Recent Challenges for the Enforcement of Wildlife Laws in East Malaysia

Mariani Ariffin

Department of Environmental Management, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor, Malaysia

ABSTRACT

Law enforcement is one of the weakest links in wildlife conservation. This paper analyses the main challenges facing wildlife law enforcement in East Malaysia and identifies the enforcement strategy used by wildlife officers in the region. To these ends, a questionnaire was distributed to the wildlife officers. The study found that the respondents tended towards deterrence strategy in enforcing the laws which focuses on detecting and punishing violations. The study also revealed that the primary challenge facing the wildlife enforcement officers was lack of institutional capacity. This was reflected by problems related to inadequate equipment, facilities, limited manpower and lack of skills. Other major challenges highlighted by the respondents were lack of cooperation from the public and other enforcement agencies, lack of political will and threats from the regulated parties. The findings of the study contribute to a greater understanding of the main enforcement strategy used by wildlife officers in East Malaysia and highlight challenges they encountered in undertaking their duties. These insights provide useful information into developing better informed capacity-building programme for the wildlife officers and for decision-makers at state and federal level in determining allocation or other provision for the wildlife authorities.

Keywords: Challenges, East Malaysia, enforcement, laws, wildlife

INTRODUCTION

In the wake of wildlife crimes which are widely committed by organised criminal gangs across national boundaries (Cook, Roberts & Lowther, 2002), enforcement is essential to ensure compliance with

conservation legislation (Holmern, Muya, & Røskaft, 2007; Keane, Jones, Edward-Jones & Minner-Gulland, 2008). However, ineffective enforcement has remained one of the main obstacles to conservation laws (Kaaria & Muchiri, 2011; Sharma 2003). According to Crow, Shelley, and Stretesky (2013), most wildlife crimes can be classified into four areas, namely improper permitting, illegal taking, illegal possession of wildlife and by-products and conservation-related offences. Wildlife crime can occur at the micro-level such as subsistence poaching and individual acts of cruelty, meso-level like organised illegal hunts and domestic trade in protected species, as well as macro-level, notably import and export of endangered species (Wellsmith, 2011).

The enforcement cycle starts from the committing of an offence by a person, through its detection, the taking of enforcement action, possible prosecution and the consequent imposition of sanctions, to the final outcome of achieving compliance (Benson et al., 2006). The 'deterrence' strategy is the most stringent approach of enforcement. It emphasises a confrontational style of enforcement and the sanctioning of rule-breaking behaviour. The assumption under this approach is rational people respond to incentives, and thus, "if offenders are detected with sufficient frequency and punished with sufficient severity, then they, and others, will be deterred from future violations" (Cunningham, 2010, p. 121). In contrast, a compliance strategy emphasises cooperation rather than confrontation and

conciliation rather than coercion to avoid any conflict with the regulated parties. It assumes that the majority are willing to comply voluntarily. These two enforcement strategies are two polar extremes that are unlikely to be found in their pure form.

Other approaches occur in between the two polar. One of these approaches is called responsive regulation, the approach which is a combination of the two extreme approaches, whereby regulators respond based on the responses of regulated parties. For example, regulators may first give advice upon detecting an offence but if the regulated party does not comply and continue committing violations, progressively punitive and deterrence oriented strategies will be taken. While literature have theorised several other regulatory enforcement approaches (for example really responsive regulation by Baldwin & Black, 2007, pp. 59-94), which also highlighted a few other approaches), this study will focus on the three approaches described earlier as they are the most commonly applied by many enforcement agencies. Previous studies on regulatory enforcement have addressed general topics related to environmental law enforcement against industries (Fairman & Yapp, 2005; Gunningham, Kagan, & Thornton, 2004; Thornton, Gunningham, & Kagan, 2005), but not many have addressed enforcement by wildlife agencies, which is usually enforced against small business and individuals with different motivations. There is also not much literature that looks at the issue in the context of Asian developing countries. In addition,

previous studies have not considered the appropriateness of enforcement strategy in light of the challenges faced by wildlife agencies in practice.

In the face of the importance ensuring effective enforcement, it is particularly intriguing to look at the strategy used by wildlife officers to enforce laws, and see whether such strategy is appropriate when considered against the difficulties faced by the officers in practice. In Malaysia, wildlife officers, rather than the police have a prominent enforcement role, including investigation and prosecution of wildlife crimes (Ariffin & Mustafa, 2013). Several studies related to conservation have made discouraging conclusion on wildlife enforcement in the country. Sarawak has been reported to have the highest sale of bear products at local shops in the country, the sources of which were claimed to be locally hunted (Krishnasamy & Shepherd, 2014). Another study on the conservation status and trade of the Asian Box Turtle (*Cuora amboinensis*) in Malaysia revealed that there was lax law enforcement and unequal enforcement efforts throughout the country (Schoppe, 2008). Similar conclusion on the lack of enforcement at all levels was made by another study on pangolin capture and trade in Malaysia (Chin & Pantel, 2008; Pantel & Awang, 2010). The current study looks at the enforcement of wildlife legislation in East Malaysia. The study focuses on the enforcement of the International Trade in Endangered Species Act 2008 (Act 686) (henceforth, INTESA) as well as Sabah Wildlife Conservation

Enactment 1997 and Sarawak Wildlife Protection Ordinance 1998. Results of the study provide information on wildlife law enforcement strategy used by agencies and challenges faced in undertaking enforcement tasks. The results are useful to reflect upon the appropriateness of the existing enforcement strategy and how it can be improved.

INTESA is a federal law that aims to implement Malaysia's obligations under the International Convention on International Trade in Endangered Species of Wild Fauna and Flora. It regulates import and export of certain species listed in its schedules through permitting system. These listed species are endangered or potentially threatened by commercial activities if not controlled. Possession of illegally imported or exported wildlife species or specimen is also an offence under INTESA. The Act provides stringent penalties with fine not exceeding MYR100,000 for each animal or plant specimen illegally imported or exported or imprisonment for a term not exceeding seven years or both. Meanwhile, Sabah Wildlife Conservation Enactment 1997 and Sarawak Wildlife Protection Ordinance 1998 provide for conservation and management of wildlife and their habitats in Sabah and Sarawak respectively. Both state laws categorise wildlife as protected species or totally protected species with stricter controls given to the latter category. Certain dealings in wildlife including hunting of animals, collection of plants and their utilisation and sale require permit or license. All the three legislations

provide enforcement officers with police-like powers in order to do investigation and enforce the laws including power of arrest, search and seizure. Under the laws, enforcement officers may also conduct prosecution, with written consent of the Public Prosecutor.

As one of the mega diverse countries in the world, the wild flora and fauna diversity in Malaysia is not absolutely known but is nonetheless exceptionally rich. Wildlife species of East Malaysia are generally richer than that of Peninsular Malaysia. There are approximately 221 recorded species of non-marine mammals in East Malaysia (Davison & Akbar, 2007). It is further estimated that the region has 742 species of birds, 242 amphibian and 567 reptile species (Ministry of Natural Resources and Environment, 2009). Both Sabah and Sarawak also have an estimated 12,000 species of vascular plants. The iconic Mount Kinabalu of Sabah alone has over 5000 plant species; 40% of these are endemic (Ministry of Natural Resources and Environment, 2014).

States in Peninsular Malaysia have agreed to federalise wildlife management and protection through the Department of Wildlife and National Parks under the Ministry of Natural Resources and the Environment. Meanwhile, Sabah and Sarawak have their own agencies under the respective state governments to enforce different set of laws to conserve wildlife in the two states. The Forest Department of Sarawak (SFD) is responsible for conservation of wildlife and forest in the state. In response to shortage of manpower

in the SFD, Sarawak Forestry Corporation (SFC) was established in 1995 to help with enforcement (Forest Department Sarawak, 2012a). Currently the SFD is the license issuing agency for wildlife exploitation-related activities including hunting, trading, possession and commercial farming. Sabah Wildlife Department is the main authority that manages wildlife species and protected areas as well as enforcement of the relevant laws including INTESA and Sabah Wildlife Conservation Enactment 1997. The department is also responsible in managing and issuing license, permits and certificates in ensuring sustainable use of wildlife resources in Sabah.

In 2013, SFD recorded 48 cases which were compounded and 13 cases were filed in court for all offences under the 13 ordinances and rules related to wildlife and forestry enforced by the department. It was stated that seven cases were investigated under the Sarawak Wildlife Protection Ordinance 1998 but there is no report on how many of these were prosecuted (Forest Department Sarawak, 2014). Compound is a form of civil fine imposed on a person who commits an offence under the laws by a government agency. In 2012, SFD reported that 75 offences were compounded and only one case was filed in court. Besides, seven cases were investigated under the Sarawak 1998 Ordinance (Forest Department Sarawak, 2013). In 2011, SFD recorded 45 cases of compound and zero prosecution though the year witnessed a total of 121 wildlife cases which were investigated under the Sarawak 1998 Ordinance alone (Forest Department

Sarawak, 2012). It can be seen that the number of prosecution in Sarawak is much lower compared to the number of cases compounded. In Sabah, there have been reports of arrests and charges in the daily news but accessible statistics on wildlife crimes or successful prosecution in the state are unobtainable.

MATERIALS AND METHODS

The study was conducted in East Malaysia comprising Sabah and Sarawak, which occupy the northern Borneo island. Environmental and wildlife issues are important to local residents of Sabah and Sarawak as well as to those who visit the region each year for the sole purpose of enjoying the states' vast natural resources. A questionnaire survey which consisted of 45 items and divided into three parts was developed. Some of the items were phrased in the reverse to avoid respondents' tendency to respond in an indiscriminately positive way. The first part of the questionnaire was designed to elicit respondents' demographic information. The second part attempted to find out about the respondents' orientation towards enforcement strategy. The final part aimed to extract information pertaining to enforcement challenges encountered by the respondents. The survey result was analysed using descriptive analysis. An open-ended question, "What are other challenges facing your agency in enforcing wildlife legislation?", was included to give respondents the opportunity to identify other challenges that were not included by the Likert items.

The survey was distributed to wildlife enforcement officers of Sabah Wildlife Department and Sarawak Forestry Department. Using a convenience sampling that depends on availability of officers during pre-arranged field visits, a total of 48 respondents took part in the survey - 22 were from Sabah and 26 from Sarawak. The questionnaire was administered through face-to-face interview and email. A combination of factors including the demanding nature of their jobs and lack of facility like computer made it hard for the targeted respondents to lend commitment to this research despite persistent follow-up from the researcher. Therefore, it was difficult to obtain high participation. Nevertheless, it was estimated that at the time of the study, each of these states had around 80 wildlife officers who were involved in enforcement activities, thus, the number of respondents who participated in the study was more than 25% of the target population. However, convenient sampling method to administer the questionnaire means that the results are not generalisable to all wildlife enforcement officers in the region but provide important insights.

RESULTS AND DISCUSSION

In line with the nature of wildlife enforcement work, almost all the respondents were males with only two female respondents. In terms of race, 27% of the respondents were Malays and 60% were natives of Sabah and Sarawak, including Kadazan, Dusun, Iban

and Bidayuh. About 55% of the respondents were aged between 41 and 49 years old and 32% were more than 50 years old. To sync with their seniority, almost all the respondents (98%) had more than 10 years' working experience with wildlife authorities. In terms of education level, merely 14% had completed tertiary education. Majority of the respondents had passed the Malaysian Certificate of Education. Despite their moderate academic qualifications, most of the enforcement officers were rich with field site experiences. Based on their academic qualification or their working experience, 57% of the respondents claimed to be knowledgeable in forestry and about 5% declared they were knowledgeable in law and biology respectively.

While the respondents may use a combination of strategies in enforcing the laws, the survey result shows higher overall mean for deterrence strategy ($M = 4.02$, $SD = .388$) in both states compared to compliance strategy ($M = 3.68$, $SD = .540$) and responsive regulation ($M = 3.51$ $SD = .551$). This suggests that the orientation of the respondents is towards deterrence, rather than being persuasive or responsive. A high percentage responded as agree and strongly agree with all statements associated with deterrence strategy. For instance, most of the respondents (83%) believe that people will not comply with the law unless punishment is imposed on violators. Besides, when a violation is detected, the majority of the respondents (95%) say they are always ready to take formal enforcement action. In line with this, about 96% of the respondents give emphasis on collection of evidence to prove violations.

Despite their tendency towards deterrence strategy, their flexibility to employ a mixture of enforcement strategies can be seen from the respondents' responses to some items related to compliance strategy. For example, in order to ensure compliance, 89% of them say they may persuade the regulated parties rather than using confrontation. Likewise, 58% of the respondents state they may try to negotiate or persuade violators before proceeding with formal enforcement action. With regard to responsive strategy, certain statements also receive high approval from the respondents. For example, many concur (68%) that depending on the circumstances and motives of the regulated party, a blend of persuasion and coercion can be used to achieve compliance. Similarly, many respondents (75%) say negotiation and advice can be used for less serious crimes.

As shown in Figure 1, the primary enforcement challenge identified by the respondents is institutional capacity (Sabah: $M = 4.07$, $SD = .594$; Sarawak: $M = 4.18$, $SD = .425$). The institutional capacity studied includes manpower in terms of number and skills, logistics and equipment. Almost 90% of the respondents concur; 50% of them strongly agree that there is insufficient number of officers to do enforcement. Similar to the situation in many other states, wildlife enforcement officers in Sabah and Sarawak also perform many different tasks

that include a myriad of administrative tasks like issuance of licenses, regulatory duties like monitoring birds' nests collection and social welfare work like responding to human-animal conflict call. Other than that, over 87% of the respondents think that their agencies have inadequate infrastructure facilities. About 71% of them view their equipment to be less advanced compared to the typed used by wildlife criminals. With regard to skills, 92% feel that conducting effective prosecution is a big problem for wildlife authorities. Besides that, 83% of the respondents believe that not all wildlife officers are skilled in recognising wildlife species.
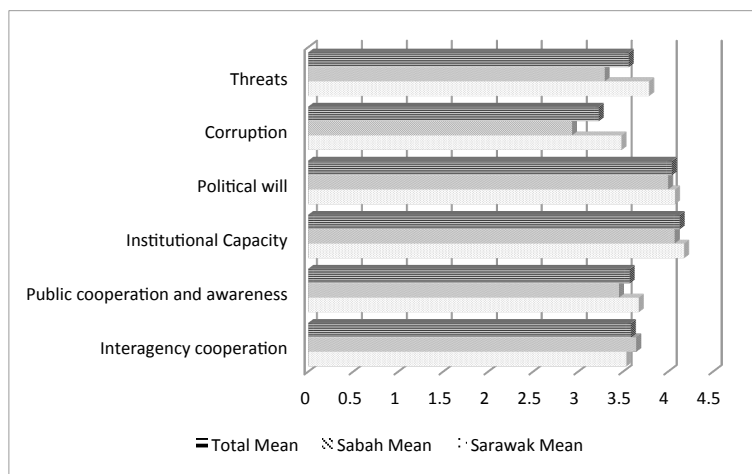

Figure 1. Major challenges to enforcement in practice

The second main challenge for wildlife officers in East Malaysia is the lack of political will (Sabah: $M = 4.00$, $SD = 1.00$; Sarawak: $M = 4.08$, $SD = .611$). The results show that 48% of the respondents agree and 6.3% strongly agree that politicians pay insufficient attention to wildlife conservation issues in East Malaysia. About 41% of them say that budget allocation for wildlife enforcement agency is inadequate. The third main challenge facing wildlife law enforcement in the region is lack of interagency cooperation with other enforcement agencies. With regard to this, Sabah ($M = 3.65$, $SD = .722$) had a slightly higher mean compared to Sarawak ($M = 3.54$, $SD = .516$). The study shows 68% of the respondents in Sabah think that they lack of cooperation from other enforcement agencies such as the customs, and military. Further, about 77% view information sharing between them and such agencies to be limited. In this survey, 82% of the respondents in Sabah are also of the opinion that other enforcement agencies lack understanding of their roles and

responsibilities. Most of them also perceive training with other enforcement agencies as rare.

In terms of cooperation from the public, 21% of the respondents strongly agree and 60% agree that the public does not have adequate knowledge about wildlife laws. The study found 81% of them believe that the public does not understand the role of wildlife enforcement authority. Meanwhile, 46% say that the public is not always willing to provide information about wildlife-related criminal activity. More than 75% of the respondents say that the public sometimes refuses to cooperate with them. Threat from wildlife criminals is another main challenge faced by wildlife officers in East Malaysia. The study found that approximately 29% of the respondents strongly agree and 46% agree that in the course of field operations, enforcement officers are often threatened by criminals. As for corruption, the study found the mean to be the lowest for both states (Sabah: $M = 2.93$, $SD = 1.00$ and Sarawak: $M = 3.48$, $SD = .780$). This suggests that corruption in wildlife enforcement is seen as less serious compared to other major challenges highlighted earlier.

Confirming the statistical findings above, as shown in Table 1, responses to the open-ended question reveal the highest recurring theme (35.9% of the responses) is coded to institutional capacity, half of them mention lack of infrastructure, equipment or logistics. These include lack of space to store confiscated wildlife, inadequate vehicles for enforcement since they are also used for other official

tasks, lack of motorcycles which are more suitable to chase culprits through narrow paths, unavailability of weapons for self-defence, lack of communication gadgets like walkie-talkie or special equipment that can help in areas with no telecommunication transmission. Many respondents also cite that there is small number of enforcement officers for the areas that they need to monitor. A few also express concern about the lack of young officers and permanent wildlife officers.

Table 1
Frequency of different challenges mentioned in the open-ended survey

Coding of Challenges	Frequency
Institutional capacity	28
Lack of cooperation	11
Lack of incentives	8
Threats	8
Political interference	7
Lack of training	4
Lack of priority	2
Poverty	2
Corruption-leak of information	2
Lack of monitoring	1
Lack of SOP	1
Forest clearance	1
Lack of enforcement power	1
High demand of wildlife	1
Easy access to habitat	1

Besides that, 14% of the responses to the open-ended item are associated with lack of cooperation especially from the public. A few respondents also mentioned lack of cooperation from other enforcement agencies. About 10% of the responses

which were coded raised concerns about threats from aggressive suspects. Many respondents also highlighted lack of incentives as another major challenge for wildlife officers. In relation to this, respondents reported limited overtime allowance and lack of other financial allowance for conducting dangerous operations. Low salaries and lack of moral support also worsened the situation. Other major challenges cited by them are political interference, leaking out of enforcement information and lack of training.

The study discovered that wildlife officers in Sabah and Sarawak tend towards deterrence strategy in enforcement. Such enforcement is seen to provide deterrence to both the culprits and the wider public (Wellsmith, 2011). However, the expected deterrence effect will only ensue if enforcement is strong. Enforcement can be strong if detection is high and is followed by certain and severe punishment (Du Rées, 2001). Several researchers have found that high detection of violations, followed with other further enforcement measures like giving warning, seizure or prosecution will best improve compliance with wildlife protection laws (Rowcliffe, de Merode, & Cowlishaw, 2004).

The current study shows that wildlife authorities in Sabah and Sarawak lack institutional capacity. Therefore, detection level may not be as high as the authorities would hope for. For example, in order to increase detection of violations, patrolling efforts must also be intensified (Keane et al., 2008), which is currently difficult for Sabah

and Sarawak due to small number of officers and limited resources. Besides, as courts do not necessarily set the same priority as the wildlife authorities on protecting wildlife (Leader-Williams & Milner-Gulland, 1993), it is difficult to ensure certain and severe punishment even if the culprit is brought to court.

Nurse (2011) argued that the existence of different types of offenders and criminal behaviour must be recognised in policy and enforcement practice. This could be the starting point for Sabah and Sarawak to improve enforcement effectiveness. By acknowledging the various types of offenders and offences, the wildlife authorities in both states can set targeted strict enforcement activities for persistent offenders and serious criminal behaviour like those which involve organised wildlife crimes. Meanwhile, they can employ a more persuasive or compliant approach in enforcing wildlife laws against other less culpable offenders or those doing the crimes due to ignorance or for subsistence.

The most common barriers to insufficient interagency coordination and cooperation include lack of mechanism for sharing data among agencies, differing agency structures and unclear chain of command. Resolving these obstacles is essential to ensure effective detection, investigation and prosecution. Coordination problem can be overcome through crossover training and assignment of law enforcement to facilitate communication of information between agencies and provide on-site consultation. Another strategy is to institutionalise

the coordination process through regular structured meetings to discuss best practices, networking and concerns as well as formalise relationships through agreements or joint-policymaking (Freeman & Rossi, 2012).

Like their counterparts in the Peninsular Malaysia, wildlife officers in East Malaysia also suffer from insufficient capacity of their enforcement agencies, lack of inter-agency and public cooperation and lack of political-will (Ariffin, 2015). These enforcement challenges are interrelated. Lack of institutional capacity is the primary challenge but is also affected by other main challenges. For example, lack of skills among the officers can be attributed to failure of hiring more highly educated candidates. This, in turn can be linked to lack of incentives to join the profession due to low enumeration and other allowances. In other words, if the problem of insufficient skills or knowledge is to be resolved, higher political-will is required to provide better payfor wildlife officers or more budget allocation for wildlife agencies so that they can send existing officers to more trainings to improve their skills. Akella and Cannon (2004) found that inadequate budgetary resources compromise the effectiveness of enforcement in several biodiversity-rich countries. Similarly, insufficient budget has hampered wildlife enforcement in East Malaysia.

Some of the challenges in the current enforcement system may need to be addressed at the same time to ensure better enforcement against wildlife crimes. For example, in order to address the problem of insufficient knowledge or skills, first, the issue of inadequate training needs to be resolved, which in turn, requires solution to lack of financial resources and political support. Although limited formal education does not necessarily preclude individuals from being excellent officers, it may lead to inefficiencies in the handling of paperwork or preparation of cases. Under both Sabah and Sarawak wildlife legislation, wildlife officers have police-like investigative powers and can be authorised to conduct prosecution. However, as the results of the study pointed out, there is a strong impression among the respondents for their skills and knowledge to be further developed. Therefore, their authority *per se*, is futile, unless their existing skills and knowledge are improved. Poor investigation skill precludes the authority from building strong cases and prosecuting wildlife offenders successfully. In addition, in order to encourage better cooperation from the public in providing information on wildlife crimes, the public should be informed that the laws protect the identity of informant. When more informants come forward, decision-makers may channel more resources into fighting wildlife crimes as they see the public views such crimes seriously.

CONCLUSION

The study found that enforcement officers in East Malaysia are primarily prone towards deterrence strategy in their enforcement approach. Due to the vast land mass of East Malaysia and the lack of manpower and

other resources of the wildlife authorities in the region, it is difficult to ensure detection of violations and successful prosecution to achieve the deterrence impact of strict enforcement. Low detection and prosecution rate will not only encourage violations but may also cause demoralisation among enforcement officers. Therefore, higher political-will especially in building up the institutional capacity of the wildlife agencies is essential for effective enforcement. Otherwise, with the existing capacity that they have and the challenges that they face in practice, it seems more appropriate for the wildlife enforcement officers to adopt more the compliance strategy. This will change their focus from punishing all violators to ensuring they comply with the law. This perspective will encourage the officers to take initiatives to advise and help violators until they comply with and will give the former a sense of satisfaction when they achieve this. Alternatively, the wildlife officers in Sabah and Sarawak can also consider the responsive approach by combining both the deterrence and compliance strategies. However, a clear enforcement policy including enforcement actions that should be taken under different circumstances needs to be developed to guide the enforcement officers in making decision when dealing with various violations under different circumstances to avoid bias and inconsistent enforcement responses.

ACKNOWLEDGEMENT

REFERENCES

Akella, A. S., & Cannon, J. B. (2004). Strengthening the weakest links: Strategies for improving the enforcement of environmental laws globally. In R. White (Ed.), *Environmental crime: A reader* (pp. 528-67). Washington, DC: Center for Conservation and Government.

Ariffin, M. (2015). Enforcement against wildlife crimes in west Malaysia: The challenges. *Journal of Sustainability Science and Management, 10*(1), 19-26.

Ariffin, M., & Mustafa, M. (2013). International wildlife trade regulation and its enforcement in Malaysia. *CLJ Bulletin, 30*(LNS (A)), 1-17.

Baldwin, R., & Black, J. (2008). Really responsive regulation. *The Modern Law Review, 71*(1), 59-94. Retrieved from http://dx.doi.org/10.2139/ssrn.1033322

Benson, W., Davis, L., Dickson, W., France, S., Glennie, E., & Howarth, W. (2006). *The effectiveness of enforcement of environmental legislation.* Swindon, Wilts: WRC Group.

Chin, S. Y., & Pantel, S. (2008). Pangolin capture and trade in Malaysia. In S. Pantel, & S. Y. Chin (Eds.), *Proceedings of the Workshop on Trade and Conservation of Pangolins Native to South and Southeast Asia.* Selangor, Malaysia: TRAFFIC Southeast Asia.

Cook, D., Roberts, M., & Lowther, J. (2002). *The international wildlife trade and organised crime: A review of the evidence and the role of the UK.* Godalming, England: WWF-UK.

Crow, M. S., Shelley, T. O., & Stretesky, P. B. (2013). Camouflage-collar crime: An examination of wildlife crime and characteristics of offenders in Florida. *Deviant Behavior, 34*(8), 635-652. Retrieved from http://dx.doi.org/10/1080/01639625.2012.759049

Cunningham, N. (2010). Enforcement and compliance strategies. In R. Baldwin, M. Cave, & M. Lodge (Eds.), *The Oxford handbook of regulation* (pp. 120-145). Oxford, UK: Oxford University Press. Retrieved from http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199560219.001.0001/oxfordhb-9780199560219-e-7

Davison, G. W. H., & Akbar, Z. (2007). The status of mammalian biodiversity in Malaysia. In L. S. L. Chua, L. G. Kirton, & L. G. Shaw (Eds.), *Proceedings of the Seminar and Workshop Status of Biological Diversity in Malaysia and Threat Assessment of Plant Species in Malaysia*. Kuala Lumpur, Malaysia: Forest Research Institute.

Du Rées, H. (2001). Can criminal law protect the environment? *Journal of Scandinavian Studies in Criminology and Crime Prevention, 2*(2), 109-126. Retrieved from http://dx.doi.org/10.1080/140438501753737606

Fairman, R., & Yapp, C. (2005). Enforced self-regulation, prescription, and conceptions of compliance within small businesses: The impact of enforcement. *Law and Policy, 27*(4), 491-519. Retrieved from http://dx.doi.org/10.1111/j.1467-9930.2005.00209.x

FDS. (2012a). *Sustainable forest management and biodiversity conservation in Sarawak, Malaysia*. Kuching, Sarawak: Forest Department Sarawak.

FDS. (2012b). *Annual report 2011*. Kuching, Sarawak: Forest Department Sarawak.

FDS. (2013). *Annual report 2012*. Kuching, Sarawak: Forest Department Sarawak.

FDS. (2014). *Annual report 2013*. Kuching, Sarawak: Forest Department Sarawak.

Freeman, J., & Rossi, J. (2012). Agency coordination in shared regulatory space. *Harvard Law Review, 125*(5), 1134.

Gunningham, N., Kagan, R. A., & Thornton, D. (2004). Social license and environmental protection: Why businesses go beyond compliance. *Law and Social Inquiry, 29*(2), 307-341. Retrieved from http://dx.doi.org/10.1111/j.1747-4469.2004.tb00338.x

Holmern, T., Muya, J., & Røskaft, E. (2007). Local law enforcement and illegal bushmeat hunting outside the Serengeti National Park, Tanzania. *Environmental Conservation, 34*(1), 55-63. Retrieved from http://dx.doi.org/10.1017/S0376892907003712

Kaaria, D., & Muchiri, M. (2011). Enforcement challenges across borders: Detecting and prosecuting illegal wildlife trafficking. In *Ninth International Conference on Environmental Compliance and Enforcement* (pp. 204-208). Whistler, Canada.

Keane, A., Jones, J. P. G., Edwards-Jones, G., & Milner-Gulland, E. J. (2008). The sleeping policeman: Understanding issues of enforcement and compliance in conservation. *Animal Conservation, 11*(2), 75-82. Retrieved from http://dx.doi.org/10.1111/j.1469-1795.2008.00170.x

Krishnasamy, K., & Shepherd, C. R. (2014). A review of the sun bear trade in Sarawak, Malaysia. *TRAFFIC Bulletin, 26*(1), 37-40.

Leader-Williams, N., & Milner-Gulland, E. J. (1993). Policies for the enforcement of wildlife laws: The balance between detection and penalties in Luangwa Valley, Zambia. *Conservation Biology, 7*(3), 611-617. Retrieved from http://dx.doi.org/10.1046/j.1523-1739.1993.07030611.x

MNRE. (2009). *Fourth national report to CBD*. Putrajaya, Malaysia: Ministry of Natural Resources and Environment.

MNRE. (2014). *Fifth national report to CBD*. Putrajaya, Malaysia: Ministry of Natural Resources and Environment.

Nurse, A. (2011). Policing wildlife: Perspectives on criminality in wildlife crime. In *Papers from the British Criminology Conference* (pp. 38-53). London, England: The British Society of Criminology.

Pantel, S., & Awang, A. N. (2010). *A preliminary assessment of pangolin trade in Sabah.* Petaling Jaya, Malaysia: TRAFFIC Southeast Asia.

Rowcliffe, J. M., De Merode, E., & Cowlishaw, G. (2004). Do wildlife laws work? Species protection and the application of a prey choice model to poaching decisions. In *Proceedings of the Royal Society B Biological Sciences,* (pp. 2631–2636). London, England: Royal Society B Biological Sciences.

Schoppe, S. (2008). *Science in CITES: The biology and ecology of the Southeast Asian box turtle Cuora amboinensis and its local uses and trade in Malaysia.* Selangor, Malaysia: TRAFFIC Southeast Asia.

Sharma, C. (2003). Enforcement mechanisms for endangered species protection in Hong Kong: A legal perspective. *Vermont Journal of Environmental Law, 5*, 1-34.

Thornton, D., Gunningham, N. A., & Kagan, R. A. (2005). General deterrence and corporate environmental behavior. *Law and Policy, 27*(2), 262-288. Retrieved from http://dx.doi.org/10.1111/j.1467-9930.2005.00200.x

Wellsmith, M. (2011). Wildlife crime: The problems of enforcement. *European Journal on Criminal Policy and Research, 17*(2), 125-148. Retrieved from http://dx.doi.org/10.1007/s10610-011-9140-4