FOREST MONITORING SYSTEMS AS AN INSTRUMENT OFFENSES AND OFFENSES AGAINST THE ENVIRONMENT

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Abstract:
The article surveillance issues in the context of efforts to reduce the number of offenses against the environment carried out in forest in the Lubuskie provinicy area. It presents the legal aspects concerning the definition of crimes and offenses against the environment. At the same time provides information on the capabilities and the applicability of forest monitoring and the legal situation of this type of technology.

Key words: forest areas, offense, against, monitoring

INTRODUCTION
In 2011 General Analytical Magistrate of Natinal Forests reported in annual Report of fighting against forests wrecking that overall loses in 2010 reached 5 559 980 PLN in 62 821 registered cases of forests sabotage [1]. Forest sabotage is defined as unlawful using of forests spaces (ie. thrashing), poaching, thievery or destruction of forestry management properties, timber thievery. Vast number of registered cases makes problem of finding and avoiding such acts most vitable. Thus the following article was focused on presenting idea for a practical modern system containing instruments (devices) which might be used as a „weapon” against forestry offences and crimes. Also classification of felonies and crimes against environment and its legal regulations in Poland has been presented in this paper.

DEFINITION AND CLASSIFICATION OF OFFENCES AND CRIMES AGAINST ENVIRONMENT

According to The Penal Code [2] a crime is an act written in The Penal Code. This act must be unlawful, culpable and socially harmfull more than insignificant.In case of legal protection of environment there are two very important legal actions mentioned in article 39 point 5 and 6 of The Penal Code:

- obligation to compensate,
- obligation to pay exemplary.

An crime against environment is an socially dangerous act (that fullfills requirements described in The Penal Code or other Laws), unlawful, culpable and punishable by the court. The Legislator described detailed types of environment related crimes. In many cases those punishable acts derives as unvoluntaries effects of economic activities in form of harmfull wastes, liquids, ashes, gases, radioactive substances and ionizing radiation, which might be harmfull for human health or live or they might devastate plants and animals. It is known that in pursue of greater economical profits forced by companies environment stand no chances on its own. Therefore there is need for protecting in as many areas as possible environment through the law. The crimes against environment are detaily described in art. 181-188 of The Penal Code. For example:

- ommision of performing mandatory air pollution and radiation measurements,
- failure to use necessary means needed to maintain ecological balance in processes of designing and performing digging or violation of the terms of performing works with crucial socially-economically aspects determined by IOŚ[3] or WIOŚ [4],
- disregarding special directives which are focused on air protection; disregarding warrants or bans related to protect air; disregarding,
- destruction of soil binding plants or cleansing environment plants; using chemical means, digging, or using mechanical devices in harmfull for the trees way,
- disregarding mandatory requirements of protecting environment against wastes,
- disregarding obligations related to protect environment against radiation.

In case of offences The Petty Offences Codes regulates punishments. In forests areas most cases of offences and crimes are usually form anthropogenic stress-inducing forest wrecking (table 1).

The law enforcements designated to preventing and fighting crimes against environment tries to protect as many aspects of the environment as possible thus there is a need for increasing detection rate of crimes and offences against
environment. In following article mainly forests of Lubuskie Provinicy are considered. To protect those forests an Forrests Guard has been established. One of main duties of this forces is protecting communal wealth, according to Law about Forrests 28th September 1991 [7] National Forrests are part of communal wealth. Forrests guards have following rights and privileges while performing duties described in article 1:

- to check documents of people suspected of committing crime or offence, likewise witness of crime or offence,
- to incline and estreat fines described by different laws,
- to stop and control means of transportation on forests areas and its close vicinities in order to check its load and passangers luggages, in case of probable cause of offency or crime,
- to search facilities in case of probable cause ofoffency or crime along with rules described in The Penal Code,
- to apprehend red-handed crime or offency offender also right after chase and bring him to the Police,
- to confiscate and held with a receipt items used to commit crimes or offences,
- to run a case against offenders and to stand as a public prosecutor in regional courts,
- to investigate and to bring accusations in small claims track if aspect of the offence is timber from forests owned by treasury,
- to carry short and long firearms or gas weapons and hand operated gas throwers,
- to demand necessary help from national institutions, to ask for help from economical entities, social organizations and in urgent cases from any citizen to help on the basis of law of the Police.

In order to effectively use high competence of Forrests Guards it’s crucial to quickly detect offences or crimes. Modern monitoring system should significantly improve efficiency of Forrests Guards. The Lubuskie Provinicy is quite unusual provinicy in Poland, since almost 50% of its acreage are forests [8]. Besides almost half of all fires in Lubuskie forests are deliberate arsons. According to Actualization of Waste Management Program for Lubuskie Provinicy for years 2009-2012 with vision for years 2013-2020 [9] many entrepreneurs tries to reduce costs and dumps their wastes directly in forests.

<table>
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<th>Table 1</th>
<th>Forrest wrecking amongs other stress-inducing factors affecting environment [6]</th>
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<td>Physiographics conditions</td>
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VALIDITY OF MONITORING FORESTS IN LUBUSKIE PROVINCE

According to General Inspector of Personal Data [10] using monitoring devices in locations where peoples presence is possible might cause legal issues due to the legal protection of personal data. Although Inspector also remained how important is who has the records, and who has access to those records.

It is believed that forestry monitoring might be very helpful while tracking offenders. With help of modern technology bringing offenders, poachers, arsonists, timber thieves to the court might be simpler. High competence of police as well as forest guards with ability to precisely pinpoint offenders whereabouts due to monitoring devices should increase abilities mentioned forces to find and capture offenders.

Because of high environmental versatility in Lubuskie province there is need for special qualities of institutions governing environment. In Lubuskie province there are six special areas of conservation habitats listed in Natura 2000 program: Valey of Lazy Obra, Pszczewskie Lakes, Valey of Obra, Nietoperek, Moor Chlopiny, Moor Młodno, Noteć Estuary. Warta Estuary is also listed on Natura 2000 special area of bird nesting places. 39.3% of Warta’s Estuary surface is considered as region of a extremely important natural values.

Furthermore Lubuskie province held many habitats of protected, rare and even threatened with extinction species of plants and animals, many of which has been enlisted in Polish Red Book of Plants and Animals. Since Lubuskes’ province most important resources is rich, versalite environment it is necessary to protect by monitoring this environment on highest possible level.

POSSIBLE WAYS OF USING MONITORING DEVICES

Camers installed in forrest may also track and spy some animals. Hidden camers might record spectacaler behaviours without any human presence. Cameras used to record animals are sometimes known as traps. They are deployed along with animals usual walking paths or near watering places. Each animal that interferes with devices infrared beam activates recording process thus giving necessary data for scientist who can later count and estimate number of different species. Data gathered in such fashion are very useful for scientifically friendly medias, such as National Geographic Society or World Wide Fund For Nature (WWF, further World Wildlife Fund). Mentioned organizations were among most active trap cameras promoters.

There are four major groups of forest wrecking: unautho- rized using forest, timber thievery, fire protection and protection agains excessive usage of forest ares in recreational purposes. Monitoring might help preventing all of those acts. One of most onerous and difficult to find crime is polluting forests (excessive usage of forest). Timber thievery is divided into: thievery „from the spot”, if trees are cut down and stolen and „from supplies” when prepared logs of wood are stolen.

Forest monitoring might reduce pollution level in polish forests, which is common and expensive problem despite regular Forrests Guards patrols. In 2008 National Forrests spend 9.5 million PLN for cleaning threshas left in forests. If some amount of this money was spend for modern monitoring system it might have reduced overall costs of cleaning forests.

Timber thievery is also a huge reason of losses for the National Forrests. In 2010 around 27 thousand of cubic meters of wood worth 3 millions 200 thousand PLN has been stolen. Although there is decline in amount of stolen wood in 2010 comparing to 2009 by 3%, due to increase of wood prices worth of stolen wood increased. According to spokesman of National Forrests thieves captured red handed often attacked forrests guards.

National Forrests spreads on over 7.5 million ha of forests in Poland. All this territory is guarded by approximately one thousand forests guards. Because of this protection National Forrests has lower level of stolen wood than public forests. In 2010 Forrest Guards reffered 2016 indictments.

Each year in National Forrests there are thousands of fires. In registerd 1740 cases of fire in National Forrests in 2010 burned 380 ha [14]. Most disturbing fact is that 43% of this fires resulted of arsonists actions. In forests near Zielona Góra 240 cases of fire was noted of which 36% was cases of deliberate arsonery. According to the Regional Management of National Forrests in Zielona Góra 95 cases of fire detection was reported to the fire fighters by a random persons, while observations points detected fire 88 times.

TECHNICAL REQUIREMENTS FOR FOREST MONITORING

A camera that is bound to discretely monitoring wide forests areas should be constructed in a way that minimize services. Frequent visits of servicemans might reveal locations of hidden cameras. Also such devices should be tough enough to withstand harsh environmental conditions.

Although there are suggestions, in the literature, that animals might react for cameras, there are no specific researches how cameras interferes with flora and fauna. Thanks to technological improvements some undesirable properties of recording devices might be avoided. The new generation cameras need no artificial light to record (infrared or thermovision). Because modern camers has no moving parts their loudness has been drastically reduced. Some technological novelties, such as photovoltaic cells extend time between servicing devices – batteries needs to be replaced when they lifespan ends, not every time when they simply discharges. There are available on the market cameras with built in GSM and GPS modules. When stolen these devices send theyre current location to the monitoring center, sometimes with taken pictures (usually sent as MMS). Sending single pictures through GSM carriers is relatively inexpensive in comparision to sending real-time video stream, but given enough funds there is option to create live-time complex monitoring system.

CONCLUSIONS

Most cases of fellonies and crimes on forest areas are forms of unauthoized forest using (i.e. arsonery of polluting) and timber thievery (including thievery of National Forrests properties). They are very disturbing problem in general forestry management in The Republic of Poland. Sheer numbers of crimes and fellonies against forests environments and loses due to those crimes and fellonies require effective means of finding offenders. We believe that one of those means might be modern monitoring system. Such system might prevent crimes and helps to track perpetrators thus minimalizing loses to countrys budget. It seems that because of higher competition between hardware and
software manufactures leading to declining prices and wider offsets, usage of monitoring devices in forrests will ascend drastically in following years. In conclusion: market for qualified products and qualified specialists will expand and forrests areas will be better protected with efficient instruments.

REFERENCES


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