Review

Three Decades of Urban Forest and Green Space Research and Practice in Croatia and Slovenia

Silvija Krajter Ostojić 1,* 1, Dijana Vuletić 1, Špela Planinšek 2, Ursa Vilhar 3 and Anže Japelj 2

1 Department for International Scientific Cooperation in Southeast Europe—EFISSE, Croatian Forest Research Institute, Cvjetno naselje 41, 10450 Jastrebarsko, Croatia; dijanav@sumins.hr
2 Department of Forest and Landscape Planning and Monitoring, Slovenian Forestry Institute, Večna pot 2, 1000 Ljubljana, Slovenia; spela.planinsek@gozdis.si (Ś.P.); anze.japelj@gozdis.si (A.J.)
3 Department of Forest Ecology, Slovenian Forestry Institute, Večna pot 2, 1000 Ljubljana, Slovenia; ursa.vilhar@gozdis.si
* Correspondence: silvijak@sumins.hr

Received: 30 November 2019; Accepted: 20 January 2020; Published: 23 January 2020

Abstract: Background and Objectives: Urban forests and green space contribute to human wellbeing. Green infrastructure is recognized by the European Union as a planning tool that contributes to the implementation of many public policies, with urban forests and green space as its main building blocks. Croatia and Slovenia are young democracies and recent members of the European Union. Hence, they also need to contribute to the implementation of those policies. Previous review studies on urban forests and green space rarely addressed scientific or professional publications in those countries. Furthermore, the body of knowledge about urban forest and green space research and practice in post-socialist countries is still rather weak. The goal of the paper is (a) to show that urban forest and green space research and practice is much stronger in these countries than it is possible to assume based only on previous review papers or only by searching Scopus and Web of Science, and (b) to describe publications written by scientists and professionals in the past 30 years.

Materials and Methods: We used a trilingual systematic literature review to identify scientific and grey literature in various databases, as well as a snowballing technique, and yielded 211 publications in Croatia and 84 in Slovenia. Results: We identified many more publications on urban forests and green space science and practice in Croatia and Slovenia than it was possible to assume based only on previous review papers and when searching solely publications in English. Croatian authors showed continuity over time in terms of number of publications, while Slovenian publications have been on the rise in the past decade. In both countries, scientific papers were most frequent, and the vast majority of studies addressed capital cities. Croatian publications mainly focused on parks and park-forests, while Slovenian publications focused on urban forests. Interestingly, Croatian authors were affiliated with over 60 organizations, and in comparison to Slovenian authors, have stronger preference towards publishing in their local language. Green space planning and design followed by resource inventory were the most frequent themes. The least addressed themes in both countries were resource management, economic aspects, policy, legislation or governance. Conclusions: Important discussion in the future, especially in Croatia, would be regulation of urban forestry as a profession. Cross-sectoral and interdisciplinary studies, as well as focusing on cities other than capitals in future, can help in addressing issues such as climate change or application of participatory approaches.

Keywords: urban forests; urban forestry; green space; post-socialist countries; scientific and grey literature
1. Introduction

Previous review papers on urban forests and green space rarely address papers published by authors from Mediterranean and Eastern European countries [1] (Table S1). Hence, the impression is that studies targeting those urban natural resources in some of those countries almost do not exist. This applies to publications of Croatian and Slovenian authors as well. However, reasons for the reported scarcity of publications in these countries could be various. One of the reasons might be criteria for journals to be listed in the leading databases of scientific journals such as Web of Science or Scopus and many journals are left out in the process. Another reason could be the language of the publication. Papers published in languages other than English have a limited audience, which is especially applicable for languages spoken by a limited number of speakers, such as Croatian and Slovenian. Furthermore, the research culture of a certain country in general or in certain disciplines could also favor publications in local languages [2]. The type of publication and keywords taken into consideration may also limit the final selection of papers. Review papers usually focus on scientific and review papers, probably due to the goal(s) of those reviews. This often leads to exclusion of grey literature such as professional and conference papers, books or book chapters.

Hence, the goal of this paper is to show that urban forest and green space research and practice exists in Croatia and Slovenia to a much bigger extent than one might conclude from review papers and focusing only on publications in English. Furthermore, the goal is to take a closer look and describe scientific and professional production in those countries. Croatia and Slovenia are relatively young states forged in the early 1990s due to the demise of socialist Yugoslavia. During which time, both countries went through political, economic and societal transition. Now, both are members of the European Union (EU)—Croatia from 2013 and Slovenia from 2004. The European Commission (EC) acknowledges green infrastructure as one of the planning tools that contributes to implementation of many policies, such as biodiversity and nature protection, regional development, climate change adaptation, disaster risk management, etc. [3]. As EU member states both Croatia and Slovenia are expected to contribute to implementation of those policies. Green infrastructure is defined as “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” [3]. As such, the definition implies urban forests and other green space are among the structural elements of those networks. On the other hand, the body of knowledge about urban forest and green space science and practice in post-socialist countries is still rather slim (for some exceptions please see [4–10]).

Urban forestry as a professional and scientific field has emerged from the forestry sector, and partially horticulture, and been applied on urban and periurban woodlands [11]. The concept of urban forestry originated in the 1960s in North America. Its emergence in Europe can be traced back to the United Kingdom and Ireland in the 1980s, from where it spread to the Netherlands and Northern Europe [12,13]. The concept gradually gained its currency in Europe in the 1990s [11,14]. However, interpretations of what is or should be considered as urban forests and urban forestry are various [12]. Urban forestry is generally acknowledged as being cross-sectoral and interdisciplinary and that the forestry sector is only a stakeholder in the urban forestry mosaic [12]. Besides foresters and forestry, several other sectors and/or disciplines are important for the field, such as landscape architects, urban planners, horticulturalists, arborists and tree workers. For readers’ better understanding and interpretation of results, we will first briefly present the context in Croatia and Slovenia.

1.1. Short Description of the Context Related to Urban Forests and Green Space in Croatia

Croatia is rather small country (total area 87.661 km$^2$ of which land accounts for 56.594 km$^2$) with a population of about 4.3 million (Table 1). It is divided territorially into 21 regional units made up of 20 counties and the city of Zagreb, the Croatian capital, which has a status of both city and county. Croatia has 127 cities and 428 municipalities, and on average about 70% of the population live in cities.
### Table 1. Number of cities and municipalities in Croatia per regional unit, number of people living in cities and municipalities, and percentage of urban population (those who live in cities). Source: Ministry of Public Administration of the Republic of Croatia based on the Census in 2011.

| Counties and City of Zagreb in Croatia | Number of Cities | Number of Municipalities | Number of Citizens in Cities | Number of Citizens in Municipalities | Total Number of Citizens | % of Urban Population |
|---------------------------------------|------------------|--------------------------|-----------------------------|-------------------------------------|-------------------------|-----------------------|
| Zagrebačka                            | 9                | 25                       | 223,068                     | 94,538                              | 317,606                 | 70.23                 |
| Krapinsko-Zagorska                    | 7                | 25                       | 48,897                      | 83,995                              | 132,892                 | 36.79                 |
| Sisačko-Moslavačka                    | 7                | 12                       | 120,756                     | 51,683                              | 172,439                 | 70.03                 |
| Karlovačka                            | 5                | 17                       | 92,693                      | 36,206                              | 128,899                 | 71.91                 |
| Varaždinska                           | 6                | 22                       | 97,075                      | 78,876                              | 175,951                 | 55.17                 |
| Koprivničko-Križevačka                | 3                | 22                       | 60,240                      | 55,334                              | 115,574                 | 52.12                 |
| Bjelovarsko-Bilogorska                | 5                | 18                       | 76,936                      | 42,828                              | 119,764                 | 64.24                 |
| Primorsko-Goranska                    | 13               | 23                       | 219,994                     | 76,201                              | 296,195                 | 74.27                 |
| Ličko-Senjska                         | 4                | 8                        | 33,368                      | 17,629                              | 50,997                  | 65.43                 |
| Viroviticačko-Podravska               | 3                | 13                       | 40,281                      | 44,555                              | 84,836                  | 47.48                 |
| Požeško-Slavonska                     | 5                | 5                        | 58,448                      | 19,586                              | 78,034                  | 74.90                 |
| Brodsko-Posavskia                      | 2                | 26                       | 73,370                      | 85,205                              | 158,575                 | 46.27                 |
| Zadarska                              | 6                | 28                       | 102,570                     | 67,447                              | 170,017                 | 60.33                 |
| Osječko-Baranjska                      | 7                | 35                       | 193,964                     | 111,068                             | 305,032                 | 63.59                 |
| Šibensko-Kninjska                      | 5                | 15                       | 81,937                      | 27,438                              | 109,375                 | 74.91                 |
| Vukovarsko-Srijemska                  | 5                | 26                       | 88,195                      | 91,326                              | 179,521                 | 49.13                 |
| Splitško-Dalmatinska                  | 16               | 39                       | 350,671                     | 104,127                             | 454,798                 | 77.10                 |
| Istarska                              | 10               | 31                       | 143,976                     | 64,079                              | 208,055                 | 69.20                 |
| Dubrovačko-Neretvanska                | 5                | 17                       | 78,455                      | 44,113                              | 122,568                 | 64.01                 |
| Medimurska                            | 3                | 21                       | 41,226                      | 72,578                              | 113,804                 | 36.23                 |
| City of Zagreb                         | 1                | -                        | 790,017                     | -                                   | 790,017                 | 100.00                |
| **Total**                              | **127**          | **428**                  | **3016.137**                | **1268.812**                        | **4284.949**            | **70.39**             |

Croatia is also a highly forested country with almost 50% of its land covered with forests and forest land [15]. It has a long tradition of forestry and forestry education [16]. However, the first documented use of urban forestry as a term and definition among Croatian scientists was identified in two conference papers presented during the conference “Greenery of the City of Zagreb” organized in 1990 by the Zagreb branch of the Yugoslavian Academy of Science and Arts [17,18]. To the best of our knowledge, the first documented use of the term in the professional journal Hrvatske šume occurs at about the same time [19]. However, the practice of urban forestry existed prior to the 1990s as well, especially in forestry offices along the Adriatic coast, where forestry organizations provided maintenance services for trees and green space around tourist objects, such as hotels or camping sites, as a source of additional income [20]. Later on, the term is used in the Strategy of Spatial Planning (1997) [21] and Program of Spatial Planning of the Republic of Croatia (1999) [22]. However, publications addressing the history of forestry in Croatia do not mention urban forests or urban forestry [16]. In 2003, the Croatian Forest Policy Strategy (OG 120/2003) [23] included urban forestry as one of the strategic goals. Formally, urban forestry higher education in the Faculty of Forestry, University of Zagreb has been provided since 2005 [24] with 212 graduates by the 1st of October 2019 [25]. In 2006, the Croatian Chamber of Forestry and Wood Technology Engineers in its statute acknowledged the profession of licensed forestry engineer for urban forestry and provided a list of competences that such professionals should possess [26]. Some of these include planning and design of urban forest ecosystems, developing guidelines for urban forest management, analysis and assessment and design of parks or implementation of arboricultural work. However, according to the statute, forestry engineers, regardless of whether they studied urban forestry or not can get a license for urban forestry works. Urban forestry is recognized as a “type of work” within the forestry profession, which can be performed only by certified forestry professionals (forestry engineers), according to the Rulebook on Types of Forestry Works, Minimal Requirements for Those Works and Works that Private Forest Owners Can Perform by Themselves [27]. The latest forest law of the Republic of Croatia [28] for the first time takes into consideration urban forestry by solely providing its definition. It also prescribes procedure for designation of urban forests. The law also provides a definition of a forest,
and it does not include trees outside forests. The Croatian Arboricultural Society, established in 2003, represents professionals and companies working in arboriculture. Members are mostly foresters and people working in municipal companies in charge of green space maintenance. However, the main problem for urban forestry professionals in Croatia is that those who have finished urban forestry studies at the Faculty of Forestry in Zagreb have a hard time finding jobs. These professionals are low in demand due to the low level of awareness in Croatia that tree care is a job for professionals and not just any person who has permission to handle a chainsaw. As a result, municipal companies often do not have professionals who are educated tree workers or urban foresters.

On the other hand, architects and landscape architects in Croatia have dealt with urban green space for a significantly longer time. For instance, [29] provides an overview of the development of landscape architecture as a profession from 1900 until 1940. It is generally acknowledged that Croatian landscape architecture was at its peak in the 19th and early 20th century, while Croatia was part of the Austro-Hungarian Empire or at latest until the Second World War [30]. The same authors claim that during the socialist period (1945–1991) no landmark urban green space was created, while at the same time existing landscape architectural and cultural heritage, especially those around manors, was left to deteriorate. This continued in the transition and post-transition period that in general favored development (private investors) over green space [31]. However, urban and green space planning in socialist times in Croatia is generally acknowledged as being of better quality than in the transition and post-transition period [32]. This is also true for other post-socialist countries in Europe [33].

Regarding formal education in landscape architecture, in 1996 interdisciplinary studies of landscape architecture started at the Faculty of Agronomy, University of Zagreb, provided collaboratively by six faculties, even though some courses at the faculty had been provided since 1968 [34]. However, those who graduated from the Faculty of Architecture, University of Zagreb can also work as landscape architects as well as urbanists and spatial planners. Both architects and landscape architects have their professional associations.

1.2. Short Description of the Context Related to Urban Forests and Green Space in Slovenia

Similarly to Croatia, Slovenia is rather a small country based on its total area (20,273 km²) and population (about two million) (Table 2). It is divided into 12 regional units and has 67 cities and 212 municipalities. On average about 37% of the population live in cities.

### Table 2. Number of cities and municipalities in Slovenia per regional unit, number of people living in cities and municipalities, and percentage of urban population (those who live in cities). Source: [35].

| Statistical Regions in Slovenia | Number of Cities | Number of Municipalities | Number of Citizens in Cities | Number of Citizens in Municipalities | Total | % of Urban Population |
|-------------------------------|------------------|--------------------------|-----------------------------|-------------------------------------|-------|-----------------------|
| Pomurska                      | 4                | 27                       | 20,626                      | 104,309                             | 124,935| 16.50                 |
| Podravska                     | 5                | 41                       | 127,721                     | 199,391                             | 327,112| 39.00                 |
| Koroška                       | 5                | 12                       | 24,978                      | 47,547                              | 72,525 | 34.40                 |
| Savinjska                     | 8                | 31                       | 88,727                      | 169,260                             | 257,987| 34.40                 |
| Zasavska                      | 4                | 4                        | 31,816                      | 26,287                              | 58,103 | 54.80                 |
| Posavska                      | 5                | 6                        | 21,153                      | 55,479                              | 76,632 | 27.60                 |
| Jugovzhodna Slovenija         | 6                | 21                       | 47,803                      | 96,498                              | 144,301| 33.10                 |
| Osrednjeslovenska             | 9                | 25                       | 344,227                     | 190,060                             | 534,287| 64.40                 |
| Gorenjska                     | 8                | 18                       | 83,493                      | 122,826                             | 206,319| 40.50                 |
| Primorsko-notranjska          | 3                | 6                        | 17,809                      | 35,353                              | 53,162 | 33.50                 |
| Goriška                      | 6                | 13                       | 34,255                      | 85,246                              | 119,501| 28.70                 |
| Obalno-kraška                | 4                | 8                        | 46,122                      | 68,324                              | 114,446| 40.30                 |
| **Total**                     | 67               | 212                      | 888,730                     | 1200,580                            | 2089,310| 37.30                 |

In comparison to Croatia, Slovenia is even more forested with about 60% of its area covered by forests and forest land [36]. In Slovenia, urban forest as a concept being formally acknowledged for the first time can be traced to the establishment of a landscape protected area (hereafter LPA) ‘Zajčja
dobrava’ in 1972 [37], which was also one of the first LPA according to the nature protection act from 1970 [38] and the first of its kind in the capital, Ljubljana. Its designation was considered an important long-term project as its green areas were protected from being converted into land-uses other than forests, meadows, cultivated grasslands, tree lines, etc., being an important foundation for public health of a great part of local residents. Later on and with similar legal grounds, four more LPAs with significant proportions of forest lands near larger cities were designated—LPA of Tivoli, Rožnik in Šišenski hrib in the city of Ljubljana [39], LPA of Drava and LPA Mariborsko lake in the city of Maribor [40], and the memorial park of Udin boršt near the city of Kranj [41]. However, even before the 1970s, urban forests were, rather indirectly, recognized as one of the elements of the so-called ‘green belt’ around the city of Ljubljana [42], where very different categories of forest, green areas and individual trees were all considered as urban forests [43]. In the 1980s, the first scientifically based elaborations of the definitions of both urban forests and urban forestry were evolving as [44] published a set of definitions—“urban forest is a forest nearby urban centers and has a unique character, given by its role in people’s social benefits”. A term—suburban forest—indicating a strong spatial connection with urban areas was beginning to be used by forestry professionals in the 1980s and 1990s. The term related to forests very close to cities or larger towns affecting the quality of life in densely populated areas [45].

Nevertheless, albeit with a relatively long tradition of recognition of the concept, there is still no uniform definition of the term ‘urban forest’ as a special legal category in Slovenia’s legal framework [7]. A forest management-related category of ‘forests with a special purpose’ [46] seems to be a proxy for now that can also indicate forest lands with special designation, among which are forests notably important for outdoor recreation, aesthetic enjoyment or air purification.

Perhaps similar to in Croatia, urban forestry as a professional field is in Slovenia still in its infancy. Despite the fact that urban forestry has been a specially designed study module for more than 15 years, it is not equally treated as other professional areas in the forestry service, like logging, construction of infrastructure, management planning, hunting, silviculture etc. Slovenia Forest Service as the sole public agency to provide forest management expertise to land owners does not have a section committed to urban forestry. This is despite the fact that Slovenia Forest Service prepares management plans for forests in or close to urban areas and acknowledges their specific character of being important for physical recreation, aesthetical enjoyment and microclimate regulation. Even at the ministry levels there is not a single position within the forestry sector that anyhow focuses on issues related to urban forestry. Altogether, urban forestry in Slovenia is marginalized, even though the field is quickly evolving globally and society seems to be recognizing the benefits of having forests or other woody vegetation nearby.

2. Materials and Methods

We searched for relevant scientific and grey literature on various types of tree-based urban green infrastructure from various sources over the timespan of 30 years (from 1990 and 2019). For scientific literature, global databases SCOPUS and Web of Science (WoS) were the starting point. The documents were searched for based on the combination of keywords: “green space”, “urban forest*”, “urban woodland*”, “street tree*”, “tree line*”, “tree avenue*”, “green infrastructure” and “green system”. An initial search was performed in July 2019, but the database of relevant publications was updated until the 28 November 2019. However, not all nationally relevant journals are listed in those databases. We also checked national databases of journals, namely Hrčak and the catalogue of the National and University Library in Croatia, as well as CBS/COBiSS database and dLib in Slovenia, where we also applied variations of key words in local languages. In both countries we checked national scientific bibliographies where it is possible to find information not only about scientific but also about professional and conference papers. In Croatia, we also checked the national repositories of scientific master theses and doctoral dissertations where it was possible to list publications not only by key words but also by institutions. This was useful because in both countries there is a limited
number of institutions educating professionals dealing with certain aspects of tree-based, urban green infrastructure. Scientists and professionals in forestry, landscape architecture, architecture, horticulture, arboriculture, life sciences, social scientists and other fields have their most popular journals, and their communities are rather small, so it was easy to identify such national journals in each country. Those are also available online and provide full access to papers. Therefore, it was possible to carry out a thorough search of those journals issue by issue to identify relevant papers that might not be included in the database based only on key words. For instance, in Croatia the main national journal for scientists and professionals in forestry is Šumarski list, due to its more than century long timespan, while for instance, for architects, the most important national journal is Prostor. Similarly, in Slovenia, the journal Gozdarski vestnik is the main national journal for forestry research and practice. The authors of the review are native speakers of Croatian or Slovenian, which gave them an opportunity to investigate publications in those languages besides publications in English. We also used a snowball technique to expand the database of relevant publications by checking the reference section of the documents in the database. In order to show a variety of publications, written by both scientists and professionals, we included scientific research and review papers, preliminary communications, professional and conference papers and books and book chapters. Conference proceedings containing abstracts only were excluded. The only deviation for this rule was proceedings of the IUFRO conference “Forests for Cities, Forests for People—Perspectives on Urban Forest Governance” that took place in Zagreb, Croatia in 2012 [47] and proceedings of the European Forum on Urban Forestry in 2016 that took place in Ljubljana, Slovenia, the same year Ljubljana was a European Green Capital. The reason for including those proceedings was the international character of those events and the fact that all the presentations targeted research and practice of urban forests and green space. Proceedings of the conference “Greenery of the City of Zagreb” organized in 2013 [48] were considered as one publication (the same as a book), and we did not analyze each paper published in these proceedings separately. However, conference papers published as a result of two conferences in 2004 and 2005 were analyzed separately, since those were published in the Croatian journal Agronomski glasnik (vol. 66, no. 3–5 in 2004 and vol. 67, no. 2–4 in 2005) as separate papers. Publications were taken into account only when authored or coauthored by Croatian or Slovenian authors. In cases when publications addressed specific locations, we included only publications that studied locations in Croatia or Slovenia. Our approach yielded altogether 211 publications authored or co-authored by Croatian researchers or professionals and 84 by Slovenian researchers or professionals (Database S1). In a few cases, publications were co-authored by Croatian and Slovenian researchers, and we counted those based on the affiliation of the first author. If the first author was Croatian, the paper was counted as a Croatian publication. The database was analyzed per country to enable between-country comparison. Furthermore, it was analyzed based on number of publications per year, number of publications per type of publication, language of publication, study locations, authors’ affiliations, type of green infrastructure, methods and themes. When publications addressed several types of urban green space in the same publication, we counted each type as one. For our purposes, we adapted green space typology developed in the EU’s Green Surge project [49]. Green Surge addressed various types of green space not only tree-based green space.

3. Results

The number of publications retrieved showed a difference between two countries with significantly more publications associated with Croatian authors or about 2.5 times more (Figure 1). The overall distribution of publications per country in the period 1990–2019 also exhibited differences between countries regardless of the type of publication. With a few exceptions, there is almost a continuity of publishing over time in the investigated period in Croatia, while in Slovenia publishing intensified in the past decade. Croatian authors were the most prolific in 2004 and Slovenian in 2015. The reason for the peak in Croatia is the international interdisciplinary conference “Care for Urban Areas—Urban Tree Lines” organized in Dubrovnik by the Faculty of Agronomy, University of Zagreb. The highest peak in
the number of publications in Slovenia can be explained by the conference “Green infrastructure in Central, Eastern and Southeastern Europe: Is There a Universal Solution to Environmental and Spatial Challenges?” organized by the Biotechnical Faculty, University of Ljubljana in 2015.

When looking at the type of publications in both countries, the most frequent were research papers (Figure 2). Next frequent in Croatia were conference papers, followed by books and professional papers. Book chapters, master’s theses, dissertations and conference proceedings contributed to a much lesser extent to the total number of publications. The main difference was in the fact that in Slovenia we found no professional papers in the given period, and the number of master’s theses was much higher than in Croatia.

Figure 2. Distribution of publications in Croatia and Slovenia per type of publication.

Analysis of the language of publication showed authors’ preferences in both countries towards publishing in local languages (Figures 3 and 4), which was more emphasized among Croatian authors, who published four times more in Croatian than in English (Figure 3). Bilingual and multilingual...
publications were rather scarce. For instance, in Croatia four publications were published as bilingual Croatian-English publications, and there was only one that was mainly written in Croatian but with extensive summaries in English, German and Italian (Figure 3). On the other hand, in Slovenia there was almost a balance between publishing in English and Slovenian. Only one publication was bilingual and one in Croatian (Figure 4).

![Figure 3. Language of Croatian publications (n = 211).](image1)

![Figure 4. Language of Slovenian publications (n = 84).](image2)
We further examined where those publications were published in terms of journals and publishers. Altogether Croatian scientific and professional production was distributed over 77 journals and other publishers. Croatian authors published 159 papers in 46 journals of which 90 publications (about 43%) were concentrated in three journals (Agronomski glasnik, Šumarski list and Prostor), the three most important national journals for researchers and professionals in agronomy, forestry and architecture respectively (please see Table S2 for the comprehensive list). Out of 46 journals, 27 are indexed in Scopus and 21 in WoS (Table S2). Both Šumarski list and Prostor are indexed in Scopus and WoS, while Agronomski glasnik is not present in either of those databases. For only 14 journals, publishers were not organizations from Croatia. On the other hand, Slovenian authors published 48 papers in 23 journals with the majority of publications published in Gozdarski vestnik, the main national journal for researchers and professionals in forestry in Slovenia. The second most frequent source of publications was the journal Urbani izziv, the main national journal for spatial planners and urbanists.

Furthermore, we investigated affiliations of Croatian and Slovenian authors in order to identify the most productive organizations based on how many times authors were connected with a certain organization. The results showed that Croatian authors were affiliated with 62 organizations, while Slovenian authors were connected with only 18 organizations. In Croatia, the top five organizations were the Faculty of Forestry (n = 34), Faculty of Agronomy (n = 32), Faculty of Architecture (n = 30) and Faculty of Science (n = 26), all constituencies of the University of Zagreb, while the Croatian Forest Research Institute (Forest Research Institute, Jastrebarsko until 2009) (n = 18) is a public institute. Authors were affiliated six or less times with each of the other organizations. In Slovenia, the most productive organization based on the number of affiliated authors was the Biotechnical Faculty, University of Ljubljana (n = 40). The Slovenian Forestry Institute (n = 16), Slovenia Forest Service (n = 11) and Faculty of Civil and Geodetic Engineering, University of Ljubljana (n = 8) followed. Authors were affiliated three or less times to each of the other organizations in Slovenia. Independent researchers accounted to 26 in Croatia and five in Slovenia.

Out of 211 Croatian publications, 187 (88.6%) addressed specific cities as study locations. Those locations were spatially distributed across 73 cities. However, the ultimate champion city was Zagreb, the capital of Croatia, with 99 publications (Figure 5). Dubrovnik, Opatija, Osijek and Split, as regionally important cities, were also addressed but to a much lesser extent (13, 10, 11 and 9 times respectively). All other cities were represented even less (with 1–6 publications each). In Slovenia, out of 84 publications, 67 (80%) addressed urban forests and green space in specific cities. In Slovenia we identified only 11 study locations, and again, the majority of publications were related to the capital of Slovenia, Ljubljana (n = 51). A relatively small number of publications addressed Celje (n = 6) and Maribor (n = 3), while other locations were represented by only one publication each.

We were also interested to see how many times publications addressed a certain type of green space. The results showed big differences between Croatia and Slovenia (Figure 6). For instance, Croatian publications showed greater variation of green space addressed in those publications. We identified altogether 24 types of green space. In comparison, Slovenian publications showed less variation with only 14 types of green space. The most frequent type of green space in publications of Croatian authors was parks (with or without adding historical parks into account), followed by park-forests, tree lines and urban forests. On the other hand, in Slovenian publications urban forest was conspicuously the most frequent type of green space.
Another point of investigation was the analysis of publication themes (Figure 7). The most frequent themes in Croatia were green space planning and/or design, resource inventory, public perspectives, plant health, as well as ecology and tree ecology, while in Slovenia the same themes gained prominence, but in a different order. The only exception is the theme of plant health, which gained only marginal interest among Slovenian authors.
In Croatia, one third of publications dealt with green space planning and/or design and the theme was present over the entire period. Architects and landscape architects wrote almost all these, with only a few exceptions where they were written by, for instance, art historians, e.g., [50]. Within the group it was possible to identify several subthemes. One subgroup of publications (30 out of 72) discussed the establishment and historical development over time of various types of green space, but mostly parks, e.g., [51–53], in a descriptive manner, based on the exploration of literature, archival records, old maps, photos or postcards. The other somewhat smaller subgroup of publications (12 out of 72) went beyond a purely descriptive approach and provided recommendations for renewal and conservation of certain urban green space. Again, most of these addressed parks as well as historical parks and gardens, e.g., [54–56]. Another rather small subgroup of publications (only 6 out of 72) presented plans and a design for a new or renovation of existing green space, e.g., [57,58]. Other topics were even less frequently present. From these we will mention only the most significant works. One of these is a textbook on methodology for the restoration and preservation of Croatian landscape architectural heritage [59] based on the Florence Charter on Historic Gardens (1982) adopted by the International Council of Monuments and Sites (ICOMOS) and International Federation of Landscape Architects (IFLA) [60]. Another is a book on Dubrovnik Renaissance gardens, a type of garden that has some authentic features that distinguish these gardens from other Renaissance gardens [61], and a book on Zagreb’s Green Horseshoe, a Gesamtkunstwerk developed in the late 19th and early 20th century [50]. It is also Zagreb’s landmark network of green spaces comprised of seven square parks and a botanical garden.

Publications dealing with green space planning and design mostly addressed single green spaces, but several books are considered monumental works in terms of both their importance and the number of sites included. Obad Šćitaroci [55] explored more than 60 manors with their parks and gardens in the Croatian north-west region of Hrvatsko Zagorje. Šćitaroci and Šćitaroci [54] explored another 60 manors and their parks and gardens in historical area of Slavonia between the cities of Zagreb and Ilok, while the same authors investigated 50 19th century green spaces in 20 cities and municipalities [30]. The goal of these books was to bring into the spotlight valuable Croatian cultural landscape and

![Figure 7: Themes of interest for Croatian and Slovenian authors.](image-url)
architectural and horticultural heritage, as well to discuss the importance of this heritage in the European context. Obad Šćitaroci [59] claims that Croatian park heritage is rich in terms of quality and quantity but is widely unknown even in Europe, because it has not been explored and, as such, is left to oblivion. However, according to the same author, it is part of western civilization, influenced mostly by Italy, Austria and Germany, and shows continuity in development from antiquity until nowadays.

Only several publications addressed networks of green spaces. Beside three publications addressing Green Horseshoe, one master’s thesis dealt with landscape analysis and the possibility of developing Zagreb’s green system as a network of green spaces [62], and the other one carried out the landscape analyses of the city of Dubrovnik in the context of green infrastructure development for climate change adaptation [63].

On the other hand, in Slovenia the theme of green space planning and/or design was only the fourth most frequent based on number of publications (Figure 7). Studies mainly focused on the analysis of landscape structure in terms of connectivity of forest patches and the state of naturalness of forest remnants in the otherwise urbanized environment. Three out of five studies addressed the issue of rapid build-up by either road infrastructure or residential construction on the functioning of system of green areas [64–66]. This issue is somehow a critical aspect of spatial development in Slovenia since it shows that urban forests as a key element of the landscape might not have a priority over development in or near the cities. The public and some decision makers also criticized this. It seems that this research clearly reflects socially relevant discussion. Additionally, one paper gave an overview of studies using GIS analysis and calculation of several landscape metric indices to support the assessment [67].

The theme of resource inventory was the second most important among Croatian authors (Figure 7). These publications bring information on results of mostly woody plant inventories at different scales and of different types of green space. Only a few papers addressed exotic species [68]. Some authors were interested in inventory of invasive species, e.g., [69,70]. Several papers, of which almost all were written by botanists, presented inventory of flora in general, not only woody species [71–76]. Gardens of educational organizations such as schools were addressed in four papers [75,77–79]. Field inventory as a method prevailed, but in some papers, remote sensing was used for this purpose [80–82]. Several mostly conference papers provided inventories of tree lines, e.g., [83]. The champion paper based on number of sites is a paper by Bertović et al. [84] who conducted an inventory of 66 green space areas and of different types of green space in the city of Rijeka. Plant diversity was investigated in only two papers [85,86].

Resource inventory was the most frequent topic for Slovenian authors (19 out of 84 publications). Several studies have been addressed tree cadasters in the cities of Kobarid [87], Logatec [88] and Velenje [89], all as part of a master’s thesis. The importance of such tools to guarantee sustainable monitoring of urban trees was the main argument to promote its implementation. Further on, a large body of literature targeted resource inventory in terms of straightforwardly measuring the size of forest patches, state of growing stock and tree species composition, and the condition of infrastructure. The primary methodological approach was GIS analysis of either satellite imagery, e.g., [90,91], or ground data obtained by field inventory, e.g., [92]. In addition to that, Tavčar [93] investigated the effect of ownership on the state of urban forests. Two studies depended on remote data as well but moved further from elementary forest-related metrics and investigated the provision of ecosystem services [94,95].

Public perspectives were addressed in 27 out of 211 Croatian publications (Figure 7), whereby public perceptions of, as well as preferences and attitudes towards, green space were investigated or users’ behavior was addressed. The earliest publication is from 1997, but the majority (22 out of 27) were published between 2010 and 2019. The capital city of Zagreb was a study area in almost all papers. In only five papers study areas were in more than one city, e.g., [96], three papers had each more than one study area in one city, e.g., [97] and only one paper about residents’ perceptions of green space made a comparison among seven cities in five countries [8]. The survey questionnaire prevailed
as a method of choice in almost all papers (24 out of 27). With the exception of one conference paper, all others were research papers. Some papers investigated perceptions and preferences of specific trees and woody plants, e.g., Dobrič et al. [98], who studied the perceptions of black locust in public green space, Dobrič et al. [99], who addressed attitudes towards and perceptions of ash-leaf maple, or Caput-Jogunica and Martinis [100], who studied perceptions of ornamental woody plants. One paper studied the perception of and preferences towards green space composition [96]. A single paper surveyed the perception of green space by children [101]. Recreational preferences were addressed in several publications. For instance, Sever and Verbič [102] studied trail preferences among recreationists, while Sever et al. [103] investigated the perception of crowding.

In Slovenia, 14 out of 84 publications addressed this theme (Figure 7). All data was obtained though interaction with the public, decision makers or policy makers. Hence, the survey questionnaire was a main method. The bulk of the studies focused on peoples’ preferences regarding the setting of urban green areas, especially forests [46,104–111]. Some also covered urban forest visitors’ behavior in terms of frequency, duration of visits and main activities [107,108,110,111], and a few also employed non-market valuation to determine peoples’ willingness to pay as a monetary proxy for preferences [105,110,111]. Furthermore, at least three studies collected data by counting visitors at entrance points [105,107,112]. All publications attached to this theme dealt exclusively with urban forests in the capital city of Ljubljana. In general, studies on public perspective are the key for designing green spaces and especially urban forests, as this is a type of green space with multiple management goals is most obvious.

In Croatia, plant health as a theme was present in 19 out of 211 publications (Figure 7). The majority of papers addressed tree health in the context of the effect of pests and diseases. Some publications reported on the presence of certain insect species, such as bark beetle Orthotomicus erosus on Aleppo pine [113] or alochtonous Cinara cedri [114]. The health of horse chestnut trees was investigated in tree publications. Another tree publication studied tree health from an arboricultural perspective. Authors used different methods to conduct tree risk assessment, e.g., [115]. Authors of research papers mostly reported field observations with or without laboratory analyses. In only one instance remote sensing methods were used to assess the health status of trees in park-forest Maksimir, one of the most important green spaces in the capital [116]. Authors of 13 out of 19 publications were affiliated with forestry research organizations, namely the Faculty of Forestry of the University of Zagreb or the Croatian Forest Research Institute. A book with international authorship provides an overview of the most important pests and diseases on urban trees [117]. Just above half of the publications addressed tree health in the capital.

On the other hand, in Slovenia, this theme gained only marginal interest with only four publications (Figure 7). These publications addressed pathogenic fungi on the university’s green space [118] and non-native insects in an urban forest [119], as well as mechanical wounding [120] and stress factors [121]. The last two publications both act as general guidelines on how different agents affect tree health and how to mitigate those negative impacts.

A relatively small number of Croatian publications dealt with ecology and tree ecology (Figure 7). Seven papers addressed tree ecology from the perspective of tree phenology, e.g., [122]. Five publications discussed species selection, for instance what species are recommended for green roofs [123] or in general as street trees, park trees or trees for urban woodlands [124]. Three papers reported on soil studies, e.g., [125], of which two were conducted in forests and the other investigated the content of selected trace elements in the context of pollution monitoring in park soils. One paper addressed the influence of light on natural regeneration of pedunculate oak in an urban park-forest [126]. The majority of papers (11 out of 17) were published in Šumarski list, the main national journal for researchers and professionals in forestry.

On the other hand, the theme of ecology and tree ecology was the second most frequent among Slovenian authors (17 out of 84). They cover master’s theses and scientific papers mainly published by authors associated with the Faculty of Civil and Geodetic Engineering, University of Ljubljana and Slovenian Forestry Institute. The majority dealt with the effects of urban forests or urban trees
in built environment, such as surface runoff [127–133] or quality of groundwater [134]. Thus, the hydrological aspect of urban forests seemed to be the most important. One paper analyzed the potential of having innovative measures to mitigate surface runoff in urbanized areas such as permeable paving, infiltration pipes and green roofs [135]. This study was one of those that relied heavily on field measurements, similar to Kermavnar [127,128] and Šraj et al. [133]. Others based their conclusions mainly on modelling. Apart from this, two studies tackled the relation between urban green areas and heat islands effect. A study at the EU level showed that different types of green areas have different effects on lowering the surrounding heat and that especially a forest’s configuration and composition has an important impact [136]. Perhaps more focused, [137] investigated how an urban park can have a cooling effect in days of extreme summer heat. Research showed that the capacity of such green areas to attenuate high temperatures depends on the density and age of woody plants.

In Croatia, a small group of publications, more specifically six books and two conference proceedings, addressed various topics. Almost all the publications are related to the city of Zagreb. A book written by an activist diagnosed various issues with public space in Zagreb, including public green space, but also provided suggestions for improvement [138]. Two books presented work of municipal companies for the maintenance of green space and other public areas, e.g., [139]. A popularly written book on the park-forest Maksimir was published to mark the 200-year jubilee of its establishment [140], while another one, subtitled ‘a nostalgic look into the past’, presented the history of some of Zagreb’s parks and promenades [141]. Lastly, one book addressed various themes related to park-forests in Zagreb [142]. In Slovenia, several conferences were organized, with conference proceedings published in Slovenian, focusing on various topics related to urban forestry history and evolution on a national level [64,143]. The city of Ljubljana hosted the European Forum on Urban Forestry, an international event with various topics related to urban forests and green space, involving Slovenian and foreign researchers and professionals [144].

Resource management was a theme of only seven publications of Croatian authors (Figure 7). Four papers were written in the second half of 1990s by foresters, published in the journal Šumarski list, and addressed forests or park-forests from a silvicultural perspective. Authors advocated active management as in economic forests regardless of the fact that recreational use prevails, e.g., [145]. Additionally, tree conference papers discussed management, or better said, lack of proper management of tree lines in two of Croatia’s regional capitals, namely Osijek and Split, e.g., [146]. The theme was weakly present among Slovenian authors as well (Figure 7), as only four relevant publications were identified. All these focused on providing guidelines on how to manage urban forest [147–149] and how to include other aspects, such as game management [150].

The economic aspects of urban forests and other green space was another less frequent theme in both countries (Figure 7). In Croatia, publications under this general theme dealt with the economic assessment of urban trees [151], the value of urban forests for residential land use that implements the hedonic pricing method [152], assessment of forest ecosystem services in urban forests [153], or the role of urban green space in tourism [154]. Two papers are more general. One of these papers brings general discussion on valuing nature in an urban context [155], while another reviews literature on the valuation of urban green space benefits [18]. Finally, one conference paper discusses children’s parks/playgrounds as public goods [156]. In Slovenia, three papers employed willingness to pay for either the possibility of public access to urban forests [105] or to improve several attributes of forest setting, which are related to quality of outdoor recreation [110,111]. All these studies focused on one of two major urban forest patches in Ljubljana, either Rožnik [105,110] or Golovec [111]. All were conducted as cross-sectional surveys based on a stated preferences approach and aimed to establish coarse information on the public’s recreational preferences in urban forests in the capital of Slovenia.

Only several publications in each country dealt with policy, legislation or governance of urban forests (Figure 7). In Croatia, a dissertation provided description and assessment of the quality of governing tree-based green spaces in the city of Zagreb [19], while another paper discussed the legal procedures of putting a public park under protection [157]. Additionally, two book chapters were
recently published of which one discussed the concept of governance in general [158] and the other one critically addressed the European Green Capital Award [159]. In Slovenia five publications addressed this theme. Four out of five addressed long-lasting work on the city forest of Celje [43,160–162], where extensive analysis of strategic and subordinated legal documents was carried out in order to show a complete process of designation. Public participation was highlighted as an important element of democratic society. People’s needs and wants related to public urban forests and green space needs to be somehow channeled into the planning and management of those natural resources.

Green space education as a theme was present only among Croatian authors, even though with only three publications (Figure 7). Two papers discussed curriculum for urban forestry, environmental and nature conservation professionals, a potential and an actual study program at the Faculty of Forestry, University of Zagreb [17,24], while another paper presented an educational trail in a park-forest [163].

The label ‘other’ referred to several publications that could not be associated with any other theme (Figure 7). In Croatia, two publications are review papers investigating urban forest and green space-related scientific literature at a global and regional level [1,14]. One paper discusses the general importance of green space in urban areas [164], another one investigates the influence of fertilization on the growth of Thuja occidentalis ‘Smaragd’ [165], and finally, recreational supply in a city district is discussed in correlation with the demographic profile of the district [166].

Finally, we took closer look into methods used in research publications (research papers, preliminary communications, dissertations and scientific master’s theses). The majority of publications in both countries used some form of field work (in Croatia 44.1% of publications, while in Slovenia 52.9%) (Figure 8). By field work we mean measurements, inventories, assessments or observations on the natural resource, so we did not include on site face-to-face interviews, even though these are also implemented in the field. The second most frequent method in both countries was a description or a narrative (30.9% in Croatia and 40.9%). In Croatia, this is mostly due to one third of research publications being review papers (39 out of 116). The survey questionnaire as a method was in third place in Croatia (20.7% of publications), while in Slovenia it was spatial analysis (27.3%).

![Figure 8. Methods used in publications of Croatian and Slovenian authors.](image)

### 4. Discussion and Conclusions

The literature review showed many more publications authored by Croatian and Slovenian authors than it was possible to perceive only by reading review papers on urban forests and green
space, and by solely searching publications in English (Table S1, Database S1). While review papers showed only a few publications from these countries (Table S1), our approach came up with 211 publications authored by Croatian authors and 84 publications of Slovenian authors (Database S1). This is probably due to the language issue, when it comes to small languages such as Croatian and Slovenian. Another advantage of this review is that we covered some segments of grey literature, which is not often the case in literature reviews (Table S1). However, we assume that there is much more grey literature that was beyond our reach, such as planning and design studies for new green spaces or renewal of the existing ones or any other studies that are commissioned by local and regional government but are not traceable online. Another avenue of grey literature that we also did not explore are bachelor and diploma theses because many of them are not fully accessible, and even when they are, it is not the case for the entire period we investigated. Possibly, some other publications are also beyond our grasp, for instance conference proceedings, especially those from the 1990s, that are not available online and hence not easily accessible. However, we did not limit our database only to publications that are available online. Possibility to search for publications in local languages in national publications fully available online certainly added to the final number of publications taken into consideration.

In terms of the timeline, and correspondence with the development of urban forestry in other European countries [11], since we only studied the period between 1990 and 2019, we cannot say how many research and professional papers were written before that time. In Croatia, certainly it was part of forestry practice even before the period [20], and landscape architecture and horticulture dates go back even further [29]. However, it is interesting to see that in Croatia research and professional production showed more continuity in the given period while in Slovenia it followed a course similar to other Mediterranean [1] or Latin America and Caribbean countries [167], which means it has proliferated in the past 10 years or so.

The prevalence of research papers in our database is not a surprise since many authors were affiliated with research and education organizations (Figure 2). Capital cities were the most frequently addressed in publications probably due to many research and education organizations being located in capitals. This is certainly true for Slovenia (Figure 5). In Croatia, the Faculty of Forestry, Faculty of Architecture, Faculty of Agronomy and Faculty of Science (with its departments of botany and geography) are all located in the capital. These organizations are among the top five based on number of affiliated authors and coauthors of analyzed publications. It may also be that researchers tend to choose study locations closer to their workplace. Research funding in Croatia and Slovenia is still lower than the EU average. However, in comparison to Croatia, Slovenia invested more than double in R&D in 2017 (Slovenia 1.87, Croatia 0.86, EU average 2.07% of GDP) [168]. Choosing closer locations allows research to be done even when one has no specific research budget. Focus on capitals may leave out regional differences in many aspects related to urban forests and green space. However, we were surprised to see that Croatian authors were associated with more than 60 organizations, while Slovenian with much less. This is possibly due to the difference in size of each country and the number of research and education organizations (Tables 1 and 2). It is also worth mentioning that categorization of papers in journals is not the same as now. For instance, those categorized as research papers in some national journals would probably not be in the same category now. However, we counted papers the way they were categorized by journals themselves. An important result of the review is the fact that research publications were published in many journals, but most frequently in professional journals of foresters and landscape architects due to the authors’ professional backgrounds. Croatian authors had a stronger preference for publishing in the local language, influencing their international visibility. For instance, out of 116 research publications (research and review papers, preliminary communications, dissertations and scientific master theses), only 25% were published in English.

Different types of green space were differently addressed in both countries, with the main difference being prevailing focus on parks and park-forests in Croatia and urban forests in Slovenia (Figure 6). This is mostly due to the prevalence of publications by architects and landscape architects.
in Croatia under the green space planning and/or design theme (Figure 7). On the other hand, in Slovenia most of the authors are forestry professors from the Biotechnical Faculty at the University of Ljubljana and urban forestry practitioners from the Slovenian Forestry Service. Landscape architects or horticulturists in Slovenia have only been publishing green space planning and/or design publications in the past decade, but their interest is increasing.

Analysis of authors’ affiliations showed that forestry research and education organization prevailed in both countries. This may have to do with the focus in our study being on tree-based green infrastructure and trees usually fall within the scope of forestry or urban forestry professionals.

When it comes to prevailing themes, it is not a surprise that the most frequent theme in Croatia was green space planning and design given the long tradition of landscape architecture and horticulture [29]. They certainly have a much longer tradition in comparison to urban forestry. Publications mainly focused on a search for origins and transformation of green space over time. We agree this is important in the context of revitalization of often old green spaces. Sometimes those publications act as a tribute to green spaces that lost the battle with urbanization or negligence or when there are only a few trees left as remnants of once glorious parks and gardens attached to old manors in an equally sorry state. However, only a minority of publications went further in proposing a way forward. Revitalization, especially of historical gardens and parks that are abundant in Croatia, implies significant resources and commitment of various actors as well as knowledge and skills of various professionals. Based on our professional knowledge, collaboration even between organizations in the same sector is often missing. The study on urban forest governance in the city of Zagreb based on the interviews with stakeholders came to the same conclusion [19].

Another important theme in both countries was resource inventory (Figure 7). Inventory of woody vegetation is certainly the first and necessary step for effective green space management and maintenance [169] as well as the quantification and valuation of ecosystem services trees provide (i-Tree, 2019). In recent decades, there is an increasing interest in urban tree inventories [170] supported by methodological and technological developments, such as i-Tree [171] or remote sensing. For Croatia and Slovenia we do not have information about the extent to which cities and municipalities have woody plant inventories, and even if they have, whether the information is up to date or used whatsoever. The city of Zagreb has its own green cadaster available online, but it shows only trees maintained by the city company [19]. From discussion with professionals working in city companies in charge of the management and maintenance of public green space, we know that some cities do have at least partial tree inventories for their own purposes. However, this information is not available online and so far there has not been a survey investigating which cities and to what extent have such databases. A conference paper indicated possibility that even when cities do make an effort to develop a database, it does not automatically mean that it is used, updated or useful [146]. Similarly, a pilot study of several North American and European cities showed that even when cities do have inventories, these are not necessarily updated or taken to the next level and used in the development of a strategic management plan [169]. In Slovenia, the city of Ljubljana also has its own green cadaster, maintained by a private company with professional arborists. Smaller cities in Slovenia often take advantage of diploma or master’s theses, dealing with green infrastructure inventories, and base their management plans on the theses’ results, e.g., [87–89]. Findings from Sweden show that size of municipality affects whether a municipality has an urban tree inventory and that there is a higher possibility that those who have an inventory also have a tree management plan [172]. Furthermore, recently a discussion has been initiated in Europe on the potential of using Forest Inventory data to extract data on forests in urban areas [173]. Urban trees and other woody vegetation are facing many threats, such as urban densification [174] or effects of climate change [175]. Resource inventory in cities and municipalities is certainly a topic that needs to be further investigated in both countries for the purpose of effective management and securing sustainable urban futures.

The public perspectives theme was somewhat less important in both countries (Figure 7). Focus prevailed on recreationists, their perception, preferences or behavior. In both countries, the majority of
publications occurred in the past 10 years. This is somewhat later than reported in some other review papers identifying an increase in the number of publications dealing with this topic in the period from 2000 onwards [14,176]. A review paper on the human-nature relationship identified survey questionnaires as the most common method [176] and our review came up with the same result. The same authors claim studies are rarely cross-country, cross-age, or cross-park. Publications in Croatia and Slovenia follow suit. However, regarding the age groups, these are not always reported or results are not discussed in this context. A literature review of urban forest and green space related research in Mediterranean countries showed that the theme of sociocultural values, as labelled by the authors, is the third most important topic, based on number of publications [1]. Furthermore, connection between green space and human health receives even more interest, however not to the same extent in all countries. On the other hand, in both Croatia and Slovenia there is a research gap on the health effects of green spaces. Additionally, social and environmental justice (equity) was out of focus, similarly to the conclusions of Ordóñez-Barona et al. [167].

Plant health received only a marginal interest of Croatian and Slovenian authors with less than 10% of publications associated (Figure 7). Given the fact that the urban environment is harsh to trees and due to the effect of climate change, they are prone to lower vitality, pests or diseases, e.g., [175]. In Croatia and Slovenia, forest pests and diseases are continually monitored [28,46]. On the other hand, urban tree health monitoring is not obligatory and falls under the authority of cities and municipalities. We are not aware how many cities and municipalities perform such monitoring. However, there is an obligation in the European Union on taking protective measures against pests and plants including also in urban areas [177,178]. Furthermore, arboriculture as a discipline is rather young and still not widely recognized in both countries, which may explain why only a few papers addressed this aspect.

Interest in ecology and tree ecology in urban areas was only marginal in Croatia. In contrast, one fifth of publications in Slovenia addressed this theme (Figure 7). Interestingly, pollution, especially airborne, was the most pronounced theme in Mediterranean countries, especially Italy [1]. However, pollution and the possibility of its attenuation by urban trees have not received attention in Slovenia and in Croatia; only two papers addressed this theme [179,180]. In Slovenia, however, due to the LIFE+ project EMoNFUr [181], focusing on monitoring of urban forest ecosystem services, the research interest and number of publications related to urban forest ecosystem services has increased. When it comes to the hydrology of urban forests or trees, Slovenian authors from two organizations (Faculty of Civil Engineering at University of Ljubljana and Slovenian Forestry Institute) published 12% of all publications (Figure 7), indicating the recognized importance of studying the role of urban green infrastructure in water regulation and purification [182]. Regarding urban forests and green spaces in the context of climate change, this topic is still not part of the scientific or professional discourse in Croatia and is in its infancy in Slovenia, e.g., [136,183].

Other themes such as resource management, economic aspects, policy, legislation and governance or green space education received even lesser interest in both countries (Figure 7). In Croatia papers discussing adapted urban forest management are conspicuously missing, especially given the prevalence of recreational use and other cultural ecosystem services in urban areas. A possible explanation may be the prevailing focus of foresters on economic forests in rural areas serving wood production. On the other hand, in Slovenia there was continuous discussion and work of foresters in the city of Celje on Celje urban forest and how to include the public [162].

In the future we expect more discussion among researchers and professionals about positioning of urban forestry as a profession, especially in Croatia, and providing legal regulations in terms of providing definitions and rules of the game. In Croatia, there is no formal definition of what is or should be considered as urban forest. However, definition of urban forestry in the latest Law on Forests [28] implies that these are forest ecosystems of a certain minimum size, which means forests and park-forests regardless of whether these are protected or not. Hence, the definition as such does not include parks, street trees, groups of trees or single trees. Regardless of the definition provided by the law, there is no common understanding among researchers and professionals. Based on the practice
of arboriculture, performed by some foresters and urban foresters, the focus is on trees (tree-based green infrastructure) regardless of where they are.

We would also encourage in both countries studies focusing on urban areas outside capitals. Regarding the specific themes, review showed only limited focus on some ecosystem services. We encourage expanding the focus on ecosystem services other than recreation, water regulation or purification. Expanding the current knowledge base on urban tree inventories in both countries would serve as a basis for more effective management, especially in the context of providing a response to climate change, pests or diseases, and other issues. Cross-sectoral and interdisciplinary studies, as well as studies performed across different types of urban forests and green space, focusing on multiple sites and dealing with various types of stakeholders or age groups should be encouraged in the future.

Regardless of the limitations we previously mentioned, our review showed benefits of including publications in languages other than English, as well as benefits of reaching beyond research papers. The review contributed to better understanding of the status and development of urban forest and green space research and practice, especially of urban forestry, in post-socialist countries, a rarely discussed topic so far.

Supplementary Materials: The following are available online at http://www.mdpi.com/1999-4907/11/2/136/s1, Table S1: Overview of some review papers addressing urban forests and green space with regard to databases used, timeline, language, key words and included number of publications in Croatia and Slovenia; Table S2: Journals and number of publications published by Croatian and Slovenian authors including information whether the journal is indexed in Scopus or WoS; Database S1: List of publications in Croatia and Slovenia included in the analysis.

Author Contributions: Conceptualization, S.K.O. and A.J.; methodology, S.K.O.; data collection for Croatia S.K.O. and D.V.; data collection for Slovenia, A.J., Š.P. and U.V.; data analysis for Croatia, S.K.O.; data analysis for Slovenia A.J., Š.P. and U.V.; writing—original draft preparation, S.K.O., D.V., A.J., Š.P. and U.V.; visualization, S.K.O. and D.V. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Ministry of Science and Education of the Republic of Croatia and Slovenian Research Agency, grant number No. P4-0107 through the project “Research on social aspects of urban forestry in Croatia and Slovenia”.

Acknowledgments: The authors would like to thank Martina Kičič, mag. ing. silv. for her help with Figure 5 and three anonymous reviewers for their valuable comments.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. Krajter Ostojić, S.; Salbitano, F.; Borelli, S.; Verlič, A. Urban forest research in the Mediterranean: A systematic review. Urban For. Urban Green. 2018, 31, 185–196. [CrossRef]
2. Research Trends; van Weijen, D. The Language of (Future) Scientific Communication. Research Trends. 2012, Volume 31. Available online: https://www.researchtrends.com/issue-31-november-2012/the-language-of-future-scientific-communication/ (accessed on 19 November 2019).
3. EC. Green Infrastructure (GI)—Enhancing Europe’s Natural Capital. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Available online: https://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructures/1_EN_ACT_part1_v5.pdf (accessed on 17 November 2019).
4. Iojă, C.I.; Rozylowicz, L.; Pătroescu, M.; Niţă, M.R.; Vâna, G.O. Dog walkers’ vs. other park visitors’ perceptions: The importance of planning sustainable urban parks in Bucharest, Romania. Landsc. Urban Plan. 2011, 103, 74–82.
5. Gudurić, I.; Tomićević, J.; Konijnedijk, C.C. A comparative perspective of urban forestry in Belgrade, Serbia and Freiburg, Germany. Urban For. Urban Green. 2011, 10, 335–342. [CrossRef]
6. Kronenberg, J. Why not to green a city? Institutional barriers to preserving urban ecosystem services. Ecosyst. Serv. 2015, 12, 218–227. [CrossRef]
7. Verlic, A.; Arnberger, A.; Japelj, A.; Simoncic, P.; Pirnat, J. Perceptions of recreational trail impacts on an urban forest walk: A controlled field experiment. Urban For. Urban Green. 2015, 14, 89–98. [CrossRef]

8. Krajter Ostovic, S.; Konijnendijk van den Bosch, C.C.; Vuletic, D.; Stevanov, M.; Zivojinovic, I.; Mutabdzija-Becirovic, S.; Lazarevic, J.; Stojanova, B.; Blagojevic, D.; Stojanoska, M. Citizens’ perception of and satisfaction with urban forests and green space: Results from selected Southeast European cities. Urban For. Urban Green. 2017, 23, 93–103. [CrossRef]

9. Pietrzyk-Kaszyńska, A.; Czepkiewicz, M.; Kronenberg, J. Eliciting non-monetary values of formal and informal urban green spaces using public participation GIS. Landsc. Urban Plan. 2017, 160, 85–95. [CrossRef]

10. Haase, D.; Dushkova, D.; Haase, A.; Kronenberg, J. Green infra structure in post-socialist cities: Evidence and experiences from Eastern Germany, Poland and Russia. In Post-Socialist Urban Infrastructures; Routledge: Abingdon upon Thames, UK, 2019; pp. 105–124.

11. Konijnendijk, C.C. A decade of urban forestry in Europe. For. Policy Econ. 2003, 5, 173–186. [CrossRef]

12. Randrup, T.B.; Konijnendijk, C.; Dobbertin, M.K.; Prüller, R. The concept of urban forestry in Europe. In Urban Forests and Trees; Konijnendijk, C., Nilsson, K., Randrup, T.B., Schipperijn, J., Eds.; Springer: Berlin/Heidelberg, Germany, 2005; pp. 9–21.

13. Konijnendijk, C.C.; Ricard, R.M.; Kenney, A.; Randrup, T.B. Defining urban forestry—A comparative perspective of North America and Europe. Urban For. Urban Green. 2006, 4, 83–103. [CrossRef]

14. Krajter Ostovic, S.; Konijnendijk van den Bosch, C.C. Exploring global scientific discourses on urban forestry. Urban For. Urban Green. 2015, 14, 129–138. [CrossRef]

15. Ministarstvo Poljoprivrede. Šumskogospodarska osnova 2016–2025. (General Forest Management Plan of the Republic of Croatia 2016-2025). Available online: https://poljoprivreda.gov.hr/istaknute-teme/sume-112/sumarstvo/sumskogospodarska-osnova-2016-2025/250 (accessed on 16 January 2019).

16. Anic, I.; Meštrović, Š.; Matić, S. Značajni događaji iz povijesti šumarstva u Hrvatskoj. Šumar. List 2012, 136, 169–176.

17. Borzan, Ž. Prilog diskusiji o urbanom šumarstvu i vrednovanju općekorisnih funkcija šume (A Contribution to the Discussion on Urban Forestry and Evaluation of the General Forest Benefits). Glas. Za Šumske Pkuse Spec. Issue 1993, 4, 7–16.

18. Krajter Ostovic, S.; Posavec, S.; Vuletic, D.; Stevanov, M. Pregled literature o vrednovanju koristi od urbanih šuma. Jastrebarsko. Rad. Hrv. Šum. Inst. 2013, 45, 161–172.

19. Krajter Ostovic, S. Analysis of Current Urban Forest Governance in the City of Zagreb. Ph.D. Thesis, University of Zagreb, Zagreb, Croatia, 2013.

20. Gallo, C. Urbano šumarstvo Uprave šuma podružnica Buzet—Pregled aktivnosti (Urban Forestry in Forest Branch Office Buzet—Overview of Activities). In Urban Forestry in Croatia—Development and Future Perspectives, Presented at the First Professional Conference on Urban Forestry, Osiiek, Croatia, 15 November 2019; Tikvic, I., Ed.; University of Zagreb, Faculty of Forestry: Zagreb, Croatia, 2019; pp. 94–98.

21. Agencija za zaštitu okoliša. Strategy of Spatial Planning (1997). Available online: http://dokumenti.azo.hr/Dokumenti/Strategija_prostornog_uredenja_RH_%2797.pdf (accessed on 19 November 2019).

22. Ministarstvo prostornog uređenja. Program RH (1999). Available online: https://poljoprivreda.gov.hr/istaknute-teme/sume-112/sumarstvo/sumskogospodarska-osnova-2016-2025/250 (accessed on 16 January 2019).

23. Narodne Novine. Croatian Forest Policy and Strategy (OG 120/2003). Available online: https://narodne-novine.nn.hr/clanci/sluzbeni/2003_07_120_1663.html (accessed on 12 November 2019).

24. Krpan, A.P.B. Faculty of Forestry, University of Zagreb and Department of Forest Engineering in the Bologna Process. Croat. J. For. Eng. 2007, 28, 123–136.

25. Škvorc, Ž. Predgradski i diplomski studij Urbano šumarstvo, zaštita prirode i okoliša. (Bachelor and Diploma studies programme Urban forestry, nature and environmental protection at the Faculty of Forestry, University of Zagreb). In Urban Forestry in Croatia—Development and Future Perspectives, Presented at the First Professional Conference on Urban Forestry, Osiiek, Croatia, 15 November 2019; Tikvic, I., Ed.; University of Zagreb, Faculty of Forestry: Zagreb, Croatia, 2019; pp. 17–21.

26. Hrvatska komora inženjera šumarstva i drvene tehnologije. Statut. 2006. Available online: http://www.hksi PDT.hr/index.php?option=com_content&view=article&id=216&Itemid=56 (accessed on 16 November 2019).
27. Narodne Novine. Pravilnik o vrsti šumarskih radova, minimalnim uvjetima za njihovo izvođenje te radovima koje šumoposjednici mogu izvoditi samostalno (Rulebook on Types of Forestry Works, Minimal Requirements for Those Works and Works that Private Forest Owners Can Perform by Themselves). Available online: https://narodne-novine.nn.hr/clanci/sluzbeni/2015_02_16_302.html (accessed on 16 November 2019).
28. Zakon.hr. Zakon o šumama. Available online: https://zakon.hr/z/294/Zakon-%C5%A1umama (accessed on 16 November 2019).
29. Pereković, P.; Kamenečki, M. A Historical Overview of Landscape Architecture Profession in Croatia from 1900 to 1945. Agric. Conspec. Sci. 2019, 84, 127–134.
30. Božičević, J.; Nikšić, M.; Mlinarić, T.J.; Missoni, E. (Eds.) Zelenilo grada Zagreba. In Proceedings of the Conference: Zbornik Radova—Zelenilo Grada Zagreba, Zagreb, Croatia, 5–6 June 2013; Croatian Academy of Sciences and Arts: Zagreb, Croatia, 2013; pp. 1–409.
49. Cvejić, R.; Elner, K.; Pintar, M.; Železnikar, Š.; Haase, D.; Kabisch, N.; Strohbach, M. A Typology of Urban Green Spaces, Ecosystem Provisioning Services and Demands. A Project Report. 2015. Available online: https://greensurge.eu/working-packages/wp3/files/D3.1_Typology_of_urban_green_spaces_1_.pdf (accessed on 22 July 2019).

50. Knežević, S. Za obnovu zagrebačke Zelene potkove. Rad. Insituta Za Povij. Umjet. 1996, 20, 167–177.

51. Arbutina, D. Razvoj kaptolskog vrta Ribnjaka u Zagrebu i planovi za uređenje perivoja. Prostor 1996, 4, 253–270.

52. Barišić Marenić, Z. Urbanističko-arhitektonsko-hortikulturno oblikovanje, Trg kralja Petra Krešimira IV, Zagreb. In Moderna arhitektura u Hrvatskoj 1930-ih = Modern Architecture in Croatia 1930’s; Radovič Mahečić, D., Ed.; Školska knjiga, Institut za povijest umjetnosti: Zagreb, Croatia, 2007; pp. 285–292.

53. Vahtar-Jurković, K. Opatijski gradski perivoji; Rijeka i Arhitektonski fakultet, Sveučilišta u Zagrebu: Zagreb, Croatia, 2010; pp. 1–211. (In Glosa)

54. Šćitaroci, M.; Šćitaroci, B. Dvorci i perivoji u Slaveniji - od Zagreba do Iloša; Šćitaroci d.o.o.: Zagreb, Croatia, 1998; pp. 1–448.

55. Obad Šćitaroci, M. Dvorci i perivoji Hrvatskoga zagorja; Školska knjiga d.d.: Zagreb, Croatia, 1991; pp. 1–364.

56. Vahtar-Jurković, K. Gradski perivoji i perivojni trgovi Opatije: Nastanak, razvoj, obilježja, europski utjecaji i vrijednovanje. Ph.D. Thesis, University of Zagreb, Zagreb, Croatia, 2007.

57. Stojan, M. Krajobrazno uređenje: Infrastrukturna gradnja Branimirova ulica od Avenije Marina Držića do Heinzelova ulice—I etapa realizacije. Agron. Glas. 2004, 66, 47–60.

58. Stojan, M. Krajobraznost i perivoj: Ugrađivanje i razvoj parka na reservoiru Longin Menčin; Školska knjiga d.d.: Zagreb, Croatia, 1992; pp. 1–216.

59. ICOMOS. 2019. Available online: https://www.icomos.org/en/newsletters-archives/179-articles-en-francais/ressources/charters-and-standards/158-the-florence-charter (accessed on 28 December 2019).

60. Šišić, B. Dubrovački renesansni vrt: Nastajanje i oblikovna obilježja; HAZU, Zavod za povijesne znanosti u Dubrovniku: Dubrovnik, Croatia, 1992; pp. 1–171.

61. Koščak, V. Prostorni potencijali za uspostavu zelenog sustava grada—primjer Zagreba. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2000.

62. Marot, M.; Golobić, M.; Müller, B. Green infrastructure in Central, Eastern and South Eastern Europe: A universal solution to current environmental and spatial challenges? Urban. Izzivi 2015, 26, S38–S49. [CrossRef]

63. Hrdalo, I.; Tomić, D.; Pereković, P. Implementation of green infrastructure principles in Dubrovnik, Croatia to minimize climate change problems. Urban. Izzivi 2016, 153, 129–139. [CrossRef]

64. Pirnat, J.; Hladnik, D. The concept of landscape structure, forest continuum and connectivity as a support in urban forest management and landscape planning. Forests 2018, 9, 584. [CrossRef]

65. Marot, M.; Golobić, M.; Müller, B. Green infrastructure in Central, Eastern and South Eastern Europe: A universal solution to current environmental and spatial challenges? Urban. Izzivi 2015, 26, S1–S12. [CrossRef]

66. Jurković, M.; Jurković-Bevilacqua, B. Prilog introdukciji in aklimatizaciji drvenastih egzota—listače—u zagrebačkim parkovima. Šumar. List 1997, 121, 269–276.

67. Vuković, N.; Bernardić, A.; Nikolić, T.; Hršak, V.; Plazibat, M.; Jelaska, S.D. Analysis and distributional patterns of the invasive flora in a protected mountain area—A case study of Medvednica Nature Park (Croatia). Acta Soc. Bot. Pol. 2010, 79, 285–294. [CrossRef]

68. Ožura, M.; Šag, M. Drvenaste invazivne vrste gradskih područja u Karlovcu. Zb. Rad. Medimur. Veleuč. u Čakovcu 2018, 9, 59–64.

69. Budisavljević, A.; Terlević, A.; Mihelić, P.; Špadić, B.; Papković, D.; Nikolić, T.; Šegota, V. Vaskularna flora šume Dotršćina (Zagreb, Hrvatska). Glas. Hrvat. Bot. Druš. 2017, 5, 4–19.

70. Bilić, K.; Prlić, D.; Nikolij, T. Inventarizacija in kartiranje vaskularne flore in staništa park-šume Adica (Vukovar, Hrvatska). Glas. Hrvat. Bot. Druš. 2015, 3, 4–17.

71. Alegro, A.; Bogdanović, S.; Rašetnik, I.; Boršić, I.; Cigić, P.; Nikolij, T. Flora poluprirodne močvare Savica, suburbanog dijela grada Zagreba (Hrvatska). Nat. Croat. 2013, 22, 111–134.
Forests 2020, 11, 136

74. Vuković, N.; Boršić, I.; Alegro, A.; Nikolić, T. Vaskularna flora Jaruna (Zagreb, Croatia). Vaskularna flora Jaruna (Zagreb, Croatia). Nat. Croat. Period. Mus. Hist. Nat. Croat. 2013, 22, 275–294.

75. Vlahović, I.; Karlović, K. Otrovné a alergene biljne vrste v školskim vrtovima grada Samobora. Agron. Glas. 2013, 75, 107–116.

76. Nežmah, M.; Ljubičič, I. Vaskularna flora uz donji tok otoka Bliznec (Sjeverozapadna Hrvatska). Agron. Glas. 2012, 74, 275–294.

77. Židovec, V.; Pirić, T.; Skenderović Babojelić, M.; Dujmović Purgar, D. Vrtovi odgojno-obrazovnih institucija na području gradske četvrti Sesvete. Agron. Glas. 2018, 80, 313–334. [CrossRef]

78. Jelaska, S. Preliminary Analyses Results of Forest Plant Diversity and Distribution on Mt. Medvednica, Zagreb. In Proceedings of the International Multidisciplinary Scientific GeoConference, Vienna, Austria, 27–29 November 2017; SGEM: Sofia, Bulgaria, 2017; Volume 17, pp. 569–576.

79. Železnikar, Š. Ekosistemske storitve in biotska pestrost na izbranih primerih zelene infrastrukture v Ljubljani. Acta Agric. Slov. 2019, 2017, 191–206. [CrossRef]

80. Gašparović, M.; Medak, D.; Miller, M. Geospatial monitoring of green infrastructure—Case study Zagreb, Croatia. In Proceedings of the International Multidisciplinary Scientific GeoConference, Vienna, Austria, 27–29 November 2017; SGEM: Sofia, Bulgaria, 2017; Volume 17, pp. 569–576.

81. Seletković, A.; Kičič, M.; Berta, A.; Pernar, R.; Ančič, M.; Količ, J.; Balenović, I. Usporedba lidarskih in terenskih podataka pri izmjeri visine stabala v urbanim područjima. New For. Mech. J. Theor. Appl. For. Eng. 2017, 38, 43–56.

82. Valožič, L.; Cvitanović, M. Kartiranje promjene šumskog pokrova: Analiza prostorne promjene šumskog pokrova u Parku prirode Medvednica pomoću Landsatovih snimaka. Hrvat. Geogr. Glas. 2011, 73, 245–255. [CrossRef]

83. Opačić, V.; Gašparović, S.; Dolenc, N. Analiza rekreacijske funkcije odabranih zelenih površina v gradu Zagrebu—razlike v navikah posjetitelja. Geoadria 2019, 24, 23–51.

84. Dobrović, I.; Nikolić, T.; Jelaska, S.D.; Plazibat, M.; Hršak, V.; Šoštarić, R. An evaluation of floristic diversity of Robinia pseudoacacia L. in Medvednica Nature Park (northwestern Croatia). Plan Biosyst. 2006, 140, 234–244. [CrossRef]

85. Železnikar, Š. Ekosistemske storitve in biotska pestrost na izbranih primerih zelene infrastrukture v Ljubljani. Acta Agric. Slov. 2019, 2017, 191–206. [CrossRef]

86. Petričoli, M.; Šolić, T.; Šimat, N.; Jelaska, S.D.; Plazibat, M.; Hršak, V.; Šoštarić, R. An evaluation of floristic diversity of Robinia pseudoacacia L. in Medvednica Nature Park (northwestern Croatia). In Proceedings of the International Multidisciplinary Scientific GeoConference, Vienna, Austria, 27–29 November 2017; SGEM: Sofia, Bulgaria, 2017; Volume 17, pp. 569–576.

87. Dobrović, I.; Nikolić, T.; Jelaska, S.D.; Plazibat, M.; Hršak, V.; Šoštarić, R. An evaluation of floristic diversity in Medvednica Nature Park (northwestern Croatia). Plan Biosyst. 2006, 140, 234–244. [CrossRef]

88. Novak, G.; Medak, D.; Mihelić, S. Geospatial monitoring of green infrastructure—Case study Zagreb, Croatia. In Proceedings of the International Multidisciplinary Scientific GeoConference, Vienna, Austria, 27–29 November 2017; SGEM: Sofia, Bulgaria, 2017; Volume 17, pp. 569–576.

89. Dolejší, N. Urbano drevje mestne občine Velenje—analiza stanja in smernice upravljanja. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2013.

90. Pirnat, J.; Hladnik, D. A tale of two cities—from separation to common green connectivity for maintaining of biodiversity and well-being. Land Use Policy 2019, 84, 252–259. [CrossRef]

91. Železnikar, Š. Ekosistemske storitve in biotska pestrost na izbranih primerih zelene infrastrukture v Ljubljani. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2015.

92. Pirnat, J.; Hladnik, D. A tale of two cities—from separation to common green connectivity for maintaining of biodiversity and well-being. Land Use Policy 2019, 84, 252–259. [CrossRef]

93. Verlic, A.; Durić; Kokalj, Ž.; Marsetić, A.; Simončič, P.; Oštir, K. Tree species classification using Worldview-2 satellite images and laser scanning data in a natural urban forest. Šumar. List 2014, 138, 477–488.

94. Jordán, G.; Halls, P., Ed.; Taylor & Francis: London, UK, 2001; pp. 183–197.

95. Železnikar, Š.; Eler, K.; Pintar, M. City hotspot: Linkages between ecosystem services and biodiversity of urban green areas. Acta Agric. Slov. 2017, 109, 113–123.

96. Pereković, P.; Ančič, B. Kompleksnost kao nosilac preferencija i indikator posjećenosti parkova. Agron. Glas. 2017, 79, 205–232. [CrossRef]

97. Valožič, L.; Cvitanović, M. Kartiranje promjene šumskog pokrova: Analiza prostorne promjene šumskog pokrova u Parku prirode Medvednica pomoću Landsatovih snimaka. Hrvat. Geogr. Glas. 2011, 73, 245–255. [CrossRef]
100. Caput-Jogunica, R.; Martinis, L. Percepcija ukrasnog bilja studenata agronomije u rekreacijskom centru Jarun u Zagrebu. Agronomski glasnik. *Glas. Hrvat. Bot. Druš.* **2019**, *81*, 81–102.

101. Privora, V.; Grašo, K.; Caput Jogunica, R.; Han Dovedan, I. Perception on Urban Greenery of Children Attending Tennis Schools in Zagreb. *Agric. Conspec. Sci.* **2012**, *77*, 77–96.

102. Sever, I.; Verbič, M. Providing information to respondents in complex choice studies: A survey on recreational trail preferences in an urban nature park. *Landsc. Urban Plan.* **2018**, *169*, 160–177. [CrossRef]

103. Sever, I.; Verbič, M.; Marušič, Z. Measuring trail users’ perception of crowding in a peri-urban nature park: A best-worst scaling experiment. *Urban For. Urban Green.* **2018**, *35*, 202–210. [CrossRef]

104. Babić, N. Zelene Površine v mestu: Primer mesta Nova Gorica. Master’s Thesis, New University, Nova Gorica, Slovenia, 2014.

105. Osanič, A.; Pirnat, J. Ovrednotenje rekreacijske funkcije v urbanem gozdu na primeru ljubljanskega Golovca. Evaluation of the recreational function in urban forest—Case study Golovec (Ljubljana). *Gozd. Vestn.* **2003**, *61*, 171–182.

106. Poprženovič, A.; Pezdevšek Malovrh, Š.; Dorbič, B.; Delič, E. Stavovi o društvenoj funkciji in opčem stanju zelenila u Bihaću (Bosna i Hercegovina). *Glas. Future* **2019**, *2*, 1–14. [CrossRef]

107. Smrekar, A.; Šmid Hribar, M.Š.; Erhartič, B. Stakeholder conflicts in the Tivoli, Rožnik hill, and Šiška hill protected landscape area. *Acta Geogr. Slov.* **2016**, *56*, 306–319. [CrossRef]

108. Žižek, L.; Pirnat, J. Odnos javnosti do gozdov v mestih na primerih Rožnika in Golovca v Ljubljani. *Gozd. Vestn.* **2011**, *69*, 115–118.

109. Grafenauer, B. Zelene površine v Mariborju: Etnološki vidik. Ph.D. Thesis, University of Ljubljana, Ljubljana, Slovenia, 2008.

110. Japelj, A.; Mavsar, R.; Hodges, D.; Kovač, M.; Juščič, L. Latent preferences of residents regarding an urban forest recreation setting in Ljubljana, Slovenia. *For. Policy Econ.* **2016**, *71*, 71–79. [CrossRef]

111. Japelj, A.; Mavsar, R.; Hodges, D.; Kovač, M.; Juščič, L. Using a latent class model to segment citizens of Ljubljana (Slovenia) according to their preferences over the recreation setting in the Golovec urban forest. *Austrian J. For. Sci.* **2017**, *134*, 41–62.

112. Goličnik, B. Social behaviour as a basis for design and development of green infrastructure. *Urban. Izzivi* **2015**, *26*, S147–S149. [CrossRef]

113. Pernek, M.; Lackovič, N.; Lukić, I.; Zorić, N.; Matošević, D. Outbreak of Orthotomicus erosus (Coleoptera, Curculionidae) on Aleppo Pine in the Mediterranean Region in Croatia. *South-East Eur. For.* **2019**, *10*, 19–27. [CrossRef]

114. Landeka, N.; Podnar, M. Nalaz strane vrste Cinara (Cinara) cedri (Hemiptera; Aphididae) u Istri, Hrvatska. *Šumar. List* **2017**, *5–6*, 271–276. [CrossRef]

115. Paulič, V. Prosudba opasnih stabala korištenjem vizualnih metoda i arborikulturnih instrumenata. Ph.D. Thesis, University of Zagreb, Faculty of Forestry, Zagreb, Croatia, 2015.

116. Zagoranski, F.; Fernar, R.; Seletkovič, A.; Antičič, M.; Kolić, J. Monitoring the health status of trees in Maksimir forest park using remote sensing methods. *South-East Eur. For.* **2018**, *9*, 81–87. [CrossRef]

117. Tomić, Z.; Diminč, D.; Cech, T.; Hravšovec, B.; Krehan, H.; Pernek, M.; Perney, B. *Bolesti i štetnici urbanog drveća*; Forest Research Institute, Jastrebarsko, Faculty of Forestry, University of Zagreb: Zagreb, Croatia, 2008; pp. 1–384.

118. Nagode, I. Patogene glive na izbranih drevesnih vrstah v dendrološkem vrtu Oddelka za gozdarstvo in obnovljive gozdne vire. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2008.

119. Jurč, M. Nekatere škodljive domače in tujerodne žuželke v gozdovih na območju Ljubljane. *Gozd. Vestn.* **2010**, *68*, 321–329.

120. Marion, L. Sezonska aktivnost kambija in njegov odziv na mehanske poškodbe pri mestnem drevju. Ph.D. Thesis, University of Zagreb, Faculty of Forestry, Zagreb, Croatia, 2007.
124. Sæbo, A.; Borzan, Ž.; Ducatillion, C.; Hatzistathis, A.; Lagerström, T.; Supuka, J.; García-Valdecantos, J.L.; Rego, P.; Van Slycken, J. The selection of plant materials for street trees, park trees and urban woodland. In Urban Forests and Trees; Konijnendijk, C.C., Nilsson, K., Randrup, T.B., Schipperijn, J., Eds.; Springer: Berlin/Heidelberg, Germany, 2005; pp. 257–280.

125. Bakšić, D.; Pernar, N.; Perković, I.; Vrbek, B.; Roje, V. Raspodjela zemnoalkalijskih i alkalijskih kovina (Ca, Mg, K, Na) u šumskom tlu Parka prirode Medvednica. Šumar. List 2015, 139, 7–19.

126. Ostrogović, M.Z.; Sever, K.; Anić, I. Utjecaj svjetla na prirodno pomlađivanje hrasta lužnjaka (Quercus robur L.) u park-šumi Maksimir u Zagrebu. Šumar. List 2010, 3–4, 115–123.

127. Kermavnar, J. Sestojne padavine v izbranih urbanih gozdovih Ljubljane. Master's Thesis, University of Ljubljana, Ljubljana, Slovenia, 2015.

128. Kermavnar, J.; Vilhar, U. Canopy precipitation interception in urban forests in relation to stand structure. Urban Ecosyst. 2017, 20, 1373–1387. [CrossRef]

129. Ribnikar, M. Uporaba modela Brook90 za ugotavljanje vodne bilance urbanih gozdov. Master's Thesis, University of Ljubljana, Ljubljana, Slovenia, 2018.

130. Zabret, K.; Šraj, M. Can urban trees reduce the impact of climate change on storm runoff? Urban. Izzivi 2015, 26, S165–S178. [CrossRef]

131. Zabret, K.; Rakovec, J.; Šraj, M. Influence of meteorological variables on rainfall partitioning for deciduous and coniferous tree species in urban area. J. Hydrol. 2018, 558, 29–41. [CrossRef]

132. Zabret, K.; Šraj, M. Rainfall interception by urban trees and their impact on potential surface runoff. CLEAN Soil Air Water 2019, 47, 1800327. [CrossRef]

133. Šraj, M.; Lah, A.; Brilly, M. Meritve in analiza prestreženih padavin navadne breze (Betula pendula Roth.) in rdečega bora (Pinus sylvestris L.) v urbanem okolju. Gozd. Vestn. 2008, 68, 310–320.

134. Vilhar, U.; Planinšek, Š.; Ferreira, A. Vpliv gozdov na kakovost virov pitne vode mestne občine Ljubljana. Gozd. Vestn. 2010, 68, 310–320.

135. Štajdohar, M.; Brilly, M.; Šraj, M. Vpliv sonaravnih ukrepov na hidrogram odtoka z urbaniziranega prispevnega območja. Acta Hydrotech. 2016, 29, 145–162.

136. Nastran, M.; Kobal, M.; Eler, K. Urban heat islands in relation to green land use in European cities. Urban For. Urban Green. 2019, 37, 33–41. [CrossRef]

137. Šimpraga, S. Zagreb, javni prostor; Porfirogenet: Zagreb, Croatia, 2011; pp. 1–512.

138. Bertović, S.; Kiš, D. (Eds.) Spomenica Zrinjevac: Priroda, vrtovi, perivoji i uresno rastlinstvo u Zagrebu; Zrinjevac d.o.o.: Zagreb, Croatia, 1994; pp. 1–263.

139. Meštrović, Š.; Matić, S.; Tustonjić, A.; Pavelić, J. Šume Medvednice jučer-danas-sutra. Šumar. List 1998, 122, 315–328.

140. Turalija, A. Drvoredi u Osijeku (povijestni pregled, održavanje, podizanje i nestajanje). Agron. Glas. 2004, 66, 143–160.

141. Šiftar, A.; Maljevac, T.; Simoneti, M.; Bavcon, J. Mestno drevje; University of Ljubljana, Botanical garden, Department of Biology, Biotechnical Faculty: Ljubljana, Slovenia, 2011; pp. 1–207.

142. Janež, M.; Kozorog, E.; Oblak, D. Urejanje in Upravljanje Mestnih in Primetnih Zelenih Površin: Zbornik Posveta, Tolmin; Urejanje in upravljanje mestnih in primetnih zelenih površin: Tolmin, Slovenija; Zavod za gozdove Slovenije, Območna enota Tolmin: Tolmin, Slovenija, 1995; pp. 1–20.
149. Čibej, L. Pomen urbanih gozdov za razvoj mesta Ajdovščina. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2006.

150. Miklavčič, V. Upravljanje z divjadjo v mestni občini Ljubljana. *Geod. Vestn.* 2010, 68, 282–291.

151. Beljan, K.; Posavec, S.; Jerčič, K. Economic Valuation of Urban Trees: Ribnjak Park Case Study. *Zagreb. South-East Eur. For.* 2015, 6, 119–127. [CrossRef]

152. Lovrič, M.; Pettenella, D. The Value of Urban Forests in Residential Land Use; LAP LAMBERT Academic Publishing: Saarbrucken, Germany, 2010; pp. 1–76.

153. Tikvič, I.; Ugarkovič, D.; Peleš, I.; Knežič, I.; Medunič-Orlič, G.; Marinč, S.; Butorac, L.; Čmrlec, A.; Koharevič, R.; Nazlič, M.; et al. Procjene usluga šumskih ekosustava i općekorisnih funkcija šuma park šume Marjan u Splitu. *Šumar. List* 2017, 141, 277–284.

154. Dolenc, N. Ekonomski aspekti upravljanja zaščitenim gradskim površinama. Ph.D. Thesis, University of Rijeka, Opatija, Croatia, 2017.

155. Čaldarovič, O.; Šarinič, J. Socijalna važnost prirode u urbanom kontekstu. *Druš. Istraž.* 2010, 19, 733–747.

156. Cerovič, L.; Dukič, N.; Jakovič, E. Public good and free riders: A case study on the example of parks for children in the City of Rijeka. In *The Function of Management in Increasing Tourism Consumption, Proceedings of the 8th International Scientific Conference, 3 May 2012, Opatija*; Radišić, F., Ed.; The Function of Management in Increasing Tourism Consumption, Faculty of Tourism and Hospitality Management: Opatija, Croatia, 2012; pp. 99–108.

157. Vahtar-Jurkovič, K.; Šišić, S. The Procedure of Putting a Park under Protection Using the Sv. Jakov Park in Opatija as an Example. *Agric. Conspec. Sci.* 2011, 76, 101–107.

158. Simson, A.; Krajter Ostojić, S. Landscape Urbanism and the Building of Sustainable Futures. In *Building Sustainable Future: Design and the Built Environment*; Dastbaz, M., Strange, I., Selkowitz, S., Eds.; Springer: Berlin/Heidelberg, Germany, 2017; pp. 247–270.

159. Gulsrud, N.M.; Krajter Ostojić, S.; Fehnle, M.; Marie, B.; Paloniemi, R.; Pearlmutter, D.; Simson, A.J. Challenges to governing urban green infrastructure in Europe—The case of the European Green Capital award. In *The Urban Forest—Cultivating Green Infrastructure for People and the Environment*; Pearlmutter, D., Calfapietra, C., Samson, R., O’Brien, L., Krajter Ostojić, S., Sanesi, G., Alonso del Amo, R., Eds.; Springer: Cham, Switzerland, 2017; pp. 235–258.

160. Hostnik, R. *Zeleni pas Celja: Strokovne osnove za razglasitev gozdov s posebnim namenom*; Zavod za gozdove Slovenije: Celje, Slovenia, 1996; pp. 1–51.

161. Hostnik, R. Razglasitev gozdov s posebnim namenom na primeru primestnih gozdov Celja. *Gozd. Vestn.* 1997, 55, 453–459.

162. Hostnik, R. Razvoj mestnih gozdov Celja in sodelovanje z javnostmi. In *Participacija v gozdarskem načrtovanju*; Bončina, A., Ed.; University of Ljubljana, Biotechnical Faculty, Department of Forestry and Renewable Forest Resources: Ljubljana, Slovenia, 2004; pp. 83–93.

163. Mravljičič, I. Informativna točka i poučna staza u park-šumi Trakošćan. *Rad. Zavoda Za Znan. Rad Varažd.* 2015, 26, 107–113.

164. Butorac, M.; Šimleša, D. Zelena srca gradova. Važnost vrtova i perivoja u urbanim područjima. *Druš. Istraž.* 2007, 16, 1081–1101.

165. Katič, B.; Herak-Čustić, M.; Čoga, L.; Karlovič, K.; Petek, M. Utjecaj gnojidbe na rast i razvoj vrste Thuja occidentalis ‘Smaragd’. *Agron. Glas.* 2006, 68, 137–146.

166. Crljenko, I. Relationship between the population age structure and recreational landscape: An example of Dubrava. *Geotra. 2013*, 113, 143–146. [CrossRef]

167. Ordóñez-Barona, C.; Devisscher, T.; Dobbs, C.; Orozco Aguilar, L.; Dias Baptista, M.; Navarro, N.M.; da Silva Filho, F.; Escobedo, F.J. Trends in Urban Forestry Research in Latin America & The Caribbean: A Systematic Literature Review and Synthesis. *Urban For. Urban Green.* 2020, 47, 126544.

168. EUROSTAT. 2019. Available online: [https://ec.europa.eu/eurostat/web/science-technology-innovation/visualisations](https://ec.europa.eu/eurostat/web/science-technology-innovation/visualisations) (accessed on 30 December 2019).

169. Keller, J.K.K.; Konijnendijk, C.C. Short communication: A comparative analysis of municipal urban tree inventories of selected major cities in North America and Europe. *Arboric. Urban For.* 2012, 38, 24–30.

170. Nielsen, A.B.; Östberg, J.; Delshammar, T. Review of Urban Tree Inventory Methods Used to Collect Data at Single-Tree Level. *Arboric. Urban For.* 2014, 40, 96–111.

171. I-Tree. 2019. Available online: [https://www.ittreetools.org](https://www.ittreetools.org) (accessed on 30 December 2019).
172. Östberg, J.; Wiström, B.; Randrup, T.B. The state and use of municipal tree inventories in Swedish municipalities – results from a national survey. Urban Ecosyst. 2018, 21, 467–477.

173. Gulsrud, N.M.; Busse Nielsen, A.; Bastrup-Birk, A.; Stahl Olafsson, A.; Lier, M.; Fischer, C.; Zalkauskas, R.; Hedblom, M.; Sievanen, T.; Nordh, H.; et al. Urban Forests in a European Perspective: What can the National Forest Inventory tell us. In Proceedings of the Workshop for Practitioners and Researchers, Brussels, Belgium, 15 March 2018; Summary of workshop results. Department of Geosciences and Natural Resource Management, University of Copenhagen: Frederiksberg, Denmark, 2018; pp. 1–16.

174. Haaland, C.; Konijnendijk van den Bosch, C. Challenges and strategies for urban green-space planning in cities undergoing densification: A review. Urban For. Urban Green. 2015, 14, 760–771. [CrossRef]

175. Tubby, K.V.; Webber, J.F. Pests and diseases threatening urban trees under a changing climate. For. Int. J. For. Res. 2010, 83, 451–459. [CrossRef]

176. Kabisch, N.; Qureshi, S.; Haase, D. Human–environment interactions in urban green spaces—A systematic review of contemporary issues and prospects for future research. Environ. Impact Assess. Rev. 2015, 50, 25–34. [CrossRef]

177. Council Directive 2000/29/EC of 8 May 2000 on Protective Measures against the Introduction into the Community of Organisms Harmful to Plants or Plant Products and against their Spread within the Community. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02000L0029-20190901 (accessed on 30 December 2019).

178. Regulation (EU) 2016/2031 of the European Parliament of the Council of 26 October 2016 on Protective Measures against Pests of Plants, Amending Regulations (EU) No 228/2013, (EU) No 652/2014 and (EU) No 1143/2014 of the European Parliament and of the Council and Repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC. Available online: https://eurlex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R2031&from=hr (accessed on 30 December 2019).

179. Vranković, A.; Pernar, N.; Martinović, J.; Ricov, Š. Prilog poznavanju ekoloških odnosa u zagrebačkom gradskom raslinstvu. Agron. Glas. 1994, 56, 193–217.

180. Roje, V.; Orešković, M.; Rončević, J.; Bakšić, D.; Pernar, N.; Perković, I. Assessment of the trace element distribution in soils in the parks of the city of Zagreb (Croatia). Environ. Monit. Assess. 2018, 190, 121. [CrossRef] [PubMed]

181. EMoN Fur. 2019. Available online: http://www.emonfur.eu (accessed on 31 December 2019).

182. Vilhar, U.; Pearlmutter, D.; Calfapietra, C.; Samson, R.; O’Brien, L.; Krajet Ostoić, S.; Sanesi, G.; Alonso del Amo, R. (Eds.) Water regulation and purification. In The Urban Forest: Cultivating Green Infrastructure for People and the Environment; Future City; Springer Nature Cop.: Cham, Germany, 2017; pp. 41–47. ISBN 1876-0899.

183. Simičič, A. Vpliv rabe tal na pojavljanje urbanih toplotnih otokov v Sloveniji. Master’s Thesis, University of Ljubljana, Ljubljana, Slovenia, 2018.

© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).