Pocket Park – A New Type of Green Public Space in Kraków (Poland)

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Abstract. Public space, including green areas are particularly important for the quality of life in the city. The influence of greeneries can be considered in regard to natural, social, and economic assets. Such spaces improve the city climate quality, they can create areas of social activity, and above all they serve as a space for leisure and recreation. The same natural environment brings benefits to the city, referred to as ecosystem services, which can be converted into monetary value. Therefore, protection of existing green spaces and their restoration is an important element of sustainable urban development. At the same time in large cities, in which dominates high-density housing development, the issue of ensuring proper availability of green spaces arises. In the recent years in Poland various activities are being undertaken to improve the value of an index showing the surface of public green spaces per one inhabitant of the city. The surface of green public spaces of recreational function in Kraków is 618,48 ha (based on “The direction of the green areas development and management in Kraków for 2017 - 2030” – project, p. 151), which in per capita corresponds to about 8 m². In the last years, the city has been undertaking activities aiming at increasing the availability of public green spaces to the residents. For this purpose, the city initiated the realisation of an idea of creating small green spaces, called pocket parks, based on American and European solutions. The paper presents research on pocket parks as a new form of public green spaces in Kraków. The purpose of the research is to indicate rules regarding the method of development of small parks within selected American and Polish realisations, and to indicate optimal solutions for future implementation. The paper presents general principles of the idea of creating pocket parks. Two Kraków realisations of pocket parks are described: park in Zwierzyniec district, at the junction of Bolesław Prus and Julian Fałat Streets, and “Ogród Motyli” park, located at Dekerta Street in XIII Podgórze district. The above realisations are compared to the selected American pocket parks - Paley Park and John F. Collins Park. The analysis provides similarities and differences between the concept of pocket parks in Kraków and in the United States of America. As a result, the paper presents the benefits of creating small public green spaces in the context of the sustainable development of Kraków and the possibilities of applying solutions following the example of American cities.

1. Introduction
Public space is an inherent element of spatial structure of cities. It provides a link between developed areas and a transit place for people who live, work or just hang out in the city. Generally accessible green areas, which are components of public spaces systems, are of special importance. They may perform numerous functions – recreational, separating or social, among others. They offer a different landscape in the city composed mainly of developed areas with their prevailing concrete and asphalt.
They introduce or preserve the natural element of greenery. Hence, they contribute to improving the climate in the city. In the context of the idea of sustainable urban growth, paying attention to preserving a coherent structure of elements of nature, particularly in large cities, is a fundamental guideline in their growth strategy. The United Nations Summit, which was held from the 25th to 27th September 2015, adopted the 2030 Agenda for Sustainable Development. The Agenda presents 17 Sustainable Development Goals which are to replace the Millennium Goals of year 2000. The concept of sustainable development of cities is discussed *inter alia* in Goal 11: “Make cities and human settlements inclusive, safe, resilient and sustainable.” [1] One of the detailed targets is ensuring access to public spaces, including green areas. The spaces should be accessible to various social groups regardless of age or gender. All efforts should also be undertaken to make them accessible to people with disabilities. The above assumptions may be put to practice among others by creation of new generally accessible green areas in the vicinity of residential districts, workplaces or concentrated services. Small distance from places of permanent residence may facilitate the accessibility of the above-mentioned areas for the elderly, the disabled or parents with children. However, creation of new green areas in cities is not an easy task given the absence of large plots of undeveloped land.

Kraków is the second largest city in Poland with respect to area (327 km²). The current population amounts to 766,739 residents (data provided by GUS [Central Statistical Office] for the 1st half of 2017) [2]. One of the goals of the spatial policy laid out in the document Changes to the Study of Conditions and Directions of Spatial Development for the City of Kraków of 2014 is “Improving the standard of public spaces, which in turn should influence improvement of general living and residence standards. Special attention will be paid to green areas of all kinds enabling public use of space.” [3] At the same time, one of the primary goals related to creation and transformation of natural environment in Kraków is implementation of principles of sustainable development and improving the quality of life in the city. The above provisions of 2014 are consistent with the recommendations of the 2030 Agenda for Sustainable Development. A new administrative unit of the Kraków Municipality was established in 2015, under the name of Zarząd Zieleni Miejskiej (ZZM) [Municipal Green Areas Management Board]. The unit is responsible for protection and maintenance of green areas in Kraków, including creation of new areas of greenery. One of the ZZM initiatives has been creation of the so-called pocket parks in Kraków, i.e. small green areas accessible and attractive for local communities. Two such pocket parks have been created in the city so far: one in district VII Zwierzyniec and the other in district XIII Podgórze. 18 new pocket parks are to be established in 2018, within the project called Gardens of Kraków Residents implemented by ZZM in Kraków.

### 2. The concept of pocket park

The concept of pocket park (also called vest-pocket or minipark) emerged from the need to improve the quality of urban life in the aspect of accessibility of public spaces, including green areas. It is related mainly to big cities, where the problem of insufficient green areas or recreational spaces that would serve local communities, is most acutely felt, particularly in city centres. Due to dense development in such cities, it is difficult to find an undeveloped plot of land that could become a new public space. The problem was recognized in the United States of North America in the 50s and 60s of the 20th century. The Internet website of The Rev. Linnette C. Williamson Memorial Park Association\(^1\) contains information on the urban unrest in the USA in the early 1960s, which led officials of different administration levels to focus attention on living conditions in America's inner cities. Congressman John Lindsay’s mayoral campaign in early 1965 was symptomatic of this new interest, and it was during this campaign that his associate Thomas P. F. Hoving called for the creation of open-space and green areas as small as one building lot [5]. It is worth noting that the idea of creating small parks in New York was particularly popularized and promoted by the Park Association of New York led by Whitney North Seymour in years 1964 – 1965 [6].

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\(^1\) The Rev. Linnette C. Williamson Memorial Park Association was founded in 1994 in New York. Its aim is „to improve the quality of life for children, families and all residents in Central Harlem.” [4].
The Internet website of the American Planning Association features information from the archival report by the Planning Advisory Service (Information Report no. 229) of December 1967 on the history of the emergence of pocket parks in the USA [7]. It may be read in the report that the concept of small parks – pocket parks – was first born in Europe immediately after the 2nd World War. The process of rebuilding cities ruined during the war included designing small parks as recreational spaces at sites which were laid waste by earlier bombings. The concept of creating parks on small undeveloped lots was brought to the USA as a result of inspiration by the European experience. The pocket park concept was promoted by landscape architect Professor Karl Linn, with his famous idea of the so-called “neighbourhood commons.” A project was initiated in the middle of the 20th century to establish a network of pocket parks in four American cities: New York, Baltimore, Philadelphia and Washington. It must be stressed that the idea of pocket parks in New York was not initially met with enthusiastic reception. One of its opponents was Robert Moses, who had been the New York City Parks Commissioner since the 30s of the 20th century. He was of the opinion that the area of a park may not be smaller than 3 acres (approx. 1.2 ha). However, when senator John Lindsay became mayor of New York in the 60s of the 20th century, the activities aimed at realisation of the pocket park concept gained momentum [6].

The idea of classifying green areas in relation to their size and thus creating a system of green areas of different sizes in the city existed in the USA already in the early 20th century [8]. The APA report of 1965 (Report No. 194) presents the concept of American landscape architect Charles Downing Lay, who, in 1914, suggested a system of recreational areas for a city of 100,000 people. He classified the types of parks according to their size and listed several forms, such as: reservations, large city parks, neighbourhood parks, playgrounds and, finally, gardens and squares, for which he determined recommended sizes [8]. As may be read in the Report of 1967, pocket parks were smaller than parks or playgrounds defined as spaces of the area amounting to 4,000 – 12,000 m² (1 – 3 acres). Their small area resulted from land conditions (availability of an undeveloped plot). It was not, however, determined by the guidelines related to the principles of municipal park creation [7].

At present in the USA, we may find classifications of green areas in cities and villages in which the major criterion is the area [9, 10]. Some of them follow the classification pattern presented in publication The Park, Open Space and Greenway Guidelines of 1996 developed by the National Recreation and Park Association (NRPA). The above publication distinguishes 10 forms of parks and open spaces: mini-parks, neighborhood parks, school parks, community parks, large urban parks, natural resource areas, greenways, sport complexes, special use parks, private parks/recreational facilities [11]. The smallest park form in the above classification is the mini-park, with its prescribed area of 2,500 to approx. 4,000 m², also called the pocket park.

3. Selected examples of pocket parks in New York and Philadelphia
The best known pocket parks, which are often inspirations for the contemporary realisations of Polish mini-parks are located in the United States of North America. One of them is the famous Paley Park in New York, and John F. Collins Park in Philadelphia is another. It is worth remembering that Paley Park was not the first small park in New York. Whitney North Seymour [6] insists that the first mini-park was established in 1733 on the initiative of three New York residents and was called Bowling Green. The above-mentioned residents wanted to create a small place for the game of bowls, of the area of half-acre (approx. 2,000 m²). A park was thus created, which is now located in the centre of the New York business district [6].

Paley Park (Figure 1) was established in 1967. The park was designed by the landscape architectural firm of Zion Breen Richardson Associates [12]. It is located in Midtown Manhattan at 3 East 53rd Street, at the distance of approx. half a kilometre to the south of Central Park. It is surrounded on three sides by buildings of different heights: from low to high-rise buildings. The park occupies the area of approx. 390 m² [13]. The interior of the park is visible and accessible from the street. The park was symbolically separated from the space of the street by four steps elevating it from the level of the sidewalk. It should also be noted that the area of the park may be temporarily closed off with the folding gate situated at the
entrance from the street. Paley Park is an example of a solution that is not typical of Polish public spaces and which is called in New York “a privately owned public space” (POPS). It is a form of space which is made accessible as an open space by the owner-investor in return for certain benefits related to obtaining some additional area for development [14]. The prevailing area of the park’s ground surface is hard paved. The natural elements are provided by trees planted at even intervals and ivy covering the side walls. A characteristic element is the “water wall,” i.e. the wall closing the park from the north designed as a kind of fountain – a waterfall. The design of the seating places is also worth special attention. The seating area is made up of moveable chairs, which may be arranged according to the changing needs of the park users. William H. White observes that moveable chairs have got a lot of advantages in a small public space, and he quotes Paley Park as a positive example [15]. Tables are not permanently attached to the ground, either, and may therefore be moved. The park is surrounded by development offering various types of services, such as: restaurants, banks, a clothes store and office functions. The location – in the vicinity of various services and at highly frequented routes – makes it a small oasis accessible for different users.

John F. Collins Park is located in central Philadelphia between Chestnut and Ranstead Streets. The park was realised in 1979 to the design of landscape architect John Francis Collins, from whom it derives its present name [16]. The park occupies the area of approx. 360 m², its longer side is approx. 37 m long [17]. The area is flanked by buildings on two sides. The ground floors of the neighbouring buildings house various functions: there are among others a pizzeria, a bakery, a clothes store and a drugstore. The park is situated in a business district, which makes it a resting place both for local residents and for people working in the area. The development surrounding the park is also diversified in respect of height, from low buildings to high-rises. The park is separated from the street by open-work iron gates, both on the side of Chestnut St. and Ranstead St. The discussed area is also an example of “privately owned public space” – it is private property made accessible for the local community within specified time limits. Similarly, to Paley Park, the prevailing area of the park’s ground surface is hard paved. Here as well the green elements are trees and ivy covering the walls of the neighbouring buildings. There is also a piece of garden furnishings – a shallow rectangular fountain located in the part closer to Ranstead Street. A characteristic feature of the discussed park are wooden seating places. Some of them are permanently attached to the ground, but there are also moveable chairs.

Both parks discussed above were among the first pocket parks established in their cities. In Kraków, now we have two first such parks – they have been created recently – and their design was inspired inter alia by New York’s Paley Park.

4. Kraków Pocket Parks
Two pocket parks have been established in Kraków in recent years (2016 – 2017). They are first mini-parks in the city, and the idea of their creation derived from the pocket parks created in the United States of North America as well as in Europe. The Municipal Green Areas Management Board, operating in Kraków since 2015, is planning creation of more mini-parks. The project called Gardens of Kraków Residents has been developed for this purpose, and there are plans to create 18 new pocket parks in Kraków in the future. According to the strategy of the Municipal Green Areas Management Board, their area should not exceed 5,000 m² [18].

The first pocket park established in the Małopolska capital is located at the corner of Bolesława Prusa and Juliana Falata streets in district VII Zwierzyniec (Figure 2). It was completed in late 2016. Surrounded by mostly multi-family residential development, it is located in close vicinity of a green meadow of more than 100 ha (Kraków´s Błonia) and the market square “Plac na Stawach.” Two streets of low traffic intensity are its northern and eastern limits, whereas from the west it is closed off by a multi-family block. To the south of the park is situated the local primary school. The discussed area is owned by the Municipality of Kraków, so it is a public space, accessible at all times. The park occupies the area of approx. 1,600 m². It is symbolically separated from its surroundings by a low fence running along the neighbouring streets. The facility consists mostly of green areas with walking paths and playgrounds for children. The small green area has been equipped with a variety of furnishings,
including garden furniture. From Falata street, it features a semi-circular gazebo, which – over time – is to be covered by climbing plants. Diversity of greenery has been ensured by planting various species of flowers and shrubs. Additionally, the trees growing previously at the site have been preserved. Another element positively influencing biodiversity are bird feeders (Figure 3). This element has an additional educational function. Wooden benches and seating facilities placed in the park are permanently attached to the ground – their arrangement may not be changed. A noticeable feature are two wooden loungers facing the south. They may not be moved, either, due to their heavy weight. One thing that draws particular attention in this place is absence of services in the closest vicinity, which – had it been there – might have encouraged a heightened level of activity within this new green public space.

The Garden of Butterflies (Figure 4), located in district XIII Podgórze, is the youngest Kraków’s mini park – it was opened in 2017. The park is situated at the crossing of Jana Dekerta, Wałowa and Romana Kiełkowskiego streets. The surrounding development is of multi-functional character. In the closest vicinity there are: Podgórze sports club, a kindergarten, a drivers’ training centre, an upholstery workshop, a bar and a few residential buildings. It must be stressed that the creation of the park was partly made possible due to the involvement of a group of Jagiellonian University students, who took up the initiative to create a green area in Zabłocie that would integrate the local community. The Garden of Butterflies occupies the area of 554 m² [18]. From the south, it is closed off by a historic residential building from the early 20th century with a shop in the ground floor selling health food and natural beauty products. The green area is composed of a small square with a path leading along the line of wooden benches joined together. Due to the curved seating surfaces, the benches make up an irregular form. The distinguishing feature of the discussed project are insect hotels (mostly for butterflies), which have been placed at two corners of the park (Figure 5). A great variety of flower types have been planted in the area of the park in order to create adequate conditions for insects. Wooden elements for interactive games may prove attractive to younger users of the facility. An in-situ inspection revealed a problem related to insufficient number of parking places in the surroundings of the Garden, which leads to drivers leaving their cars on the pavement around the park. This in turn creates a barrier for pedestrian movement and hides the Garden of Butterflies from view.

The presented cases demonstrate certain differences between pocket parks in New York and Philadelphia on the one hand, and in Kraków on the other. The American examples are private property that have been made accessible to the public. John F. Collins Park is open only during specified hours. The parks in Kraków, however, are the property of the Municipality of Kraków. The discussed small green spaces in New York and Philadelphia are located in the districts of high development density and diversified functions. The functional diversity results in the fact that the users of these spaces are not only local residents, but also people working nearby or using some of the services offered in the area. The park in Bolesława Prusa street in Kraków is located in a much less attended place, with the dominant residential development, so there is little diversity as far as the users are concerned. The Garden of Butterflies, on the other hand, is surrounded by multi-functional buildings, which may contribute to a higher number of users. It could be concluded that American pocket parks were created for the whole population of the city, although – due to the private ownership of the land – the use may be temporarily suspended. The discussed cases in Kraków are public areas created with the local community in mind. Yet, since they are freely accessible, they may be used by any resident or visitor in Kraków. There are also clearly discernible differences between the parks in Kraków and in America in the way the areas have been developed. American parks are characterised by: prevailing hard-paved surfaces, moveable chairs and water features, which promote urban climate quality improvement. The realisations in Kraków feature mostly biologically active surfaces with a variety of plant species. The seating places have been arranged and permanently fixed in a given position. The parks in Kraków address the need to ensure biodiversity by creating space for various living organisms (in the case of the examples discussed above – for birds and butterflies). The differences and similarities between the above-mentioned realisations have been presented in Table 1.
## Table 1. Comparative analysis of four pocket parks

| CRITERION                                      | Paley Park | John F. Collins Park | Park in Falata/Prusa streets | Park in Dekerta street |
|------------------------------------------------|------------|----------------------|-------------------------------|------------------------|
| The park area [m²]                              | 390        | 360                  | 1600                          | 554                    |
| Ownership type                                  | privately owned public space | privately owned public space | public space               | public space           |
| Option to fence off                             | X          | X                    |                               |                        |
| Prevailing type of surfacing                    | Hard-paved surface         | X                      | X                             |                        |
| Presence of high-rise greenery (trees)          | X          | X                    | X                             | X                      |
| Presence of water features                      | X          | X                    |                               |                        |
| Creation of wildlife-friendly conditions        | X          | X                    |                               | X                      |
| Seating types                                  | Permanent | X                    | X                             | X                      |
| Variety of services in the vicinity             | X          | X                    | X                             |                         |

![Figure 1. Interior of the pocket Paley Park in New York, [21]](image-url)
5. Results and discussions
Comparison of selected American projects realised at the time when pocket parks first emerged in the USA with the first realisations in Kraków was aimed to demonstrate certain regularities in creation of these spaces. The research results show differences in the approach to establishing pocket parks. Mini-parks both in Poland and in the USA emerged from the need to ensure appropriate accessibility of green areas in big cities of dense and compact development and to improve the urban environment quality. However, the methods of creating pocket parks are different in different cities. The presented research results may help to define guidelines for setting up new pocket parks in Kraków. It may be noticed that the size of biologically active area does not affect directly the increase in the number of users. However, due to the possibility of introducing valuable green areas into city centres, it seems sound and legitimate that they should cover as much of the available area as possible. Moreover, it would be worth consideration to introduce water features into the park space (following the example of the analysed American solutions), as they improve the air quality and bring the “natural” sound into the public space. An interesting solution are moveable chairs since they offer the user the possibility to decide where to place them. It may enable creation of friendly environments both for one person and for larger groups. Implementation of the solution prescribing moveable chairs and seating places may be more difficult in
freely accessible areas than in “privately owned public spaces” due to the higher probability that the chairs would be vandalised or stolen. Private ownership offers a certain degree of control over these spaces. Nonetheless, introduction of moveable chairs and tables is worth considering as this solution gives users some influence on the appearance and functioning of their space. Another striking feature is the presence of services in the vicinity of pocket parks. The analysed sites in America are situated in business and services districts with a large number of users. The projects hitherto realised in Kraków, particularly the facility in Falata street, are located in places with a rather poor range of services on offer. The greatest traffic is generated by the primary school. It would be worthwhile considering location of small services in the vicinity of the above-mentioned and planned parks to enrich the functional variety of the area and encourage various groups of users to enjoy these new forms of green public spaces in Kraków.

6. Conclusions
Pocket park is a “new” form of the public green space in the urban structure of Kraków. The idea behind creation of the mini-parks in Kraków emerged from the need to complement the system of greenery in the city, particularly in the city centre, and to improve its accessibility for residents and visitors. The two hitherto created pocket parks in Kraków differ from the selected American projects, primarily in the aspect of green surfaces, presence of water features, the form of seating places and solutions aimed at ensuring biodiversity. The facilities in Kraków feature bird feeders and “butterfly hotels.” It is an interesting concept, also introducing the function of wildlife education into the recreational spaces of the city. Following the example of New York and Philadelphia, we could consider installing some water features in the newly created parks, as they may contribute to the improvement of climate among dense development. The concept of creating small green public areas in Kraków seems absolutely sound and valid if we want to achieve the goal of better accessibility of green commons. However, it appears that more attention should be paid to the presence of services in the surroundings of the park, e.g. small gastronomic businesses, which – being an additional asset, like in the case of Paley Park – might contribute to an increase of the number of users. The completed pocket parks fill in a gap in the system of public spaces in Kraków as they implement some of the guidelines included in the Study of Conditions and Directions of Spatial Development for the City of Kraków, which stipulate that “The main principle of spatial policy related to public spaces is defining/locating areas of public use (including sites within areas covered by historic heritage protection) and subsequent building of a public spaces network” [19]. Moreover, small green areas may offer the city benefits which are called ecosystem services [22], such as profits from transportation of users seeking recreation or profits from renting real estate for services around pocket parks.

References
[1] “Transforming our world: the 2030 Agenda for Sustainable Development”, [acces date: 12.02.2018]. Available at: https://sustainabledevelopment.un.org/post2015/transformingourworld;
[2] “Liczby o Krakowie” [online]. Kraków: Magiczny Kraków, 2018 [access date: 13.01.2018]. Available at: http://www.krakow.pl/biznes/1140,artykul/liczby_o_krakowie.html;
[3] Study of Conditions and Directions of Spatial Development for the City of Kraków, Vol. II, Cracow 2014, p. 12;
[4] “Mission Statement” [online]. New York: The Rev. Linnette C. Williamson Memorial Park Association, Inc., [access date: 13.01.2018]. Available at: http://www.williamsonparks.org/mission-statement/;
[5] “Vest-Pocket Park 1965” [online]. New York: The Rev. Linnette C. Williamson Memorial Park Association, Inc., [access date: 13.01.2018]. Available at: http://www.williamsonparks.org/vestpocket-park-1965/;
[6] “Small Urban Spaces: The Philosophy, Design, Sociology and Politics of Vest-Pocket Parks and Other Small Urban Open Spaces,” W. N. Jr. Seumour, [ed.], New York University Press, 1969;
“Vest Pocket Parks”. American Society of Planning Officials, Planning Advisory Service Information Report No.229, December 1967. Available at: https://www.planning.org/pas/reports/report229/;

“Standards for outdoor recreational areas”. American Society of Planning Officials, Planning Advisory Service Information Report No.194, January 1965. Available at: https://www.planning.org/pas/reports/report194.htm;

“Appendix VI - Classification of Parks, Open Space and Greenways and Trail Types” [in:] “Code of Ordinances County of Franklin, North Carolina”. Available at: https://library.municode.com/nc/franklin_county/codes/code_of_ordinances?nodeId=CD_OD_APXAUNDECO_APXVICLPAOPSPGRTRTY;

“Appendix B - Park and Open Space, Classification / Facility Guidelines” [in:] “Waunakee's Comprehensive Outdoor Recreation Plan 2017”. Available at: http://www.vil.waunakee.wi.us/DocumentCenter/View/3786;

“Classifications for Parks, Open Space, and Greenways” [in:] “Park, Recreation, Open Space and Greenway Guidelines”, ed. James D. Mertes, James R. Hall, National Recreation and Park Association, 1996. Available at: http://people.tamu.edu/~sshafer/Readings%20Park%20Types/Classfications%20for%20park%20open%20space%20on%20greenways%20National%20recreation%20and%20park%20association%20(1996)%20Ashburn,%20VA%200pp.93-131.pdf;

“Projects” [online]. Doylestown: Zion Breen Richardson Associates. Landscape Architects Site Planners, [access date 13.01.2018]. Available at: http://www.zbrassociates.net/projects.htm;

“ZoLa New York City’s Zoning & Land Use Map” [online], [access date: 21.01.2018]. Available at: https://zola.planning.nyc.gov/about/9.72/40.7125/-73.733;

“Privately Owned Public Space” [online]. New York: NYC Department of City Planning, [access date: 15.01.2018]. Available at: https://www1.nyc.gov/site/planning/plans/pops/pops.page

W. H. White, “The Social Life of Small Urban Spaces”, Project for Public Spaces, New York, 1980;

“John F. Collins Park” [online]. Washington DC.: The Cultural Landscape Foundation, [access date: 16.12.2017]. Available at: https://tclf.org/landscapes/john-f-collins-park;

Brochure “Comparing Urban Space: a reference guide”, Montgomery County Planning Department, 8787 Georgia Avenue Silver Spring, MD 20910 [access date: 13.01.2018]. Available at: http://montgomeryplanning.org/wp-content/uploads/2016/09/Public-Spaces-3-Web-2017.pdf;

“Gardens of Kraków Residents” (“Ogrody Krakowian - 18 parków kieszonkowych w 2018 roku”) [online], Zarząd Zieleni Miejskiej w Krakowie, [access date: 13.01.2018]. Available at: https://zsm.krakow.pl/aktualnosci/406-ogrody-krakowian-18-parkow-kieszonkowych-w-2018-roku.html.

Study of Conditions and Directions of Spatial Development for the City of Kraków, Vol. II, Cracow 2014, p. 46;

„A «Butterfly Garden» was developed in Kraków” (“W Krakowie powstał «Ogród Motyli»”) [online]. Onet.pl: Onet Kraków, 2017 [access date: 15.01.2018]. Available at: https://krakow.onet.pl/w-krakowie-powstal-ogrod-motyli/fynll7k;

Wikipedia Commons, Jim.henderson at en.wikipedia [Public domain], via Wikimedia Commons; [access date: 30.03.2018]. Available at: source: https://upload.wikimedia.org/wikipedia/commons/4/41/Paley_Park_jeh.jpg;

J. Kronenberg, “Ecosystem services in cities” (“Usługi ekosystemów w miastach”), [in:] Bergier T., Kronenberg J., “Nature in a city. Ecosystem services – untapped potential in a city” (“Przyroda w mieście. Usługi ekosystemów – niewykorzystany potencjał miasta”), 1st Edition, Kraków, Fundacja Sendzimir, p. 14, 2012, [access date: 12.12.2017]. Available at: http://sendzimir.org.pl/ images/Zrownowazony_Rozwoj_Zastosowania-3.pdf.