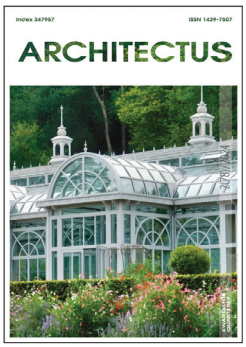

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Historical orangeries and greenhouses in Poland: typology and preservation

Abstract

Orangeries and greenhouses were among the most ephemeral buildings erected in Polish gardens. The evolution of technology, the lack of proper maintenance, fires and wars meant that they were subject to constant remodelling or suffered damage. Although they have been an integral part of most garden layouts, providing suitable conditions for the storage and cultivation of exotic plants, to date they have not become the subject of any major academic study.

The aim of this paper is to present the results of the first cross-sectional study of historical orangeries and greenhouses in Poland.

The research and analysis, carried out in the years 2021–2022, made it possible to identify 165 surviving buildings, for which starting data and a classification by type, material, form, time of construction and architectural style were prepared. Each orangery and greenhouse was subject to an assessment of its degree of preservation using a four-point scale that considered the authenticity and integrity of the historical substance, current use and age. The results of the study can serve as a starting point for identifying conservation challenges in the preservation of historical orangeries and greenhouses and formulating recommendations and standards to better protect these buildings.

Key words: Poland, preservation, greenhouse, orangery, historical garden

Introduction

Historical gardens are a permanent part of every nation's heritage. Their significance is highlighted by relevant legal provisions [1]. Extensive work has been done over the years to assess this group of complexes for historical, aesthetic, environmental, cultural, architectural, perceptual and social values [2].

Gardens that meet the definition of a "heritage site" are described in the Venice Charter in terms of conservation methods and care directions [3], [4]. It is emphasised that the components of historical gardens are both their architectural and horticultural compositions, with many elements characterising the different style eras. The plant component is generally impermanent, and naturally undergoes transformation and requires replacement, while the architectural fabric must be subject to conservation measures [4]–[8].

Of the numerous architectural features in gardens, forms of garden buildings with uses related to the storage of plants already existed in Ancient Rome – they were the so-called fruit houses. In the Middle Ages, orangeries in the ground, protected by thermal covers, took over these functions. In the 16th century, temporary, demountable forms made of wood were used [9]. In garden layouts from the 17th and 18th centuries onwards, a group of utilitarian buildings began to play a discernible role in garden composition. Their types and purpose, incorporated into the structure of the entirety of each layout, are of interest. The ways in which buildings and plant material survive are described in local law and in documents drafted by international institutions [10], [11].

The tradition of cultivating exotic plants in Poland is at least 480 years old, and one of its material manifestations were the numerous orangeries and greenhouses. Their typology was first proposed in the late 19th century in *Encyklopedyja powszechna* [The Universal Encyclopedia] and

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took into account the prevailing winter temperatures and relative humidity [12]. Another typology was developed by Jan Łebkowski in his 1937 work on greenhouses [13], in which he distinguished a number of structures for the cultivation of exotic plants, taking into account the structure's construction, the environmental conditions inside, and the types of plants grown in them. Contemporary researchers have so far distinguished between historical orangeries and greenhouses by considering three criteria such as the time of construction, the form and layout of the interiors and the aforementioned plant types [14]–[16]. The state of their preservation has only been studied for the Lublin Voivodeship [17], [18]. No publication to date has presented a comprehensive attempt to valorise the surviving structures in Poland. This study aims to fill this gap concerning three key issues, i.e. typology, conservation status and valorisation.

The aim of this paper is to present the results of the first cross-sectional study of historical orangeries and greenhouses in Poland. In the first part of the paper, the identified orangeries and greenhouses are reviewed in terms of location, types of spatial units and dimensions, and their footprint. The analytical section then presents the results of typological studies, conservation status and valorisation. The conclusions summarise the key findings and feature the directions for further research.

Materials and methods

The subject investigated involved the use of in-depth historical analysis and a multiple-case study of each orangery and greenhouse site. Comparative analysis was used to approximate the typological changes that took place in orangery buildings in Poland with reference to the state of the art in the rest of Europe. The cultural heritage from the selected group of preserved sites was valorised according to a set of predetermined indicators.

Data on existing historical orangeries and greenhouses in Poland came from voivodeship monument registers, the Map Portal of the National Institute of Cultural Heritage [19] and the registration cards of architectural and civil engineering, the so-called green and white cards stored in the archives of voivodeship monument conservation offices. These sources contain the most up-to-date and reliable information, allowing objective research and analysis. Supplementary material was obtained from contemporary cadastral maps, aerial photographs (orthophotos), the literature, online sources and field research.

Due to the study's subject and spatial scope, the research was carried out in three phases, using several different methods. The first stage involved identifying the stock of existing historical orangeries and greenhouses in Poland. After a review of the above-mentioned materials, 165 sites were identified for which starting data was collated and divided into three groups. The first data group includes the exact location (voivodeship, county, town), the type of location and type of building. The second data group includes the ownership, the current use, the spatial unit in which they are located, the form and the material of which they are constructed. The last group of data concerned the date of construction, the architectural style, the designer and builder, essential dimensions and the footprint. The results were then analysed statistically and typologically by structural system, material, form, time of construction and the architectural style of the buildings.

The second stage of the study "involved" an analysis and interpretation of the data collected using the case study method and architectural and conservation investigation. On this basis, the state of preservation of historical orangeries and greenhouses in Poland was determined, with particular emphasis on their structural systems, interior form and equipment for growing and displaying plants, or heating and water systems.

In the final stage, valorisation of the orangeries and greenhouses was done using an original rating method with ratings given in three criteria. The first is authenticity (the degree of preservation of the original historical substance) and integrity (completeness of surviving elements of the structure): original equipment, interior and construction (3 points); original interior and construction (2 points); original construction (1 point); none (0 points). The second is the current use of the building: palm house, orangery, greenhouse (3 points); church, hospital, housing, commercial, culture and education (2 points); outbuilding (1 point); ruin (0 points). The final criterion is age, defined as the century in which the building was constructed: 18th century (3 points); 19th century (2 points); 20th century (1 point). On this basis, valorisation of the surveyed structures was carried out on a four-level scale:

1. High (9–7 points) – a complete structure, restored, with fully intact furnishings and fixtures, used to winter and exhibit plants.
2. High-medium (6–4 points) – a structure subjected to adaptive reuse, which retains most original structural elements, often adapted or stripped of its original equipment, with its current use different than the original.
3. Low-middle (3–2 points) – a structure that is dilapidated but that retains essential structural elements, in poor technical condition, stripped of its original furnishings or significantly remodelled, with its current use different than the original.
4. Low (1 point) – a structure that is de facto a ruin, with only trace amount of surviving original structural elements, stripped of its furnishings and abandoned.

Results and discussion

A total of 165 orangeries and greenhouses entered in the register of monuments in 15 of Poland's 16 voivodeships were identified. The highest number of structures was found in the south-western and south-eastern areas of the country. In terms of numbers, the Lower Silesian Voivodeship came first, with 35 structures, and the Subcarpathian Voivodeship came second, with 20. A dozen or so sites each are located in the Masovian Voivodeship – 19, the Greater Poland Voivodeship – 15, the Lublin Voivodeship – 14, the Lubusz Voivodeship – 14 and the Lesser Poland Voivodeship – 11. The voivodeships with only a few structures each included the Warmian-Masurian Voivodeship – 9, the Łódź Voivodeship – 7, the Kuyavian-Pomeranian Voivodeship – 6, the Opole Voivodeship – 4,

the Podlaskie Voivodeship – 3, the Silesian Voivodeship – 3, the Świętokrzyskie Voivodeship – 3, and the Pomeranian Voivodeship – 2. In the West Pomeranian Voivodeship, no orangeries or greenhouses were found listed in the register of monuments (Fig. 1).

The location of the structures on their respective county maps indicates a great degree of dispersion. Only one in three counties has at least one orangery and greenhouse. The majority are located in rural areas – 61.8%. The largest number, four each, are located in the counties of Świdnica and Kłodzko (Lower Silesian Voivodeship). The counties of Oleśnica (Lower Silesian Voivodeship), Brzozów and Przeworsk (Subcarpathian Voivodeship), Pruszków (Masovian Voivodeship) and Szamotuły (Greater Poland Voivodeship) each feature 3 sites. Only 38.2% of orangeries and greenhouses are located within what are now city limits. The highest number of sites – 9 – was identified in Warsaw, which is the capital of Poland. Slightly fewer – 6 – are located in Legnica and form the city's palm house complex. Other cities include Kraków – 3, Wałbrzych – 2, Wrocław – 2, Przemyśl – 2, Poznań – 2, and Końskie – 2 (Fig. 2).

The study distinguished seven types of spatial units in which Polish orangeries and greenhouses are located. Most are located within ornamental gardens and parks (51.5%) or are part of a major, formal residential building such as a castle, palace, manor house or villa (15.2%). Slightly fewer were built in culinary gardens or plant nurseries (10.9%). Several sites are part of manors (9.1%) and botanical gardens, educational and demonstration gardens (9.1%). Only four buildings are located in monastery gardens (2.4%). Other locations (1.8%) included the site of the former Herrera Manufacture in Sieradz, the administrative part of a palace in Siemiatycze, and the orangery next to a tenement house in Sulechów.

The type of spatial unit shows clear correlations with their location. The vast majority of orangeries and greenhouses located within ornamental gardens and parks (81.1%) or connected to a formal residential building (80.0%) are located in rural areas. A similar proportion applies to orangeries and greenhouses built in culinary gardens or plant nurseries (83.3%). All grange facilities are located in rural areas. The vast majority of educational and demonstration facilities are located within cities (86.6%). Monastic orangeries and greenhouses display an even share.

The architectural data collected also made it possible to identify trends in the dimensions and footprint of historical orangeries and greenhouses in Poland. We can distinguish four groups of buildings by footprint: over 1000 m^2 – 4 (2.4%), 1000–500 m^2 – 19 (11.5%), 500–100 m^2 – 111 (67.3%) and under 100 m^2 – 31 (18.8%). The most extensive facilities, with a footprint greater than 1000 m^2, include: The Palm House in Wałbrzych-Lubiechów – 5000.0m^2, the Poznań Palm House – 4612.0 m^2, the greenhouse of the botanical garden of Adam Mickiewicz University in Poznań – 1537.0 m^2 and the orangery of the Sanguszko Palace in Lubartów – 1042.0 m^2. The smallest orangery in Poland is located in the manor park in Zakrzewko and covers an area of 35.2 m^2.

We can distinguish four groups of buildings by average length: over 100 m – 2 (1.2%), 100–50 m – 16 (9.6%), 50–10 m – 137 (83.1%), under 10 m – 10 (6.1%). In terms of width, the structures were divided into five groups: over 25 m – 6 (3.6%), 25–15 m – 12 (7.3%), 15–10 m – 52 (31.5%), 10–5 m – 90 (54.5%), under 5 m – 5 (3.1%). The facilities with the largest dimensions are the previously mentioned Poznań Palm House – 178.5 × 52.3 m and the Palm House in Wałbrzych-Lubiechów – 107.0 × 69.0 m. The shortest orangery is at the Administrator's House in the manor park in Nowa Krępa – 6 m, while the narrowest is at the palace in Bieździedza – 2.5 m. The average dimensions and footprints of buildings as divided by construction period clearly indicate that larger buildings were

Fig. 1. Number of historical orangeries and greenhouses in Poland by voivodeship
(elaborated by J. Kuśmierski, K. Hodor)

Il. 1. Liczba historycznych oranżerii i szklani w Polsce według województw
(oprac. J. Kuśmierski, K. Hodor)

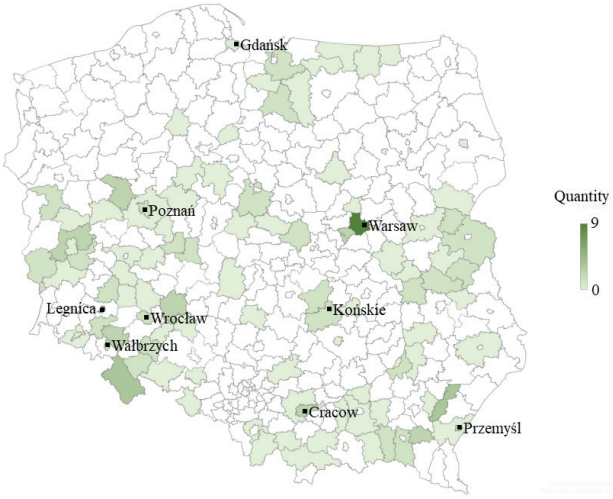

Fig. 2. Number of historical orangeries and greenhouses in Poland by counties
(elaborated by J. Kuśmierski, K. Hodor)

Il. 2. Liczba historycznych oranżerii i szklarni w Polsce według powiatów
(oprac. J. Kuśmierski, K. Hodor)

erected in the Baroque and Rococo periods of 1600–1750 (average dimensions: 45.1 × 10.8 m, average footprint: 515.7 m^2) than in the later period of Classicism, namely 1750–1830 (average: 30.7 × 9.7 m, 308.0 m^2), and Historicism 1830–1914 (average: 26.9 × 10.6 m, 365.2 m^2). The smallest buildings were erected during the Polish Modernism period, in the years 1918–1939 (average: 17.5 × 10.7 m; 155.3 m^2).

Typology

The historical orangeries and greenhouses investigated were divided into five groups based on their structural system, material, form, time of construction and architectural style (Table 1). The state of preservation and current use did not allow a typology related to environmental conditions to be formulated, e.g., greenhouses, temperate houses, and hothouses. It was also not possible to formulate a division by plants cultivated, for instance into aquaria, pineries, cactus houses, ferneries, orange houses or orchid houses. Palm houses and fig houses are among the only such facilities, as they have retained their original customary name.

By building type, we can distinguish: orangeries (74%), greenhouses (20%), palm houses (5%) and fig houses (1%). Of these, masonry structures predominate (84%), while those of steel or cast iron are in the minority (16%). No wooden structure has survived to this day. This balance is the result of a number of external factors such as the passage of time and lack of proper maintenance, the consequences of armed conflicts and natural disasters, and internal factors, which include deliberate demolitions or adaptive reuse projects, modernisations, changes in ownership, or a lack of funds for maintenance.

Table 1. Typology of orangeries and greenhouses listed in the voivodeship registers of historical monuments in Poland (elaborated by J. Kuśmierski, K. Hodor)
Tabela 1. Typologia oranżerii i szklarni wpisanych do wojewódzkich rejestrów zabytków w Polsce (oprac. J. Kuśmierski, K. Hodor)

Item no.	Division by	Type
1.	Type	Orangery Greenhouse Palm house Fig house
2.	Material	Masonry Steel or cast iron
3.	Form	Free-standing Attached/connected Integrated
4.	Period of construction	18th century 19th century 20th century
5.	Architectural style	Baroque Rococo Classicist Historicism (Renaissance, Baroque or Gothic Revival, Eclecticism) Modernism Styleless

A typology based on building form was also formulated based on the data collected. Among the orangeries and greenhouses surveyed, we can distinguish detached buildings – which do not use the foundations or walls of neighbouring buildings (61.2%), connected or attached buildings – which are connected to a neighbouring building through an adjoining wall (33.3%) or integrated buildings – which are part of a larger, typically residential building (5.5%). However, these data do not show any clear difference between location and type. A comparative analysis of the period of construction showed that there are half as many 18th-century detached buildings (21.8%) as connected ones (12.7%), which is in keeping with the trend of the time to separate uses for reasons of function (formal and residential from, e.g., agricultural), health (air pollution from masonry stoves) and safety (the threat of fire). Slightly more connected structures (67.3%) than free-standing structures (58.4%) date to the 19th century, and all orangeries and integrated greenhouses were built either in the late 19th century or the early 20th century. This shows the tendency of the era to extend the interiors of palaces, manor houses or villas with then-fashionable conservatories.

Of the orangeries and greenhouses currently listed in register of monuments, only 17.6% of them come from the 18th century. The oldest are the two conservatories at Roztoka Palace, dating from 1725 (Fig. 3) and the orangery of the Cistercian abbey in Henryków, erected in 1727 (Fig. 4). Buildings erected in the 19th century predominate, constituting 64.8% of the sample. The remaining 17.6% are orangeries and greenhouses erected in the 20th century. The youngest structure listed in the register is greenhouse no. 2, a part of the Legnica Palm House complex, dating from ca. 1940–1949. It is also worth noting the historical buildings which were destroyed during World War II and almost completely reconstructed, such as the orangery of the Wilanów Palace rebuilt in 1951–1960 and that of the Puławy Palace from 1965–1966.

The time of construction has helped to indicate the gradual move away from traditional brick orangeries towards steel greenhouses and palm houses from the 18th to the 19th century. This was a pan-European trend linked to technological developments (the spread of steel construction, the invention of rolled glass), but also the construction of the railway, which made it possible to bring in new delicate exotic plants that previously could not survive prolonged voyages. The new species of exotic plants required different environmental conditions, most importantly more sunlight and humidity, which the former walled orangeries could not provide. However, this statistics does not fully reflect the historical trend, as lightweight steel structures were more prone to deterioration and not too many have survived to our times.

Among the surviving orangeries and greenhouses that are listed in the register of monuments, we can distinguish a typology by architectural style, which is directly related to either the time of construction or the designers. The buildings identified represented the following styles: Baroque, Rococo, Classicist, Historicist (Renais-

sance, Baroque, or Gothic Revival, Eclecticism, etc.) and Modernism. The majority, 37%, represents Historicism, characteristic of the 19th century. Prominent among them are buildings designed by Italian-born Polish architect Francesco Maria Lanci (1799–1875). His works include: The Egyptian Orangery at the Małachowski Palace in Końskie, the Gothic Revival Orangery at the Białaczów Palace and the Italian Renaissance-style orangeries of the Potocki Palace in Krzeszowice and the Falenty Palace. Other important buildings of the era include the Baroque Revival orangery of the Brzesko Palace, and the Gothic Revival orangery of the Jabłonna Palace designed by architects Ferdinand Fellner the Younger (1847–1916) and Hermann Gottlieb Helmer (1849–1919).

Classical-style orangeries and greenhouses from the 2nd half of the 18th and early 19th centuries are the second most common, accounting for 25% of the identified buildings. As many as seven of them were designed by Polish architect Chrystian Piotr Aigner (1756–1841). His largest buildings include the orangeries of the palace in Wilanów (Warsaw), the Czartoryski Palace in Puławy and the castle in Łańcut. He is followed by Szymon Bogumił Zug (1733–1807), a Polish architect of Saxon origin, who authored the design of the orangery of the Jabłonna Palace and two orangeries at the Radziwiłł Palace in Nieborów. Two orangeries were designed by Italian architect Domenico Merlini (1730–1797), namely at the Mniszech Palace in Dęblin and at the Royal Baths in Warsaw, which belonged to King Stanisław August Poniatowski. In addition, there are two orangeries designed by eminent German architects: the ramp orangery at Żmigród Palace by Carl Gotthard Langhans (1732–1808) and the orangery at Sypniewo Palace attributed to Karl Friedrich Schinkel (1781–1841). The Orangery Palace of Bishop Ignacy Krasicki in Lidzbark Warmiński is an outstanding Classicist-style work.

Baroque buildings from the 18th century account for a much smaller proportion – 5%, and Modernist ones from the 20th century – 4%. The first group includes some of the largest and most ornate orangeries, such as that at the Sanguszko Palace in Lubartów, the Cistercian abbey

Fig. 3. Ruins of the Roztoka Palace Orangery, built in 1725 (photo by Ł. Przybylak)

Il. 3. Ruiny oranżerii pałacu w Roztoce z 1725 r. (fot. Ł. Przybylak)

Fig. 4. Orangery of the Henryków Cistercian Abbey, built in 1727 (photo by Ł. Przybylak)

Il. 4. Oranżeria opactwa cysterskiego w Henrykowie z 1727 r. (fot. Ł. Przybylak)

in Henryków, the Brühl Palace in Brody designed by Saxon architect Johann Christoph Knöffel (1686–1752), and the Reichenbach Palace in Goszcz by royal builder Karl Martin Frantz (1712–1755). As far as Modernist buildings are concerned, the greenhouse built as part of the complex of the psychiatric hospital in Kobierzyn in Kraków designed by a team of Polish architects under the direction of Władysław Klimczak (1878–1929) clearly stands out. The only surviving Rococo building is the orangery of the palace in Radzyń Podlaski, designed by Jakub Fontana (1710–1773) and decorated with a unique set of sculptures by Polish artist Johann Chrisostomus Redler. Of the remaining buildings, 29% were identified as styleless, due to their disrepair or alterations that made it impossible to clearly identify the architectural style.

Preservation

The orangeries and greenhouses investigated and listed in the register of monuments display an insufficient degree of authenticity and integrity of their historical substance. Only 4.2% have retained their original structural systems, interior forms, and even partial furnishings and fittings such as heating and water supply systems, or plant shelves made of stone or tuff. The vast majority, 70.3%, retain only the original design or its elements. These also include buildings subjected to renovation with inappropriate technological and material solutions and with a secondary division of the interior. The remaining 25.5% is in a state of disrepair. The best-preserved buildings include the complex of palm houses and greenhouses in Legnica and the palm house of Książ Castle in Wałbrzych-Lubiechów.

Only 12.0% of the buildings have retained their original use as orangeries, greenhouses or palm houses. In addition to those mentioned above, it is also retained in two orangeries located on the grounds of the Radziwiłł Palace in Nieborów. The remaining buildings have been subjected to adaptive reuse as culture and education facilities (18.0%), business and storage premises (16.0%), commercial premises such as offices and stores (13.0%), and residential uses (12.0%). Some of them are used as churches, like the orangeries in Młochów and Michałów (1%), and as hospital rooms – as in the case of the former Herrera Manufacture in Sieradz (1.0%). Of the buildings surveyed, 27.0% remain abandoned and are not used for any purpose.

The ownership structure of historical orangeries and greenhouses in Poland varies greatly. Currently, most of them – 48% of the existing orangeries and greenhouses – are privately owned. The remaining half are public facilities that belong to local authorities (22%), cities (13%), universities and science institutions (7%), museums (5%), state-owned companies, agencies or institutes (3%). The remaining 2% belong to the Roman Catholic Church. The ownership aspect shows many correlations with the current use (Fig. 5). Private facilities feature mainly residential (18), business (17) or commercial uses (17). Several have retained their use as orangeries (3) and greenhouses (2). Local authorities have allocated their share of the facilities primarily for cultural and educational (12), and ancillary (2) purposes. Cities stand out for running the highest number of palm houses (4) and greenhouses (4). The situation is similar for the facilities of universities and academies of sciences – these include greenhouses (3) and a palm house (1). Museums use their buildings for cultural purposes (6) and state-owned companies, agencies or institutes for commercial purposes (2). The Catholic Church adapted its greenhouses for religious (2) and educational (2) purposes. Half of the buildings in a state of disrepair are in private hands (24). A high percentage are facilities of local government bodies (13) and cities (5).

Valorisation

The criteria adopted for assessing the value of orangeries and greenhouses listed in voivodeship registers of historical monuments in Poland allowed them to be rated on a four-degree scale with regard to authenticity and integrity, current use and age. The highest ratings (9–7

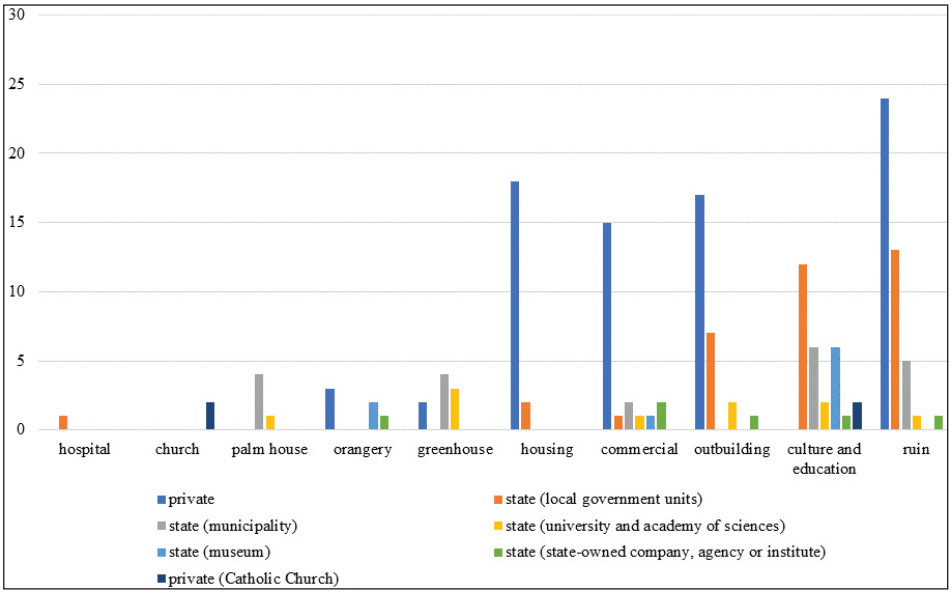

Fig. 5. Diagram showing dependencies between ownership type and building use (elaborated by J. Kuśmierski, K. Hodor)

Il. 5. Diagram zależności pomiędzy własnością a funkcją budynku (oprac. J. Kuśmierski, K. Hodor)

points) were given to 7.9% of sites. This was followed by high-medium-rated facilities (6–5 points) accounting for 56.4% of the total, and low-medium-rated facilities (4–3 points) having a 34.5% share. The lowest rating (2–1 points) is represented by only 1.2% of all orangeries and greenhouses.

Among the best-preserved orangeries and greenhouses in Poland is the Legnica Palm house complex. It consists of two palm houses, hot and cold greenhouses and a connecting building, built between 1887 and 1949 on the initiative of Feodor Beer. The central palm house was designed by local architect and master builder Albert Jänckner, and the construction work was entrusted to Höntsch & Co. of Dresden. To this day, the facilities have retained their original structure and are used to display exotic plants.

Another best-preserved building is the complex of palm houses and greenhouses of Książ Castle in Wałbrzych-Lubiechów, built in the years 1911–1913 and founded by Prince Hans Heinrich XV von Hochberg (Fig. 6). It is the most extensive complex in Poland, covering 5000.0 m^2. The facility features an original structural system, heating systems, plant shelves and beds finished with tuff from the Mount Etna volcano in Sicily. Currently, 250 species of exotic plants from five continents are grown here.

The last of the highest rated buildings are the Old and New Orangery of the Radziwiłł Palace in Nieborów, built in 1790 and 1796 to a design by Saxon architect Szymon Bogumił Zug (Fig. 7). Their construction was linked to the purchase of a collection of exotic plants by the Radziwiłł family, which originally belonged to August II, King of Poland and Elector of Saxony. Although both buildings are faithful reconstructions of the original buildings (the Old Orangery was rebuilt after a fire in 1981 and the New Orangery partially reconstructed in the 1950s), they retain many original elements such as Tuscan colonnades and duct-stack heating installations. To this day, their interiors are still used for growing and storing exotic plants.

Discussion

When looking at analogous studies in an international context, it is noticeable that they focus on local, national investigations of individual building types showing a methodological pattern despite different key issues [20]. One noteworthy study was conducted in the Czech Republic, and covered a similar context, as part of the project: "Neglected topics in landscape architecture for heritage care purposes" at the Faculty of Horticulture of the Mendel University in Brno [21]. It clearly stands out via its similar specificity and methods, referencing heritage from a specific area. The study was carried out on a sample of 150 existing historical orangeries and greenhouses and identified values in the areas of the preservation of original form, material substance authenticity, historical integrity and artistic value. For the 210 existing and no-longer-existing buildings for which historical material was collected, a typology was developed by structural system, type of glazing and role in the composition.

In the Netherlands, research into historic conservatories and greenhouses dates back to the 1990s, when Erik Geytenbeek published a paper in which he made the first collective historical analysis and survey of 90 structures [22]. On the basis of available materials and field inspections, he described their evolution, construction and architecture, as well as the equipment and the plant collections stored in them. His research is being continued by

Fig. 6. The Walbrzych Palm House, Książ Castle (photo by J. Kuśmierski)
Il. 6. Palmiarnia wałbrzyska, Zamek Książ (fot. J. Kuśmierski)

Fig. 7. New Orangery of the Radziwiłł Palace in Nieborów (photo by J. Kuśmierski)

Il. 7. Nowa Oranżeria pałacu Radziwiłłów w Nieborowie (fot. J. Kuśmierski)

the Cultural Heritage Agency of the Netherlands (RCE) as part of the Werkgroep Historische Kassen in Nederland specialist team. Thanks to successive surveys, the stock of surveyed orangeries and greenhouses has been increased by more than 170. A classification of them by location, construction, materials used, and function has also been developed [23].

All available studies provide important support for the Polish examples and attest to the general correctness of the methodology adopted, and enhance the potential for comparative studies. This study allowed the creation of a reference database of structures and the introduction of a new hitherto unknown Polish context. The proposed method for the classification and valorisation of historical orangeries and greenhouses has a universal character and can be successfully applied in other European countries.

Conclusions

The ownership structure of historical orangeries and greenhouses in Poland varies greatly. A significant number have ceased to exist, fallen into disrepair or been subjected to adaptive reuse. The reasons for this can be found in the fragility of these facilities when exposed to damage from warfare, fires, lack of continuous maintenance, but also the evolution of technology and modernisations. Orangeries and greenhouses were among the most ephemeral buildings erected in Polish gardens. Nevertheless, there are still many valuable examples of these historical buildings, like The Legnica Palm House Complex, the Palm House and Greenhouse of Książ Castle in Wałbrzych-Lubiechów and the Old and New Orangery of the Palace in Nieborów.

The results obtained as part of this study will form the basis for further in-depth analysis and valuation of the surviving historical orangeries and greenhouses. The results of the study can serve as a starting point for identifying conservation challenges in the preservation of historical orangeries and greenhouses and formulating recommendations and standards to better protect these buildings. Numerous challenges and constraints need to be taken into account in future stages of more in-depth research. The most important is the dispersal of archival materials across various collections in public and private archives in Poland and in other countries, the multiple languages the documents were written in, and their archaic language style. A significant amount of material was also lost as a result of World War II (1939–1945). Another challenge is the multiplication of historical layers. Due to the fact that, in Poland, orangeries and greenhouses were treated primarily as utilitarian buildings, they were subjected to numerous remodelling projects, modernisations and demolitions. There is therefore a lack of standardised terminology to distinguish between the different types or buildings forms, making them difficult to identify.

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Streszczenie

Historyczne oranżerie i szklarnie w Polsce: typologia i stan zachowania

Oranżerie i szklarnie były jednymi z najbardziej efemerycznych budynków wznoszonych w polskich ogrodach. Ewolucja technologii, brak odpowiedniej konserwacji, pożary i wojny sprawiały, że podlegały nieustannym przebudowom lub zniszczeniu. Mimo iż stanowiły integralny element większości założeń ogrodowych, zapewniając odpowiednie warunki do przechowywania i uprawiania roślin egzotycznych, do dziś nie doczekały żadnego większego naukowego opracowania.

Celem autorów artykułu jest przedstawienie wyników pierwszych przekrojowych badań nad historycznymi oranżeriami i szklarniami w Polsce.

Prace studialne i analityczne zrealizowane w latach 2021–2022 umożliwiły identyfikację 165 zachowanych obiektów, dla których opracowano dane wyjściowe oraz klasyfikację ze względu na typ, materiał, formę, czas budowy oraz styl architektoniczny. Każda oranżeria i szklarnia podlegała ocenie stopnia zachowania według czterostopniowej skali uwzględniającej autentyzm i integralność substancji zabytkowej, obecną funkcję i wiek. Wyniki badań mogą posłużyć jako punkt wyjściowy do określenia wyzwań konserwatorskich w zakresie zachowania historycznych oranżerii i szklarni oraz sformułowania zaleceń i standardów dla lepszej ochrony tych obiektów.

Słowa kluczowe: Polska, oranżeria, szklarnia, ogród historyczny, stan zachowania