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Social network analysis in the fight against illegal wildlife trade

Building a bridge between research and practice

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About this report

This report was produced in the context of a cross-divisional initiative to promote systematic, intelligence-led action against IWT networks in East Africa and Southeast Asia.

As part of this initiative, the Public Governance division of the Basel Institute is leading research and community engagement activities in East Africa. The goal is to contribute towards the prevention and combating of IWT by developing a better understanding of the context-specific drivers of trafficking and the role of informal social networks and their associated corrupt practices in facilitating such illicit behaviours.

With regard to informal social networks engaged in wildlife trafficking, two types of research are applied to shed light on different aspects of the puzzle: field research (interviews and focus group discussions) and social network analysis (SNA). Analysing the structural, relational and sociometric characteristics of trafficking networks through SNA is already, even in these early stages, proving a novel way to close the gap between research and practice.

For a brief introduction to the technique, see the author's quick guide to social network analysis in combating organised crime and trafficking.[1] Preliminary findings are set out in this December 2019 report: Examining wildlife trafficking networks in East Africa through the lens of social network analysis.[2]

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[1] https://www.baselgovernance.org/blog/jacopo-costas-quick-guide-social-network-analysis-combating-organised-crime-and-trafficking
[2] https://www.baselgovernance.org/publications/preliminary-report-examining-wildlife-trafficking-networks-east-africa-through-lens

1 Executive summary

This short report provides a framework for leveraging synergies between researchers in the field of social network analysis (SNA) and practitioners in the field of intelligence and law enforcement against illegal wildlife trade (IWT). The synergies between theory and practice are potentially great yet largely unexplored.

The report shows how SNA research can support investigations relating to IWT and how, in turn, data and experience gleaned from IWT investigations can help SNA research. By joining forces with their different but complementary approaches, researchers and practitioners can generate novel insights to support the fight against IWT.

SNA research can support wildlife trafficking investigations in various ways:

- analysis of datasets to generate a wide range of valuable intelligence products;
- structuring the intelligence through SNA to enable its systematic application by investigators;
- identifying criminal actors previously hidden in the data;
- assessing vulnerabilities in criminal networks;
- developing evidence-based strategies to counter IWT.

In turn, IWT enforcement activities and practitioners can support SNA research on wildlife trafficking through:

- providing a rich source of primary and secondary data;
- helping to frame research questions and hypotheses;
- introducing researchers to the field and making connections;
- clarifying queries around specific data and the roles/functions of actors in the network;
- acting as a sounding board to confirm or reject the findings of the SNA.

In order to harness such synergies, it is important to think of ways in which information can be better shared between the fields of research and practice. Enabling access to databases is a first step. It is also important for researchers and practitioners to develop a better understanding of each other's work and methods with a view to jointly developing evidenced-informed strategies against IWT.

To some extent, we will learn as we go. As the collaborative approach between SNA and IWT investigation deepens and expands, so too will our understanding of what these synergies mean in everyday practice. This will allow for further reflection on:

- the characteristics of researcher/practitioner collaboration within multidisciplinary projects;
- the contributions and added value of such collaborations;
- the challenges and ways in which such collaborations can be improved;
- spaces for institutionalisation.

These lessons will make a vital contribution to the collective endeavours of public and private actors working towards the same goal – in this case, the ambitious goal to eradicate IWT.

2 Mind the gap: building a bridge between research and practice

Few would disagree that collaboration between researchers and practitioners is fundamental to increase our capacity as a community to fight crime in the contemporary world. Strategies to fight crime should be based on evidence (Morselli 2010). But while opportunities for such collaboration are plentiful, real-life examples are surprisingly challenging and all too rare. This situation is no different with bridging the gap between SNA researchers and IWT investigators. Even at the most fundamental level, a significant challenge relates to promoting wider understanding of what SNA means and to the concrete goals and objectives researchers and practitioners have in applying these academic tools and concepts (van der Hulst 2009).

Over the years, various pilot projects have tested the feasibility and effectiveness of collaboration between these two epistemic communities.[3] One aspect is clear: easier access to investigative and judicial data could make a huge potential contribution to the study of social criminal networks. Documents such as electronic wiretapping and shadowing records, or pre-trial detention orders and sentences, are incredibly valuable for SNA (Heath, Fuller, and Johnston 2009; Berlusconi 2013; Campana and Varese 2012; Campana 2016). But obtaining such documents is often a major challenge for researchers.

High-quality SNA needs high-quality data, so this challenge impacts the depth and breadth of findings that SNA can achieve. Weaker findings in turn make a weaker contribution to law enforcement efforts.

Bringing different fields of knowledge and skillsets together in a context of openness and collaboration will not only produce better knowledge, but also improve processes. Meaningful collaborations are planned from the outset and designed to share and build on capacities, perspectives and practices. In this way, the body of knowledge becomes greater than the sum of its parts.

3 How can SNA research support wildlife trafficking investigations?

There is abundant evidence that social network analysis can contribute positively to the investigation of organised crime such as wildlife crime. Empirical research and SNA can support investigative, intelligence and law enforcement activities in different ways (van der Hulst 2009).

[3] The US Department of Justice's Office of Community Oriented Policing Services (COPS Office) entered into a cooperative agreement with Yale University to pilot a state wide violence prevention initiative in New Haven, Connecticut in cooperation with the New Haven Police Department, the US Attorney's Office, and local service providers and community members (Papachristos and Sierra-Arevalo 2018); the Richmond, Virginia, Police Department (RDP) participated in a pilot project to explore the viability of incorporating social network analysis into the crime analysis methodologies, with the collaboration between representatives of RDP, sociologists, and software designers (Johnson et al. 2019); the Naval Postgraduate School in Monterey, California, is home to the Common Operational Research Environment (CORE) Lab which has worked together with law enforcement partners to incorporate SNA methods into crime reduction strategies (Crocker 2018); finally, as part of the UK Home Office's Ending Gang and Youth Violence programme, a SNA research was undertaken in partnership with Great Manchester Police in order to better understand the local gang issues (Gunnell, Hillier, and Blakeborough 2016).

The most obvious contribution of SNA to investigations is generating new knowledge with an immediate intelligence relevance and application. SNA can be applied to large sets of primary and raw empirical data such as wiretapping and telephone conversations, SMS exchanges, instant messaging chats and emails.

This can generate actionable information that may have otherwise been missed in the noise of large data sets. This could be targeted intelligence about key individuals, companies, telephone numbers, email addresses or business or criminal connections. It could also be more strategic intelligence about operative strategies and hidden relational patterns, events and facts.

Details of financial transactions and shipments of goods, incidents of corruption and money laundering, or intelligence about routes and concealment strategies can all provide that crucial piece of information to propel investigations forward.

The structural-functional perspective that SNA provides can help practitioners operating with constrained resources and tight deadlines. Information collected during SNA can be organised and presented in intelligence reports and Excel sheets, allowing investigators and law enforcement agents to verify new leads quickly and systematically. Operationally, this could lead investigators to improve their investigative processes and better focus their field operations.

SNA can also increase the capacity to identify individual or collective actors who remained marginal or completely unknown to previous investigations, but who play an important role in the criminal game.

As well as helping to identify and target key players (Patel et al. 2015; Borgatti 2006; Schwartz and Rouselle 2009), SNA can be used to assess vulnerable and strategic positions in the crime networks (Morselli 2010; Grassi et al. 2019). By providing information on the key players, leaders, brokers and hidden patterns that connect them, SNA can help practitioners to neutralise and disrupt criminal networks (Ren et al. 2019; Everton 2012).

SNA can also produce knowledge and know-how on how IWT operates in general as well as in particular contexts. This provides a basis for evidence-based enforcement strategies (Morselli 2010).

SNA and network ethnography contribute to building the bigger picture of structures and functions of the criminal networks (Calderoni and Piccardi 2014). This helps both researchers and practitioners to create theoretical and conceptual frameworks and models to analyse the characteristics of particular criminal networks (Schwartz and Rouselle 2009).

These models are essential to create effective and efficient red flag systems that can predict links, flows and connections between different nodes or actors in a network (Dash, Safro, and Srinivasamurthy 2018; Hu et al. 2018; Moses and Chan 2018; Berlusconi et al. 2016; Lombardo 2019; Bachner 2014). They are also necessary to anticipate the actions of organised and transnational crime organisations (Williams and Godson 2002).

4 How can investigations support SNA research on wildlife trafficking?

Investigators, intelligence analysts and law enforcement agents play a significant role in providing avenues for academic activities on criminal phenomena.

The most obvious aspect is data. Illegal wildlife trade is by nature secretive and opaque, so public data that could feed into SNA research is often limited. Nevertheless, this information is not absent. Civil society organisations, NGOs, public prosecutors and judges, national wildlife authorities, police and law enforcement agents all have rich sources of information that could potentially be harnessed for academic study.

Law enforcement practitioners themselves can play a valuable role in facilitating academic research on IWT. First, they can help frame the research agenda by improving goals, questions, theoretical models and hypotheses. Second, practitioners can provide the much-needed introductions that are essential to launch the research activities. They know "who's who" in the field and can make the necessary connections.

Third, practitioners can provide access to (anonymised) data on trafficking networks, and specifically the type of data that permits researchers to analyse structural, relational and sociometric characteristics of networks. Primary documents include confidential and intelligence reports, wiretapping and other forms of electronic and human surveillance (pictures, videos, recordings), bank statements and financial transaction reports. These are crucial building blocks of SNA research but nearly impossible for academic researchers to obtain.[4]

The support of practitioners is not only important at the start of such an academic exercise. During the different stages of the analysis, researchers rely on practitioners to explain gaps in the data that prevent them from tying the different pieces of the story together. This includes clarifying individual pieces of data and datasets – which may not be presented clearly – or shedding light on the roles and functions of particular traffickers, co-offenders and private-sector actors.

When the empirical analysis of documents and data is concluded, practitioners provide a crucial sounding board to verify the findings and insights emanating from the SNA.

This expert-practitioner lens helps to accurately establish borders and members of the network; further specify operative dynamics and relationships of influence; better clarify the relation between formal and informal roles; and interpret and translate specific behaviours into more general concepts with wider applicability.

[4] Respecting the limits of laws defined by national and international authorities on the handling of personal and sensitive data, practitioners can directly share with researchers – or sustain the sharing by third parts – of important information, materials and data that permit the SNA research of IWT.

5 How to enhance the value of SNA applied to IWT intelligence and investigation

The positive spill-over effect of applying SNA and network ethnography to IWT intelligence and investigative activities can be further enhanced in two ways.

First, by training researchers on how to better analyse empirical materials through an intelligence and investigative lens.

Second, by building comprehensive data sets. Better data means better analysis. Bringing together individual pieces of information held by different actors involved in intelligence and law enforcement activities can be very valuable. Databases shared between different institutions, such as law enforcement bodies, intelligence agencies and NGOs involved in the fight against IWT[5] (Haas and Ferreira 2015; 2016) are therefore extremely useful to collectively increase the effectiveness of strategies to fight IWT.

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[5] In this framework, the actors identify specific procedures to identify and share anonymised and encrypted data, and to continuously feed this database through mechanisms such as Actionable Intelligence Reports based on the grammar of social network analysis.

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