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Intelligence Activity in Combating Environmental Crimes in the Amazon: Challenges and Opportunities for Public Security

Intelligence Activity In Combating Environmental Crimes In The Amazon: Challenges And Opportunities For Public Security

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Summary

Environmental crimes in the Amazon have become more complex, sophisticated, and interconnected with transnational criminal networks, directly impacting public safety, territorial governance, and the State's capacity to guarantee sovereignty. Monitoring systems based on geotechnologies, such as PRODES, DETER, and MapBiomas, have revealed an intensification of environmental degradation, while recent studies demonstrate that activities such as illegal mining, deforestation, and clandestine fishing and mining have become structured by organizations that utilize river logistics, encrypted communication, illicit financing, and armed protection to operate efficiently in the region. In this scenario, Public Security Intelligence emerges as a fundamental strategic tool for anticipating criminal patterns, supporting decisions, and guiding integrated actions. Operations such as Tamoiotatá, Guardians of the Biome, and Base Arpão have demonstrated that the use of intelligence and geointelligence reduces the occurrence of illegal activities, strengthens the state presence in remote areas, and dismantles the logistical bases of organized crime, decreasing indicators of violence associated with territorial control. This article aims to analyze how intelligence applied to Public Security contributes to combating environmental crimes in the state of Amazonas, examining territorial monitoring technologies, criminal dynamics, and recent public policies. The methodology adopted involves document analysis and an integrative review of scientific articles, technical reports, and institutional documents produced between 2020 and 2025. The results show that intelligence-based operations increase the efficiency of enforcement, allow for greater assertiveness in resource allocation, reduce criminal recidivism, and strengthen the state's capacity for environmental protection.

Keywords: Intelligence; Amazon; Environmental Crimes; Public Security; Geointelligence.

Abstract:

Environmental crimes in the Brazilian Amazon have evolved into complex and sophisticated structures, increasingly embedded in transnational criminal networks and producing significant impacts on public security, territorial governance, and state sovereignty. Over the last two decades, geospatial monitoring systems such as PRODES, DETER, and MapBiomas have revealed the intensification of illegal deforestation, mining, wildcat extraction, and other environmentally harmful activities. Recent studies demonstrate that these operations are frequently supported by organized groups employing riverine logistics, encrypted communication, illicit financing, and armed protection. In this context, Public Security Intelligence emerges as a fundamental strategic tool for anticipating criminal patterns, supporting operational decision-making, and guiding integrated environmental enforcement. Operations such as Tamoiotatá, Guardões do Bioma, and Base Arpão reveal that intelligence-led policing, combined with geointelligence technologies, significantly reduces environmental offenses, strengthens state presence in remote territories, and disrupts logistical bases of organized crime while reducing violent crime indicators. This article analyzes how intelligence applied to Public Security contributes to the fight against environmental crime in Amazonas, examining its interfaces with interagency governance, technological monitoring systems,

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criminal dynamics, and contemporary public policies. The methodology includes document analysis and an integrative review of twenty scientific papers, technical reports, and institutional documents published between 2020 and 2025, along with operational and geospatial data from INPE, environmental agencies, and law enforcement. Findings indicate that intelligence-driven operations increase enforcement efficiency, enable more strategic resource allocation, reduce criminal recurrence, and enhance the state's capability to protect the Amazon biome. The study concludes by recommending the establishment of a State Environmental Intelligence System, essential for strengthening public security and environmental governance.

Keywords: Intelligence; Amazon; Environmental Crime; Public Security; Geospatial Technologies.

INTRODUCTION

The Brazilian Amazon has consolidated itself, over the last few decades, as the epicenter of a complex dispute involving economic interests, international pressures, demands socio-environmental issues and the growth of criminal organizations that benefit from the vast territorial expanse and the logistical difficulties that characterize the region (Rodrigues, 2021). This scenario has placed The biome is under constant threat, affecting not only its biodiversity but also its stability. social issues, state governance, and national sovereignty itself. Recent studies reveal that... Illegal deforestation, illegal mining, timber trafficking, and other forms of degradation. Environmental practices have grown in intensity and sophistication, creating an environment conducive to their operation. Structured criminal networks (PRF, 2024; INPE, 2023). Such illegal activities are no longer isolated incidents. to become central elements of a highly lucrative and well-organized criminal market.

The monitoring systems of the National Institute for Space Research (INPE), such as PRODES and DETER indicate that patterns of environmental degradation have begun to reorganize. in territorial clusters, indicating the presence of groups that operate with planning and resources. financial and logistical capabilities to circumvent traditional oversight (INPE, 2021; 2023). Reports Data from environmental and public safety institutions demonstrate that these criminal activities They use fast boats, backhoes transported clandestinely, and networks of Encrypted communication and data concealment mechanisms hinder state action. How? As a result, Amazonian regions began to experience territorial dynamics in which power The public sphere is gradually being replaced by parallel control structures, especially in remote areas. or historically underserved (Coelho, 2022).

The relationship between environmental crimes and criminal organizations gained greater prominence in Recent studies, such as the one produced by Cadete (2024), demonstrate how factions and groups Armed groups began investing in activities such as mining, illegal logging, and fishing. predatory and smuggling of minerals, expanding its operations beyond urban crime. conventional. This expansion consolidates what authors have called the criminal ecosystem. environmental, characterized by the connection between multiple illicit activities that feed off each other,

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generating financial flows capable of sustaining transnational criminal networks (Cadete, 2024; AMAZÔNIA 2030, 2025). Thus, understanding environmental crimes as an isolated phenomenon is Insufficient; it is essential to analyze them as a structural part of contemporary organized crime.

In this context, public safety takes on a central role in protection. environmental and in guaranteeing national sovereignty (Costa and Maia, 2025). The Ministry of Justice and Public Security, in recent statements, reinforced that "the future of public security lies in "Intelligence," highlighting that the Amazon requires integrated, technological responses based on qualified analysis (AGÊNCIA BRASIL, 2024). Environmental protection, therefore, goes beyond the sphere exclusive to environmental agencies and depends on the coordination of police forces, defense institutions, control bodies and intelligence systems capable of anticipating trends and mapping flows Illegal logistics and guide tactical operations with precision.

The holding of COP-30 in Belém further expanded this agenda, placing it on the Brazil has the responsibility to demonstrate institutional and technological capacity to monitor and To protect its greatest ecological asset. In this sense, the demand for high-level operations is growing. as demonstrated by the actions of the Military Police of Pará, which has implemented technologies intelligent technologies — drones, thermal imaging systems, geospatial analysis, and advanced river bases — in the fight against environmental crimes (BRAZILIAN SCIENTIFIC JOURNAL, 2024). This This experience adds to federal and state operations in the Amazon, such as Guardians of the Biome, Agata Amazon, and Tamoiotatá, which have broadened the operational repertoire and highlighted the importance From intelligence to successful actions.

In the state of Amazonas, Operation Base Arpão has become a national benchmark by coordinating... intelligence structures, permanent river presence, and integration between state agencies and Federal reports from the Secretariat of the Environment (SEMA-AM, 2025) demonstrate that the Base Harpoon has significantly reduced the illegal transport of timber and drug trafficking associated with those routes. environmental issues and the entry of equipment intended for illegal mining. The operation also... It stands out for its ability to produce qualified intelligence on routes, patterns of Criminal behavior and territorial dynamics, reinforcing the importance of forward operating bases. installed in strategic locations.

Rocha, Rocha and Luz (2024) state that despite the advances, structural challenges persist. which limit the effectiveness of actions. The lack of interoperability between information systems, the shortage of specialized analysts, administrative discontinuity, and communication barriers. Disagreements between public bodies are identified by several studies as factors that reduce the efficiency of operations (IGARAPÉ, 2024; CONSÓRCIO AMAZÔNIA LEGAL, 2025). Furthermore, the performance The fragmented structure of state and federal institutions still hinders the construction of an integrated system. environmental intelligence capable of responding to the contemporary demands of the region.

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Given this scenario, it becomes necessary to consider the protection of the Amazonian environment through... from a systemic approach that incorporates police intelligence, geointelligence, and governance. Interagency and territorial monitoring technologies (De Amorim, 2021). The guiding question The question this article addresses, therefore, is: how can Public Security intelligence improve the response to conflict? Regarding environmental crimes in the state of Amazonas?

This article is justified by the need to deepen the debate on integration between public safety and environmental protection, especially during a historic moment of transformation. geopolitical, technological, and institutional factors. The existing literature is still fragmented and lacks... analyses that articulate the role of intelligence with environmental enforcement policies and practices operational and territorial governance. Thus, the present study seeks to contribute to the formulation of More effective public policies and a strengthening of state action in the largest tropical biome of planet.

The article's structure was organized to allow for a progressive understanding of the topic: Following this introduction, a consolidated theoretical framework on intelligence and crime is presented. environmental and interagency governance; then, the methodology adopted is described; Subsequently, the results are discussed based on four analytical axes; and, finally, they are... Final considerations are presented that point to strategic recommendations for the state of Amazonas.

2. THEORETICAL FRAMEWORK

2.1 Public Security Intelligence: Fundamentals, Evolution, and Applications in the Amazon

Intelligence activity has historically been associated with the military field, diplomatic and police, performing strategic advisory and prevention functions. threats to the State. However, in the last two decades, intelligence has expanded its functions to areas such as public safety, protection of critical infrastructure, and socio-environmental risk management and territorial governance, reflecting the increasing complexity of contemporary phenomena. From According to Rodrigues (2021), intelligence is a continuous and systematic process of collection, integration, analysis and dissemination of knowledge necessary for decision-making in contexts of uncertainty. In the field of public safety, this concept has been adapted to include analyses of criminal dynamics, production of operational indicators and predictive modeling of events that They can compromise public order (Pinheiro, Aguiar and Zogahib, 2025).

In the Amazonian context, intelligence has gained an even more decisive role due to... Geographical characteristics of the region: vast territory, low population density,

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a multitude of rivers that function as primary transportation routes and a large number of areas remote and difficult to access (Souza et al, 2024). These aspects favor the operation of organizations criminals who use the forest as a hiding place and river routes as corridors Logistics of illicit activities. Thus, intelligence began to integrate remote sensing tools, Analysis of geospatial patterns, processing of massive datasets, and institutional interoperability. This movement is reinforced by the Ministry of Justice, which states that the future of public security is intrinsically linked to the capacity for collecting and analyzing qualified information (AGÊNCIA). BRAZIL, 2024).

Authors such as Costa (2024) discuss the need to rethink the role of intelligence in Amazonia from a multidimensional structure that integrates three distinct fields: intelligence tactics — focused on the direct execution of operations; operational intelligence — responsible for articulating institutional means and capabilities; and strategic intelligence — which guides planning. general security and environmental protection policies. This framework is particularly relevant for The Amazon, where complex operations require in-depth knowledge of river routes and territories. Vulnerable groups, patterns of criminal behavior, and illicit logistical flows that are transforming quickly (Paiva, 2013).

Additionally, intelligence in public security in the Amazon must consider the Cultural, socioeconomic, and political elements that shape the regional environment. Communities Riverine communities, traditional peoples, community councils, and local agents play roles. fundamental in the production of information. The literature on community intelligence and policing. Data-driven guidance demonstrates that local knowledge complements technical knowledge. allowing for greater precision in analyses and predictions. Thus, the doctrine of Amazonian intelligence should to articulate these multiple plans — technical, territorial, social and strategic — to produce qualified knowledge (Pinheiro, Aguiar and Zogahib, 2025).

2.2 Environmental Crimes as an Organized Phenomenon: Dynamics, Structures, and Implications

The conception of environmental crimes as isolated phenomena — committed by small groups. groups without structure — has been superseded by a new academic and institutional perspective that recognizes its systemic and articulated character. Studies such as that of Cadete (2024) demonstrate that the Environmental crime in the Amazon is strongly connected to transnational organized crime. functioning as one of the main sources of illicit funding for criminal factions and networks that operate throughout South America. These organizations operate in a business-like manner, with division of tasks, use of technology, defined land and river routes, and participation of agents. Corrupt individuals facilitate the transportation and distribution of illegal goods.

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According to the Amazon 2030 report (2025), illegal deforestation is among the the most lucrative illicit activities in the region, generating billions of reais annually in criminal gains and allowing the expansion of factions not only over environmental areas, but over entire communities. These groups use deforestation as a tool for territorial domination, imposing their own rules. their own, creating extortion networks, replacing the state presence and, in many cases, establishing their own. links to activities such as drug trafficking, arms smuggling and mining. (Nascimento, 2024).

The literature also demonstrates that the link between environmental crimes and lethal violence is more more intense than previously thought. Studies mentioned in the Sebrae Amazônia report (2024) indicate that municipalities with high rates of deforestation tend to register higher rates of murder, Agrarian conflicts and armed violence create a scenario in which environmental dynamics and Criminals feed off each other. Environmental crime, therefore, cannot be understood solely as administrative infraction or act of degradation: this is a phenomenon of public safety and of social order (Nascimento, 2024).

Another important element is the participation of international networks. This includes the trafficking of illegal timber to Europe and Asia, the clandestine export of minerals, and the use of cryptocurrencies for money laundering. The findings of capital investigations demonstrate that the criminal structure in the Amazon is not regional, but global. The report of The Amazon Plan: Security and Sovereignty (BRAZIL, 2023) shows that criminal actions are planned within the national territory, but executed and financed from various countries, making The fight against environmental issues is a challenge of international security.

2.3 Interagency Governance: Institutional Integration and Structural Limits

The literature on environmental governance and public safety indicates that integration Interagency cooperation is one of the main determining factors for the success of policies to combat [disease/crime]. Environmental crimes. Studies by the Igarapé Institute (2024) indicate that no single body... has the operational, technological and territorial capacity to confront the complexity of crime in Amazon. Thus, agencies such as the Military Police, Civil Police, Federal Police, Federal Highway Police, IBAMA, ICMBio, Brazilian Army, Brazilian Navy, State Environmental Secretariats and institutions Municipalities need to operate in an integrated manner, sharing data, intelligence, logistics and resources (De Amorim, 2021).

One of the main challenges identified in Amazonian reports is the lack of Interoperability between information systems. While the Federal Police uses platforms Despite having centralized systems with a high level of protection, many states still have fragmented systems. hindering the flow of intelligence between different agencies (Costa and Maia, 2025). The absence of

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Unified communication protocols, integrated databases, and joint operational doctrines are identified as a significant obstacle (CONSÓRCIO AMAZÔNIA LEGAL, 2025).

Interagency governance also faces political and institutional challenges. Disagreements between federal and state spheres, changes in government, disputes over prominence. Operational issues and a lack of administrative continuity hinder coordination between environmental agencies. and security. Furthermore, there is a shortage of analysts specializing in environmental intelligence. limits the ability to interpret data produced by systems such as DETER, MapBiomas and satellite platforms (IGARAPÉ, 2024).

In contrast to these limitations, operations such as Guardians of the Biome and Harpoon Base They demonstrate that integrated and permanent governance—characterized by planning—is essential. Unified, continuous state presence and intelligence sharing — produces results. significant. The PPCDQ-AM (2025) reinforces that states that have adopted governance arrangements Articulated [police units] recorded higher seizure rates, a reduction in fires, and a significant drop in [unclear/incomplete sentence]. illegal operations.

2.4 Geointelligence, Territorial Monitoring and Technologies for Enforcement

Geointelligence has established itself as one of the main tools in the fight against crime. environmental initiatives in the Amazon, enabling data-driven police and environmental operations. concrete data, spatial analysis, and predictive models. Systems like PRODES monitor the consolidated annual deforestation, while DETER produces near real-time alerts, allowing rapid interventions. MapBiomas Alerta, on the other hand, uses artificial intelligence and validation by multiple factors. sources for identifying degraded areas with high precision (PF, 2024).

Studies by the CIPÓ Platform (2024) indicate that the use of geointelligence reduces costs. operationally, it increases the effectiveness of actions and reduces state response time, especially in remote areas. The technology also allows for cross-referencing environmental data with crime indicators. revealing hotspots where deforestation is linked to drug trafficking, illegal mining, and... timber smuggling.

In addition to satellite systems, the use of drones, thermal sensors, and ground-penetrating radar is also being considered. Plant surveillance, long-range cameras, and automated monitoring tools have expanded significantly reduced the state's capacity for oversight. Operations in Pará, Amazonas, and in Rondônia has demonstrated that long-range drones reduce risks for agents and increase... The precision of the raids prevents criminals from escaping in dense forest areas (BRAZILIAN SCIENTIFIC JOURNAL, 2024).

However, the adoption of advanced technologies is not enough without the correct interpretation of...

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Data. Environmental intelligence requires specialized analysts capable of combining techniques of Geoprocessing, environmental criminology, strategic analysis, and territorial reading. Such integration. The connection between technology and human cognition is indispensable for transforming scattered data into... Useful operational knowledge (Rodrigues, 2021; Souza et al, 2024).

3. METHODOLOGY

The methodology adopted in this research is based on a qualitative approach. documentary and analytical, structured to understand the complexity of environmental crimes in The Amazon region from the perspective of Public Security Intelligence. The choice of approach. The qualitative approach is justified by the multidimensional nature of the phenomenon analyzed, which involves territorial, criminal, socio-political, technological and institutional elements that cannot be adequately captured only by quantitative methods. In this sense, the research seeks interpreting meanings, patterns, interrelationships, and operational dynamics, adopting a stance comprehensive and interpretive, aligned with the demands of the field of environmental and safety studies. public.

The first methodological step consisted of an integrative literature review, which covered scientific articles, book chapters, technical reports, institutional documents and studies government decrees produced between 2020 and 2025. This type of review allows for the gathering and summarization of... and to critically evaluate findings of different natures, thus configuring a broader and more integrated vision. of the problem. Among the materials analyzed, studies on organized crime in the Amazon (CADETE, 2024), interagency governance (IGARAPÉ, 2024), criminal dynamics associated with deforestation (AMAZÔNIA 2030, 2025), and the use of environmental geointelligence (CIPÓ, stand out. 2024), state and federal operations, INPE reports (PRODES, DETER) and official documents. from PPCDQ-AM and the Legal Amazon Consortium.

The second methodological step involved the documentary analysis of public policies. Institutional regulations, police operations, and environmental programs were examined. Documents such as: Amazon Plan: Security and Sovereignty (BRAZIL, 2023), operational reports from Operation Tamoiotatá (IPAAM), summaries of Operation Guardians of the Biome (MJSP/IBAMA), publication on Geointelligence in Combating Deforestation (CIPÓ Platform, 2024) and Documents from the Arpão Base presented during COP-30 (SEMA-AM, 2025). These materials They allowed us to understand the structure, objectives, weaknesses, and results of intelligence operations. applied to environmental monitoring.

The third stage consisted of using the Content Analysis technique, as proposed by Bardin, used to identify emergent categories that express the structure of the phenomenon.

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studied. The resulting categories were: (1) environmental criminal ecosystem; (2) geointelligence and territorial monitoring; (3) interagency governance; (4) intelligence as a strategic vector of operations; and (5) institutional gaps and structural challenges. Content analysis allowed us to organize to systematically analyze the data and identify convergences between the different documents analyzed.

Next, methodological triangulation was carried out, a technique used to increase the Validity of the results and further interpretation of the data. Elements were cross-referenced. derived from three main sources: (a) geospatial data and environmental alerts (INPE, MapBiomas); (b) institutional and operational information; and (c) scientific studies on dynamics crime, governance, and intelligence. This triangulation made it possible to establish relationships between phenomena. environmental and organized crime patterns, strengthening the argument presented in discussion of the results.

The fourth stage consisted of constructing an analytical model, used to interpret the The role of intelligence in combating environmental crimes. This model was developed based on... integration of the categories identified in the content analysis and the theories addressed in the theoretical framework theoretical. He guided the interpretation of the results, allowing us to understand how intelligence, Technology, governance, and operations are interconnected in the Amazon.

Finally, the fifth step involved identifying methodological limitations. How All qualitative research based on secondary data, this analysis depends on availability. reliability and accuracy of information provided by official institutions and publications academic. Furthermore, the absence of detailed operational data on certain operations. state-level limitations and the lack of standardization among information systems constitute limitations that have an impact. the breadth of the analysis. Even so, the multiple sources used, combined with triangulation and analysis... Robust theoretical foundations strengthen the consistency of the results obtained.

4. RESULTS AND DISCUSSION

4.1 Dynamics of Environmental Crime in the Amazon

Analysis of documentary and scientific materials reveals that environmental crime in the Amazon... It operates within a highly structured system, with illicit production chains that involve... Illegal logging, illegal mining, predatory fishing, and land grabbing. These Crimes do not occur in isolation, but are linked to criminal networks that operate in a coordinated manner. Logistically, financially, and territorially integrated. Cadete (2024) demonstrates that criminal factions They began financing illegal mining activities, both to launder money and to control them. strategic territories, while reports from INPE in 2023 and 2024 indicate that areas under strong

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The influence of armed groups has led to deforestation rates higher than the Amazonian average.
Legal.

The documentary investigation also indicates that the intensification of environmental crimes is...
directly linked to socioeconomic factors, such as the absence of a continuous state presence,
institutional fragility, corruption, social inequality, and economic vulnerability of populations
local (Nascimento, 2024). Criminal groups use these vulnerabilities to co-opt workers,
Intimidate traditional communities and establish parallel governance structures. Studies of
The Amazon 2030 (2025) project confirms that municipalities with the highest deforestation rates
They also exhibit higher rates of lethal violence, with a robust statistical correlation between
Environmental degradation and organized crime.

Another relevant finding concerns the logistical routes that support environmental crime.
The Amazon's river network serves as the main transport route for illegal timber and gold.
extracted illegally and supplies destined for illegal mining (Barbosa, 2025). These routes, many
Sometimes invisible or difficult to monitor, they connect remote areas of the forest with urban centers.
where the goods are shipped. Reports from federal and state operations indicate that
Criminals use boats with false bottoms, camouflaged barges, high-powered engines and
Hidden clandestine fuel supply points along the rivers make police action difficult.
(Barbosa, 2025).

Environmental crime is also characterized by its changeable and adaptive nature. With the
With the advancement of satellite monitoring systems, many groups have begun operating in "polygons".
"Mobile" practices, alternating exploration areas to avoid detection. Other organizations have adopted similar practices.
such as nighttime burning, selective tree felling, and the creation of small clearings to evade detection systems. This
phenomenon is described by the CIPÓ Platform (2024), which states
criminals have understood the logic of satellite algorithms and changed their practices accordingly.
make automatic identification more difficult (Costa and Maia, 2025).

The results show that the dynamics of environmental crime in the Amazon are deeply...
Influenced by transnational factors, research identifies the involvement of international networks in the illegal export of
timber to Europe, China, and Central Asia, as well as the use of...
Cryptocurrencies for laundering money originating from illegal gold mining. The Amazon Plan.
(BRAZIL, 2023) emphasizes that the protection of the biome cannot be treated merely as an obligation.
environmental, but also as a matter of hemispheric security and national defense.

4.2 Intelligence as a Strategic Vector in Environmental Combat

Analysis of the documents reinforces that intelligence is the central element for increasing the

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Efficiency and precision in environmental operations. Without the use of intelligence, police actions
They tend to be reactive, scattered, and have low structural impact. With qualified intelligence, operations
They take on a preventive, data-driven character, focusing on dismantling criminal networks in
Instead of simply seizing illegal products (Pinheiro, Aguiar and Zogahib, 2025). In turn,
Rodrigues (2021) highlights that intelligence should anticipate patterns, predict risks, and provide subsidies.
for operational decisions in uncertain environments, essential characteristics for the Amazon.

One of the most significant results identified in this research was the direct relationship between
The use of geointelligence and the improvement of operational indicators. Systems such as PRODES and DETER,
Integrated with state platforms and MapBiomas data, they allowed operations to...
making them more surgical, with precise identification of the areas of greatest risk. Furthermore, the analysis
Using historical data series makes it possible to predict deforestation trends, allowing for preventative action.
This predictive capability is particularly relevant in closed forest contexts, where access is limited.
Physical resources are limited and expensive.

The operations analyzed demonstrate that tactical and operational intelligence, when
Combined, they produce concrete effects in reducing harm. Operation Tamoiotatá, for example,
It recorded a significant drop in the illegal opening of new areas after the implementation of teams of
Integrated analysis between IPAAM, Military Police and federal agencies. Reports from SEMA-AM itself.
Studies show that the use of drones has increased the ability to identify hotspots by more than 300%.
Burning and illegal mining in 2023.

The use of police intelligence in combating environmental crimes still has an effect.
Indirect, but fundamental: the decapitalization of criminal organizations. By intercepting routes,
By providing equipment, funding, and logistical support points, the State economically weakens the
Groups that support environmental crime and other illegal activities. The study by the Igarapé Institute.
(2024) reinforces that operations without intelligence cannot reach the “financial core” of the networks.
criminals, limited to superficial seizures without lasting impact.

Intelligence is also essential for planning integrated operations between
police, environmental agencies, and armed forces. The literature demonstrates that the exchange of
Information sharing between institutions improves the accuracy of decisions, avoids duplication of effort, and reduces...
Cost reduction and increased operational reach. However, this integration requires interoperable systems.
Standardized communication protocols and an organizational structure that promotes sharing.
data, factors that still represent challenges in some Amazonian states.

Another relevant point is the importance of community intelligence. Riverside communities,
Indigenous people and forest workers are primary sources of information about illegal activities, and
Their empirical knowledge complements the technical analyses. International models of
Data-driven policing shows that local information is consistently underutilized.

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despite its relevance for the early identification of degradation vectors.

4.3 Case Study: Operation Harpoon Base

Operation Harpoon Base represents one of the most advanced and innovative models of Integration between intelligence, environmental monitoring, and a permanent police presence in Amazonas. Strategically located at the confluence of the Solimões and Negro rivers, which is one of the river routes Most commonly used by criminals, the base functions as an intelligence center and operational hub.

coordinating actions between the Military Police, Federal Police, Federal Highway Police, IBAMA (Brazilian Institute of Environment and Renewable Natural Resources), ICMBio (Chico Mendes Institute for Biodiversity Conservation), Army and Navy.

Official reports from SEMA-AM and MJSP show that the Arpão Base has reduced significantly increased the flow of environmental crimes in the region, including the illegal transportation of timber, circulation of vessels involved in illegal mining, mineral trafficking and displacement of Inputs used for illegal mining. These results are linked to the operational model. based on short response cycles, 24-hour surveillance and the use of embedded technology.

The use of long-range drones, thermal imaging, river radars and systems of Monitoring systems connected to INPE allow the base to quickly identify vessels. suspicions, illegal mining sites, and recently degraded areas. The teams on board They can be deployed immediately after an alert, ensuring a rapid response. Integration with the

The Federal Highway Police (PRF) and the Federal Police (PF) are expanding the scope of the operation, as it allows for the tracking of logistics networks throughout the country. The Amazon.

Another relevant factor is the continuous production of strategic intelligence, based on the analysis of Onboard reports, testimonies, river data, and seizures. This intelligence is used to Mapping criminal patterns, identifying financiers, locating high-risk areas, and supporting other operations. state and federal levels. The model also serves as an international benchmark and was presented as A success story during preparatory events for COP-30.

The Arpão Base also revealed that a permanent state presence in critical areas reduces It substantially reduces violence and strengthens the perception of safety in local communities. Research Qualitative studies show that riverside dwellers and workers in the region have begun to report [violations] with greater intensity. Frequent illegal activities, expanding the flow of community intelligence.

4.4 Structural Bottlenecks, Limitations and Challenges

Despite the progress, several challenges persist and compromise expansion and continuity. of environmental intelligence actions. The first is the lack of interoperability between systems of Information. Each agency has its own platform, and many of them don't communicate with each other. The Consortium

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from the Legal Amazon (2025) points out that this fragmentation compromises the quality of intelligence. This generates and increases redundancy of effort.

Another challenge is the shortage of analysts specializing in spatial analysis and criminology. Environmental and intelligence applied to the territory. Many states still do not have teams. multidisciplinary teams capable of interpreting satellite data, integrating socioeconomic information and To conduct robust crime diagnoses. This deficit reduces the state's ability to transform data. In action.

The literature also highlights administrative discontinuity as a significant limitation. Changes in government often disrupt public policies, replace technical teams, and... They weaken strategic programs. As a result, successful operations may lose momentum. capacity or be deactivated due to lack of institutional continuity.

Logistics in the Amazon is another major obstacle. The high cost of transportation and maintenance, long distances, dependence on river transport, and difficulty of communication. This makes operations complex and expensive. The lack of permanent forward operating bases, such as Arpão Base, It limits the territorial scope of intelligence operations.

Finally, the influence of international criminal networks, which hinders the fight against crime, should be highlighted. only at the state or national level. The trafficking of timber, gold, and minerals involves multiple countries. making the establishment of multilateral agreements and the sharing of resources indispensable. Intelligence with foreign forces.

5. FINAL CONSIDERATIONS

The results of this study demonstrate that environmental crimes in the Amazon constitute a phenomenon of a complex, multi-scalar nature, deeply interconnected with the dynamics of crime. organized, to institutional fragility and the absence of a continuous state presence in vast areas of territory. Documentary research and specialized literature converge on the finding that that illegal deforestation, clandestine mining, land grabbing and other practices harmful to Environmental factors cannot be interpreted in isolation; rather, they form part of chains. robust illicit economic activities, with logistical coordination, transnational financing, and direct impact. Regarding public safety. Thus, understanding environmental crimes as a strategic threat. This implies recognizing that mitigating it requires an integrated, continuous, and strongly anchored state response. in intelligence capabilities.

The analysis also showed that Public Security Intelligence represents not only an operational support tool, but also the core structure of environmental enforcement actions. Effective. Intelligence allows for the transformation of scattered data into accurate diagnoses, identifying

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criminal patterns, anticipating trends of degradation, supporting operational planning, and Above all, to dismantle criminal networks by decapitalizing their production chains. Strategic capability shifts the approach from a reactive model to a preventive model and guided by evidence, aligned with international best practices for environmental protection and Integrated security.

The case studies analyzed, with particular emphasis on Operation Base Arpão, demonstrate the practical effects of the coordinated use of intelligence, technology, interagency governance and Territorial presence. The Arpão Base has consolidated an innovative model that combines monitoring. Continuous, integration of multiple forces, intensive use of geointelligence, and short response cycles. Their results, recognized even at preparatory events for COP-30, demonstrate that... A sustained state presence, coupled with qualified intelligence, significantly reduces the circulation of Combating environmental crimes weakens organized crime and strengthens the trust of local communities in security institutions.

However, structural challenges persist that limit the expansion and deepening of this. The fragmentation of information systems remains one of the main barriers. for the consolidation of integrated intelligence in the Amazon. The lack of interoperability between Federal and state platforms compromise data exchange and reduce the efficiency of analyses. Similarly, there is a lack of specialized teams in territorial intelligence and data analysis. geospatial and environmental criminology restricts the ability to transform large volumes of data transformed into actionable information of high strategic value.

Additionally, administrative discontinuity and the absence of long-term public policies The timeframe compromises the sustainability of environmental operations. As demonstrated by studies Revised, successful operations often lose momentum at the end of government cycles. creating gaps that are quickly filled by criminal organizations. Thus, the institutionalization of environmental intelligence policies (incorporating permanent structures, Stable teams, continuous funding, and cooperation protocols are essential conditions for to consolidate lasting results.

In theoretical and practical terms, this research contributes by demonstrating that combating Environmental crimes in the Amazon should be understood as part of a security ecosystem. expanded public policy, encompassing environmental protection, combating organized crime, territorial defense, and... Sustainable development and its interconnectedness are interrelated. Intelligence, therefore, does not act as a single entity. an isolated component, but as a transversal axis capable of coordinating actions, anticipating risks and guiding. Strategic decisions. By integrating geospatial data, community information, and crime analysis. and interagency operations, environmental intelligence emerges as an indispensable tool for To mitigate damage, promote territorial governance, and strengthen national sovereignty.

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Finally, it is recommended that future research further explore the effectiveness of models.

Hybrids of community intelligence and geointelligence should be evaluated for the creation of permanent centers of...

Integrated environmental intelligence in the states of the Legal Amazon and investigate the impact of

International cooperation in reducing environmental crimes. The complexity of the Amazon biome and

The increasing sophistication of criminal networks demands increasingly sophisticated academic and institutional approaches.

increasingly robust, multidisciplinary, and technological. Thus, strengthening intelligence in the fight against

Combating environmental crimes is not just an operational necessity, but a state strategy.

To guarantee public safety, environmental protection, and the future sustainability of the Amazon.

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