

CORRESPONDENCE/COMMENTARY

Legal and organizational aspects of arson attacks on monumental trees in Poland

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ABSTRACT

Trees, as natural monuments, have special natural and social significance, therefore their destruction is felt as a great loss. The aim of this article is to consider legal and organizational aspects related to arson of monumental trees in Poland – presentation of the current status, identification of existing deficiencies and shortcomings, as well as to propose solutions to the identified problems. The information about arson attacks on monumental trees was collected as a result of browsing 480 websites using four keywords, including ‘arson attack on nature monument’ (pol. ‘podpalony pomnik przyrody’), of which 175 (unique) were considered useful. Additionally, to the above, reviews of legal acts were carried out, including the Penal Code, the Code of Petty Offences, the Nature Conservation Act and its implementing acts. In total, information was collected about 30 arson attacks on monumental trees, mostly oaks, located most often in southern Poland, which is only a fraction of all such cases of vandalism. The phenomenon has greatly intensified in the second decade of the 21st century, which makes it all the more urgent to consider the legal and organizational issues involved. The analysis of legal acts showed discrepancies in the qualification of such an act (Nature Conservation Act – a petty offence, Penal Code – an offence), which entails different consequences for perpetrators, as well as ambiguities in defining its rank (what is to be considered significant damage?). Additionally, there are several paragraphs in the Penal Code that potentially fit the situation, creating ambiguity as to the ultimate choice of sentence. Also at a disadvantage is the limited case law in this area and the undetermined way to calculate the full value of a monumental tree, which may determine the penalty for the crime. In response to this problem, the authors proposed a simplified way of valuing monumental trees, differentiated according to the rank of the tree set on fire, as well as harsher penalties for the described crime. In addition to the imperfection of the law, a major problem is the low level of enforcement. It is due to the low detection rate of the perpetrators of the crimes – out of the 34 cases of described arson attacks, only in one the perpetrator was revealed and was held liable for his crime. None of the trees were under surveillance or access restriction at the time of the arson. The article analyses the existing procedures (recently introduced in the State Forests), as well as possible technical solutions that could allow a faster and more effective response in case of a threat to a natural monument. The authors considered the protection of the most valuable trees – through the installation of photo traps and temperature/smoke sensors notifying of recorded threats – as the most urgent need, as well as the posting of information about their monitoring.

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KEY WORDS

fire, fire protection, law enforcement, monitoring, natural monument, vandalism

Introduction

The International Union for Conservation of Nature (IUCN) defines natural monument (or feature) as a protected area set aside ‘to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove’ (www.iucn.org). In Poland, this term is applied primarily to a natural object rather than an area. According to the Nature Conservation Act, natural monuments are therefore individual living and inanimate objects or groups of such objects of particular natural, scientific, cultural, historical or landscape value, and characterized by individual features that distinguish them from other objects, such as trees of impressive size, shrubs of native or foreign species, springs, waterfalls, water spouts, rocks, ravines, erratic boulders and caves (Act, 2004 – Article 40.1). In the whole Poland there are (in register entries) 34,898 natural monuments, of which 27,405 are single trees, 4,679 are groups of trees, and 751 are avenues of trees (GUS, 2021).

Natural monuments are established by the municipal councils by means of a resolution, which specifies the name of the object or area, its location, the supervisor, the specific objectives of protection, arrangements for its active protection, if necessary, and prohibitions specific to the object (Act, 2004 – Article 41). These are selected from the prohibitions listed in Article 45 of the Nature Conservation Act and may include destroying, damaging or transforming a protected object (paragraph 1). The matters of nature protection, but also *e.g.*, communal greenery and afforestation belong to the commune’s own tasks (Act, 1990 – Article 7.1.1 and Article 7.1.12); they are carried out by the mayor with the help of the communal office (Articles 30 and 33).

Although monumental trees have special natural and social significance, and are generally held in high esteem and respect by people (Grzywacz and Pietrzak, 2013; www.monumentaltrees.com), there are times when the thoughtlessness and vandalism of individuals leads to damage or complete destruction of a natural monument. This is particularly associated with arson attacks on monumental trees. The aim of this article is to determine the scale of this problem, as well as to consider the legal and organizational aspects related to such situations – to present the current state, to identify the existing gaps and shortcomings, as well as to propose solutions to the identified problems.

Methodology

Information about arson attacks on monumental trees (without imposing a time frame) was searched for January and February 2022 in Internet resources. During Google search, following terms were used: arson attack on natural monument (pol. ‘podpalony pomnik przyrody’), natural monument burned down (pol. ‘spłonął pomnik przyrody’), natural monument on fire (pol. ‘pali się pomnik przyrody’), and natural monument burning (pol. ‘pożar pomnika przyrody’). For each key phrase, the first 120 pages (480 total) were checked. 120 pages was the threshold number for the first key phrase checked, to which important information still appeared. The following were excluded from the results: pages that were not about natural monument fires (163 pages), pages that were no longer active (3 pages), pages that only had redirects to other pages, article announcements (30 pages), pages that described fires with natural causes (lightning – 3 pages) or did not indicate arson as the cause of the fire (8 pages). The final results used 273 websites from the aforementioned searches, and 175 websites after discarding repeated websites (98

websites). They represented a variety of entities with different scales of influence, with the most common sites being national magazine websites (10.3% of sites), local online news portals (13.7%), national online news portals (11.4%), specialized national online news portals (11.4%), and other websites (10.9%).

Web searches were reviewed for information about the tree species, its proper name, location, dimensions, and the date, circumstances, and effects of the arson. The collected information was compiled in an Excel spreadsheet.

In total, information was collected on 30 trees (Table 1). Whenever possible, information from the internet regarding the perimeter was verified (in the case of significant discrepancies) or supplemented (in the case of missing data) on the basis of the recognized monograph of Pacyniak (1992), as well as the monograph of Grzywacz and Pietrzak (2013) – the perimeter given there was indicatively slightly increased, taking into account the difference between the date of publication of the monograph and the date of arson.

For the purposes of this article, legislation was also reviewed (*e.g.*, the Penal Code, the Code of Petty Offences, the Nature Conservation Act and its implementing acts).

Results with discussion

THE PROBLEM OF QUALITY OF LAW. Based on the adopted methodology, information on 30 trees set on fire (sometimes several times) was collected (Table 1, Fig. 1). But the problem is broader than that, as evidenced by the comments under the post on the searchable website ('At my place in Bydgoszcz two years ago [2019] someone also set fire' (pol. 'U mnie w Bydgoszczy dwa lata temu też ktoś podpalił') – <https://spidersweb.pl>), as well as from the knowledge of one of the authors (for example: the St. Francis Oak in the Lublin region, the Garrison Oak in Toruń, the Bolesław Oak in Podczele near Kołobrzeg, oaks in Stary Gręboszów, Wrocław, Janowiczki, Dylewo, Gorlice and Leków in the Świdwin district – Prof. Andrzej Grzywacz, oral information).

The studied phenomenon has intensified in the 21st century, especially in the southern part of the country (Fig. 1). On the analysed websites – with regard to the 20th century – information about three cases of arson of a natural monument appeared, while the rest (at least 31 – Table 1) occurred already in the 21st century, of which 25 in the last decade (since 2012 – Table 1). This can, of course, be interpreted to mean that nowadays any event can be more publicized than it used to be, and it is no longer any problem to publish such information in the widely available media. People's environmental awareness and sensitivity to such vandalism has also increased, which may have influenced the wider spread of information involving strong emotions. On the other hand, however, with the political and economic changes in Poland and the resulting general increase in wealth, consumer model of life and access to various stimulants, the likelihood of the appearance of people who do not respect any values, including those of nature, increases. Perhaps Polish law has not kept up with changes in mentality in society and is too less restrictive in the case of petty offences and offences against nature, which would partly explain the increasing audacity in this matter. However, it should be noted that another possible reason – insufficient protection of monumental trees, is also relevant, as discussed in more detail in the last subsection of the results.

According to the Nature Conservation Act, which regulates all the basic issues related to natural monuments, whoever intentionally destroys or damages a natural monument shall be punished with arrest or fine (Act, 2004 – Article 45.1.1 and Article 127). Their size/amount is not specified in the Act, and adjudication is based on the provisions of the Code of Conduct in

Table 1.

Analysed cases of arson attacks on monumental trees

Species and proper name	Location	Circumference [cm]	Date of arson	Effect of arson
Oak of the Republic <i>Quercus robur</i> L.	Brodnica Forest District	approx. 650	25.12.2020	burned
Oak of Love <i>Quercus</i> L.	Biała Podlaska Forest District	approx. 570	19.04.2021	survived
Chrobry Oak <i>Quercus robur</i> L.	Szprotawa Forest District (Piotrowice)	approx. 1030*	18.11.2014 (also earlier)	died in 2020
Wincenty Oak <i>Quercus</i> L.	Dukla Forest District (Krościenko W.)	approx. 550	03.09.2020 (also 03.05.2015)	survived
Mieszko I Oak <i>Quercus robur</i> L.	Warsaw-Ursynów	approx. 860	16-17.06.2019	survived
Napoleon Oak <i>Quercus robur</i> L.	Przytok Forest District	approx. 1050	15.11.2010 (also in 2004 and 1925)	in 2010, it burned down
Cygański Oak <i>Quercus</i> L.	Kluki-Grobla	approx. 500	20.08.2012	burned
Chwalibóg Oak <i>Quercus</i> L.	Wałbrzych	approx. 510	twice before 2019	survived, but is in very bad shape
Prastary Oak <i>Quercus robur</i> * L.	Wapnica	approx. 690*	07-08.08.2015	n.d.
Oak (no name) <i>Quercus</i> L.	Grabno near Ustka	n.d.	05.1992	burned
Radomski Bartek Oak <i>Quercus</i> L.	Rdzuchów-Kolonia	n.d.	19.01.1995	died
Jagiełło Oak <i>Quercus robur</i> * L.	Nowy Sącz	approx. 480*	01.01.2013	survived
Powstańczy Oak <i>Quercus</i> L.	Skarżysko-Kamienna	n.d.	2005?	burned
Oak (no name) <i>Quercus</i> L.	Skarżysko-Kamienna	n.d.	20.03.2014	survived
Oak (no name) <i>Quercus</i> L.	Karszówek	approx. 800	22.04.2017	burned
Oak (no name) <i>Quercus</i> L.	Grojec	n.d.	09.08.2015	burning from the inside, there was a chance to save
Oak (no name) <i>Quercus</i> L.	Grojec	n.d.	before 2015	truncated in 2015
Ustrobniak Oak <i>Quercus</i> L.	Ustrobna	n.d.	28.06.2014	n.d.
Gajus Oak <i>Quercus robur</i> L.	Lubcza	n.d.	13.03.2015	burning from the inside, there was a chance to save
Oak (no name) <i>Quercus</i> L.	Słupski Młyn	n.d.	14.06.2015	n.d.
Oak (no name) <i>Quercus</i> L.	Kliczków Mały	n.d.	21-22.05.2013	survived
Oak (no name) <i>Quercus</i> L.	Bielsko-Biała	n.d.	11.2011	n.d.
Wiktoria Lime <i>Tilia cordata</i> Mill.	Książenice near Rybnik	approx. 460	22.06.2021	loss of 60% of crown, no survival data
Willow (no name) <i>Salix</i> L.	Rybnik	n.d.	03.05.2021	burned from the inside, no record of survival
Hornbeam (no name) <i>Carpinus</i> L.	Korzkiew	n.d.	31.12.2018	burned, cut down
Ash (no name) <i>Fraxinus</i> L.	Gorlice	n.d.	30.07.2019	significantly damaged, was to be cut out
Ash (no name) <i>Fraxinus</i> L.	Osieki	n.d.	31.12.2013	burned
Black poplar (no name) <i>Populus nigra</i> L.	Bielsko-Biała	approx. 550	2010	survived

Table 1. continued

Species and proper name	Location	Circumference [cm]	Date of arson	Effect of arson
Species and name missing	Teresin	n.d.	mid 05.2021	special care needed to save
Species and name missing	Żory-Baranowice	n.d.	21.03.2018	trunk burned, but left

n.d. – no data; *data verified/supplemented on the basis of Pacyniak (1992) and/or Grzywacz and Pietrzak (2013)

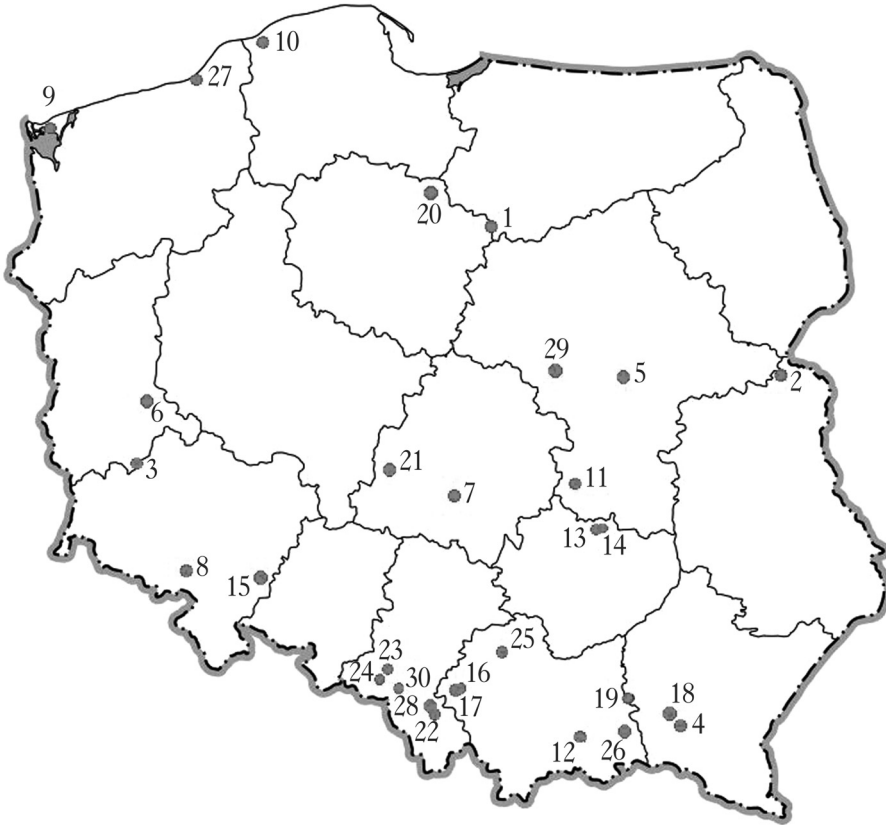


Fig. 1.

Distribution map of monumental trees set on fire (tree numbering according to Table 1)

Petty Offences (the Code of Petty Offences itself makes no mention of penalties for destroying or damaging natural monuments – Act, 1971). If it is not possible to restore the previous state of affairs, a compensation of PLN 10,000 may also be adjudged in favour of a social organisation acting for the benefit of environmental protection or the provincial fund for environmental protection and water management (Act, 2004 – Article 129.2). Thus, from the perspective of the Nature Conservation Act (2004), arson attacks on natural monument are treated as a petty offence.

Another qualification of this act can be found in the Penal Code, where it is defined as an offence: whoever intentionally destroys, seriously damages or significantly diminishes the natural value of a legally protected area or object (in this case, a natural monument), causing significant

damage, shall be subject to a fine, penalty of restriction of liberty or the penalty of deprivation of liberty for up to 2 years (Act, 1997 – Article 187.1). However, there is no given definition of ‘significant damage’, and it is left to the courts and the doctrine of criminal law to give content to this concept (<https://sip.lex.pl>). However, the jurisprudence in this area is not very rich. In the period 1999-2020, out of 559 initiated proceedings under this paragraph, 267 were qualified as offences (<https://statystyka.policja.pl>). There are only direct references in the Penal Code to ‘substantial damage’, which involves a loss of more than PLN 200,000 (Act, 1997 – Articles 115.5 and 115.7) and to ‘damage of great magnitude’, exceeding the value of PLN 1 million (Articles 115.6 and 115.7a). With reference to another paragraph of the Penal Code, significant damage is situated between minor and substantial damage (<https://e-prawnik.pl>). Such an interpretation would result in the possibility of punishing the offender already when the value of the monumental tree set on fire would not exceed PLN 200,000. On the analysed websites, only in one case information about the assessed value of an arson monument was given – ash *Fraxinus L.* in Osieki (tree no. 27 in Table 1) was valued at PLN 1 million. The Penal Code Article 187.1 in question was, in turn, invoked on pages relating to the arson of the Oak of the Republic (pol. ‘Dąb Rzeczypospolitej’) and the Napoleon Oak.

Another provision in the field of environmental crimes that could be relevant to the discussed problem of arson of monumental trees is related to Article 181.1 of the Penal Code (Act, 1997): whoever causes destruction in the plant world in significant size shall be punished with imprisonment from 3 months to 5 years. This is therefore a potentially higher penalty than the previously described Article 187.1. At the same time, the term ‘substantial size’ is not equivalent to ‘substantial damage’, so in this case it is difficult to determine some threshold value of the tree at which the crime of arson would be prosecuted. However, it is worth giving an example from Toruń of a case similar in its consequences: in the trial concerning cutting down in the communal forest 41 Scots pines *Pinus sylvestris L.* and 1 black locust *Robinia pseudoacacia L.*, which ended with a guilty verdict, the value of all those trees was estimated at least at 2,728.75 PLN (<http://orzeczenia.ms.gov.pl>), *i.e.*, relatively low. It can be said without much error that the value of each of the natural monuments described set on fire far exceeded it. There are no police statistics relating solely to this paragraph, while the totals for Article 181, which also covers the destruction of plants and animals in protected areas and the destruction of species under protection, indicate a richer case law, with 545 offences between 1999 and 2020 (<https://statystyka.policja.pl>). The Article 181 in question – in conjunction with Article 288 of the Penal Code (Act, 1997) – was referred to on the website describing the arson of the Chrobry Oak. Section 1 of Article 288 states that whoever destroys, damages or renders useless another’s property shall be punished by imprisonment for a term of 3 months to 5 years.

There is also a paragraph in the Penal Code relating to fires/arson itself: whoever intentionally causes an event that endangers the life or health of many people or property of great dimensions, having the form of fire, is subject to a penalty of imprisonment of one to ten years (Act, 1997 – Article 163.1). Thus, this is the highest potential sentence of those described so far. A fire in a natural monument – especially if there are other trees or buildings in the surrounding area and with the spread of the fire – can lead to significant damage to that area as well. In this case, we refer to the area/volume size of the potential damage. However, if it is considered that a threat of great magnitude will lead to so-called damage of great magnitude, then the previously quoted section of the Penal Code (Articles 115.6 and 115.7a) and the assumed minimum value of this damage of PLN 1 million will apply. So, if one wanted to use the maximum penalty for putting on fire a monumental tree, one would have to use article 163.1 and take the value of

the tree as at least PLN 1 million. Perhaps this is the solution that was applied to the aforementioned ash tree *Fraxinus* in Osieki (Table 1). However, if arson of a monument is considered an act of negligible social harm, it will not be treated as an offence tried under the Penal Code (Act, 1997 – Article 1.2). The provision thus formulated casts some doubt on the strength and quality of the provisions of the Nature Conservation Act cited above regarding penalties for destroying or damaging a natural monument (Act, 2004 – Article. 45.1.1 and Article 127), since by giving them the rank of a petty offence they suggest low social value of the protected object (its destruction is from above considered an act of low social harmfulness).

Apart from the different legal qualifications of arson of a monument of nature (where the key may be the assessment of the social harmfulness of the act), the basic problem of applying the above-mentioned articles of the Penal Code is the lack of a financial way to determine the full value of a monumental tree – it should be remembered that this value usually consists of many elements (natural, cultural, historical, landscape, educational, tourist and recreational, or emotional). The only legal document that specifically links financial issues to one natural parameter of a tree – circumference at breast height – is the Regulation of the Minister of Environment on the rates of fees for removal of trees and shrubs (Regulation, 2017), issued on the basis of the Nature Conservation Act (Act, 2004 – Article 85.4b). The regulation sets rates per centimetre of circumference, which vary depending on the genus or species of tree and its size (a tree up to 100 cm in circumference – lower rates, depending on the species: PLN 12, PLN 25, PLN 55 and PLN 170 per 1 cm of circumference; trees above 101 cm of circumference – higher rates, depending on species: PLN 15, PLN 30, PLN 70 and PLN 210 per 1 cm of circumference; these rates may not exceed PLN 500). The latter in particular points to the legally recognized greater value of thicker trees relative to those of average size. If a tree is removed from the property without a permit or if the tree is destroyed (and this is how arson could be classified), the mayor of the village, town or city shall impose an administrative fine equal to twice the fee for the removal of the tree (Act, 2004 – Articles 88.1 and 89.1). This provision does not directly apply to monumental trees. However, Table 2 presents a calculation of the potential approximate administrative penalty for the destruction of the monumental trees described in this article. This was only possible for trees of a defined circumference (the numbering of

Table 2.

Amount of potential statutory administrative penalty for tree destruction

Tree set on fire	Circumference [cm]	Fee rate [PLN]	Fee [PLN]	Administrative penalty [PLN]
Oak of the Republic	approx. 650	70	45,500	91,000
Oak of Love	approx. 570	70	39,900	79,800
Chrobry Oak	approx. 1030	70	72,100	144,200
Wincenty Oak	approx. 550	70	38,500	77,000
Mieszko I Oak	approx. 860	70	60,200	120,400
Napoleon Oak	approx. 1050	70	73,500	147,000
Cygański Oak	approx. 500	70	35,000	70,000
Chwalibóg Oak	approx. 510	70	35,700	71,400
Prastary Oak	approx. 690	70	48,300	96,600
Jagiełło Oak	approx. 480	70	33,600	67,200
Oak (no name)	approx. 800	70	56,000	112,000
Wiktoria Lime	approx. 460	30	13,800	27,600
Black poplar (no name)	approx. 550	15	8,250	16,500

trees in Table 2 is shared with the numbering in Table 1), and the rates given are from the aforementioned regulation (Regulation, 2017).

The calculations presented in Table 2 seem to fall far short of the actual, intuitively estimated value of the monumental trees set on fire, which are associated with many legends, stories, sentiments, inspirations or interests of people, but also the unique role of these trees in nature. None of the calculations comes close to the amount of PLN 1 million considered a threshold for damage of great magnitude, which is what the destruction of a natural monument is usually regarded as. To make the amount of the administrative penalty more reflective of the value of the monumental tree destroyed, a higher conversion factor than the current ‘2’ would have to be used. The conversion rate for significantly damaging, setting fire to, or cutting down a tree could be based on its rank. Based on the distribution and quantitative status of monumental trees presented by Zarzyński and Grzywacz (2019), the authors of this article propose the following solution: for the destruction of a natural monument – a rate $\times 10$, for the destruction of a National Natural Monument (there are 1,905 of them in Poland) – a rate $\times 15$, and for the destruction of a European Natural Monument (183 trees in Poland) – a rate $\times 20$. Table 3 presents the calculation of penalties – according to the proposed conversion factors – for arson of the trees summarized in Table 2, taking into account the size thresholds given by Zarzyński and Grzywacz (2019) and assuming that all the oaks featured are pedunculate oaks *Quercus robur* L. The mentioned minimum circumference thresholds for pedunculate oak., small-leaved lime *Tilia cordata* Mill. and black poplar *Populus nigra* L. are 600 cm for a national monument and above 800 cm for a European monument.

The amount of the penalty thus determined can be considered a simplified estimate of the value of the destroyed tree. The conversion factors adopted by the authors (10, 15, and 20) were selected so that the amount of the penalty for destruction (arson, significant damage, or cutting down) of the most valuable monumental trees (European monuments) exceeds PLN 1 million, which can be associated with the value of damage of great magnitude described in the previously cited Penal Code (Act, 1997 – Articles 115.6 and 115.7a) and associated with the relatively highest penalty of imprisonment (from 1 to 10 years).

Table 3.

Amount of penalty for tree destruction proposed by the authors

Tree set on fire	Circumference [cm]	Fee rate [PLN]	Fee [PLN]	Converter	Amount of penalty [PLN]
Oak of the Republic	approx. 650	70	45,500	91,000	682,500
Oak of Love	approx. 570	70	39,900	79,800	399,000
Chrobry Oak	approx. 1030	70	72,100	144,200	1,442,000
Wincenty Oak	approx. 550	70	38,500	77,000	385,000
Mieszko I Oak	approx. 860	70	60,200	120,400	1,204,000
Napoleon Oak	approx. 1050	70	73,500	147,000	1,470,000
Cygański Oak	approx. 500	70	35,000	70,000	350,000
Chwalibóg Oak	approx. 510	70	35,700	71,400	357,000
Prastary Oak	approx. 690	70	48,300	96,600	724,500
Jagiełło Oak	approx. 480	70	33,600	67,200	336,000
Oak (no name)	approx. 800	70	56,000	112,000	840,000
Wiktoria Lime	approx. 460	30	13,800	27,600	138,000
Black poplar (no name)	approx. 550	15	8,250	16,500	82,500

In ancient Greece and Rome, arson was often punished by death by throwing into the fire, although trees/forests were not specifically mentioned; at the end of the Middle Ages, for example, German law already considered arson a felony, and the punishment was usually breaking with a wheel. Then, in the 16th and 18th centuries, the death penalty by burning at the stake was revisited in Europe. After that time, the death penalty was mostly abolished or limited to severe arson only (Sygit, 2016). These included the forest arson in Syria in the fall of 2020 (described as an act of terror that led to the destruction of state infrastructure and the death of many people), for which 24 people were executed and another 20 sentenced to between 10 years and life imprisonment (www.wprost.pl).

In Poland, arson was also considered one of the most serious crimes from the 13th century to the mid-20th century, punishable by burning alive until the 18th century. During the partition period (Poland was partitioned between the bordering empires: Russia, Prussia and Austria between 1772 and 1918), in the first native penal code functioning in the Kingdom of Poland (in Article 148), malicious forest arson was treated as a felony and was punishable by severe imprisonment from 3 to 10 years. Nowadays, arson is no longer treated in Poland as a felony, but as an offence (Sygit, 2016) and – as can be seen from the previously reviewed legal provisions – is associated with a relatively low penalty, especially in relation to the loss of the destruction of a monumental tree. It should be emphasized that while burnt/destroyed buildings can be rebuilt (the Royal Castle in Warsaw is a good example), a burnt tree cannot be reconstructed. Therefore, arson (and generally destruction/damage) of monumental trees should always be treated as a serious offence/felony, with high social harm, punishable by imprisonment of the higher the rank of the tree. This would be consistent with the public sentiment evident in the comments on the analysed websites, where hopes were articulated that the perpetrators of these acts of vandalism would be quickly apprehended and very severely punished.

THE PROBLEM OF LAW ENFORCEMENT. Regardless of the construction of laws relating to arson of monumental trees, enforcement of those laws remains key to reducing negative public behaviour. Meanwhile, the detection rate of arson perpetrators is low: out of at least 34 cases of arson of natural monuments presented in this article, the consequences could be drawn only in one case (ash tree *Fraxinus* in Osieki – tree no. 27 in Table 1, which was set on fire by a 16-year-old boy from Sianów commune). Police statistics for the years 1999-2020 relating to the aforementioned various articles of the Penal Code can also be cited (Act, 1997). In the case of Article 187, which refers to the reduction of the natural value of the protected object (or area), the average detection rate for all offences under this article (including offences other than arson of monumental trees) was 52.6% in the given period (with a range of 11.1% to 91.7% per year), but if we narrow this down to the most recent years starting from 2012 (which is the time when most arson attacks on natural monuments occurred – *vide* chapter above), the average detection rate dropped to 37.1% (according to the <https://statystyka.policja.pl>). It should be recalled that the article of the Penal Code in question (specifically, paragraph 1 of this article) was invoked on the analysed websites relating to the arson of the Oak of the Republic and the Napoleon Oak (trees 1 and 6 in Table 1).

If, on the other hand, we consider the provision of the Penal Code (Act, 1997 – Article 181) referring to the destruction of the plant (and animal) world, either in significant size (paragraph 1, which could apply to monumental trees), or in relation to protected areas or species (the remaining paragraphs), the average detectability of crimes in the period 1999-2020 was 45.2%, and as of 2012 – only 35.7% (according to the <https://statystyka.policja.pl>). However, no statistics are given on the detection rate of crimes that endanger public safety (Act, 1997 – Article 163),

including causing a fire that endangers the life or health of many persons or property of great magnitude (paragraph 1 of this article).

To increase the detection of perpetrators of monumental trees arsons, while also expressing the loss felt, rewards were offered in several cases for helping to identify arsonists. On the analysed web sites the rewards were declared by the foresters from the State Forests (in case of setting fire to the Oak of the Republic – PLN 15,000 in total, including PLN 10,00 from the Director of the Regional Directorate of State Forests in Toruń, and PLN 5,000 from the Forest District Manager of Brodnica Forest District; in case of Napoleon Oak – PLN 5,000 from the Forest District Manager of Przytok Forest District), the head (starost) of Bełchatów county (Cygański Oak – PLN 1,000) and a private person – Jacek Bożek from the Gaja Club (black poplar *P. nigra* in Bielsko-Biała – reward without stated amount). However, despite the rewards, the perpetrators of these arsons, as well as almost all others, have not yet been identified, which has prevented the enforcement of existing laws. Meanwhile, the public is very much looking forward to this, as was evident in numerous comments on some of the websites analysed (*e.g.*, the need for a spectacular trial and a harsh sentence to deter further potential perpetrators).

Undoubtedly, the low detection rate of arson perpetrators is due to the fact that such trees are usually located at some distance from places regularly frequented by people – in forests (*e.g.* the Oak of the Republic, the Oak of Love (pol. ‘Dąb Miłości’), the Cygański Oak, the Napoleon Oak), among farmlands (*e.g.*, the Wiktoria Lime, the Gajus Oak), in a park in a small town (*e.g.*, the hornbeam tree *Carpinus L.* in Korzkiew, the oak tree *Quercus L.* in Kliczków or the natural monument in Teresin) or at the side of main thoroughfares (*e.g.*, the Mieszko I Oak in Warsaw or the black poplar *P. nigra* in Bielsko-Biała). Arson attacks often occurred also at times and dates when there are less people around: on holiday mornings (the Oak of the Republic, the Jagiełło Oak), at night (the Wincenty Oak, the Mieszko I Oak; the hornbeam tree *Carpinus* in Korzkiew and the ash tree *Fraxinus* in Osieki – on New Year’s Eve; the Prastary Oak, the oak tree *Quercus* in Kliczków, the Napoleon Oak) or probably early in the morning (the Chrobry Oak). The lack of a monitoring system for these trees meant that in many cases they could not be saved because the firefighting action started too late (*vide* Table 1).

THE PROBLEM OF SECURING MONUMENTAL TREES. At the time of the arson (or even the arsons), none of the trees described (*vide* Table 1) were under constant monitoring or surrounded by a fence that would have prevented or impeded approaches to them. In the latter case, this will be due to the desire to make unique natural specimens available to the public, as well as to limit negative human interference with the landscape around the tree. However, these circumstances created a sense of impunity in the perpetrators and led to acts of vandalism. One may wonder, as many Internet users did in their comments on the analysed posts/articles, whether at least some of them are not the work of one person – a serial arsonist of particularly well-known natural monuments?

Only after the arson attacks, in the case of two natural monuments (Mieszko I Oak and Oak of Love), actions were taken (or at least such actions were declared on the analysed websites), which consisted in covering them with a monitoring system (cameras, photo traps). In addition, there was to be a significant increase in the frequency of Forest Service patrols near the Oak of Love. Stronger fencing was installed around the Chrobry Oak, as well as around the Mieszko I Oak, while in the case of the Wincenty Oak – after the first arson in 2015 – the hollow in the stump was secured with metal mesh. However, these were ‘after-the-fact’ actions, whereas the optimal action would have been to prevent the damage (or significantly reduce its severity as a result of an early warning system).

In the comments of Internet users to some of the analysed websites, there were proposals to install photo traps taking pictures at (well-known) natural monuments (the quoted cost: PLN 200), equipped with solar chargers (reported cost: PLN 150), photo traps/wildlife cameras that send the photos/videos taken (quoted cost: PLN 1,000), while the listed equipment allows you to take good quality photos/videos even at night. However, it was noted that these solutions may not suffice when the offender is masked (hood/vest). Another useful piece of equipment, suggested by Internet users, could be tree-mounted temperature sensors, equipped with a SIM card and sending immediate information about an arson incident to the fire department (no cost given). Another proposed solution is to surround the natural monument with a barbed wire fence.

Of the proposals listed above, those for equipment that sends immediate notifications of a situation (movement/presence of people or exceeding a certain temperature threshold) make the most sense, as they will allow the fastest response to an identified threat. In the case of photo traps, this will mean an expenditure of about PLN 1,000-2,000 (*e.g.*, www.fotopulapka.pl). However, even here one can have some reservations about the functionality of the solution – in a situation where the tree is frequently visited, the alerts from the photo trap would require an equally frequent involvement of the recipient of the text message to verify that the visit involves danger to the natural monument. In the case of the temperature sensors suggested by Internet users sending text messages, the range of devices available on the Polish market is much poorer than in the case of photo traps, and the cost of the device, which also notifies the detection of smoke, is at a level of about PLN 500 taking into account the purchase of sealed packaging for the device (<https://sklep-ppoz.pl>).

According to the authors of the article, the most urgent need is to protect – by installing photo traps and temperature/smoke sensors – about 180 European Natural Monuments mentioned earlier. Further on, the most valuable specimens from among about 1,900 National Natural Monuments should be secured by means of at least photo traps, and if there are funds – gradually also the remaining monumental trees, while – according to the information provided by the Chief Nature Conservator – some of them (without specifying which ones?) are already covered by audio-visual monitoring (Golińska, 2021). Given the location of the trees, as well as the specifics of their potential protection, the following options for funding from the Environmental Protection and Water Management Funds (National and Provincial) may come into play: activities related to the maintenance and preservation of parks and gardens, which are subject to protection under the provisions on the protection and care of historical monuments (Act, 2001 – art. 400a.1.26); projects related to nature protection, including the arrangement and maintenance of green areas, trees, bushes and parks (Act, 2001 – art. 400a.1.29); expenditures on acquisition, maintenance, operation and security of specialist equipment and technical devices used to perform activities for environmental protection and water management (Act, 2001 – art. 400a.1.36) or other tasks serving environmental protection and water management resulting from the principle of sustainable development and consistent with environmental protection policy (Act, 2001 – art. 400a.1.42). Do not forget to place information near the trees that they are monitored – this can further increase the effectiveness of the protection by creating a psychological barrier (perhaps the cheapest solution would be just to place such information, but it would not allow to react quickly in case of fire). It would be optimal to implement such tree protection in a comprehensive way, on the initiative of one entity (*e.g.*, the Ministry of Climate and Environment), but it should be remembered that municipalities are directly responsible for natural monuments.

The Ministry of Climate and Environment itself takes a similar position. At the end of 2020, after the fire of the Oak of the Republic, an interpellation to the Minister of Climate and Environment on securing natural monuments against intentional devastation was submitted by Paweł Szramka, Member of Parliament of the Republic of Poland (Szramka, 2020). In response to this interpellation, the Chief Nature Conservator stated that the executive body for the protection measures for the natural monuments is the head of the commune and it is the responsibility of the commune authorities to properly protect the monumental trees. He also noted the need to increase the public's sense of responsibility for nature through, among other things, educational activities, as well as the need for cooperation between local governments, forest districts of the State Forests and the police to monitor and prevent devastation of nature, although this task is very difficult due to the location and number of natural monuments (Golińska, 2021). Undoubtedly, education and cooperation are needed and to a greater or lesser extent they are being realized, however, they will protect only partially against acts of vandalism, while each arson attack on a monument is associated with a huge natural and social loss. For this reason, it seems that in modern realities, technical solutions are also needed, such as the previously mentioned photo traps and sensors that send information about disturbing situations. In this context, as particularly noteworthy should be evaluated the initiative of the State Forests, which in the recently introduced Forest Fire Protection Manual included in a separate appendix (fourth) the principles of fire protection of nature reserves and natural monuments (CILP, 2020). According to them, identification of natural monuments (their marking on the situation and overview map) and assessment of the existing fire risk, depending on which fire protection will be designed, should be taken as a starting point. It was assumed that fire risk increases with the age of the tree, as hollows formed over the years make it easier to start a fire (CILP, 2020), a point made earlier in the text when referring to the Wincenty Oak arson. For particularly valuable monumental trees, it is recommended in the cited Manual (CILP, 2020) to develop individual cards that include the following information: name, photo, hazard characteristics, tree size (including height, trunk circumference, and branch span), access characteristics, list of convenient water intake locations, recommended fire extinguishing agents, and tasks related to providing equipment, materials, and expert support. The safety of these particularly valuable natural monuments should be ensured by the possibility of early fire detection, the possibility of arrival of rescue forces, the availability of water supply sites, the determination of the time of free fire development for fire weather conditions and the establishment of rules for the disposal and use of forces and resources in rescue operations (including the use of water or such chemical agents that are biodegradable). The aforementioned early detection of fire may be enabled by a monitoring system (as already discussed in the context of the interpellation's proposals) or by special sensors that respond to changes in CO₂ and dust concentrations, recommended especially when tree characteristics facilitate arson and/or the tree has been previously set on fire (CILP, 2020). However, we did not find a large offering of devices that determine CO₂ concentration and simultaneously send alarm notifications (*e.g.*, www.cometsystem.pl, www.sklep.cyfronika.com.pl), and their price exceeds PLN 1,000 or even USD 1,000. Thus, it appears that the proposal for temperature and smoke detectors presented earlier is more attractive in this regard, especially since the cited Manual (CILP, 2020) does not propose funding sources for such devices (this would imply a direct cost to the State Forests). However, the presented solution in force in the State Forests will cover only a part of Polish natural monuments, as on the territory administered by them there are 9,253 of them in the form of single trees, and additionally 1,407 tree groups and 127 avenues (CILP, 2021). Therefore, the question of securing monumental trees outside the

State Forests (especially in the southern part of the country – *vide* Figure 1) is still open, although the cited Manual (CILP, 2020) already gives an important hint on possible procedures and solutions.

Conclusions

- ✦ Arson attacks on trees – natural monuments are becoming more and more frequent, therefore, according to the authors, legal and organizational actions should be taken to limit such acts of vandalism in the future.
- ✦ In view of the usually high natural and social value of trees – natural monuments, as well as the often irreversible consequences of their arson, the criminal law should be reorganized and strengthened to make the punishment for such crimes more appropriate to the loss suffered and more severe than at present.
- ✦ In addition to imperfect laws, another major problem is the low level of enforcement due to the negligible detection of arson perpetrators. Devices that record the presence of people visiting a monitored natural monument can help solve this problem.
- ✦ A system for protecting monumental trees should be developed both inside and outside of the State Forests, especially in the southern part of the country, with alarm devices for temperature thresholds and smoke presence.

Authors' contributions

A.G. – conceptualization, writing-reviewing and editing; E.R-Ch. – conceptualization, methodology, writing-original draft preparation, investigation, writing-reviewing and editing.

Conflict of interest

The authors declare that they have no conflicts of interest.

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STRESZCZENIE

Prawne i organizacyjne aspekty podpalenia drzew pomnikowych w Polsce

Drzewa – pomniki przyrody mają szczególne znaczenie przyrodnicze i społeczne, dlatego ich zniszczenie odczuwane jest jako duża strata. Celem artykułu jest rozważenie prawnych i organizacyjnych aspektów związanych z podpaleniami drzew pomnikowych w Polsce: przedstawienie aktualnego stanu, określenie istniejących braków i niedociągnięć, jak również zaproponowanie rozwiązań stwierdzonych problemów. Informacje o podpalonych drzewach – pomnikach przyrody zebrano w efekcie przejścia 480 stron internetowych (4 hasła, m.in. „podpalony pomnik przyrody”), z których 175 (niepowtarzalnych) uznano za przydatne. Dokonano także przeglądu aktów prawnych, m.in. Kodeksu karnego, Kodeksu wykroczeń oraz Ustawy o ochronie przyrody i aktów wykonawczych do niej. Łącznie zebrano informacje o 30 podpalonych drzewach pomniko-

wych, głównie dębach (tab. 1), zlokalizowanych w większości w południowej Polsce (ryc. 1), co stanowi jedynie część wszystkich takich przypadków wandalizmu. Zjawisko to bardzo nasiliło się w drugiej dekadzie XXI w., stąd za pilną potrzebę uznano rozważenie związanych z nim kwestii prawnych i organizacyjnych. Analiza aktów prawnych wykazała rozbieżności w kwalifikacji takiego czynu (Ustawa o ochronie przyrody – wykroczenie, Kodeks karny – przestępstwo), z czego wynikają różne konsekwencje dla sprawców, jak również niejasności w zakresie określenia jego rangi (co ma być uznawane za szkodę istotną?). Dodatkowo w Kodeksie karnym znajduje się kilka paragrafów potencjalnie pasujących do sytuacji, co stwarza niejasność dotyczącą ostatecznego wyboru wymiaru kary. Na niekorzyść działa także ograniczone orzecznictwo w tym zakresie oraz nieustalony sposób określenia pełnej wartości pomnikowego drzewa (są tylko stawki za wycięcie „zwykłych” drzew – tab. 2), od czego może zależeć wymiar kary za przestępstwo. W odpowiedzi na ten problem autorzy zaproponowali uproszczony sposób wyceny wartości drzew pomnikowych, zróżnicowany w zależności od rangi podpalonego drzewa (tab. 3), a także zaostrenie kar za opisywane przestępstwo. Poza niedoskonałością prawa duży problem stanowi też niski poziom jego egzekucji, wynikający z niskiej wykrywalności sprawców przestępstw: na opisane 34 przypadki podpażeń tylko w jednym sprawca został ujawniony i miał być pociągnięty do odpowiedzialności. W momencie podpalenia żadne z drzew nie było objęte systemem monitoringu bądź ograniczeniem dostępu. W artykule przeanalizowano istniejące procedury (wprowadzone ostatnio w Lasach Państwowych), jak również możliwe rozwiązania techniczne, które mogłyby pozwolić na szybszą i skuteczniejszą reakcję w sytuacji zagrożenia dla pomnika przyrody. Za najpilniejszą potrzebę autorzy uznali zabezpieczenie najcenniejszych drzew – poprzez montaż fotopułapek i czujników temperatury/dymu powiadamiających o zarejestrowanym zagrożeniu – a także umieszczenie w widocznym miejscu informacji o monitoringu.