBLEM STATEMENT

Agriculture over centuries has created an impression of wellness and pleasure for most people, who have had the opportunity to visit farms operating with different commodities, such as livestock, grains and fruits. These images conjure up what is referred to as the rural idyll (Jones, 2012:8). The reality is that farming is a business enterprise with tremendous challenges and stressors due to a lack of policy directives from government with regard to aspects such as land reform and the issuing of water licences, and an abundance of new proposed bills (Wilk, Andersson & Warburton, 2013:273). Adding to these basic challenges and stressors are agricultural crimes that include theft of livestock, crops, pesticides and equipment, murder and a whole array of other crimes. The major concern with the added challenges is the absence of appreciation by the community at large and government of the impact these challenges have on the daily lives and businesses of the producers, which in effect increase the cost of food to consumers (Mears, Scott & Bhati, 2007:51). The absence of understanding of the agricultural communities is attributed to the divide between the urban and rural communities of South Africa. The umbilical cord between the urban and rural settings does not exist anymore or is very indistinct, with the result that farm animals are associated with pets in the cities, and food is regarded as the product of a supermarket, which effaces its origin. The consequence is a society functioning in a vacuum without realising the cumulative effect and impact of this on safety and food security.

Academic institutions are situated in major and large cities, which results in research focusing mainly on the urban environment, with consequent neglect of the rural environment in the social sciences and criminology (Donnermeyer & Dekeseredy, 2014:2; Donnermeyer, 2007:2; Barclay, Donnermeyer and Scott (2007:1) indicate that this tendency to focus on crime only in urban settings has led to rural crimes not being recognised as a distinct phenomenon. South Africa is not the exception in this respect, and rural crimes are seriously neglected by academics in the field of criminology generally. The only popular focus on rural crimes in South Africa arises from farm attacks and rhino poaching, as these kinds of crime receive some media attention, and certain organised agricultural groups and non-governmental organisations keep basic statistics on them. Other rural crimes such as livestock theft and theft of equipment, fertilizers and pesticides are under-researched and therefore less understood. Urban and rural settings differ immensely, with rural areas being much less populated and having relatively large distances between houses. Other aspects that need to be recognised are unemployment, urbanisation, increased competition in the farming sector, mechanisation, diminished informal control, and improvement in roads, technology and transportation systems, which create many more opportunities for criminal activities than in the past. These experiences and challenges from rural areas must be included in research (Ceccato & Dolmen, 2013:91; Barclay & Donnermeyer, 2011:3). Taking all the aspects into account, there is a relationship between the crime and the place or environment in which it is committed, and this has been researched since the early 19th century but not in South Africa (Barclay & Donnermeyer, 2011:2).

Livestock theft is an age-old, persistent crime in South Africa that poses a serious threat to food security and biosecurity, and yet it is under-researched (Zwane, Van Marle-Köster, Greyling & Mapholi, 2013:36). Livestock theft can be committed only in rural areas, but the relationship between the place and the crime has not been researched in South Africa. This may be because very little information about livestock theft has been made available for research, and a theoretical approach has been absent. Since the establishment of two different informal forums on Facebook (cf. *Veediefstal, Aanmelding en Statistieke* [Stocktheft, Reporting and Statistics] at <https://www.facebook.com/groups/113457748851009/> and Livestock Prevention Forum/ *Veediefstalvoorkomingsforum* at <https://www.facebook.com/groups/826605640724215/>),² information regarding place, environment, has become available and can be studied. The establishment of these two forums is well documented in an earlier article titled “The role of social media in livestock theft: a case study” by the author (Clack, 2015:1) and will not be repeated in this article

Noting the problem of crime place and space, this article will analyse ten livestock theft cases committed by the same gang with regard to environmental criminology theories that include Routine Activity Theory, Crime Pattern Theory, Rational Choice Theory and Buffer Zone Theory.

LITERATURE REVIEW OF ENVIRONMENTAL CRIMINOLOGY AND CRIME ANALYSIS: THEORY, CRIME AND PLACE

Boba (2005:5) defines crime analysis as “the systematic study of crime and disorder problems, as well as other police-related issues – including sociodemographic, spatial and temporal factors – to assist the police in criminal apprehension, crime and disorder reduction, crime prevention and evaluation”. In the crime analysis defined by Boba, the focus is on criminal apprehension. Many other definitions of crime analysis exist, but for the purpose of this article Boba’s definition is adopted because it captures all the characteristics of the theories associated with environmental criminology. Developments in environmental criminology theories encourage researchers to focus on geographic patterns of crime, examining situations in which offenders and victims come together in space, place and time (Eloff & Prinsloo, 2009:25; Boba, 2005:7). The theories of crime and place are divided into those that seek to explain the development of the offenders and those that seek to explain the development of criminal events (Van Eck & Weisburd, 1995:5). In this article the focus is on the latter, and it attempts to explain the development of a specific criminal event, livestock theft, within a theoretical and conceptual framework. The theory and conceptual framework used for the crime analysis is known as environmental criminology, which examines the interactions between people and what surrounds them, and how these encourage them to commit a crime (Rossmo, 1999:111). Environmental criminology is not limited to a single theory but instead consists of a family of theories relating to crime (Wortley & Mazerolle, 2013:1). This family of theories comprises the theoretical concepts of routine activity, crime pattern, rational choice and buffer zone (Kent, Leitner & Curtis, 2006:182). Felson and Clarke (1998:4) argue that these are not really theories but approaches, since none is a complete theory on its own. Each of the approaches analyses crimes from a different angle, but in the end they all arrive at the same place.

Based on the premises contained in the definition of crime analysis, Routine Activity Theory requires the analysis of the crime into the constituent elements of willing offender, suitable object and the absence of a guardian (victim) within the environment, which are necessary in order for the crime to be committed (Cohen & Felson, 1979:1). The overlap between the activities of the offender and the victim creates a location where the offender feels comfortable in committing a crime, provided a suitable object is present (Warchol & Johnson, 2011:274). Routine activity supports the notion that crime can be committed anywhere within the offender’s activity space, but naturally criminal activity is spatially

dependent on proximity to the offender's activity nodes. The activity nodes can vary depending on place or location; time of day; proximity to residence, workplace, recreation and so on; and the type of crime to be committed by the offender (in this study, livestock theft) (Rossmo, 1999:113; Kent et al., 2006:218). Activity nodes further define the offender's awareness of space for criminal opportunity. Awareness space relates to the processes an offender follows for location and target selection, and may reveal patterned structures. These patterned structures reveal the operations of an offender within his/her awareness space, a concept known as Crime Pattern Theory (Brantingham & Brantingham, 1981, 1984; Rossmo, 2000 in Kent et al., 2006:182). Crime Pattern Theory explores the interactions of offenders with their social and physical environments; hence, the manner in which targets come to the attention of offenders influences the distribution of criminal events over time and space (Brantingham & Brantingham, 1993:260; Van Eck & Weisburd, 1995:3; Barclay and Donnermeyer, 2011:3).

The location of a crime is covered by Routine Activity Theory and Crime Pattern Theory; it follows that Rational Choice Theory must also be included in crime analysis relating to environmental criminology (Brantingham & Brantingham, 1984:2). The assumption within Rational Choice Theory is that criminal behaviour is the outcome of decisions influenced by rational consideration; this theory takes into account the desires, preferences and motives of offenders and potential offenders (Cornish & Clarke, 2008:21). In the study of livestock theft discussed in the present article, a number of different cases were analysed and the geographic characteristics of crime location needed to be analysed. Rational Choice Theory also describes another environmental criminology concept: the offender's buffer zone (Brantingham & Brantingham, 1984:3). The buffer zone refers to the area surrounding the offender's particular activity node, most notably his/her residence, at which little to no criminal activity will be observed. A buffer zone is more likely to exist in the case of predatory offences, which can be characterised as premeditated (Canter & Larkin in Kent et al., 2006: 281).

RESEARCH QUESTION AND OBJECTIVES

The research question is whether the uniqueness of livestock theft can be described effectively as a rural crime that needs to be attended to in a more professional manner than other crimes against property in rural areas.

The objective is to use livestock theft cases to demonstrate by means of environmental criminology theories that livestock theft occurs within a specific rural environment and that generalisation about such crimes is not always possible due to the type of crime that is committed.

RESEARCH METHODOLOGY

Case studies from the Facebook page *Veediefstal, Aanmelding en Statistieke* (<https://www.facebook.com/groups/113457748851009/>) were utilised as the primary source of information to build a complex theoretical pattern drawing on the theories of environmental criminology. Information of the crimes not reported on social media was obtained from the case docket provided by the prosecutor in each case.³ In building complex theoretical patterns there should be constant comparisons with observed actual crime patterns derived from a variety of information sources, in this case social media, case dockets, telephone interviews and Global Positioning System (GPS) technology (Wortley & Mazerolle, 2013:78). An events-based approach to crime analysis as described by Boba (2005) *supra* was adopted to determine participation in key aspects of the crimes, such as place, space and time (Marin & Wellman, 2011:12).

The analytical focus in respect of the crimes is on the theoretical concepts within routine activity, crime pattern, rational choice and buffer zone theories. These theories include aspects such as the offender, the object, the guardian, crime patterns, choice of

location of crimes, and when and where the crimes were committed. These concepts provide the rationale for thinking spatially about the crimes committed and the pattern that developed within the social media and nodes that eventually led to the apprehension of the perpetrators. The basis for the inclusion of environmental criminology in the analysis is important, and the basics of the various theories are discussed before the crimes are analysed with reference to the associated concepts.

DATA COLLECTION

The article deals with ten specific livestock theft cases reported via social media (Facebook) by the general public. It was later discovered after a trend emerged that the cases involved an organised gang of offenders. After the crimes were reported on Facebook the victims were contacted via telephone and specific information gathered, such as GPS co-ordinates and whether the victims were part-time or full-time producers. As to the sample size, the fact that only ten cases were used that involved one gang may be criticised, although the cases do provide comprehensive information regarding place and space and livestock crime. More cases were later recorded, although not included in this study, and exactly the same trends were discovered.

The data collected were specific: in all the cases the victims provided specific GPS co-ordinates for the place where the crime was committed or the information was determined from the case docket. In previous research in other countries GPS was seldom used, although the use of GPS technology surely will enhance the testing of place-based theories (Barclay & Donnermeyer, 2011:15). The GPS co-ordinates provided the opportunity to spatially examine the crime scenes for aspects such as the terrain (e.g. whether bushveld or savannah) and proximity to roads, but for ethical reasons the details will not be made public in this article. Apart from the location, other information regarded as important for a sound analysis, such as the date and time and the sex and number of cattle stolen, were also recorded and are provided in Table 1.

Table 1: Date, time and location of the crimes and the sex, number, breed and status of animals stolen

Date	Time	Location	Sex	Number of cattle stolen	Breed	Status
12 July 2013	Night	Marble Hall	Ewes	49	Boer goats	Stud
14 July 2013	Night	Lethabong	Cows	18	Mixed	Commercial
14 July 2013	Night	Lethabong	Cows	9	Mixed	Commercial
16 July 2013	Night	Bela Bela	Ewes	55	Boer goats	Commercial
23 July 2013	Night	Lethabong	Cows	38	Mixed	Commercial
26 July 2013	Night	Beestekraal	Cows	5	Bonsmara	Commercial
26 July 2013	Night	Beestekraal	Cows	29	Bonsmara	Stud
31 July 2013	Night	Rustenburg	Heifers	47	Bonsmara/Simbra	Commercial
5 Aug 2013	Night	Modimolle	Cows	10	Brahman	Stud
16 Aug 2013	Night	Mokopane	Cows	25	Brahman	Stud

In total 104 goats and 181 cattle were stolen during the cases in question. The content of Table 1 will be addressed in the following paragraphs.

ENVIRONMENTAL CRIMINOLOGY THEORIES AND THE CRIMES

The motivated offender

One of the obstacles to solving crimes of livestock theft is that within the criminal justice system there is no knowledge of what really motivates the offender to commit livestock theft. From historical information it becomes obvious that the motivation has changed over time. Livestock theft prior to 200 BCE is thought to have been mainly the work of small bands of

thieves. Subsequently the stealing of cattle became a more warlike activity and large numbers of cattle were stolen from other tribes, and people from those tribes were taken as slaves (Morris, 2010:310). Africa in medieval times was by no means immune to livestock theft. In South Africa in the 17th century the Khoi-San, whose land had been invaded in the process of agricultural development, slaughtered the cattle of other agricultural producers. The story is also told of one Coenraad de Buys, who complained that the Xhosa were stealing his cattle. However, investigation revealed that he, in fact, was the culprit (Du Preez, 2008:72-74). In the early frontier years cattle rustling was a favourite pastime among the Tswana, Sotho, Khoi-San and some whites (Du Preez, 2008:8). The period of the Lifaqane (1820-1830), during which the Basotho nation was formed under Moeshoeshoe, was also characterised by cattle raiding (Kynoch & Ulicki, 2000:182). Livestock theft has thus been a crime feature in Africa for millennia. However, over time, the modus operandi has changed.

Irrespective of a lack of knowledge, Paulsen (2007:349) indicates that offenders need to be classified into two categories based on their spatial orientation with regard to the crime site and the anchor points or residence. The two categories are marauders and commuters. Typically marauders will commit crimes in very close proximity to their residence or anchor point. Commuters traditionally travel distances to commit crimes, but the distances will depend on the type of crime to be committed and the environment (Paulsen, 2007:350). Clinard (1942) in (Donnermeyer & Dekeseredy 2014,35) mentions that rural offenders possess greater mobility than urban offenders and that such offenders experience a delayed onset of criminal behaviour in comparison to urban offenders. Nevertheless, actual studies of crime in a rural context are rare (Smith & McElwee, 2013:113). In this study of livestock theft the offenders are commuters but the essence of the crime is important as livestock are not available in urban areas and the geographic profile of the livestock perpetrator is not known.

In the case study analysed in this article the offender (leader of the gang) was motivated by greed and a desire to sustain the luxurious lifestyle demanded by his girlfriend. The offender was also intending to emigrate to Australia and needed money in a hurry (Pretorius, 2015; Scott, 2014; Flanagan, 2013). The main feature of the gang is that the members had met one another either as friends or in prison while awaiting trial on previous occasions for livestock theft or within the business of livestock trade (Pretorius, 2015; Scott, 2014). Despite having awaited trial on previous occasions, none of the offenders had previous convictions, which may indicate that they became arrogant to the extent that they thought they were above the law and would not be apprehended. The reasons why they were never found guilty in previous cases are unknown.

The object

One of the pillars of Routine Activity Theory is the principle of a suitable object; in the ten cases indicated in Table 1, it is clear that the suitable object was livestock (e.g. cattle and goats). The main issues for the offender in this regard are the expected profits (value of the object), the expected risk (inertia) and the ease with which the target can be reached (visibility and access) (Goodwill & Alison, 2006:297; Felson & Clarke, 1998:5).

The fact that all the livestock stolen were female is not strange, as in South Africa and other countries the majority of male cattle are slaughtered for meat, and the females are kept for breeding purposes. Evidently no specific breed or species was regarded as more suitable than another, as two different species and a variety of breeds were involved. This is an indication that the crimes were not committed in order to sell the livestock for breeding purposes; instead, the focus was on slaughtering in order to obtain the monetary value (expected profits) of the livestock as quickly as possible. The monetary value (expected profits) of the cattle stolen is based on the average mass and average slaughter price during the period in which the cattle were stolen.⁴ This represents the amount of money that the

offenders would have received if the cattle had been slaughtered; this information is important, as to some extent it explains why the objects were chosen by the offender. Livestock do not lose any value by reason of being stolen; moreover, they are a consumable product, and once slaughtered they are not easily traceable. Tables 2 to 4 show the different gains for the offenders and the losses for the victims.

Table 2: The slaughter value of the cattle stolen

Breed	Number of cattle stolen	Estimated mass	Price per kg	Total value of cattle per case
Mixed	18	500	R24 C grade	R216 000
Mixed	9	500	R24 C grade	R108 000
Mixed	38	500	R24 C grade	R456 000
Bonsmara	5	500	R24 C grade	R60 000
Bonsmara	29	500	R24 C grade	R348 000
Bonsmara/Simbra	47	400	R30 AB grade	R540 000
Brahman	10	700	R24 C grade	R168 000
Brahman	25	700	R24 C grade	R420 000
Total	181	Total monetary value		R2 311 600

Table 3: The slaughter value of the goats stolen⁵

Breed	No. of goats stolen	Price per goat	Total value of cattle per case
Mixed	49	R1 800	R82 200
Mixed	55	R1 800	R99 000
Total	104	Total monetary value	

Adding the amounts in Tables 2 and 3, the amount of R2,49 million is a clear indication as to why the objects were lucrative for the offenders, as they yielded a large sum of money for little effort, even though this sum constituted the proceeds of crime. The value as indicated by the victims in the case dockets is indicated in Tables 4 and 5. This value is important, as it signifies the perceived loss to the owner/victim on the day of the crime.

Table 4: Immediate financial loss for the victims of cattle theft

Number of cattle stolen	Breed	Status	Price per animal	Total value of cattle per case
18	Mixed	Unknown	R6 333	R114 000
9	Mixed	Unknown	R5 222	R47 000
38	Mixed	Unknown	R5 157	R196 000
5	Bonsmara	Pregnant	R8 000	R40 000
29	Bonsmara	Pregnant	R17 503	R507 600
47	Bonsmara/Simbra	Heifers	R8 510	R400 000
10	Brahman	Pregnant	R7 000	R70 000
25	Brahman	Pregnant	R26 000	R650 000
Total monetary value				R2 024 600

Table 5: Immediate financial loss for the victims of goat theft

Number of cattle stolen	Breed	Status	Price per animal	Total value of cattle per case
49	Boer goats	Stud	R8 510	R417 000
55	Boer goats	Commercial	R2 945	R162 000
Total monetary value				R579 000

The estimated loss as indicated by the different victims of the crime is R2 603 600. It is clear from the information provided that the estimated livestock slaughter values and direct values are very close for so many cases, differing by only R100 000. The alarming factor is, however, the difference in the values provided by the victims of crime. At first, in the cases of the cattle, the estimated losses of the communal farmers in the first three cases are much less than the values provided by the commercial and stud farmers. Furthermore the values between stud and commercial farmers also seem to be extravagant and far apart. This specific matter was so highly contested by the counsel for the accused in the court case that the regional magistrate in the sentencing arguments concluded that the values provided by the victims could not be regarded as correct (Del Frate, 2015; Pretorius, 2015). The reasons why the matter was so highly contested by the counsel for the accused are found within section 51(2) of the Criminal Law Amendment Act No 105 of 1997 (Department of Justice, 1997), which reads as follows:

(2) Notwithstanding any other law but subject to subsections (3) and (6), a regional court or a High Court, including a High Court to which a matter has been referred under section 52(1) for sentence, shall in respect of sentence a person who has been convicted of an offence referred to in

(a) Part II of Schedule 2, in the case of –

(i) a first offender, to imprisonment for a period not less than 15 years;

(ii) a second offender of any such offence, to imprisonment for a period not less than 20 years; and

(iii) a third or subsequent offender of any such offence, to imprisonment for a period not less than 25 years;

Part II of Schedule 2 as is referred to in section 51(2)(a) above reads as follows:

Any offence relating to ..., theft, or an offence in Part 1 to 4, or section 17, 20 or 21 (in so far as it relates to the aforementioned offences) of Chapter 2 of the Prevention and Combating of Corrupt Activities Act, 2004 –

(a) involving amounts of more than R500 000,00;

(b) involving amounts of more than R100 000,00, if it is proved that the offence was committed by a person, group of persons, syndicate or any enterprise acting in the execution or furtherance of a common purpose or conspiracy

It is clear that in two cases the values provided by the victims were in excess of R500 000, which would have led to a minimum sentence of 15 years for the accused. Reading Part II of Schedule 2, it is clear that subsection (a) creates confusion as it merely states “involving amounts of more than R500 000”. Terreblanche (2003:195) concurs with this conclusion, stating that the draftsmanship in the writing of the Act was very poor and created much confusion for the courts. In this case the accused got away with a lesser sentence due to this poor writing. This matter will need to be addressed seriously by the role players in the red meat value chain of South Africa, as well as other wildlife societies as wildlife currently fetches extreme prices at auctions.

The future breeding values of the cattle stolen are indicated in Table 6 and are based on the principle that each cow would have been able to produce another six calves in her lifetime, and each heifer 12. This calculation is particularly important in that it indicates the impact of crimes of this nature on food security in South Africa.

Table 6: Loss of income: calculation of future losses⁶

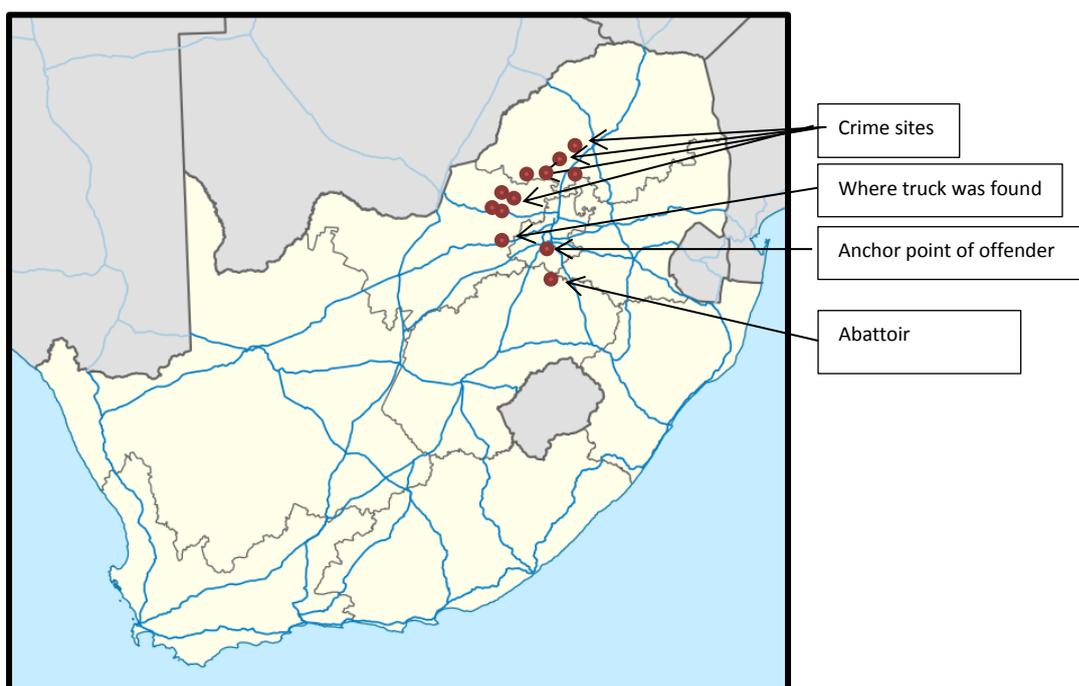
Number of cattle stolen	Breed	Estimated number of calves lost	Value of calves over period	Total loss per case
18	Mixed	6	R4 500	R486 000
9	Mixed	6	R4 500	R243 000
38	Mixed	6	R4 500	R1 026 000
13	Bonsmara	6	R4 500	R351 000
29	Bonsmara	6	R4 500	R783 000
45	Bonsmara/Simbra	12	R6 000 ⁷	R3 240 000
10	Brahman	6	R4 500	R270 000
25	Brahman	6	R4 500	R675 000
Total value lost				R7 074 000

All the livestock stolen had been accounted for at the time of writing, as had been admitted by the accused whilst pleading guilty. The goats and cattle stolen at Lethabong and Modimolle were sold at the anchor point to the public. The heifers stolen at Rustenburg were sold at a suspicious auction in Nigel. The cattle stolen at Mokopane were slaughtered at an abattoir in Villiers in the Free State.

In terms of inertia, the resistance of the objects was limited by the quality of the cattle pens, which were mostly dilapidated. The fact that the cattle pens from which the cattle were stolen were situated close to national and provincial roads must have influenced the selection of the specific objects.

The location of the crime sites

A map of the different crime sites, residences and abattoirs has been included to indicate their location in relation to one another.



The location the offenders used as their anchor point is close to Heidelberg in Gauteng. All the crime sites are more than 250 km from that anchor point, with the crimes having been committed in three other provinces, namely North West, Mpumalanga and Limpopo. The choice of the sites brings into direct contention specific aspects of all the theories within environmental criminology.

The ease with which a crime is committed needs to be considered, as the instrument used to commit the crimes was a 30-ton truck. Certain features of the truck, such as the ability to travel at a reasonable speed, undoubtedly influenced the choice of location, as did the size of the vehicle, as it was capable of accommodating a large number of cattle at a time and transporting them over long distances without attracting attention, as the transportation of cattle is an everyday occurrence in South Africa.

There are a number of other cattle farms between the anchor site and crime site. Rational Choice Theory immediately becomes relevant, and the question is asked why these particular crime sites were chosen by the offenders in preference to others. In all the cases the crime scene was close to a national highway or provincial road, which allowed for quick access and retreat. Offenders were also able to scout out potential ideal sites from moving or stationary vehicles without been observed.

Crimes at specific places

Crime Pattern Theory attempts to explain why crimes are committed at certain locations. In the case of livestock theft, this seems to be a fairly easy question to answer, as it could be argued that the crime can be committed only where livestock is produced. The problem is that crimes committed in rural or isolated areas are qualitatively and quantitatively different from those committed in urban areas (Marshall & Johnson, 2005:32). A range of variables and rich complexities contributing to the commission of the crimes in rural areas must be taken into account, and the question in fact proves not so easy to answer after all.

The answer to the question of why some places (rural and urban) experience a lot of crime while others experience almost none must be sought in terms of Crime Pattern Theory's perspective on time and space. As no interviews were conducted with the offenders, this question cannot be answered within this study. However, although these crimes were not predatory in nature, Buffer Zone Theory came into play, in that all the crimes were committed at a considerable distance from the anchor point. Following the apprehension of the gang leader, the other members of the group arrested provided evidence that the buffer zone was not in fact that large, as the spotters and actual committers of the crimes were resident in Tzaneen and Polokwane. Later it was also established that the group had met during previous periods of incarceration some ten years previously and had decided to collude to commit livestock theft (Scott, 2014).

The time at which the crimes were committed

According to the victims, all the crimes discussed in this article were committed at night. However, herding cattle at night is no easy task, and it is possible that a period of time was required, for example from dusk until the truck and trailer arrived and the cattle were actually loaded and transported away. Video footage is available from the Kranskop toll plaza in the Modimolle and Mokopane cases and provides evidence as to the times when these crimes were committed.

In the Modimolle case the truck passed empty through the toll gate in a northerly direction to the crime scene at 23:42 and returned loaded with cattle in a southerly direction at 06:34. The distance from the tollgate to the crime scene is approximately ten kilometres; taking into account driving time of about ten minutes in each direction, it can be concluded that six hours and 32 minutes was spent at the actual crime scene. The fact that so much time

was spent there does provide an indication of the difficulty of herding and loading the cattle, and also that the cattle may not have been herded into the pens beforehand.

In the Mokopane case the truck passed empty through the tollgate in a northerly direction to the crime scene at 21:47 and returned loaded with cattle in a southerly direction at 03:34. The distance from the tollgate to the crime scene was approximately 70 km, so taking into account driving time of about an hour in each direction, it can be concluded that three hours and 37 minutes was spent at the actual crime scene. The fact that less time was spent at this crime scene suggests that the cattle might have been herded into the pens beforehand, or that the pens were in a better condition for accommodating the cattle.

The length of time spent at the crime scene and the location of the crime scene do seem to indicate the absence of a suitable guardian.

The guardian

The guardian in most crimes (and in this case of cattle theft specifically) cannot simply be the owner/victim of the object. In livestock theft cases there are a host of other role players, such as the abattoir owner, auctioneers and barter agents, who are also required by law perform a guardianship function and to protect the property of others. Other elements that fulfil a guardian role include the laws instituted to help the owner to guard the cattle. The Stock Theft Act No.57 of 1959 (Department of Justice, South Africa, 1959), The Agriculture Produce Agents Act No 12 of 1992 (Department of Agriculture, 1992) and the Animal Identification Act No. 6 of 2002 (Department of Agriculture, 2002) were specifically introduced and amended for the purpose of guarding and ensuring ownership of cattle.

Obedience to the rule of law was observed by all the victims in these cases, as all the cattle were marked as required by section 7 of the Animal Identification Act No 6 of 2002 (Department of Agriculture, 2002:6). It is obvious, however, that the other role players who participated in the crimes, such as the abattoir where the cattle were slaughtered, did not comply with the rule of law, as the requirements of section 6 of the Stock Theft Act No 57 of 1959 were not adhered to: the cattle were merely received and slaughtered without confirmation of transfer of ownership or that the offenders were the rightful owners of the animals (Department of Justice, 1959). The abattoir was also not registered as a livestock agent in terms of section 16(2) of the Agriculture Produce Agents Act No 12 of 1992 (Department of Agriculture, 1992).

All the crime scenes were close to a national highway or provincial road, and although the crimes were committed at night, there must have been constant passing traffic. The fact that the crimes could not be committed without lights in the form of torches and vehicle lights does cause one to question the alertness of fellow citizens and road users.

A question that requires answering in Crime Pattern Theory is why certain people are victimised and even re-victimised, while others are never affected. In the ten cases discussed, one victim was re-victimised and admitted that after the first incident he did not think of demolishing the dilapidated cattle pens that constituted the site of the first crime scene. None of the owners of the stolen cattle lived on the premises from where the cattle were stolen; furthermore, all the victims were part-time farmers or communal farmers. Thus the guardian was absent, as is claimed in terms of Routine Activity Theory.

The social network Facebook page *Veediefstal, Aanmelding en Statistieke* at <https://www.facebook.com/groups/113457748851009/> eventually took over the guardianship role on behalf of the owners/victims by informing the public of the livestock theft and alerting them to their role in the reduction of livestock theft. The actions of the social network inspired a producer located at Moloto in Mpumalanga to print the photo of the truck that was posted on Facebook and share it with friends and clients. It was eventually two different clients, one from Vosloorus and one from Soweto, who identified the offender and provided the information that was conveyed to the SAPS Stock Theft Unit. The two people who

identified the offender were people who did business with him and were in fact also victims of other criminal schemes carried out by the culprits (Scott, 2014). Pretorius (2015), in closing arguments in the sentencing of the accused, indicated that the formation of the Facebook group was an outcry by society to protect itself from crime and must be seen as an aggravating circumstance when considering an appropriate sentence.

CONCLUSION

This article identifies ways in which specific livestock theft crimes are committed and contributes insight into this crime and the crime situation in South Africa. Crimes committed in urban and rural settings are distinguished to create awareness among researchers within in the field of criminology and to prompt further exploration in the field of environmental criminology, which has been neglected and under-researched for decades, especially in South Africa. Changes in the environment and society, such as technology in computers, cellphones and social media, are important as they express the importance of the concept of place in crime and a variety of physical, sociological and economic dimensions that are available to explain variations in crimes with specific reference to livestock theft.

Agriculture is a business enterprise with tremendous challenges and stressors. Adding to these basic challenges and stressors are agricultural crimes, which include theft of livestock and a whole array of other crimes. The total divide between urban and agricultural communities is attributed to the disappearance of the umbilical cord between the urban and rural settings. The consequence is a society functioning in a vacuum without realising the cumulative effect of this and the impact it has on safety and food security. The uninformed public requires organised agriculture and the media to ensure that people realise the impact of crime on their chances of a successful existence. Researchers and the media will seriously need to acknowledge all the different crimes committed in rural areas and not only farm attacks and rhino poaching, which do not have such a big impact on food security.

Environmental criminology theories provide a framework to research the crime of livestock theft, and categorising offenders as either commuters or marauders does provide answers in that perpetrators of livestock theft are more likely to be classified as commuter offenders. The value of the livestock is furthermore a main driver for the perpetrators, as can be seen in the profits of livestock theft – in excess of R2.4 million made by the perpetrators, with corresponding losses to the victims of these crimes. The fact that there are discrepancies in the law due to poor draftsmanship and inadequate determination of the value of livestock must be seriously addressed by the role players in the red meat value chain. Although the thefts were lucrative for the offenders, it must be noted that without a proper instrument, in this case the 30-ton truck, which they were able to move effectively to load and offload the stolen cattle, these crimes, would have been impossible. The instrument furthermore influenced the choice of location, as did the size of the vehicle and the movement over long distances without attracting attention. These facts will need to be taken seriously in the whole red meat value chain to meet concerns for the producers and food security in South Africa.

Crime Pattern Theory attempts to explain why crimes are committed at certain locations, but it is determined that this is not such an easy question to answer. Crimes committed in rural or isolated areas are qualitatively and quantitatively different from those committed in urban areas due to variables such as distance, location, geography and population. Although these crimes are not predatory in nature, Buffer Zone Theory has come into play in that all the crimes were committed at a considerable distance – 250 km – from the anchor point and were committed at night.

Obedience to the rule of law by the producers was not a guarantee of protection against the theft of their cattle. It is also obvious that a lot of role players in the value chain actually contribute to livestock theft as all attempts are made not to abide by the rule of law. The location of the premises is definitely an issue that is taken into account by the perpetrator

of livestock theft, as all the crime scenes were next to or close to – less than 300 metres from – a national highway or provincial road.

It is further determined that this is a highly neglected area of research, and much more effort should be made to address this age-old crime in South Africa. The effect of, and involvement of society in, the Facebook pages, and the effect this had on the regional magistrate in imposing sentence in the case discussed in this article, must be regarded as important for future testimony in livestock theft cases.

ENDNOTES

1. Agriculturalist, chairperson of the Gauteng Red Meat Producers Organisation, chairperson of the National Livestock Theft Prevention Forum, appointed by the Minister of Agriculture Forestry and Fisheries to the Agricultural Produce Agents Council. Some of the views expressed are based on experience gained within organised agriculture in Gauteng and South Africa. The author also gave evidence in aggravation before sentencing and notes were made in court.
2. The author is administrator of both pages. Veediefstal attracts mainly Afrikaans-speaking people and excludes many producers for that reason. Livestock Prevention was established to ensure the inclusion of all producers.
3. The author was subpoenaed to give evidence in aggravation of sentence in the trial, which provided access to the information.
4. These values are based on the author's personal records of meat prices in South Africa.
5. In the case of goats, it is a live trade and the animals are not slaughtered at abattoirs, and the estimated prices are provided by the National Livestock Theft Prevention Forum on a yearly basis.
6. As the author is not up to date with the goat trade, no prediction is made as to future losses.
7. This price takes into account a period of 12 years, and the author is of the opinion that this is actually too short an estimate.

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