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CRIMINOLOGICAL AND CRIMINALISTIC BASES OF ILLEGAL ENGAGEMENT IN FISHING, HUNTING, OR OTHER WATER-BASED EXTRACTIVE INDUSTRIES

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Abstract

The article examines the peculiarities of the criminological characteristics of illegal fishing, hunting, or other water extraction industries. The authors determine the state of criminal offenses in Ukraine, as well as the state and specific weight of illegal extraction (fishing) of aquatic biological resources in Ukraine, and investigate the causes of illegal activities. Statistical observations are made on the dynamics of criminal offenses related to illegal fishing that have been registered and referred to court. Trends that influence the growth of illegal fishing are considered. Attention is also focused on latent crime in this area. It has been established that procedural aspects are the most important in uncovering the issue of illegal fishing. In addition, the article examines the main procedural forms of participation of knowledgeable persons in the investigation of criminal cases involving illegal fishing. The issues on which experts should focus their attention when investigating these issues are highlighted. The role of the expert biologist in forming an expert opinion and the peculiarities of conducting these categories of cases are highlighted. The tactical and organizational aspects of conducting special studies and expert examinations in cases of this group of criminal offenses are analyzed. It is proposed to grant specialists of territorial administrations the function of investigative bodies during the investigation of illegal fishing. General conclusions and proposals are made that should contribute to improving the situation with illegal fishing.

Keywords: illegal fishing; special knowledge and research; specialist; expert; investigator, detective.

1. Introduction

Illegal engagement in fishing, hunting, and other water-based extractive industries represents a significant and persistent threat to environmental security, biodiversity, and legal order in Ukraine and globally. This form of criminal behavior, while often underestimated, has wide-ranging consequences for aquatic ecosystems, fisheries sustainability, economic development, and the integrity of natural resources management. In the context of Ukraine, the criminological and criminalistic study of illegal fishing activities has gained heightened importance due to both the environmental degradation caused by such offenses and the evolving patterns of organized criminal behavior connected to the exploitation of aquatic biological resources. The transformation

of environmental crimes into a distinct category under the Criminal Code of Ukraine, particularly in the newly introduced section titled "Criminal Offenses Against the Environment," reflects the increased societal and legislative recognition of their gravity. Among these crimes, illegal fishing and water-based extraction industries stand out not only because of their frequency but also due to their latent nature and the difficulty of detection and prosecution. Official statistics reveal a decreasing trend in registered environmental crimes over recent years, but this trend may not accurately reflect the true scale of the problem. Rather, it likely indicates underreporting and limitations in law enforcement capacity. Article 249 of the Criminal Code of Ukraine specifically targets illegal fishing, hunting, and related water-based activities. The prominence of this offense within environmental crime statistics underlines its criminological relevance (Petrenko et al., 2020). Despite some statistical decline since 2020, the share of these offenses remains high, and the real extent is believed to be far greater due to latent crime. The inconsistency in reported numbers and actual activity reflects a gap between formal legal responses and on-the-ground realities, necessitating a deeper understanding of both the causes and operational modalities of such offenses.

The criminological significance of illegal fishing lies not only in its environmental impact but also in the structural and economic factors that drive its persistence. The convergence of socio-economic hardship, geographic conditions, and weak enforcement creates a fertile ground for both opportunistic and organized poaching. In certain regions, illegal fishing constitutes a major means of subsistence or supplemental income, which complicates prevention and punishment strategies. Moreover, the involvement of organized criminal groups, equipped with sophisticated gear and supported by corrupt networks, demonstrates the professionalization of this type of crime (Mackay et al. 2020). These organizations often operate with high efficiency and low risk of prosecution, thereby undermining regulatory frameworks. Criminal professionalism in illegal fishing is manifested through several key features: specialized knowledge and skills, reliance on illegal income, stable criminal roles, and established distribution channels. Simultaneously, the field remains accessible to "accidental" offenders—individuals engaging in illegal fishing sporadically or out of ignorance, highlighting the need for nuanced prevention strategies that distinguish between different offender profiles.

Historical and cultural factors also contribute to the resilience of fish poaching in Ukraine. Fishing is one of the oldest human occupations, and in many communities, it holds traditional significance. The weakening of environmental awareness and the widespread perception of aquatic resources as freely accessible exacerbate the criminogenic potential of such activities. Greed and the pursuit of quick profits continue to be central motives, particularly when enforcement is weak and the perceived risk of punishment is low. A major obstacle to combating illegal fishing is its high latency. The hidden nature of the crime, combined with limited patrol capabilities and public indifference, results in a low detection rate. Latent crime reinforces the belief in impunity among offenders, contributing to recidivism and even recruitment into poaching networks (Woodill et al., 2020). Public engagement in monitoring and reporting is minimal, though it represents a critical component in improving crime detection and environmental stewardship. The criminalistic aspect of illegal fishing demands a robust response that includes both procedural precision and the involvement of experts. Investigating these offenses requires not only conventional police work but also the participation of specialists in biology, ecology, ichthyology, and criminalistics. The proper documentation, analysis, and interpretation of physical evidence—such as fish remains, fishing tools, and environmental data—are essential for securing convictions and understanding the full extent of ecological damage. Forensic examinations, including biological, ecological, and ichthyological assessments, play a vital role in qualifying the offense, estimating damages, and identifying environmental impacts. These examinations must be supported by methodologically sound collection and

preservation of evidence, often under challenging field conditions. The integration of expert input at early stages of investigation enhances the quality and reliability of legal outcomes (Weekers et al., 2021). The decentralization of investigative powers—such as granting territorial environmental authorities certain procedural rights—could significantly improve response times and crime detection. Empowering these bodies to conduct site inspections and gather primary evidence would leverage their field-specific expertise and operational proximity to suspected crimes.

Given the diversity of factors influencing illegal fishing, from economic incentives to cultural attitudes and institutional weaknesses, a comprehensive criminological and criminalistic framework is required. This framework must account for offender typologies, regional patterns, environmental harm, and legal process efficiency. Only through such an integrated approach can effective prevention, prosecution, and policy design be achieved.

In this context, the present article aims to systematically analyze the criminological profile of illegal fishing, the dynamics of such offenses in Ukraine, and the procedural mechanisms necessary for effective investigation. By combining empirical data, legislative analysis, and forensic practice, the study provides actionable insights for law enforcement, environmental protection bodies, and policymakers. Ultimately, improving the legal and institutional response to illegal engagement in water-based extractive industries is not only a matter of justice but also a crucial step toward preserving Ukraine's aquatic biodiversity and ecological resilience.

2. Criminological Dimensions and Scale of Illegal Fishing in Ukraine

The increased danger of illegal encroachment on the environment is confirmed by the fact that, for the first time in the history of our legislation, provisions providing for liability for environmental crimes have been separated into a separate section of the Criminal Code of Ukraine – "Criminal Offenses Against the Environment." Statistics on criminal offenses registered in Ukraine over the past five years show a steady decline in criminal offenses in the environmental sphere. In 2021, 5,304 criminal offenses against the environment were registered in the country, in 2022 – 4,018, in 2023 – 4,741, and in 2024 – 4,153 (On registered criminal offenses and the results of their pre-trial investigation, 2025). An analysis of the share of criminal offenses against the environment in the structure of all registered criminal offenses shows a decrease in the proportion of such illegal acts. In 2020, the share of criminal offenses against the environment in the structure of all registered criminal offenses in Ukraine was 1.55%, in 2021 – 1.48%, in 2022 – 1.21%, in 2023 - 1.19%, in 2024 - 1.12%. However, the above facts do not allow us to objectively judge the state of criminal offenses, since they are not information about the state of this type of crime, but, most likely, indicators of the fight against it by law enforcement agencies. The most complete picture can only be imagined taking into account the high latency of this type of criminal offense. Illegal fishing occupies a significant place in the structure of criminal offenses against the environment.

According to the "Rules of Amateur Fishing" in Ukraine, it is prohibited to fish:

- during spawning season - from April 1 to May 30/June 19 inclusive (on rivers and their tributaries/on reservoirs, lakes, and bays, respectively);
- during wintering - from November 1 to the beginning of spawning season (this period is set annually by the fisheries protection agency) (Order No. 229 (z0819-01) 2004).

The exact dates when the fishing ban ends may be adjusted. For example, during wintering, it is not allowed to fish in wintering pits. These dates may also depend on when a particular species of fish spawns, the region, and the water bodies.

Thus, back in 2014, in his monograph "Criminal Liability for Illegal Fishing, Hunting, or Other Water Extraction Industries," K.M. Orobets noted that illegal fishing accounts for 60% of criminal offenses in the field of natural resource protection [3, p. 20]. This is

confirmed by official data on the state of crime in Ukraine. In 2020, under Article 249 of the Criminal Code of Ukraine, "Article 249. Illegal fishing, hunting, or other water extraction industries," 17,407 criminal offenses were registered in 2021 – 608, 2022 – 576, 2023 – 615, 2024 – 685. This means that in 2020, the share of illegal fishing, hunting, or other water extraction industries in the structure of all registered criminal offenses against the environment in Ukraine was 37.34%, in 2021 – 34.84%, in 2022 – 30.76%, in 2023 – 29.62%. When providing a criminological description of illegal fishing, it is important to mention the geography of this type of criminal offense. According to the indicators, the number of registered criminal offenses is increasing despite the state of war.

Moreover, in modern conditions, poaching is widespread not only in inland waters, but also within Ukraine's maritime economic zone. Studying the territorial spread of crime has both theoretical and practical significance. Theoretically, it allows for a better understanding of the influence of various factors, including geographical ones, on the state and dynamics of crime. The practical significance lies in the organization of preventive work.

For many years, statistical data showed a steady trend of rapid growth in criminal offenses related to illegal fishing, with a peak in 2010, and since then there has been a downward trend in the registration of this type of criminal offense. We agree with K.M. Orobets that the reasons are unlikely to lie in a decrease in illegal fishing, but rather are related to the elimination of the body that was directly involved in prosecuting these criminal offenses and the transformation of environmental protection structures which monitor compliance with fishing rules and requirements for the conservation of aquatic biological resources, and a decrease in their activity (Orobets, 2014). Organized fishing occupies a special place in illegal fishing. Poaching has turned into a huge business with its own factories, exports abroad, and corrupt connections. Organized criminal groups with good equipment, weapons, and division of roles began to form here. The scale of organized criminal activity in the field of illegal fishing can be explained by the huge profits and relatively lenient penalties. In my opinion, illegal fishing is characterized by criminal professionalism, i.e., a type of criminal activity that:

1) is a source of livelihood for the perpetrator (the person receives a certain income from illegal fishing);

2) requires certain knowledge and skills to achieve the ultimate goal (for example, the person can operate a self-propelled floating vehicle, knows how to navigate at sea, can use certain means and methods for illegal fishing, etc.);

3) involves certain contacts with anti-social circles (for example, it is necessary to establish channels for selling fish caught illegally, etc.);

4) defines a stable type of criminal activity (committing predominantly similar criminal offenses) in the cases provided for in Article 249 of the Criminal Code of Ukraine (2001). Of course, it cannot be unequivocally stated that this type of criminal offense is characterized only by criminal professionalism; illegal fishing is also characteristic of “accidental” criminals, i.e., those who have committed criminal offenses for the first time.

3. Criminogenic factors and expert support in investigating illegal fishing

Speaking about the causes and conditions of crime, we would like to highlight some of the direct factors of illegal fishing. These are, first of all, gaps in environmental awareness, which in various ways exacerbate the criminogenic impact of the factors involved. Recently, the population has developed an indifferent attitude towards the fate of nature and a consumerist attitude towards aquatic biological resources. The causes of fish poaching, like any other criminal offense, should be considered in a historical context. Fishing is one of the earliest human activities. For a certain part of the population, it is the main occupation and means of subsistence in western regions [5]. As we have already noted, illegal fishing is characterized by criminal professionalism, so fish poaching is mainly motivated by greed, which is the basis of criminal activity

aimed at enrichment. In the course of our research and study of scientific literature, we have come to the conclusion that the proliferation of fish poaching and the depletion of Ukraine's fish stocks are facilitated by widespread corruption in this sector. Currently, the technical equipment of criminals engaged in fish poaching exceeds that of nature conservation authorities, which increases the mobility of poachers and makes it difficult to apprehend them. It should be recognized that one of the reasons for the existence and rapid growth of poaching is the high level of latency of the criminal offenses in question. Latent crime encourages criminals to believe that they can commit new criminal offenses with impunity. Its impact on the self-determination of illegal fishing is evident in the fact that poachers who are not detected in time continue their illegal activities, attracting new people to join them. In our opinion, an important reason for widespread poaching is the silent indifference of the population. The public in our country must take an active part in the fight against illegal fishing. Invaluable assistance in the detection and investigation of these criminal offenses is provided by knowledgeable individuals—specialists and experts in the fields of ecology, biology, biochemistry, and criminalists As practice shows, business interaction between investigators and competent specialists and experts significantly improves the quality, completeness, and effectiveness of investigations into cases of illegal fishing. The visit of one specialist to the site of illegal fishing should not prevent another specialist from visiting the site, since during the inspection they are called upon, in accordance with their specialization, to assist the investigator in solving various tasks. When the results of the inspection are evaluated taking into account various specialized knowledge, the completeness, comprehensiveness, and objectivity of this investigative action are achieved, and the most optimal decision is made regarding the actions necessary to establish the circumstances of the crime.

The participation of a specialist in the inspection of the scene of illegal fishing should not determine the content of the procedural and tactical decisions of the investigator. In turn, the investigator should not restrict the procedural rights of the specialist or hinder his initiative in studying the circumstances of the incident, identifying and recording evidence. The correct combination and scientifically organized performance of the specialist's functions leads to the effective use of special knowledge and skills in order to establish the truth in the case under investigation. Let us consider the practice of involving knowledgeable persons in the investigation of illegal river fishing. Most often, an inspection of the site of illegal fishing is carried out immediately after signs of it are detected during scheduled and unscheduled inspections, as well as during patrols of certain sections of rivers and reservoirs. It is they who, as the first to inspect the fishing site, establish the probability of the authenticity of the fact of fish poaching, as well as the circumstances of the alleged criminal event (place, time, method, fishing gear, etc.). In this regard, it is advisable to grant the territorial authorities procedural powers to independently conduct certain investigative actions, in particular, to inspect the scene of the incident. This, in turn, will increase the detection rate of these criminal offenses, as well as the efficiency and effectiveness of the investigation as a whole. An ichthyologist should be involved in the inspection of the site of illegal fishing. Using special technical means and devices, the ichthyologist, during the inspection of the scene, collects scales from illegally caught river fish for further expert examination, determines the species composition of the fish, its sexual maturity, reproductive capacity, and any damage. Subsequently, taking into account the value of the fish, the amount of damage caused by illegal fishing is determined. As practice shows, various unfounded errors are sometimes made in this process. Therefore, from a biological point of view, it is advisable to make a final conclusion on the amount of damage after a biological examination conducted by an expert biologist.

4. Forensic support and methodological approaches in investigating illegal fishing

It should be emphasized that the problem of proving the nature and extent of damage caused to aquatic biological resources is complex, since its assessment must take into account the number of river fish caught, damaged, or destroyed, as well as the damage caused to the environment. This is especially true in cases where explosives, chemicals, electric current, or other methods of mass destruction are used for illegal fishing of river fish, as only a small portion of the stunned or dead fish is removed from the water. It is important to note that the effectiveness of the use of expert knowledge will be higher if, in the case under investigation, the same expert is then entrusted with conducting an expert examination of the same name. The expediency of such a combination is due to the fact that in order to resolve the issues posed to a specific expert, the latter needs to be directly familiar with the specifics of the situation at the scene, and the expert's participation in the detection, recording, and examination of material evidence facilitates further expert research and increases the reliability of the expert's conclusions. During the investigation of cases of illegal extraction (fishing) of river fish, forensic ecological, forensic biological, and forensic ichthyological examinations are usually appointed at the initial stage. Forensic ecological examinations of the crimes under investigation are conducted to establish the factual circumstances of the negative anthropogenic impact (through illegal fishing) on the environment. Forensic ecological examinations into illegal river fishing are most often ordered during the spawning and migration (run) seasons. Spawning grounds are specific areas of the aquatic environment where fish lay their eggs. When investigating illegal river fishing, the forensic environmental expert may ask the following key questions.

1. Is there a negative anthropogenic impact on the biological resources inhabiting the river estuary or its tributary, according to the documentation provided?

2. Is the seized equipment (fishing nets or explosive and toxic agents) an instrument of negative anthropogenic impact, namely a tool for the mass extermination of river fish?

3. Is it possible to establish the cause of mass fish mortality in the river or its tributary?

4. Is the fishing net a means (weapon) of mass destruction of fish or a complete barrier to fish migration routes to spawning grounds?

In our opinion, when appointing a forensic environmental examination into the facts of illegal river fishing, the following materials must be provided:

a) a ruling on the appointment of a forensic environmental examination;

b) a report on the inspection of the scene;

c) a diagram (drawing, plan) of the scene;

d) a certificate from the territorial branch of fisheries and conservation of aquatic biological resources stating that the section of the river or its bay where illegal fishing was recorded is a spawning ground for the fish caught;

e) a certificate from an ichthyologist on the species composition of the illegally caught fish;

f) maps of specially protected natural areas (state reserves and sanctuaries, national parks, etc.);

g) tables, photos, and video materials from the scene (photos of the coastal strip of the river or its tributary where illegal fishing was detected; photos of the criminal means and tools used, specimens of fish carcasses, etc.);

h) explanations from persons involved in the illegal fishing and its witnesses (if any).

The appointment and conduct of a forensic biological examination in the investigation of illegal river fishing has its own organizational and tactical features, which are explained by its objects, methods, and research tasks. The main objects of

research conducted during this examination are fish carcasses and their remains.

In cases where, when recording the fact of illegal fishing of river fish, it is necessary to establish or clarify the systematic taxon (species) of the fish, the method of its capture, as well as when the fish has been destroyed but there are traces of it on the suspect's clothing, nets, sides of floating vehicles (boats, rafts) fish roe, it is necessary to appoint a biological examination of objects of animal origin.

The following specific questions are asked of the expert biologist regarding these objects: 1. What is the taxonomic affiliation of the river fish samples submitted for examination?

2. To which species of river fish do the scales from the samples seized during illegal fishing belong?

3. Is the biological substance seized from the floating vessel fish mucus or roe?

4. Do the fish samples seized from the scene belong to rare and endangered species listed in the Red Book of Ukraine?

5. How were the fish samples submitted for examination caught?

6. Is it possible to establish the fact of mass fish poisoning based on the documents and fish samples submitted?

The effectiveness of a biological expert's work is determined by the correct and timely removal, packaging, and transportation of material evidence and samples for comparative study. Thus, fish carcass samples must be provided to the expert in frozen form.

If traces of biological origin visible to the naked eye are found at the scene of the incident, they must be removed mechanically (by cutting out the carrier object, scraping, etc.).

In cases where such traces are expected to be present but are invisible to the naked eye or the objects carrying them cannot be transported, traces can also be collected using fingerprint films or adhesive transparent tape (such as Scotch tape).

In order to preserve the evidence necessary for biological examination, these objects must not be packed in plastic bags (to prevent them from rotting). If possible, carrier objects with traces of biological origin left on them should be submitted for examination. These may include clothing, car seat covers, individual parts from a floating vehicle, poaching gear (nets, traps, snares, spears, etc.). When investigating the illegal extraction (catching) of river fish, a forensic ichthyological examination is appointed to determine the nature and extent of damage caused to the fishery as a result of pollution of the reservoir, to establish the causes and circumstances of the death of fish and plankton, and to determine the prospects for the restoration of food organisms in the reservoir. The main objects of forensic ichthyological examination are fish scales and bones. An expert ichthyologist determines the species (genus, family) of fish, the age of the individual, and also identifies how many fish of a particular species have changed their natural properties. Sometimes, a comprehensive study is conducted with the involvement of experts from other specialties—biochemists, physiologists, geneticists, and zoologists.

To sum up the above, it should be noted that there are currently many reasons contributing to the development of fish poaching in Ukraine. They, of course, stem from the general causes of all crime in the country, as well as the causes of environmental crime, but, in our opinion, it is not enough to study the causes and conditions that contribute to the predatory destruction of our country's fish stocks. Criminological studies should be conducted regularly to characterize the overall picture of criminal offenses related to illegal fishing. The data obtained is important for developing optimal recommendations for the protection of fish stocks. Thus, having a general picture of illegal and predatory fishing in different regions of our country, it is possible to make the right decisions regarding the material and technical support necessary for the prevention agencies of a particular territory to combat poaching. Active measures must

be taken to eliminate it, as poaching is a direct threat to Ukraine's national security.

Thus, all of the above allows us to conclude that the effectiveness and quality of criminal investigations into illegal fishing is largely ensured by the timely and active participation of knowledgeable individuals through their conduct of special studies and forensic examinations.

Conclusion

Illegal fishing and related water-based poaching activities pose a multifaceted threat to Ukraine's ecological balance, resource sustainability, and environmental security. This study has demonstrated that such crimes are both widespread and deeply latent, often driven by economic necessity, cultural acceptance, and institutional shortcomings. Their continued prevalence reflects the convergence of various factors, including underdeveloped enforcement mechanisms, limited public engagement, and the growing sophistication of organized criminal groups.

The criminological landscape of illegal fishing in Ukraine reveals a mix of opportunistic and professional offenders, necessitating differentiated prevention strategies. Criminological patterns also show significant geographic variation, demanding tailored regional interventions. Addressing this issue effectively requires a shift from reactive enforcement to proactive prevention and inter-institutional coordination.

From a criminalistic perspective, the investigation of these offenses must increasingly rely on interdisciplinary expertise. The integration of environmental, biological, and ichthyological knowledge into investigative practice enhances the accuracy of crime scene assessments, supports the legitimacy of forensic conclusions, and strengthens the evidentiary base in court proceedings. Timely expert involvement, precise collection and preservation of material evidence, and the use of specialized forensic methodologies are essential to ensuring the objectivity and efficiency of criminal investigations.

Equally important is the institutional empowerment of territorial environmental agencies. Granting them specific procedural rights in criminal investigations can significantly improve crime detection rates and facilitate faster responses to environmental violations. This decentralization can serve as a model for enhancing ecological governance across other environmental domains. Overall, combatting illegal fishing requires an integrated criminological and criminalistic strategy that balances strict legal enforcement with ecological sensitivity and public participation. Legislative reforms should continue to align with international standards while enabling adaptive law enforcement practices. Moreover, fostering environmental education and community involvement is critical to reversing the societal indifference that fuels poaching.

Only through a coordinated, expert-informed, and legally robust approach can Ukraine curb illegal fishing, preserve its aquatic biodiversity, and build a resilient framework for environmental justice and sustainability.

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