

Peculiarities of Conducting Forensic Merchandising Examination Related to Illegal Logging in Ukraine

Iryna Sivchuk *

* PhD in Economics, Ternopil Scientific Research Expert Forensic Center of the Ministry of Internal Affairs of Ukraine, Ternopil, Ukraine, ORCID: <https://orcid.org/0000-0002-9087-2181>, e-mail: sivchukira@gmail.com

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The research paper is dedicated to peculiarities of conducting forensic merchandising examination during investigation of crimes related to illegal logging in Ukraine. The negative impact of illegal logging on the environment is substantiated, and changes taking place in the territories of logging are stressed. On the contrary, logging related to forestry management is aimed at ensuring protection, rehabilitation, strengthening of protective properties and raising productivity of forests and other forestry lands. The Article Purpose is to theoretically substantiate peculiarities of performing forensic merchandising examination to determine the market value of round timber while investigation of crimes related to illegal logging, and to emphasize key aspects of conducting such research using the suggested algorithm of actions. The performed research is built on application of comparative approach involving the analysis of prices of sale and offers of this type of timber. The definition of the terms “timber”, “round timber”, their classification and characteristics are also provided. Merchandising research of round timber presupposes obtaining raw data on measurement of wood parameters and applying a certain algorithm of actions in order to assess their market value. The new national wood quality

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standards were analyzed and the need to attract a forest industry specialist in the course of forensic merchandising examination is justified.

Keywords: round timber; environmental crimes; illegal logging; merchandising examination; firewood of industrial use; firewood of non-industrial use; timber quality class.

Research Problem Formulation

The forest fund of Ukraine is state property and one of the essential factors of production (along with labor and capital), therefore the nature of its use depends on the level of socio-economic, cultural and spiritual development of society overall and environment state in particular.

Improper exploitation of forests results not only in their destruction, but also seriously affects the environment, disrupting functioning of ecological system and increasing level of morbidity within population. Therefore, forests are the national wealth of people and the state, which, according to their direct purpose, regulate the circulation of water and air, the level of precipitation, the release of oxygen into the air, the air temperature, prevent soil erosion, that is, they perform water protection, protective, sanitary and hygienic, health, recreational, aesthetic and other functions to ensure and meet the needs of society and environmental safety of human life. After all, protection and rational use of natural resources is an integral and required condition for economic growth and development of society as a whole.

Statistics indicate that relative density of environmental crimes in the territory of our state is growing every year. Such a negative trend is due to the spread of such a phenomenon as illegal logging. In this connection, problems associated with this phenomenon are relevant, indisputable and global and require further research in order to compile practical guidelines to prevent destructive consequences for the environment in the future.

During investigation and trial of civil and criminal cases related to environmental crimes investigation, it is necessary to apply specific expertise to establish the market value of round timber; therefore, it is merchandising examination gives an opportunity to obtain a competent conclusion regarding crimes associated with illegal logging in Ukraine.

Analysis of Essential Researches and Publications

Scientific foundation for the research of issues related to investigation of environmental crimes (in particular, illegal logging) is studied in research papers of such researchers as V. M. Poprevych ¹,

1 Попревич В. М. Сучасний стан та перспективи розвитку кримінально-правової охорони лісів України. *Вісник Маріупольського державного університету*. 2014. Вип. 8. С. 180–186. URL: http://nbuv.gov.ua/UJRN/Vmdu_pr_2014_8_25 (date accessed: 11.11.2022).

O. M. Pylypenko ², O. V. Zaichko ³,
R. P. Oliinychuk ⁴, A. M. Krotiyuk ⁵,
O. M. Trokhanenko with co-authors ⁶ and
others.

Article Purpose

Theoretical substantiation of peculiarities of conducting forensic merchandising examination to assess market value of round timber while investigation of crimes related to illegal logging and emphasizing key aspects of carrying out such research using the suggested algorithm of actions.

Research methods

This research paper suggests applying general methods of theoretical research (analysis, synthesis, generalization, deduction) and empirical research methods (description and comparison), which combination helped to establish mechanisms for calculating market value of round timber.

Main Content Presentation

The problem of logging forest plantations is one of the most severe environmental problems worldwide. Regrettably, this negative trend has not passed Ukraine either, where recently there has been a massive destruction of windbreaks and illegal logging of forest plantations. By the way, Ukraine is the largest exporter of illegal raw materials to the EU countries. The public report of the Head of State Forest Resources Agency stresses that *“the total area of forest areas belonging to the Forest Fund of Ukraine is 10.4 million hectares, including 9.6 million hectares covered with forest vegetation. The forest cover of Ukraine is 15.9%. But despite a fairly small forest cover of the territory, Ukraine ranks 9th in Europe in terms of forested area and 7th in terms of timber reserves”*⁷.

Loggings associated with forestry management are intended for ensuring protection, rehabilitation, strengthening of protective properties and increasing the

- 2 Пилипенко О. М. Використання сучасних можливостей судових експертиз на початковому етапі розслідування незаконної порубки лісу. Вісник Луганського державного університету внутрішніх справ ім. Е. О. Дідоренка. 2016. № 4 (76). С. 232–241. URL: <https://journal.lduvs.lg.ua/index.php/journal/article/view/619> (date accessed: 11.11.2022) ; Її ж. Особливості організації й тактики огляду місця події при розслідуванні незаконної порубки лісу. Ibidem. 2018. Вип. 2 (82). С. 280–289. URL: <https://journal.lduvs.lg.ua/index.php/journal/article/view/139> (date accessed: 11.11.2022).
- 3 Заїчко О. В. Кримінологічна характеристика та запобігання незаконній порубці лісу : дис. ... канд. юрид. наук. Харків, 2019. 210 с. URL: <http://criminology.nlu.edu.ua/wp-content/uploads/2019/09/Disertatsiya-Zaichko-O.V.pdf> (date accessed: 11.11.2022).
- 4 Олійничук Р. П. Особливості розслідування незаконної порубки лісу. Актуальні проблеми правознавства. 2020. № 3 (23). С. 166–170. DOI: 10.35774/app2020.03.166 (date accessed: 11.11.2022).
- 5 Кротюк А. М. Іноземний досвід запобігання незаконним порубці, перевезенню, зберіганню, збуту лісу. Науковий вісник Національної академії внутрішніх справ. 2021. Том 26. № 1. С. 24–30. DOI: 10.33270/01211181.24 (date accessed: 11.11.2022).
- 6 Троханенко О. М., Комісарова А. Д., Верба В. В. Сучасні можливості судових експертиз і напрями використання спеціальних знань у розслідуванні злочинів, пов'язаних із лісом. Нове українське право. 2021. Вип. 4. С. 276–282. DOI: 10.51989/NUL.2021.4.41 (date accessed: 11.11.2022).
- 7 Публічний звіт голови Державного агентства лісових ресурсів України за 2021 р. URL: <https://forest.gov.ua/storage/app/sites/8/публічні%20звіти/publicniy-zvit-za-2021.pdf> (date accessed: 11.11.2022).

productivity of forests and other forest areas, oftentimes carried out according to plan (periodic planned logging). They are an element of the forest care system, that's why their further storage as plantations is inappropriate. In Ukraine, such loggings are one of the essential factors for improving quality and enhancing forest productivity. Unfortunately, also illegal logging takes place, which is the evidence of environmental crimes.

Damage inflicted to forests by excessive logging may even lead to ecological disaster (in extreme cases). Climate changes and changes in the ecosystem take place in the territories of logged forests, resulting in destruction of a substantial number of plants and animals, worsening of circulation of water and substances in nature, destruction (erosion) of the soil, etc., negatively affecting not only forestry but also climate.

In order to research into the problem of illegal logging, the concept of forest should first be defined. In particular, Art. 1 of Section I of the Forest Code of Ukraine defines the forest term as *"a type of natural complex (ecosystem), which combines mainly woody and shrub vegetation with appropriate soils, herbal vegetation, animal world, micro-organisms and other natural components that are interconnected in their development, affecting each other and the environment"*⁸. Art. 2 of the Forest Code

of Ukraine specifies that *"the object of forest relations is the forest fund of Ukraine and some forest areas. The subjects of forest relations are public authorities, local governments, legal entities and citizens who act in accordance with the Constitution and laws of Ukraine"*⁹.

State Forest Resources Agency of Ukraine defines the illegal logging term as *"timber harvesting without a special permit for the use of forest resources (logging permit, or a wood ticket)"*¹⁰.

At the same time, O. V. Zaichko interprets this definition as follows: *"this is predominantly organized criminal activity aimed at illegal harvesting of timber in forests and other protected areas and sites for commercial purposes or to meet personal (household) needs of population for firewood and timber"*¹¹.

O. Storchous proposes to define as illegal logging which *"is viewed as a completed crime from the moment of total separation of the tree or shrub from the root, in case this act inflicted significant damage (given materially defined crime)"*¹². He emphasizes that *"illegal logging could be divided into two groups depending on offense (crime) subjective composition. A. Loggings carried out without a special permit, i.e. without wood ticket (unauthorized logging). B. Loggings carried out under appropriate permit, in the course of which significant violations were committed"*¹³.

8 Лісовий кодекс України від 21.01.1994 р. № 3852-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/3852-12#Text> (date accessed: 11.11.2022).

9 Ibidem.

10 Охорона лісів від незаконних рубок / Державне агентство лісових ресурсів України. URL: <https://forest.gov.ua/napryamki-diyalnosti/lisove-gospodarstvo/ohorona-i-zahist-lisiv/ohorona-lisiv-vid-nezakonnih-rubok> (date accessed: 11.11.2022).

11 Заїчко О. В. Op. cit.

12 Сторчоус О. Кримінальна відповідальність за самовільні порубки лісу : навч. посіб. Київ, 2012. 116 с. URL: https://fleg1.enpi-fleg.org/fileadmin/ufs/04.%20Program%20Information/4.02%20Program%20Components/4.02.05%20Public%20Awareness/Criminal_Liability-UA.pdf (date accessed: 11.11.2022).

13 Ibidem. С. 9–10.

As stated by O. M. Budiachenko, *“according to the analysis of case materials, the most widespread are loggings conducted without special permit, i.e. without wood ticket (so-called illegal logging)”*¹⁴. Therefore, he suggests the following definition for illegal logging: *“it is a socially dangerous act committed with inflicting harm to social relations protected by law regarding the rational use of the forest fund, trees, shrubs that are not separated from the stump and are damp-growing (live) and grow in forests, protective and other forest plantations, in nature reserves or in the territories and sites of nature reserve fund”*¹⁵.

I. H. Bohatyrov and A. V. Savchenko believe that illegal logging takes place if it is carried out:

- 1) without special permit certified by a corresponding document (logging permit or wood ticket) and issued by the competent authority;
- 2) in the availability of permit, but failing to comply with conditions envisaged in it concerning the place, method and terms of logging, number and species of trees and shrubs (logging does not take place in allocated area; prior to the beginning or upon expiration of terms stipulated in the permit; logging of valuable and rare trees and shrubs listed in the Red Book of Ukraine, and other trees of exceptional importance for preservation of biodiversity, etc.);

- 3) in the availability of permit for continuous sanitary logging, but non-complying with restrictions established regarding the area, terms and technologies of work¹⁶.

It should be stressed that Article 39 of Chapter 6 *Functional Division of Forests* of the Forest Code of Ukraine stipulates that *“forests of Ukraine are divided into the following categories according to their ecological and socio-economic significance and depending on the main functions they perform: 1) protective forests (perform mainly water protection, soil protection and other protective functions); 2) recreational and health-improving forests (perform mainly recreational, sanitary, hygienic and health-improving functions); 3) forests for environmental, scientific, historical and cultural purposes (perform special environmental, aesthetic, scientific functions, etc.); 4) exploitable forests”*¹⁷.

In case of establishing the fact of illegal logging of forest or its theft, criminal offense is classified according to the following articles of the Criminal Code of Ukraine: Art. 185 *Theft* and Art. 191 *Misappropriation, embezzlement, conversion, or property by malversation of Section VI Criminal offenses against property* and Art. 246 *Illegal logging or illegal transportation, storage, and sale of timber of Section VIII Criminal offenses against environment*¹⁸.

14 Будиаченко О. М. Кримінальна відповідальність за незаконну порубку або незаконне перевезення, зберігання, збут : дис. ... канд. юрид. наук. Одеса, 2020. 258 с. URL: http://dspace.oduvs.edu.ua/bitstream/123456789/1479/1/Disertatsiya_Budyachenko_O.M.pdf (date accessed: 11.11.2022).

15 Ibidem. С. 121.

16 Богатирьов І. Г., Савченко А. В. Кримінальна відповідальність як сучасна проблема кримінального права України. *Підприємництво, господарство і право*. 2016. № 2. С. 133–137. URL: http://nbuv.gov.ua/UJRN/Pgip_2016_2_27 (date accessed: 11.11.2022).

17 Лісовий кодекс України від 21.01.1994 р. № 3853-XII (зі змін.). URL: <https://zakon.rada.gov.ua/laws/show/3852-12#Text> (date accessed: 11.11.2022).

18 Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 11.11.2022).

In conformity with Part 1, Article 246 of the Criminal Code of Ukraine, *“illegal felling of trees or shrubs in forests, protective and other forest plantations, transportation, storage, sale of illegally felled trees or shrubs that have caused substantial damage shall be punishable by a fine of one thousand and one thousand and five hundred tax-free minimum incomes, or arrest for a term of up to six months, or restriction of liberty for up to three years, or imprisonment for the same term”*¹⁹.

In addition to the Criminal Code of Ukraine, forest legal relations are governed by:

- The Constitution of Ukraine containing rules of direct effect that can be directly enforced in the process of implementing criminal law relations (in particular, Article 66 of Chapter II stipulates that *“everyone is obliged not to harm nature, cultural heritage and to compensate for any damage he or she inflicted”*)²⁰;
- The Forest Code of Ukraine (in particular, Part 1, Article 89 of Chapter 16 *Implementation of forest protection and conservation* specifies that *“protection and conservation of forests in the territory of Ukraine shall be carried out by: State Forest Guard, acting as part of the central executive authority implementing the state policy in the field of forestry, the executive authority of the Autonomous Republic of Crimea for forestry, and enterprises,*

institutions and organizations under their management; forest protection of other permanent forest users and forest owners” and in Article 90: *“the main tasks of the State Forest Guard are: implementation of state control over compliance with forest legislation; ensuring protection of forests from fires, illegal logging, protection from pests and diseases, damage due to anthropogenic and other harmful effects.”*)²¹;

- Resolution of the Cabinet of Ministers of Ukraine *On Approval of the Regulation on the State Forest Protection, Forest Protection of Other Forest Users and Owners of the Woods*²²;
- The Law of Ukraine *On Environmental Protection* (in particular, Part 1, Article 12 of Section II stipulates that duties of citizens in the field of environmental protection are: *“a) preserve nature, protect, and use its resources efficiently in accordance with the requirements of environmental protection legislation; b) carry out activities in compliance with the environmental safety requirements, other environmental standards and limits on the use of natural resources; c) not to violate the environmental rights and legitimate interests of other entities; d) pay fines for environmental offences; e) compensate for damage caused by*

19 Кримінальний кодекс України URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 11.11.2022).

20 Конституція України від 28.06.1996 р. (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/254к/96-вр#Text> (date accessed: 11.11.2022).

21 Лісовий кодекс України URL: <https://zakon.rada.gov.ua/laws/show/3852-12#Text> (date accessed: 11.11.2022).

22 Про затвердження Положення про державну лісову охорону, лісову охорону інших лісокористувачів та власників лісів : Постанова КМУ від 16.09.2009 р. № 976 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/976-2009-п#Text> (date accessed: 11.11.2022).

*pollution and other negative impact on the environment.”*²³;

- Resolution of the Cabinet of Ministers of Ukraine *On the Approval of Special Fees for Calculating the Amount of Damage Caused by the Violation of the Legislation “On Nature Reserve Fund of Ukraine”* which stipulates the following:
 - ‘1. Approve special fees for calculating the amount of damage caused by violation of the legislation on the nature reserve fund within territories and objects of the nature reserve fund due to:
 - illegal logging or damage to trees and plants that have lignified stem, to the extent of growth cessation; damage to trees and plants with lignified stem to the extent of growth non-cessation (non-stop growth);*
 - destruction or damage to forest crops, natural undergrowth and self-seeding, seedlings or saplings...”*²⁴;
 - other by-laws, draft laws and amendments to legal regulations in terms of regulation as to special use of forest resources and forest protection, as well as international acts in the field of environmental protection and environmental crime counteraction (illegal logging of trees).

As noted previously, illegal logging is conventionally divided into two groups depending on subjective composition of offense (crime).

1. Loggings carried out without special permit (that is, without logging permit, or they are also called unauthorised loggings). These are common ways of forest harvesting in the lack of right to harvesting. Subjects of such loggings are persons who have no legal relationship with the forest sector. For special use of forest resources of state importance (timber harvesting during felling for primary use), logging permits are issued by territorial authorities of forestry and hunting.
2. Loggings carried out on the basis of special permit, in the course of which serious violations were committed. Such loggings are carried out in the availability of permission document, but with non-compliance with conditions stipulated in it:
 - a) not those trees specified in the permit (in particular, not those species or trees that are generally prohibited to cut down);
 - b) not in areas specified in the permit (outside areas allocated for logging);
 - c) not in the amount (exceeding the limit) specified in the permit;
 - d) not within the terms specified in the permit (prior to the beginning or upon their completion)²⁵.

23 Про охорону навколишнього природного середовища : Закон України від 25.06.1991 р. № 1264-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1264-12#Text> (date accessed: 11.11.2022).

24 Про затвердження спеціальних такс для обчислення розміру шкоди, заподіяної порушенням законодавством про природно-заповідний фонд : Постанова КМУ від 10.05.2022 р. № 575. URL: <https://zakon.rada.gov.ua/laws/show/575-2022-п#Text> (date accessed: 11.11.2022).

25 Сторчоус О. Оп. cit. С. 9—10. URL: https://fleg1.enpi-fleg.org/fileadmin/ufs/04.%20Program%20Information/4.02%20Program%20Components/4.02.05%20Public%20Awareness/Criminal_Liability_UA.pdf (date accessed: 11.11.2022).

According to Part 1, Art. 69 of the Forest Code of Ukraine, *“special use of forest resources in the allocated forest area shall be carried out with a special permit – a logging permit, or a wood ticket, issued free of charge”*²⁶.

Primary causes of illegal logging (as specified by State Forest Resources Agency of Ukraine):

- *social*: low level of socio-economic development in rural areas (high level of unemployment among population harvesting timber for satisfying vital needs, low wages, low investment activity, etc.);
- *economic*: gaining quick benefits by individual citizens or organized groups who harvest large-sized and valuable timber assortments for processing or commercial sale (main consumers of such timber are sawmills (power saw benches) operating outside applicable legislation)²⁷.

Cyclical nature of illegal logging is inextricably linked to the ups and/or downs of economic activity in the country. Statistics on the scope of forest violations provided in the public report of the Head of State Forest Resources Agency of Ukraine, state that *“the largest volume of logging was discovered in forests of enterprises of Zakarpattia Regional Department: 9.5 thousand cubic meters (SE ‘Irshavskiy Forestry’: 4.5 thousand cubic meters, SE ‘Yasinya Forestry’: 2.2 thousand cubic meters); of Kharkiv: 2.9 thousand cubic meters (SE ‘Zhovtnevy Forestry’: 1.0 thousand cubic metres); of Kherson: 2.0*

*thousand cubic metres (SE ‘Holoprystanske Forestry’: 1.2 thousand cubic meters); of Vinnytsia: 1.6 thousand cubic meters and Dnipro: 1.5 thousand cubic meters (SE ‘Verkhnedneprovsky Forestry’: 1.0 thousand cubic meters)”*²⁸.

This report also contains the following information: *“investigation into circumstances of illegal loggings demonstrates that main reasons for increase in their number are activities of technically equipped criminal groups, low level of population procurement, which is forced to satisfy its vital needs in illegal way, along with a great number of unregulated private sawmills buying illegally harvested timber. To a great extent, the spread of illegal logging in the southern and eastern regions of Ukraine contributes to the lack of budget funding for retaining 11 employees of the state forest protection, which prompts them to quit their jobs at their own will; consequently, impressive areas of forests are left unattended. During 2016–2021, the number of employees of the lower level of state forest protection decreased by more than 2,000 people, impeding high-quality exercise of powers by state forest protection”*²⁹.

Let's study into the forest crime scheme in Ukraine (according to Interpol and World Wildlife Fund):

- 1) logging (cutting down more than allowed by State Forest Resources Agency of Ukraine, or even cutting down without permits, or within natural reserves or their buffer zones);
- 2) transportation (without permits or several batches with permit issued

26 Лісовий кодекс України URL: <https://zakon.rada.gov.ua/laws/show/3852-12#Text> (date accessed: 11.11.2022).

27 Охорона лісів від незаконних рубок / Державне агентство лісових ресурсів України. URL: <https://forest.gov.ua/napryamki-diyalnosti/lisove-gospodarstvo/ohorona-i-zahist-lisiv/ohorona-lisiv-vid-nezakonnih-rubok> (date accessed: 11.11.2022).

28 Публічний звіт голови URL: <https://forest.gov.ua/storage/app/sites/8/публічні%20звіти/publichniy-zvit-za-2021.pdf> (date accessed: 11.11.2022).

29 Ibidem.

- for one batch, transportation of more valuable timber according to documents for less valuable timber, crossing checkpoints for bribes);
- 3) processing (mixing batches of legal and illegal timber; according to the documents, a different amount of timber is processed than it actually is, or a different grade of wood is indicated);
 - 4) export (unavailability of certificates for timber, their forgery or use of previous documents for new batches of goods, as well as transportation of one type of wood under the guise of another: for example, round timber, which export is prohibited from Ukraine, can be exported under the guise of firewood);
 - 5) sale (buyers are provided with misleading information regarding the origin of timber or timber products or forge environmental certificates for products).

Forest crime increasingly quickly created adapts to new conditions and obstacles by governments and the environmental community, which can be traced on the basis of statistics on circulation of timber and its products between Ukraine and European Union states³⁰.

Investigation of environmental crimes against the environment, arising due to illegal logging, necessitates application of specific expertise from various fields and conducting relevant research, as the range of questions in such cases is rather extensive. For the purpose of investigating this type of crime, it is essential to appoint different types of forensic examinations

in different expert specializations, as a result of which it is possible to obtain answers to questions raised. Therefore, forensic examination can be viewed as the most efficient way to fulfil investigative tasks in cases of crimes against the environment in general and illegal logging in particular, provided strict observance of requirements of criminal procedure law concerning appointment and conduct of this investigative action³¹.

Analysis of law enforcement practice in the field of illegal logging and specialized literature gives grounds for proposing the following list of other forensic examinations, which appointment helps in solving addressed tasks: dactyloscopic, trace-evidence, forensic-economic, engineering-ecological and merchandising research, etc. We believe it is expedient to supplement this list with the latter, since during pre-trial investigation and trial of cases related to illegal logging, there is a necessity to determine the market value of round timber.

In National Standard 1 *General Principles of Valuation of Property and Property Rights* the *market value* term is defined as “*the value for which alienation of the appraisal object is possible on the market of similar property at the measurement date according to the agreement concluded between the buyer and the seller, after carrying out appropriate marketing, as long as each of the parties acted with knowledge of matter, prudently and without coercion*”³².

Carrying out forensic examination implies availability of professional skills and abilities in the corresponding field, which basis is a combination of different

30 Кротюк А. М. Op. cit. DOI: 10.33270/01211181.24 (date accessed: 11.11.2022).

31 Олійничук Р. П. Op. cit. DOI: 10.35774/app2020.03.166 (date accessed: 11.11.2022).

32 Про затвердження Національного стандарту № 1 «Загальні засади оцінки майна і майнових прав»: Постанова КМУ від 10.09.2003 р. № 1440 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-п#Text> (date accessed: 11.11.2022).

types of specific expertise and certain experience of their application in various situations. To resolve addressed tasks (questions), forensic experts in their practice use certain methodological approaches and research methods in the course of forensic examinations, which also fall within their competence.

Methodological approaches should be understood as general ways of assessing property value, stemming from basic principles of appraisal, which the forensic expert applies in the course of their activities in order to fulfil assigned expert task³³.

Conducting forensic merchandising examination while investigation of crimes related to illegal logging involves determining the market value of round timber. Accordingly, the object of this forensic examination is round timber (in particular, firewood for industrial and non-industrial use). While performing such research, a forensic expert may apply comparative approach: this is analysis of sales and offer prices with a corresponding adjustment of differences between comparison objects and appraisal object³⁴.

Timber is understood as wood materials that have preserved their natural physical structure and chemical composition and are produced by dividing logged trees and logs into parts (lengthwise or crosswise) for further use or processing; timber obtained by crosswise separation of the trunk of logged tree is considered round³⁵.

Recently, Ukrainian forest industry has switched to new national wood quality

standards harmonized with European ones. They substantially amended approaches to determining size and quality characteristics of timber. If earlier commercial timber (round timber) in Ukraine was divided into three grades (I, II, III), which had a number of assortments based on their purpose (that is, commercial wood and fuel wood were harvested: firewood suitable for use only as fuel); then starting from 2019, there has been a new division of timber (as in European countries) into four quality classes (A, B, C, D)³⁶.

The principle of classification according to the European round timber standardization system is not based on the assortment (purpose), instead, it is based on indicators of size and quality of logs (larger diameter and minimum content of wood defects at the established increment corresponds to high-class quality):

- **A:** timber of the highest quality class predominately originating from the lower part of the log, with clear wood or with minor defects that do not limit its use;
- **B:** timber of the average quality class without special requirements for clear wood and with knots within the mean value for each species;
- **C:** timber below the average quality class, in which defects are allowed that slightly reduce natural properties of timber as material;
- **D:** timber that does not comply with any of the previous quality classes, of which timber can still be acquired for further use;

33 Ibidem.

34 Ibidem.

35 Про затвердження Інструкції з ведення електронного обліку деревини : наказ Міндовкілля від 27.09.2021 р. № 621 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z1343-21#Text> (date accessed: 11.11.2022).

36 Троханенко О. М., Комісарова А. Д., Верба В. В. *Op. cit.* DOI: 10.51989/NUL.2021.4.41 (date accessed: 11.11.2022).

- remaining round timber of which it is impossible to obtain sawn timber for general use (they are classified as firewood for industrial and non-industrial use)³⁷.

The following classification of timber is given in the Instructions on keeping electronic records of timber:

“firewood for non-industrial use: timber of coniferous and deciduous type of wood, cut lengthwise and crosswise and/or chopped, used as fuel in such household wood-burning devices as stoves, fireplaces and central heating systems;

firewood for industrial use: coniferous and deciduous timber in the form of logs peeled from knots, usually with bark, intended for industrial use in production of heat and electricity, chips, shavings, pyrolysis, hydrolysis, etc. They can also be used, under contract (agreement) terms, as raw materials for production of wooden boards. At the request of consumer, they can be supplied both as round and split materials”³⁸.

According to calorific value, firewood intended for use as fuel, generation of heat and electricity, as well as pyrolysis is divided into the following groups of species:

- birch, oak, beech, ash, hornbeam, maple, elm, larch;
- pine, alder;
- spruce, cedar, fir, aspen, linden, poplar, willow³⁹.

Timber is obtained by mechanical processing of fallen trees and their parts. The trunk of fallen tree, cleaned of branches, top and stump, is called tree whip.

Conducting merchandising examination when assessing the market value of round timber first of all involves additional involvement of a specialist to measure timber, who must determine qualitative and quantitative characteristics of assortment (for round timber, these are the tree species, quality class, diameter, length; for firewood, these are tree species, species group, industrial / non-industrial use, diameter, length) and provide obtained results to a forensic expert for merchandising examination.

Forensic merchandising examination to determine the market value of round timber as well as firewood for industrial or non-industrial use should be carried out according to the following algorithm.

1. At the initial stage, it is vital to determine belonging of studied goods, taking into account measurements carried out by a specialist in the forest industry, using the measurement and calculation methods in compliance with ТУУ and ДСТУ (dimensions, volume / quantity).
2. To identify investigated objects at the market.
3. To determine the value of 1 cubic metres of timber at the moment of criminal offense commission on the basis of analyzing actual values of timber taking into account sections and area of harvesting according to the data of State Forest Resources Agency or price information placed on the websites of forestries as price lists.
4. To assess the market value of timber per units of volume considering species

37 Ibidem.

38 Про затвердження Інструкції з ведення ... URL: <https://zakon.rada.gov.ua/laws/show/1440-2003-п#Text> (date accessed: 11.11.2022).

39 ТУУ 00994207-005:2018 ДЕРЕВИНА ДРОВ'ЯНА. Класифікація, облік, технічні вимоги. URL: http://www.mdoffice.com.ua/pdf/tehnichni_umovi_1908021524.pdf (date accessed: 11.11.2022).

of tree, species group, industrial or non-industrial use, diameter, length (for firewood) at prices at the moment of committing criminal offense, applying the comparative approach.

Therefore, merchandising examination of round timber involves not only understanding the essence of the round timber concept, its classification features in compliance with new national standards, but also application of a corresponding algorithm in the course of such research, taking into account measurements provided by a specialist in the forest industry.

Enterprises of the forestry complex use price franking (timber distribution points). The Occupational Safety and Health Regulations for forestry and forest industry workers distinguish between the following types of landings: upper, lower, and intermediate timber landings and hauling routes. *“The upper timber landing is a timber landing located near logging road (highways, narrow-gauge railway) or a water body intended for temporary storage of wood raw materials, its loading on vehicles for further transportation to lower timber landings or points of consumption, intermediate timber landings, and if necessary, its processing (cleaning trees from branches and knots, full or partial bucking, debarking, etc.). The Lower Landing is a forest enterprise production site, where wood raw materials are pre-processed, sorted, and partially processed, timber and sawdust are stored, shipped to consumers and/or transported to woodworking shops of commercial timber, firewood for technological needs. An intermediate timber landing is timber industry landing where removal of wood raw*

*materials by some means of transport ends and starts by others (to lower timber landings or points of processing or consumption). It is allocated for temporary storage of wood raw materials. Hauling routes (portaging, cable ways, ground timber chutes, lakes, tributaries of rivers and other water bodies) that connect upper timber landings, and sometimes even intermediate timber storage sites with cutting areas, or those which separate sections are located outside cutting areas»*⁴⁰.

Ecological disaster caused by deforestation can be prevented if plans for conservation and rational use of natural resources are implemented, as well as if criminal activity related to illegal logging is prevented. To prevent environmental crimes associated with illegal logging, Ukraine maintains the Unified Register of Logging Tickets and electronic accounting system of timber, checks the legality of timber origin (according to the tag and car number, under the waybill), monitors internal consumption of domestic unprocessed timber, etc.

Conclusions

The war in Ukraine made certain adjustments in prospects for the development of forestry, which should stimulate the search for new ways of urgent reforms in the forestry sector. Problems that have been arising since the beginning of hostilities negatively affect the environment. As a result, today Ukrainian forests can be conditionally divided into two groups: the first includes forests in territories temporarily occupied by the enemy or located in the combat zone, and the second includes the rest

40 Про затвердження Правил охорони праці для працівників лісового господарства та лісової промисловості (зі змін.): Наказ Державного комітету України з нагляду за охороною праці від 13.07.2005 р. № 119. URL: <https://zakon.rada.gov.ua/laws/show/z1084-05#Text> (date accessed: 11.11.2022).

of forests. The protection of forests in occupied territories and in the combat zone is a serious problem, since scheduled logging of forests, carried out in peacetime by state and communal forestry, is practically not carried out; equipment is stolen or damaged; large-scale forest fires provoked by explosions and other factors are frequent; many foresters are at the front.

The entire Ukrainian economy has suffered huge devastating consequences, therefore the priority tasks for the Ministry of Ecology and Natural Resources of Ukraine, State Forest Resources Agency of Ukraine are to ensure the legality of all loggings in areas where hostilities are not taking place as well as to prevent corruption schemes in the timber market.

Since environmental crimes happen all the time, forensic merchandising examination to assess timber market value gains significance, as forensic examination is the most efficient way of fulfilling investigative tasks in this area.

Conducting forensic merchandising examination while investigation of crimes related to illegal logging involves determining the market value of round timber and firewood for industrial or non-industrial use.

Merchandising examination of timber involves obtaining timber measurements from a specialist in the forest industry, understanding their classification features based on new national standards, and applying the algorithm for determining their market value.

New challenges taking place under martial law require employees of the Expert Service of the Ministry of Internal Affairs to respond quickly while solving addressed forensic tasks both at the stages of the pre-trial investigation and subsequent court proceedings.

Особливості проведення судової товарознавчої експертизи, пов'язаної з незаконною порубкою лісів в Україні

Ірина Сівчук

Статтю присвячено дослідженню особливостей проведення судової товарознавчої експертизи під час розслідування злочинів, пов'язаних із незаконною порубкою лісів в Україні. Обґрунтовано негативний вплив незаконної порубки на навколишнє середовище та зазначено зміни, які виникають на територіях порубаних лісів. Натомість порубки, пов'язані з веденням лісового господарства, спрямовані на забезпечення охорони, оздоровлення, посилення захисних властивостей та підвищення продуктивності лісів та інших лісогосподарських угідь. Метою статті є теоретичне обґрунтування особливостей проведення судової товарознавчої експертизи з визначення ринкової вартості круглих лісоматеріалів під час розслідування злочинів, пов'язаних із незаконною порубкою лісу, та виокремлення ключових аспектів проведення такого дослідження за допомогою запропонованого алгоритму дій. Проведене дослідження ґрунтується на застосуванні порівняльного підходу, що передбачає аналізування цін продажу та пропозицій такого виду лісоматеріалів. Також розглянуто визначення термінів «лісоматеріали», «круглі лісоматеріали», їх класифікацію та характеристику. Товарознавча експертиза круглих лісоматеріалів передбачає отримання вихідних даних щодо вимірювання параметрів деревини та застосування певного алгоритму дій із метою визначення їх ринкової вартості. Проаналізовано нові національні стандарти якості деревини та

обґрунтовано необхідність залучення фахівця-спеціаліста лісової промисловості під час проведення судової товарознавчої експертизи.

Ключові слова: круглі лісоматеріали; екологічні злочини; незаконна порубка лісу; товарознавча експертиза; дров'яна деревина промислового використання; дров'яна деревина непромислового використання; клас якості лісоматеріалів.

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