

Year VI, v.1 2026 | Submission: 08/02/2026 | Accepted: 10/02/2026 | Publication: 12/02/2026

The Importance of the Biodetector Dog for Environmental Crimes in Public Security in the State of Amazonas

The Importance Of The Environmental Contraband Biodetection Dog For Public Safety In The State Of Amazonas

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Summary

The central objective of this research is to highlight the importance of biodetector dogs for environmental crime detection in the public safety of the State of Amazonas, whether related to fauna or flora. To this end, qualitative research was used as a methodological instrument, through bibliographic research in articles, books, and journals related to the thematic area addressed. The bibliographic results reveal that biodetector dogs play a crucial role in detecting illegal substances and in public safety. They are trained to identify odors that are imperceptible to humans, such as narcotics, explosives, and others relevant to public safety. When it comes to environmental crimes, they are also an important and reliable tool in detecting crimes such as trafficking in flora, seeds, and wild animals, game meat, illegal logging, among others, contributing to the fight against this type of crime in the State of Amazonas.

Keywords: Biodetector dog; Environmental crimes; Public safety; Amazon; Fauna and flora.

Abstract

The main objective of this research is to highlight the importance of dogs trained to biolocate environmental offenses for public safety in the State of Amazonas, whether the offenses are related to fauna or flora. For this, qualitative research was used as a methodological tool through a bibliographic survey of articles, books, and journals related to the thematic area addressed. The bibliographic results reveal that dogs trained to biolocate environmental offenses play a crucial role in detecting illegal substances and in public safety. They are trained to identify odors that are imperceptible to humans, such as those of narcotics, explosives, and other items related to public security. When it comes to environmental crimes, they are also an important and reliable tool in detecting crimes such as trafficking of flora, seeds, and wild animals, bushmeat, illegal logging, among others, contributing to the fight against this type of crime in the State of Amazonas.

Keywords: Biolocating dog; Environmental offenses; Public security; Amazon; Fauna and flora.

1. INTRODUCTION

According to Beck and Katcher (2003), an essential quality of the dog in human society

It relies on using its extraordinary ability to detect odors to find drugs.

They can detect illegal agricultural products, missing persons, corpses, or fugitives.

compounds with sensitivity up to 100,000 times greater than humans due to their sensitivity.

superior sense of smell.

According to the authors, over the years, having become domesticated, they were trained to perform... numerous activities, for both military and civilian purposes, such as: guiding people with special needs. special needs; facility security; protection; search and rescue; expertise; location of explosives, narcotics detection, as well as the domestic dog that in many homes ends up becoming family member, among other activities. In this sense, the use of dogs by humans, in addition In addition to being an excellent work tool, it also serves as a faithful companion.

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In police work with dogs in highly complex environments, specifically, the dogs are used in the search for missing persons, the capture of individuals, and in riot control operations. prisons, sports arenas, firearm detection, corpse searches, narcotics detection, and Specifically, the subject of this research is dogs trained to detect environmental crimes.

Considering that the constitutional role of the Military Police in the State of Amazonas is to offer The feeling of public safety, through visible policing, from this perspective, the question The scientific question being asked is: what is the importance of a dog detecting environmental crimes for security? public in the State of Amazonas, especially when it comes to combating crimes against wildlife and flora?

To resolve this issue, a guiding hypothesis was proposed that there is a latent The need for biodetector dogs to detect environmental crimes in the State of Amazonas, given that it is the The state with the largest cataloged wildlife in the world, and consequently, crime in this region. Having biodetection instruments is quite lucrative and difficult for police officers alone to intercept. In the investigation of these types of crimes, it is extremely important, and in this sense, the sniffer dog appears as... precise and necessary instrument.

In this context, the overall objective is to highlight the importance of a illicit detection dog. environmental measures for public safety in the State of Amazonas. For this purpose, the following were used. Specific objectives: 1. To analyze important aspects of the Amazon region as the largest Environmental biodiversity; 2. To learn about some environmental crimes related to the Amazon region; 3. To observe the need to train a biodetector for environmental crimes for public safety in State of Amazonas.

From this perspective, the importance of this scientific research for society is recognized, since that the role of the military police officer for the community is quite broad, ranging from a conception centered on "preservation of public order," which is a fragment of Article 144 of the 1988 Federal Constitution. which clarifies that public safety is the duty of the State, a right and responsibility of all, and is exercised for the preservation of public order and the safety of persons and property. (BRAZIL, 1988) and combating crime, up to the understanding of a police officer providing service. A public figure, a forensic police officer knowledgeable in the science involved, operating with dogs Biodetectors are science.

This work also implies actions in the academic sphere, in the areas of research and extension, combined with a social commitment to the scientific and humanitarian advancement of the military police. In other words, intellectual production within the academic sphere is of utmost importance, because... Scientific productions in their various manifestations and materializations are configured as Mechanisms for disseminating research results that move beyond the academic realm and take on a more formal form. within the police institution and in society, it is through intellectual production that the

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institutional demarcations and externalized activities that initially take place in contexts

within the walls, in order to seek integrated social development. The realization of this study also

This will provide professional development for the author who, in addition to being a military police officer, also works in the Canine Policing Unit.

This article is subdivided into a theoretical framework, which addresses the main authors, which deal with biodiversity in the State of Amazonas, environmental crimes, biopiracy, and dogs. detectors of environmental crimes; methodological section, which details the procedures. methodological aspects used during the research; results and discussion, where the following are presented: research results; and the conclusion, with the final considerations of the author of the research, based on based on the results obtained.

2. THEORETICAL FRAMEWORK

In this section, we sought authors who address the topic, thus providing a better understanding. We will address topical issues such as the biodiversity of fauna and flora in the State of Amazonas, regarding Biopiracy in the State of Amazonas: canine scent detection focused on environmental crimes.

2.1 Biodiversity in the State of Amazonas: Fauna and Flora

According to Souza and Simão (2025), biodiversity is a term first used in the decade of 1980 as a synonym for the expression of biological diversity. To speak of biodiversity is to speak of species richness of a region as well as the variations occurring within those [species](#). All [areas](#) of the [planet](#) They exhibit biodiversity; however, in some regions, it is greater, but this does not... This means that its importance is diminished when present in smaller numbers. Each species has its own... It plays a role in nature and is fundamental to the balance of the [ecosystem](#).

Following the authors' line of thought, the expression "biological diversity" has been used since... The term originated in the 1980s and initially referred only to the number of species that lived in a given area. a given region, that is, the quantity of animals, plants, and microorganisms in an area. Its The meaning has become more complex over time, also including other aspects of diversity, such as the genetic diversity among organisms.

In this sense, biodiversity encompasses the entire variety of [plant species](#). fauna and [micro-organisms](#); the ecological functions performed by these organisms in ecosystems; and the [communities, habitats](#) and the ecosystems they form.

Biodiversity also has economic importance. As we know, living beings They are an important raw material in the manufacture of food, medicines, cosmetics, clothing and even housing. Preserving it means ensuring, therefore, that these resources do not run out in the future and that the environment The environment remains in equilibrium, and it is at this point that the activity mechanisms are introduced.

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illegal activities in the Amazonian environment.

Despite knowing the importance of biodiversity, humans are still responsible for its destruction. destruction. Pollution, deforestation excessive exploitation, and especially wildlife trafficking and Flora degradation is one of the actions responsible for the reduction of biodiversity in the state of Amazonas.

The state of Amazonas is one of the most biodiverse biomes in the world, harboring a wide range of flora and fauna species, in addition to playing a crucial role in regulating global climate. It is estimated that there are more than 40,000 plant species in the Amazon, including Trees, herbs, roots, extracts, and seeds. Some of the best-known plants are açaí and andiroba. and rubber trees. The region is also home to approximately 1,300 cataloged bird species and 3,000 species of... Fish, 427 species of amphibians, 378 species of reptiles, and more than 300 species of mammals.

Amazonian biodiversity is fundamental to maintaining ecosystems. It contributes for pollination, seed dispersal, and climate regulation. In addition, many plants in the region They have therapeutic potential, being used in traditional medicine and the pharmaceutical industry. The state of Amazonas is not only a treasure trove of biodiversity, but also a vital resource for The ecological balance of the planet. Preserving this biome is crucial to ensuring survival. of countless species and the health of our planet. In this sense, combating environmental crimes is necessary to keep this biosystem alive and functioning.

2.2 Biopiracy in the State of Amazonas

Biopiracy refers to the unauthorized exploitation, collection, transportation, use, or commercialization of biological resources from nature, such as plants and fruits, animals, micro-organisms and traditional knowledge associated with these resources, without the proper permission of legitimate holders of these resources, or without fair compensation.

The trafficking of animals for scientific purposes, for example, is common in this "supply chain of "illegalities," where chemical substances from snakes, frogs, spiders, and beetles are used. for illegal research and drug production. The practice often involves misappropriation. unethical use of genetic resources and traditional knowledge, often specific to certain geographic regions. specific.

In this sense, biopiracy is the appropriation, exploitation, manipulation, export and/or commercialization of biological resources or knowledge in violation of the standards of Convention on Biological Diversity of 1992.

The term refers to everything from the smuggling of flora and fauna species to deforestation. Wood and the appropriation of traditional knowledge without sharing the profits. Companies patent them. processes or even plant and animal species with the sole objective of promoting profit, exploiting, natural resources are often obtained illegally.

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The Amazon is a constant target of biopiracy, mainly due to its vast fauna and flora, with items that are valued both for their rarity and their usefulness, whether they are plants medicinal plants, regional foods, or animals that cannot be found elsewhere.

Biopiracy in the Amazon rainforest generally occurs when individuals or entities exploit... illegally exploiting the region's biological resources without receiving authorization or exemption for the local communities without following legal and ethical protocols.

Some of the main elements and forms of biopiracy in the Amazon include:

Unauthorized collection of genetic resources

Companies and researchers, often from abroad, collect plants, animals, Microorganisms and other biological resources are extracted without permission within the Amazon rainforest.

Misuse of traditional knowledge

Many indigenous and riverside communities in the Amazon possess vast knowledge. traditional knowledge about the sustainable use of the region's resources, including their medicinal properties. Plants and management techniques. This knowledge often ends up being exploited without due consideration. refund or compensation.

Unethical patenting

Companies or researchers patent products derived from Amazonian genetic resources. without sharing the benefits with local communities or respecting their rights.

2.3 Canine Scent Detection for Biodetecting Environmental Crimes

In police forces, dogs have proven to be an extremely efficient tool due to various qualities and job functions such as assisting in the fight against crime, mainly Regarding the identification of illicit substances through their specialized sense of smell, what can and It should be used to combat biopiracy, especially in the state of Amazonas, a region with... the greatest biodiversity on the planet.

Currently, dogs perform a wide range of support services for humans. its use as a biodetector is applied in medicine, agriculture, law enforcement, and the military. wildlife conservation, among many others.

During the training of dogs as biodetectors, their individual characteristics Behaviors are observed, and subsequently, the individuals are separated to perform different tasks. functions according to the way they signal when they find the target sample, whether related to the fauna or flora. There are two forms of signaling, one being passive, which is when they sit,

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They lie down or freeze, staring intently at the sample when they find it, or actively, in

Which dog barks or paws at the meeting place.

Each type of indication is suitable for a specific type of function performed, for example, dogs of

Detecting explosives requires passive signaling, since barking or pawing at the alarm is not enough.

The artifact could trigger the detonation. On the other hand, a search and rescue dog in

In an area of dense forest, the dog needs to bark to signal its location to the driver when...

Finding the person being sought is difficult, as the dog needs to work off-leash and could get lost.

temporarily out of the team's sight. In many biodetection functions, the signaling method

The dog's presence does not interfere with the dynamics of the work. When the biodetection ability of dogs should be...

widely exploited, especially in the state of Amazonas, due to the wide range of crimes.

environmental.

3. MATERIALS AND METHODS

According to Piana (2009), conducting research is important and necessary because it investigates the world in that human beings live and human beings themselves. However, for him, research only exists with the support of appropriate methodological procedures that allow for an approach to the object of study.

According to Sellitz (1974), there are two general types of reasons for proposing questions of Research: intellectual pursuits, based on the desire to know or understand, for the satisfaction of knowing. or to understand; the practices, based on the desire to know in order to become capable of doing something. better or more efficiently.

Regarding the objective, the nubente research had an exploratory nature, which according to Vergara (1998) is characterized by the lack of scientifically produced information that met the requirements. the needs of the proposed research, which, within the scope of canine operations in a high-risk environment The more complex the problem, the more familiar one tends to become with it, with a view to making it... It's not explicit, since there's nothing written institutionally on the subject, and little related research. at the national level, thus configuring an Action Research project related to combating crime.

Environmental protection in the State of Amazonas through the use of dogs trained to detect environmental crimes.

In the meantime, relevant bibliographic and documentary surveys were carried out, which This converges with Piana (2009), who states that understanding bibliographic research as the A survey of all published bibliography in the form of books, periodicals (journals), theses, and proceedings. of congresses, where its purpose is to provide the researcher with access to the literature produced about a particular subject.

4. RESULTS AND DISCUSSION

According to Waisbich *et al* (2022), the destruction of the Amazon has reached alarming levels today. Behind

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A set of activities contributes to the deforestation and degradation of the world's largest tropical rainforest.

illicit economic activities or activities tainted with illegality: illegal logging, illegal mining,

Land grabbing of public lands and agricultural activities with environmental liabilities, especially illegal deforestation.

Although integrated into formal and legal markets, the illicit economies of the Amazon operate through

in the midst of an ecosystem of environmental and non-environmental crimes (such as corruption, fraud, crimes

violent and drug trafficking crimes).

Following the authors' line of reasoning, despite the growing recognition of the problematic nature of...

Data is lacking on organized environmental crime in the Amazon, both inside and outside the Brazilian state.

for a systematic understanding of the phenomenon. Such data are fundamental to supporting an answer.

A strategic and efficient inter-institutional approach to the problem, both nationally and regionally.

The ecosystem of environmental crime in the Amazon revolves around a set of economies.

illicit or tainted with illegality: economic activities that take place in areas of

forest, wholly or partially outside the law, without the proper authorization from competent bodies or

with a "liability for illegal deforestation" in their supply chains.

The characterization of different economic activities as "illicit or tainted with

"Illegibilities" in this strategic article refers more to the impact of the illegality caused by these

chains of action rather than being classified as an environmental crime per se.

Selective logging, usually of valuable trees (such as Ipê, Cedars, Maçarandubas,

(Spicy pepper trees, jacaranda trees, and chestnut trees), for subsequent national and/or international commercialization in

violation of existing regulatory systems (authorizations, in the case of private properties, and

concessions, in the case of public forests). Logging is one of the major factors that

contributes to the degradation and subsequent deforestation of the forest. Illegal logging practices

Illegal activities in the timber industry can occur at different stages of the production chain. There are, for example, violations of the...

conditions and limitations defined by the selective logging authorization systems in the Amazon.

Mining in violation of existing laws and regulations, especially in areas

environmental protection and indigenous territories. The main mineral illegally extracted today in

The Amazon is a goldmine, in the modality known as artisanal mining. But there is also illegal extraction of...

diamonds, manganese, and other mineral resources. In the case of gold extracted under the modality of

Small-scale mining (or artisanal mining) is a weak sector in terms of regulation.

socio-environmental, despite its highly polluting nature, is largely carried out today in a way

irregular or even illegal.

It is impossible to understand the deforestation and degradation of the Brazilian Amazon and the economies...

illicit or tainted with illegalities that propel them in a way that is dissociated from an ecosystem.

illegal environmental and non-environmental practices that are interconnected and reinforce each other. Such practices

Illegal acts are often, but not always, already classified as crimes within the legal framework.

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Brazilian.

In this category, five sets of environmental offenses were considered: pollution, fire, criminal, crimes against wildlife (illegal hunting and fishing and trafficking of wild animals), crimes against the environmental administration (fraud in licensing, authorization and inspection; disobeying or obstructing environmental oversight) and other crimes against flora. In the case of non-Environmental crimes, generically referred to here as related crimes, are behaviors that have already been classified as crimes in the Brazilian legal framework (especially in the Penal Code) as crimes and which appear at the same time as facilitators and/or guarantors of environmental crime in the Amazon.

It is becoming increasingly clear that combating organized environmental crime in the Amazon is... Above all, it is an exercise in intelligence and strategic prioritization to improve the State's resources. Brazilian law aims to deter and repress crimes and criminal actors. This applies to administrative oversight as well. Regarding criminal prosecution, both are held hostage by a context of scarce human and financial resources. Nor is it about extending the penalty to those who carry out environmental crime at the grassroots level, especially workers and petty offenders. For them, we need to think about real alternatives. of human and socioeconomic development. Conversely, the State must expand its capacity to investigate complex networks of actors involved in environmental crime in the Amazon and beyond, focusing its actions on holding the highest levels of public decision-making chains criminally accountable, private and productive entities (which are also the main economic beneficiaries) of environmental crime in the Amazon.

In these listed cases, Do Valle (2022) states that the use of biodetector dogs emerges as an important alternative in the fight against crimes such as biopiracy and illegal extraction of timber, the commercialization of game meat, among other things, especially due to its keen sense of smell, and precision.

There are various types of police operations, each with its own characteristics and objectives. Specific operations can be classified as drug trafficking suppression operations, combating organized crime, patrolling actions in vulnerable areas, including combating to environmental crimes and biopiracy. Each type of operation requires different strategies and the Mobilizing adequate resources to achieve the expected results, especially when... It deals with operations involving dogs.

FINAL CONSIDERATIONS

The research showed that the state of Amazonas is one of the richest biomes, one of the world's most biodiverse countries, harboring a vast array of flora and fauna species, as well as to play a crucial role in regulating the global climate. And, that the Amazonian biodiversity is Essential for maintaining ecosystems. It contributes to pollination and dispersal of

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seeds and climate regulation. In addition, many plants in the region have therapeutic potential, being used in traditional medicine and the pharmaceutical industry. The State of Amazonas is not only a treasure trove of biodiversity, but also a vital resource for the planet's ecological balance.

The Amazon is a constant target of biopiracy, mainly due to its vast fauna and flora, with items that are valued both for their rarity and their usefulness, whether they are plants medicinal plants, regional foods, or animals that cannot be found elsewhere.

Thus, it can be concluded that there is a latent need for biodetector dogs.

Environmental crimes in the State of Amazonas, given that it is the state with the largest wildlife population.

Catalogued from the world, relevant to this, crime in this region is quite lucrative and difficult to...

Interception solely by police officers; having biodetection instruments for these types of crimes is...

Of utmost importance, in this sense the sniffer dog appears as a precise and necessary instrument.

REFERENCES

ANTONIO, AC **Ecoletânea**: subsidies for the formation of a legal-ecological awareness.

Manaus-Amazonas: Valer Publishing House, 2000.

_____. **Conciliation as a Solution to Environmental Problems**. CEJ Magazine, Brasília, no. 32, pp. 6-11, Jan./Mar. 2006.

AMAZONAS. Statute of the Military Police of the State of Amazonas. Law 1.154 of December 9th.

1975. **Official Gazette of the State of Amazonas**, Amazonas, AM. 1975.

AZEVEDO, A. **Environmental education and its application in replacing punishment in environmental crimes**.

Thesis. São Paulo-São Paulo, year 5, v. 9, p. 56-66, 1st semester, 2008.

BAZILIO, Bruno Tiemann. **Dog training and welfare in veterinary medicine**: a literature review. 2023.

BECK, Alan; KATCHER, Aaron. **Between Pets and People**: The importance of Animal Companionship. West Lafayette, Indiana: Purdue University Press, 2003.

BRAZIL. Constitution of the Federative Republic of Brazil. **Official Gazette of the Federative Republic of Brazil**, Brasília, DF. 1988.

_____. Law establishes the National System of Public Policies on Drugs - Sisnad. **Official Gazette [From the] Federative Republic of Brazil**, Brasília, DF. 2006.

_____. Law No. 9,099, of September 26, 1995. **Provides for the Special Civil Courts and Criminal and other provisions**. Brasília-DF, 1995.

_____. Law No. 9,795, of April 27, 1999. **Provides for environmental education**. Policy National Environmental Education Program. Brasília-DF, 1999.

DO VALLE, Vitor Batista. **The olfactory capacity and precision of dogs in the service of man.**
Scientific Journal of the Higher School of Military Police, v. 3, n. 5, 2022.

GAGE, F. **Mammalian neural stem cells.** Science 2000;287:1433-1438.

GIL, Antonio Carlos. **Methods and techniques of social research.** 5th ed. São Paulo: Atlas, 1999.

LOPES, MLS **Selection and Training of Police Dogs.** Federal Rural University of Pernambuco, Undergraduate Course in Animal Science. 2019.

MALHOTRA, Naresh. **Marketing research:** an applied orientation. 3rd edition. Porto Alegre: Bookman, 2001.

MARCONI, Marina de Andrade.; LAKATOS, Eva Maria. **Research techniques:** planning and execution of research, sampling and research techniques, data preparation, analysis and interpretation. 3rd edition. São Paulo: Atlas, 1996.

SELLTIZ, Jahoda Deutsch. **Research methods in social relations.** São Paulo: EPU, 1974.

SOUZA, Ivan Nunes; SIMÃO, Maria Oliveira. **Environmental crimes in the capital of Amazonas: typology, distribution and application of alternative penalties.** Rev. Dir. Amb. e Socied., v.15, n.1, jan/jun-2025.

WAISBICH, LT; RISSO, M.; HUSEK, T.; BRASIL, L. **The ecosystem of environmental crime in the Amazon:** an analysis of the illicit economies of the forest. Igarapé Institute, a think and do tank. Strategic article 55 | February 2022.