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Materials for the Distribution and Ecology of the Mistletoe (*Viscum album* subsp. *album*) in Central-Eastern Poland. IV. Vicinity of Sandomierz

Materiały do rozmieszczenia i ekologii jemioły pospolitej typowej (*Viscum album* subsp. *album*) w południowo-wschodniej Polsce
IV. Okolice Sandomierza

SUMMARY

The structure of spatial distribution and ecological conditions of mistletoe (*Viscum album* subsp. *album*) stations in the vicinity of Sandomierz in the area of 65 km^2 (Fig. 1) were described. These studies were conducted in 1997–1999. A total of 51 group-of-specimens and single-specimen stations of the mistletoe were located, with their characteristically differentiated spatial distribution (Fig. 1). This plant was located in the investigated area in 14 host taxa. It was found that mistletoe taxa comprised exclusively tree species, in several varieties, which grew only as a result of planting (Table. 1, Fig. 2–7). Moreover, worth noting are the reported cases of destruction of discovered mistletoe stations and mistletoe expansion in the primary and new stations. A similar scope of study into the investigated mistletoe taxon has so far been conducted in central-eastern Poland in the vicinity of the towns of Tarnobrzeg, Stalowa Wola and Kraśnik (Stary).

STRESZCZENIE

W badanych okolicach miasta Sandomierza o powierzchni ok. 65 km^2 odszukano 51 grupowych i pojedynczych stanowisk jemioły (*Viscum album* subsp. *album*). Badania te wykonano w latach 1997–1999. Jak dotąd nie było dokładnych badań stanowisk jemioły w okolicach Sandomierza. Okazało się, że struktura przestrzennego rozmieszczenia i właściwości ekologicznych tej półpasożytniczej rośliny w badanych okolicach przedstawia się bardzo oryginalnie (ryc. 1–7, tab. 1). Zwraca uwagę przede wszystkim występowanie jemioły w rejonach na stanowiskach zarówno wyraźnie zgrupowanych, jak i silnie rozproszonych. Występuje ona na 14 taksonach żywicieli

należących wyłącznie do zasadzonych gatunków drzew i ich odmian. Pasożytuje najczęściej na kilku mieszańcowych taksonach z rodzaju *Populus*, a nieco rzadziej na *Acer saccharinum*, *Sorbus aucuparia* i *Robinia pseudacacia*. Stwierdzono przypadki zarówno niszczenia odkrytych stanowisk jemioły, jak i jej ekspansji na stanowiskach pierwotnych i nowych. Podobny zakres badań o rozpatrywanym podgatunku jemioły zrealizowano w środkowo-wschodniej Polsce w rejonie Tarnobrzega, Stalowej Woli, Kraśnika (Starego).

K e y w o r d s: Mistletoe (*Viscum album* L. subsp. *album* P. W. Ball.), stations and ecology, Sandomierz Upland, Poland.

INTRODUCTION

The typical mistletoe (*Viscum album* subsp. *album*) belongs to plants with a geographical submeridional-Eurasian extent (1, 7, 10). In Poland this is a common mistletoe subspecies, with an extent from the Baltic coast to the lower slopes of the Carpathian and Sudeten Mountains, but with a highly uneven spatial density of stations (2, 20). Correlations between the spatial distribution of the mistletoe and its habitat conditions, especially with its hosts, have not been studied thoroughly so far (2, 10, 12–15).

The existing data on the occurrence of *Viscum album* subsp. *album* in the vicinity of Sandomierz are very general and incomplete (2, 10, 20). In central-eastern Poland a similar scope of studies into mistletoe occurrence, as were conducted in the vicinity of Sandomierz, has been so far realized in the vicinity of Kraśnik, Tarnobrzeg and Stalowa Wola (13–15).

SCOPE OF STUDY

The purpose of the present study is to discuss the structure of occurrence of the typical mistletoe (*Viscum album* subsp. *album*), which was investigated in 1997–1999 in the vicinity of the town of Sandomierz in the area of ca. 65 km^2. The appended map of the investigation area contains locations of all recorded mistletoe stations (Fig. 1). The introductory part of this study presents, on the basis of literature, basic information about the natural properties of the investigated area. The main body of the paper describes the investigated mistletoe stations. Account was taken of the general condition of mistletoe stations in terms of urban development, of being built up and planted with trees, as well as quantitative ratios of host taxa specimens and mistletoe specimens living on them. Comprehensive data on the structure of distribution of the studied plant were listed in Table 1. The final part of the study contains the discussion of the results. The naming of taxa of systematic mistletoe hosts was given after Seneta and Dolatowski (9).

EXPLANATIONS OF DENOTATIONS

In the description of the studied mistletoe stations, to denote particular taxa of mistletoe hosts represented by specific tree taxa only, the following letter markings in the specific alphabetical order were adopted:

A — *Acer saccharinum* M a r s h a l,

B — *Betula pendula* R o t h.,

C — *Coraya ovata* (Mill.) K. Koch,

DM — *Populus x euramericana* (Dode) Guiner, var. "*Marilandica*",

DR — *Populus x euramericana* (Dode) Guiner, var. "*Robusta*",

DS — *Populus x euramericana* (Dode) Guiner, var. "*Serotina*",

E — *Populus berolinensis* (K. Koch) Dippel,

FA — *Populus maximowiczii* Henry, var. *Hybrida* 194 ("NE 49"),

FB — *Populus maximowiczii* Henry, var. *Hybrida* 275 ("NE 42"),

G — *Populus trichocarpa* Torr. et A. Gray ex Hook.,

H — *Robinia pseudacacia* L.,

I — *Sorbus aucuparia* L.,

J — *Salix fragilis* L.,

K — *Tilia cordata* Mill.

The number given before a particular host taxon (A-K) relates to the general number of host specimens, on which mistletoe specimens were recorded. The figures given after the slash "/" denote the numbers of items of mistletoe shrubs living on successive, single specimens of a particular host taxon.

On the basis of these data one can also read the total number of both host taxa specimens and mistletoe specimens living on them, occurring in the investigated station.

Additional marking: ca. — circa, * — mistletoe specimens destroyed because their host was cut down during field investigations or after their completion.

Table. 1. The structure of the mistletoe (*Viscum album* subsp. *Album*) occurrence in the vicinity of Sandomierz

Tree host of *Viscum album* subsp. *album* and tree letter denotations in station descriptions		Number of specimens		
		stations	host taxon	*Viscum album* subsp. *album*
A	*Acer saccharinum*	9	41	321
B	*Betula verrucosa*	3	5	15
C	*Caraya ovata*	1	1	7
DM	*Populus x euramericana "Marilandica"*	3	13	37
DR	*Populus x euramericana "Robusta"*	16	98	1328
DS	*Populus x euramericana "Serotina"*	23	131	1302
E	*Populus berolinensis*	7	20	103
FA	*Populus maximowiczii "Hybrida 194" ("NE49")*	4	5	27
FB	*Populus maximowiczii "Hybrida 275" ("NE42")*	2	2	2
G	*Populus trichocarpa*	1	1	3
H	*Robinia pseudacacia*	5	10	22
I	*Sorbus aucuparia*	8	24	57
J	*Salix fragilis*	1	2	5
K	*Tilia cordata*	1	1	8
	Total	51	359	3237

Fig. 1. Map of 51 mistletoe (*Viscum album* subsp. *album*) stations in the vicinity of Sandomierz. NB. On the map of investigation areas the ATPOL square grid was additionally marked (20)

AREA OF INVESTIGATIONS

The investigated area comprising the town of Sandomierz and its closest neighbouring surroundings is situated on the borderland of specific pairs of separate larger and subordinate regional units. They comprise the rectangular area of ca. 65 km^2 (Fig. 1). In physico-geographical terms the investigated region of Sandomierz lies in the zone of contact of the Kielce Upland macro-region and the province of the Central-Małopolska Upland with the Sandomierz Basin meso-region, in the province of Northern Carpathian Foothills (5). Almost in the middle of this area, in the SE-NW direction, runs the Vistula River valley, up to 160 m wide, classified as belonging to the meso-region of the Sandomierz Basin. In terms of Poland's geobotanical division, the investigated area lies on the borderland of the Konecki district in the Świętokrzyski Region, with the Sandomierska Forest district in the Sandomierz Region (11). In climatic terms, these areas are situated in the so-called Sandomierz climatic region (19).

On the Vistula valley, the left-bank, upland part of the area of Sandomierz is highly undulating, with a maximum elevation up to 160 m above sea level, a with relative height of up to 60 m. On the slope of the edge of the upland terrain, falling steeply to the north-east towards the Vistula valley, worth noting are smaller or larger forms of erosion incisions, among which the most attractive include the Queen Jadwiga Ravine and Piszczele Ravine, as well as erosional ravine forms running along the valley of the Zawichojski stream (Fig. 1).

In the studied surroundings of Sandomierz the oldest bedrock is composed of pre-Cambrian rocks (5, 6). In the upland areas, in the surface layer there are Quaternary formations: loess on top, up to 25 m thick, and below them — boulder clay, sands and gravel with varying densities. Various types of brown and rendzina soils and degraded chernozem dominate spatially on these Quaternary covers (6, 18).

The whole right-bank part of the investigated area is situated in the wide side of the Vistula valley. This is basically the area of a flat lowland lying at the height of several metres above the permanent level of the Vistula waters. Spatially, the most common here are the complex levels of floodplains and inundation terraces, with scattered dead-end arms (bars) of the Vistula river channel. In the area of the lowland Vistula valley, rich alluvial soils formed, most often of the clayey, brown and dusty-sandy types (6, 16, 18).

The climatic and water conditions in the vicinity of Sandomierz have fairly characteristic forms (8, 19). The mean annual air temperature ranges in the region of 7.3°C. The mean annual precipitation total is 556 mm. Vegetation period in this area lasts ca. 220 days. In relation to the Vistula channel the left-bank, upland areas are far drier than the right-bank, lowland ones.

Worth noting is the characteristic differentiation of the plant cover in the vicinity of Sandomierz. Comparatively the strongest, natural tree covering occurs only in the Vistula valley and on the slopes of upland areas in the region of large erosional forms. Within the dense built--up area of Sandomierz, frequent artificial tree covers are a characteristic feature. This manifests itself especially with several cemeteries and parks and in a dozen-odd squares. In the region of the surrounding areas of Sandomierz, belonging mainly to villages, the mosaic of ploughland dominates on the surface, with meadows, pastures, gardens and orchards. In the whole studied area the road margins and all types of squares and sites are as a rule highly tree-covered in rows.

The central and at the same time the largest part of the investigated area comprises compact settlement and scattered buildings in the town of Sandomierz, covering ca. 18 km^2. Sandomierz belongs to the oldest Polish towns with a complicated history of architectural and industrial development; it currently has ca. 27,198 inhabitants (3, 4, 17, 18). The town is situated at the intersection of several major road routes. In its north-western part a railway line runs, with a large

passenger and freight-handling station situated in the Vistula valley. In Sandomierz, principally a town of historical monuments and tourist attractions, a dozen-odd industrial plants operate, of which comparatively the greatest environmental nuisance are the Glass Plant and Concentrate Feed Plant.

STATIONS OF THE MISTLETOE (*VISCUM ALBUM SUBSP. ALBUM*)

1. Ostrołęka near Sandomierz, SE part, ca. 100 m W of the embankment in the Vistula valley. Near a local (*gmina*) road. An unbuilt rural area, sparsely, irregularly tree-covered: 1DS/1.
2. Sandomierz, SW part, ca. 30 m S of Krakowska St. on the W-side of the embankment in the Vistula valley. An unbuilt area, sparsely irregularly tree--covered: 1DS/1.
3. Zawisełcze, NE part. On either side of the local (*gmina* or commune) road. Over the length of ca. 150 m along the Koprzywianka river valley. An unbuilt area, sparsely irregularly tree-covered: 2DS/1, 2.
4. Sandomierz, SW part, ca. 400–500 m S of Krakowska St. The corner of the Marszałek Józef Piłsudski Square, densely built up, irregularly tree-covered: 1 A/3.
5. Sandomierz, SW part, S-side of Krakowska St., on the S fringe of the dam of the old Vistula riverbed. Among a dense row of trees: 7E/6, 6, 1, 1, 6, 2, 2.
6. Sandomierz, SE part, NE-side of Browarna St. The ridge of a loess scarp, sparsely tree-covered: 2H/1, 1.
7. Sandomierz, S part. The corner of Tatarska St. and Podwale Górne St. The square near a building, with several trees: 1I/1.
8. Sandomierz, W part, N-side of Żeromskiego St., between the wall of the cloister premises and school buildings. A square sparsely and irregularly tree-covered, in thin rows: 1FA/2.
9. Sandomierz, SE part, in Słowackiego St. Over the length of ca. 100 m on two sites. N-side of the street, in the city park on its SW edge: Fb/1. S-side of the street near a building, a square with sparse trees: 1G/3.
10. Sandomierz, central part, in Słowackiego St., over the stretch of several ares. On two sites. On N-side of the road, a square near the High School building, sparsely tree-covered, in thin rows: 2E/9,12. S-side of the high road, a square near the kindergarten building, sparsely, irregularly tree-covered: 3DS/1, 1, 9; 2 A/4, 5.
11. Sandomierz, central part. A square between several buildings, NE of the intersection of Kosełły St. and Słowackiego St, sparsely, irregularly tree--covered: 1DS/1.

12. Sandomierz, central part. A square with several buildings, irregularly tree--covered, in rows. On two sites. A square on the corner of the street running towards the Porucznika Tadeusza Króla housing estate: 5 A/1, 2, 3, 4, 1. W-side of Koseły St., in a tree row over the length of ca. 50 m: 6 A/23, 11, 5, 1, 5, 7; 1Fa/20; 1I/1.
13. Sandomierz, W part, ca. 80 m, E of Armii Krajowej St. A square z with several apartment blocks, sparsely, irregularly tree-covered. Over the area of ca. 4 ha: 1DS/8; 5I/ 1, 2, 1, 3, 10.
14. Sandomierz, W part, ca. 25 m E of Armii Krajowej St. A square around the Technical Building School premises, sparsely, irregularly tree-covered. In three nearby sites: 1DS/10; 1 A/22; 2 A/17,25.
15. Sandomierz, central part. The corner of Słowackiego St. and Koseły St. A square with several buildings and tree rows: 1 A/15.
16. Sandomierz, central part, on the corner of A. Mickiewicza St. and Koseły St. A square between apartment blocks, sparsely irregularly tree-covered in thin rows. Over the area of ca. Several dozen ares, in two close sites. SE-side of the corner of road junction: 1DS/20; 3 A/1, 2, 2; 1B/1; 7 A/1, 2, 2, 1, 2, 4, 14. W-side of A. Mickiewicza St: 1E/40.
17. Sandomierz, W part, S-side of Słowackiego St. The square of the Technical Building School with several buildings, densely, irregularly tree-covered. Over the area of a dozen-odd ares: 2 A/14, 20; 4I/1, 2, 3, 3; 2DR/2, 3; 2DS/2, 1.
18. Sandomierz, W part, S-side of A. Mickiewicza St. A square between several apartment blocks, sparsely tree-covered, mainly in rows. Over the area of a dozen-odd ares: 9I/2, 1, 1, 1, 3, 1, 1, 1, 2.
19. Sandomierz, W part. The corner of A. Mickiewicza St. and Armii Krajowej St. S-side of A. Mickiewicza St. near the junction with Armii Krajowej St. The square of the Primary School with several buildings, sparsely tree--covered, in thin rows. Over the area of several ares: 3 A/5, 1, 6; 2I/6, 8; 1K/8.
20. Sandomierz, NW part. The square of the military unit in the vicinity of four roads, with several buildings, highly irregularly tree-covered, in dense rows. Over the area of several ha in five sites. N-side of A. Mickiewicza St., in a row of several trees: 4DR/2, 3, 5, 1. E-side of Grodziska St., in a row of several trees: 3E/1, 2, 7. SW-side of Wojska Polskiego St., in a row of several trees: 3H/3, 4, 5; 1C/7. Between Grodziska St. and Wojska Polskiego St., a part of the unbuilt site with several trees 2DR/1, 5. SW-side of 11-listopada St., a part of the square with an isolated building and with several trees: 4DR/3, 3, 1, 1.
21. Sandomierz, N part. The square of the Technical Food Processing School. In two sites. In Sucha St., a part of the square near buildings with several trees:

4DM/2, 4, 5, 3. N-side of Wojska Polskiego St., a part of the square with one building, sparsely tree-covered: 2DS/6, 2.

22. Sandomierz, N part, E-side of the junction of Energetyków St. and Okrzei St. The square of the Primary School with several buildings, fairly densely tree-covered. In a semicircular tree row over the length of ca. 400 m: 9DS/1, 5, 4, 4, 3, 4, 4, 3, 1.
23. Sandomierz, NE part. Near the junction of Lubelska St. and Zawichojska St. The slopes of a loess ravine. Unbuilt sites, sparsely irregularly tree-covered. Over the area of several ha in three sites. S-side of street junction: 1DR/40. The corner of streets junction, their S-side, over the length of a dozen-odd metres, in a tree row: 4DS/6, 70, 20, 30. In the street junction, on their N-side, over the area of a dozen-odd ares: 3DR/30, 60, 60.
24. Sandomierz, NE part. The corner of Zawichojska St. and Lubelska St. The municipal cemetery. In six sites over the area of ca. 4 ha. Between Lubelska St. and the cemetery, in a tree row, over the length of ca. 300 m: 22DR/3, 15, 6, 12, 30, 5, 20, 30, 40, 40, 30, 20, 15, 25, 30, 40, 20, 20, 40, 10, 80, 60; 11 A/4, 5, 4, 5, 1, 2, 1, 2, 17, 4, 20. N fringe of the cemetery, in a dense tree row over the length of ca. 200 m: 14DS/50, 50, 30, 40, 40, 40, 10, 40, 30, 15, 30, 6, 30, 40; 4E/1, 2, 2, 11; 1DS/40; 1FB/1; 2Fa/1, 11; 2B/1, 2. On the NW cemetery corner in two tree rows over the area of several ares 5 A/1, 2, 3, 1, 3; 7 A/25, 5, 2, 10, 2, 4, 20; 3 DR/10, 60, 80. On the NE cemetery corner, loess scarp slopes, irregularly tree-covered and shrub--covered over the area of several ares 3B/2, 2, 1; 3 DR/6, 3, 5; 1E/11. The area of SW part of the cemetery, sparsely, irregularly tree-covered. Over the area of several ares: 1DR/5; 4 DS/20, 50, 3, 50. In the SE cemetery corner, tree-covered in rows, over the area of several ares: 5DS/20, 20, 20, 30, 30; 3DR/3, 1, 2.
25. Sandomierz, NE part, S of Lubelska St., near a country road. The slope of a loess ravine (Krukowski). An unbuilt site, grass-covered, sparsely irregularly tree-covered and shrub-covered: 1DR/20.
26. Mokoszyn, SW part. The edge of the square of the Technical Agricultural School's farm, with several buildings, sparsely tree-covered. Near the building at the driveway. Over the length of a dozen-odd metres: 2H/2, 3.
27. Mokoszyn, SW part, N of Lubelska St. and E of a local (*gmina*) road. A square next to several buildings, densely, irregularly tree-covered. Over the area of several ares: 5DS/1, 1, 1, 1, 1.
28. Mokoszyn, SW part, N of Lubelska St. A square of the Agricultural Schools Complex. Over the area of several ha in three sites. E-side of the square, among two rows of sparse trees over the length of a dozen-odd metres: 12DS/5, 2, 3, 6, 1, 5, 2, 1, 1, 2, 3, 2. E-side of the road, in a tree row over

the length of a dozen-odd metres: 2H/1, 1; 2E/2, 5; 4DS/1, 2, 3, 1. Between the above two stations, in a tree row over the length of a dozen-odd metres: 5DS/1, 5, 11, 4, 3.

29. Mokoszyn, SW part, between the buildings of the Extension Service Centre and two ponds on either side of a local (*gmina*) road. The fringe of ploughland, sparsely irregularly tree-covered, in thin rows. Over the length of a dozen-odd metres: 1DS/3; 1DR/2.
30. Mokoszyn, SW part; between Lubelska St. and the driveway to the square of the Agricultural Schools Complex. The square around the buildings, fairly densely, irregularly tree-covered in rows. In four tree rows over the area of ca. 100 m: 1I/2; 2J/2, 3, 9DS/4, 2, 40, 1, 2, 2, 1, 2, 3;2E/10, 1.
31. Mokoszyn, E part, near the junction of Lubelska St. and a local (*gmina*) road. The area densely and irregularly tree-covered. In two sites. On the corner of the highway and the road, on their S-side: 1H/1. NW-side of the road, in two groups of stations: 9DS/1, 1, 1, 1, 2, 7, 12, 1, 1.
32. Gerlachów Duży, NE of Lubelska St. near a local (*gmina*) road. The edge of ploughland, sparsely tree-covered, near an isolated building: 1DR/6.
33. Kamień Łukawski, E part, near a local (*gmina*) road. The edge of ploughland with several buildings, sparsely, irregularly tree-covered. Over the length of a dozen-odd metres: 2DR/1, 5.
34. Kamień Łukawski, E part, on either side of a local (*gmina*) road. The edge of ploughland with several buildings, sparsely, irregularly tree-covered. Over the length of a dozen-odd metres: 2DR/26, 1.
35. Kamień Plebański, E part, S-side of a local (*gmina*) road. The slope of a loess scarp over the Vistula valley. A thinly built up area, grass-covered, fairly densely irregularly tree-covered and shrub-covered. Over the area of several ares: 5DS/1, 1, 1, 1, 1.
36. Kamień Plebański, the middle part a local (*gmina*) road. The slope of a loess scarp over the Vistula valley. A thinly built up area, grass-covered, fairly densely irregularly tree-covered, in rows. Over the length of several dozen metres: 16DS/15, 12, 14, 8, 10, 4, 5, 6, 7, 25, 38, 3, 1, 2, 1, 1.
37. Kamień Plebański, SW part, near Zawichojska St., N-side of Błonie St. The slope of a loess scarp over the Vistula valley. A square between two buildings, sparsely, irregularly tree-covered. Over the length of a dozen-odd metres: 3DR/4, 3, 7.
38. Sandomierz, E part, near Błonie St. N-side of a local road. The square near a building with several trees: 1E/8.
39. Sandomierz, E part, between Żwirki i Wigury St. and Błonie St. The square near a building, densely, irregularly tree-covered: 1B/9.

40. Sandomierz, E part, NE-side of the junction of Błonie St. and Przemysłowa St. A square between numerous buildings, fairly densely, irregularly tree--covered, in rows. Over the area of several ha, in three sites. E-side of Błonie St. over the area of several ares: 6DR/4, 20, 4, 10, 15, 2. N-side of Przemysłowa St. over the area of a dozen-odd ares: 2Fa/1, 1; 6DR/1, 1, 1, 19, 3, 1. Between the above two sites, in a tree row over the length of a dozen-odd metres: 5DR/1, 1, 1, 2, 1.
41. Sandomierz, E part, N-side of Przemysłowa St. The square of the "Mosty" company premises, sparsely tree-covered. In a tree row over the length of a dozen-odd metres: 3DS/3, 2, 2.
42. Sandomierz, E part, N of Przemysłowa St. The corner of the square of the Multiple Wholesaler buildings, sparsely tree-covered. In a tree row over the length of a dozen-odd metres: 2DS/6, 1.
43. Sandomierz, SW part, near Mostowa St., at the side driveway. An unbuilt square, sparsely, irregularly tree-covered: 1DR/17.
44. Sandomierz, the premises of the "Glass Plant", SE part, at the junction of Mostowa St. and Portowa St. The edge of garden plots with bowers, sparsely, irregularly tree-covered and shrub-covered, in thin rows. Over the area of several ares: 5DR/5, 2, 4, 1, 6.
45. Sandomierz, SE part, on either side of Trześniowska St. A built up area, densely tree-covered, mainly in rows, less often irregularly. In four sites over the area of a dozen-odd ares. S-side of the highway: 1DS/30. N-side of the highway, in a loose tree-row: 4DS/2, 1, 1, 8. N-side of the highway, in a dense tree row running towards N-S: 5DS/ 10, 3, 2, 7, 1.
46. Sandomierz, SE part, E of railway tracks, S-side of the highway, near several buildings, at the field-path with sparse trees. In a row of several trees over the length of a dozen-odd metres: 4DM/3, 5, 2, 1.
47. Sandomierz, SE part, near Trześniowska St., E-side of Lwowska St. The area of ploughland, unbuilt, with several trees: 1DS/3.
48. Trześń, central part, on either side of a local (*gmina*) road. The area of ploughland with several buildings, sparsely, irregularly tree-covered. In two sides. N-side of the road:1DR/7. S-side of the road: 1DR/11.
49. Wielowieś, W of Lwowska St., E-side of a local (*gmina*) road, next to two ponds. The area of ploughland, unbuilt, sparsely tree-covered. In two loose tree rows: 5DM/4, 2, 3, 2, 1.
50. Wielowieś, S part, E-side of a local (*gmina*) road. The edge of ploughland, thinly built up with several trees: 1DR/5.
51. Sielec, central part, N-side of a local (*gmina*) road. The edge of ploughland, with several buildings and sparse scattered trees: 1I/1.

RESULTS

In the vicinity of Sandomierz it was found that both the spatial distribution of the located mistletoe (*Viscum album* subsp. *album*) stations and their quantitative and ecological structure have fairly characteristic forms (Fig. 1, Table 1). A total of 51 stations of the studied species were located, occurring in groups in several main and in a dozen-odd scattered sites. In the investigated area, mistletoe stations recorded in relation to the stream of the Vistula were found to occur far more frequently in the left-bank, upland part than in the right-bank, lowland part. Worth noting is also the sporadic occurrence of this half-parasitic plant in the bedside part of the wide Vistula valley and in vast rural areas. The numerically largest mistletoe station is evident primarily in the north-eastern (the corner of the intersection of R. Kosełły St. and A. Mickiewicza St.) in the north-western parts of the city of Sandomierz (in Lubelska St., in the area of the Municipal Cemetery and the premises of the Agricultural Schools Complex). This plant in turn occurs only in Sandomierz's Old Town district, over the stretch extending from the bottom of the Vistula valley as far as the fringes of upland areas with scarps and ravines. However, the mistletoe occurrence in its stations in the vicinity of Sandomierz is only sporadic and highly scattered.

Mistletoe stations are located essentially along the main and secondary roads, and only in relatively highly built up areas. Altogether, the mistletoe was recorded on 14 host taxa represented by specific tree species and their varieties, which grew only as a result of being planted (Table 1). Upon the total of 359 host specimens there are 3237 mistletoe individuals. This species is found most often and in greatest numbers on several hybrid tree taxa of *Populus*, of which chiefly on *P. x euramericana* and *P. berolinensis*. Most frequently and in largest numbers the mistletoe occurs only on trees like *Acer saccharinum*, *Sorbus aucuparia* and *Robinia pseudacacia*. On other hosts, however, this plant finds home far less frequently and in smaller numbers. Worth noting is the absence of the mistletoe on tree and shrub hosts grown inter alia in orchards and gardens and growing in the natural state.

In the studied area in the vicinity of Sandomierz frequent cases were reported of the slow process of expansion of mistletoe stations both in terms of the numbers of its specimens appearing on the same hosts and on new host specimens. Increasingly frequent cases of mechanical destruction of mistletoe stations were also reported. This most often happens as a result of cutting down its hosts, mostly from among the oldest planted trees of genus *Populus*.

A similar structure of the occurrence of mistletoe stations as described in the area of Sandomierz, has so far been reported also in the vicinity of Tarnobrzeg, Stalowa Wola and Kraśnik (13, 14, 15).

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