

ASSESSING ORNAMENTAL ALIEN PLANTS IN SLOVENIA: FROM MARKET TO GARDENS AND GREEN AREAS

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Rationale & Aims

The LIFE OrnamentallIAS project aims to prevent and mitigate the negative impacts of ornamental invasive alien plant species (IAPs) on endangered habitats and species of EU importance. The project focuses on limiting the introduction and spread of IAPs from gardens and parks into natural habitats. Its key goals are to assess the invasiveness of ornamental plants, promote non-invasive alternatives, and develop a Code of Conduct for relevant stakeholders.

Within this framework, the present study assessed the presence of ornamental IAPs on the Slovenian market, in public green areas, and in private gardens.

Methods

A market survey was conducted using online catalogues of 12 Slovenian nurseries and garden centres between December 2023 and April 2024, and plant order records from Arboretum Volčji Potok (2021–2023). In parallel, data on ornamental plants were also collected at 10 private gardens and 18 public green areas. Species lists were compiled from field surveys, tree registers, and interviews with garden owners.

All taxa were verified using the *Plants of the World Online* database and national references (*Mala flora Slovenije*, *Neobiota Slovenije*). Each species was categorized by taxonomy, origin, and invasiveness according to EU Regulation 1143/2014. Data were analysed to summarize taxonomic composition, nativeness, and the occurrence of invasive alien plants in managed green spaces.

Nurseries and garden centres

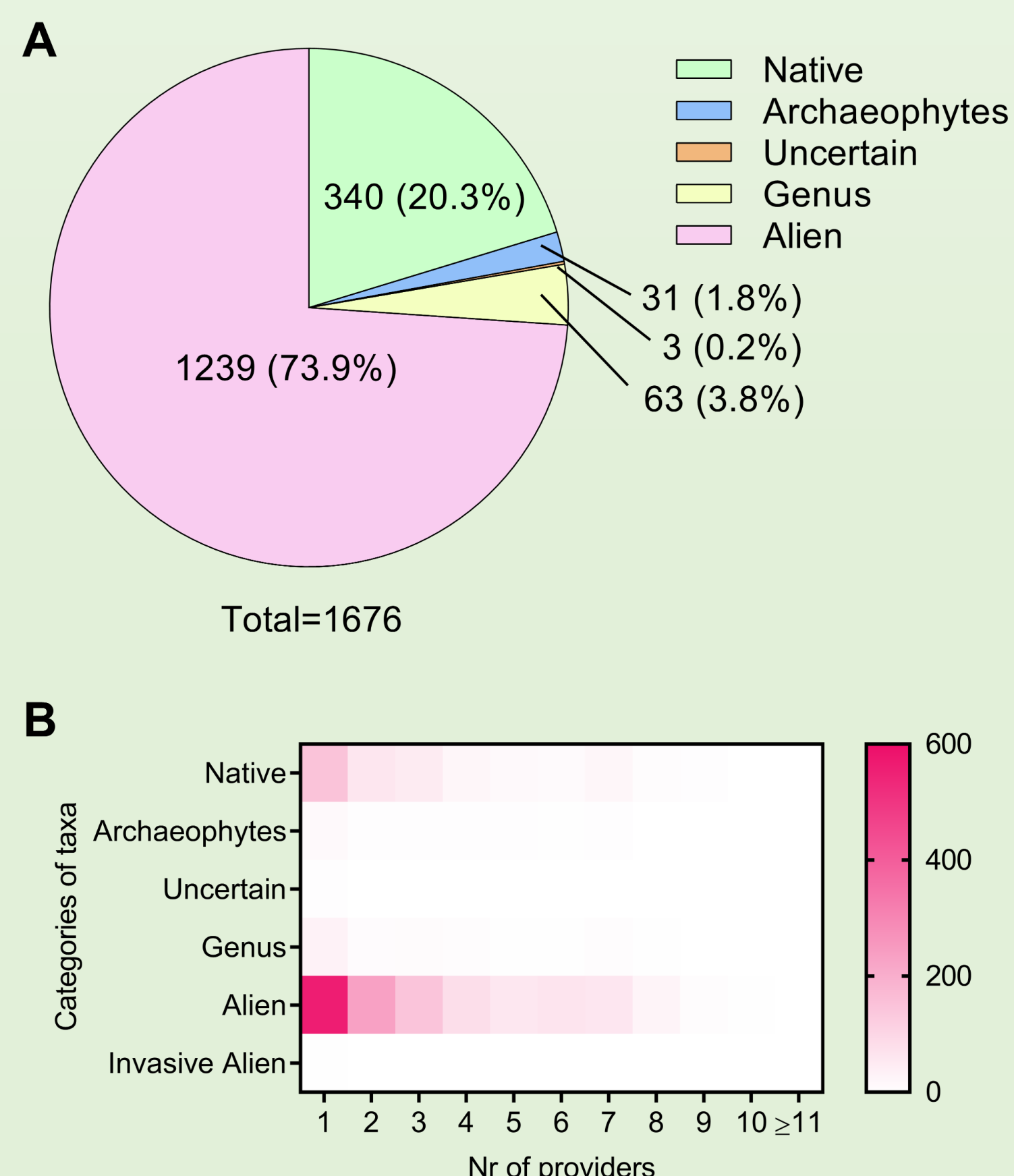


Figure 1: Ornamental plants on the Slovenian market.

A: 1676 taxa (species, hybrids, taxa that we could only assign to a genus) were identified on the market. Alien ornamental plants represent almost ¾ (73.9%), native ornamental plants 20.3% and other categories <6.0% of the taxa. No IAPs were detected.

B: Market is extremely segmented. 45% of ornamental plants are offered by a single provider, only 18.0% by more than a half and none by all the inventoried providers.

Table 1: Most frequent ornamental plants on the Slovenian market

Taxon	Classi- fication	Freq. in market		Freq. in public green areas		Freq. in private gardens	
		N	%	N	%	N	%
<i>Prunus serrulata</i> Lindl.	Alien	10	76.9	4	22.2	1	10.0
<i>Taxus baccata</i> L.	Native	9	69.2	5	27.8	2	20.0
<i>Acer palmatum</i> Thunb.	Alien	9	69.2	4	22.2	6	60.0
<i>Echinacea purpurea</i> (L.) Moench	Alien	9	69.2	2	11.1	3	30.0
<i>Euonymus fortunei</i> (Turcz.) Hand.-Mazz.	Alien	9	69.2	1	5.6	6	60.0
<i>Hedera helix</i> L.	Native	9	69.2	1	5.6	6	60.0
<i>Lavandula angustifolia</i> Mill.	Alien	9	69.2	1	5.6	3	30.0
<i>Vinca minor</i> L.	Native	9	69.2	1	5.6	2	20.0
<i>Hosta</i> Tratt.	Alien	9	69.2	0	0.0	5	50.0
<i>Callicarpa bodinieri</i> H.Lév.	Alien	9	69.2	0	0.0	0	0.0

Private gardens

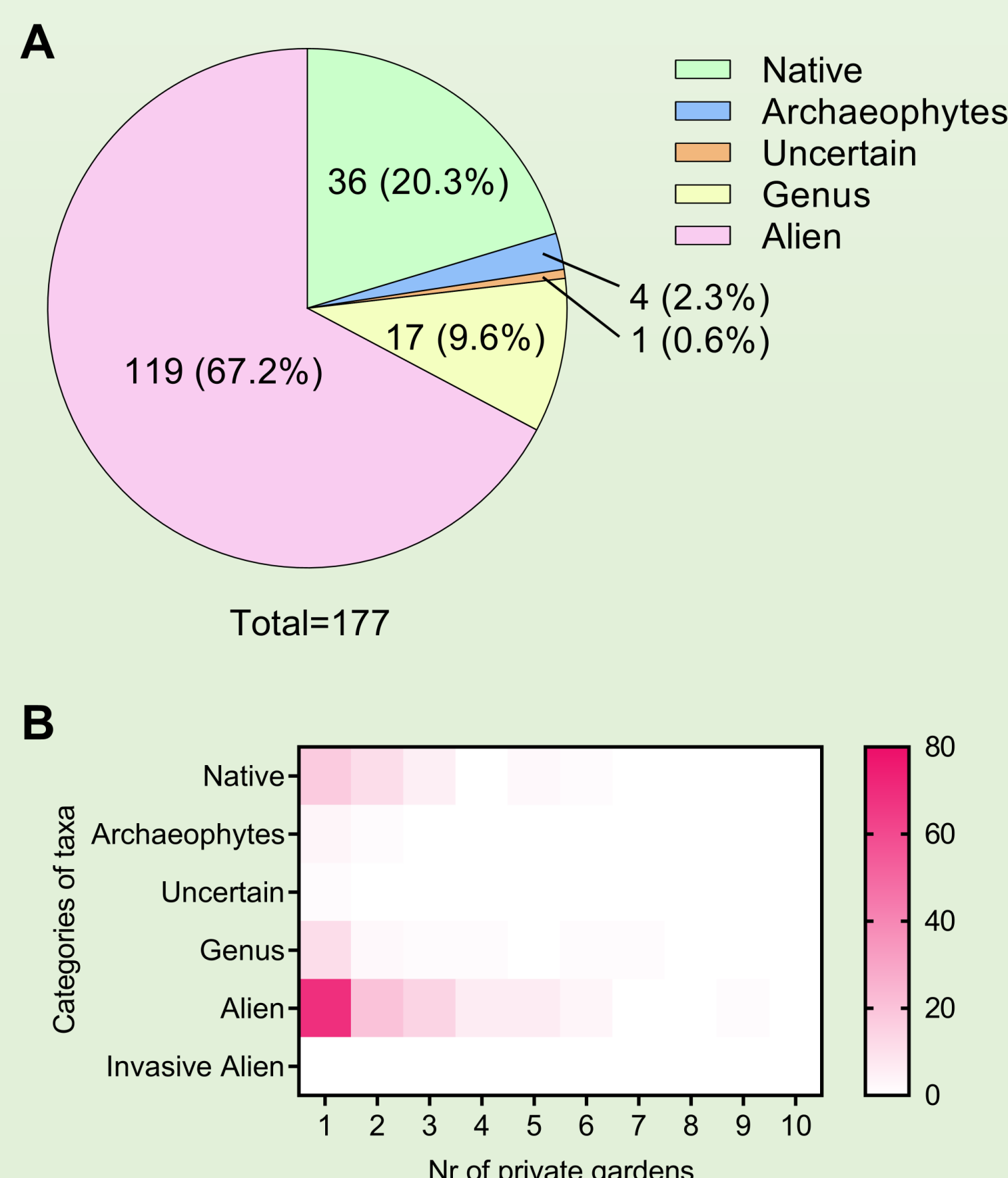


Figure 2: Ornamental plants in the private gardens.

A: 177 taxa were identified. Like on the market, alien taxa represent majority (67.2%) of the ornamental plants, while 20.3% of the ornamental plants are native. No IAPs were detected.

B: Private plantings are very heterogeneous. 57.1% of taxa are planted in only one garden, only 4% in more than half and none in all the surveyed gardens.

Table 2: Most frequent ornamental plants in the private gardens

Taxon	Classi- fication	Freq. in private gardens		Freq. in public green areas		Freq. in market	
		N	%	N	%	N	%
<i>Prunus laurocerasus</i> L.	Alien	9	90.0	8	44.4	7	53.8
<i>Rhododendron</i> L.	Genus	7	70.0	0	0.0	7	53.8
<i>Acer palmatum</i> Thunb.	Alien	6	60.0	4	22.2	9	69.2
<i>Parrotia persica</i> (DC.) C.A.Mey.	Alien	6	60.0	2	11.1	6	46.2
<i>Euonymus fortunei</i> (Turcz.) Hand.-Mazz.	Alien	6	60.0	1	5.6	9	69.2
<i>Hedera helix</i> L.	Native	6	60.0	1	5.6	9	69.2
<i>Rosa</i> L.	Genus	6	60.0	0	0.0	6	46.2

Public green areas

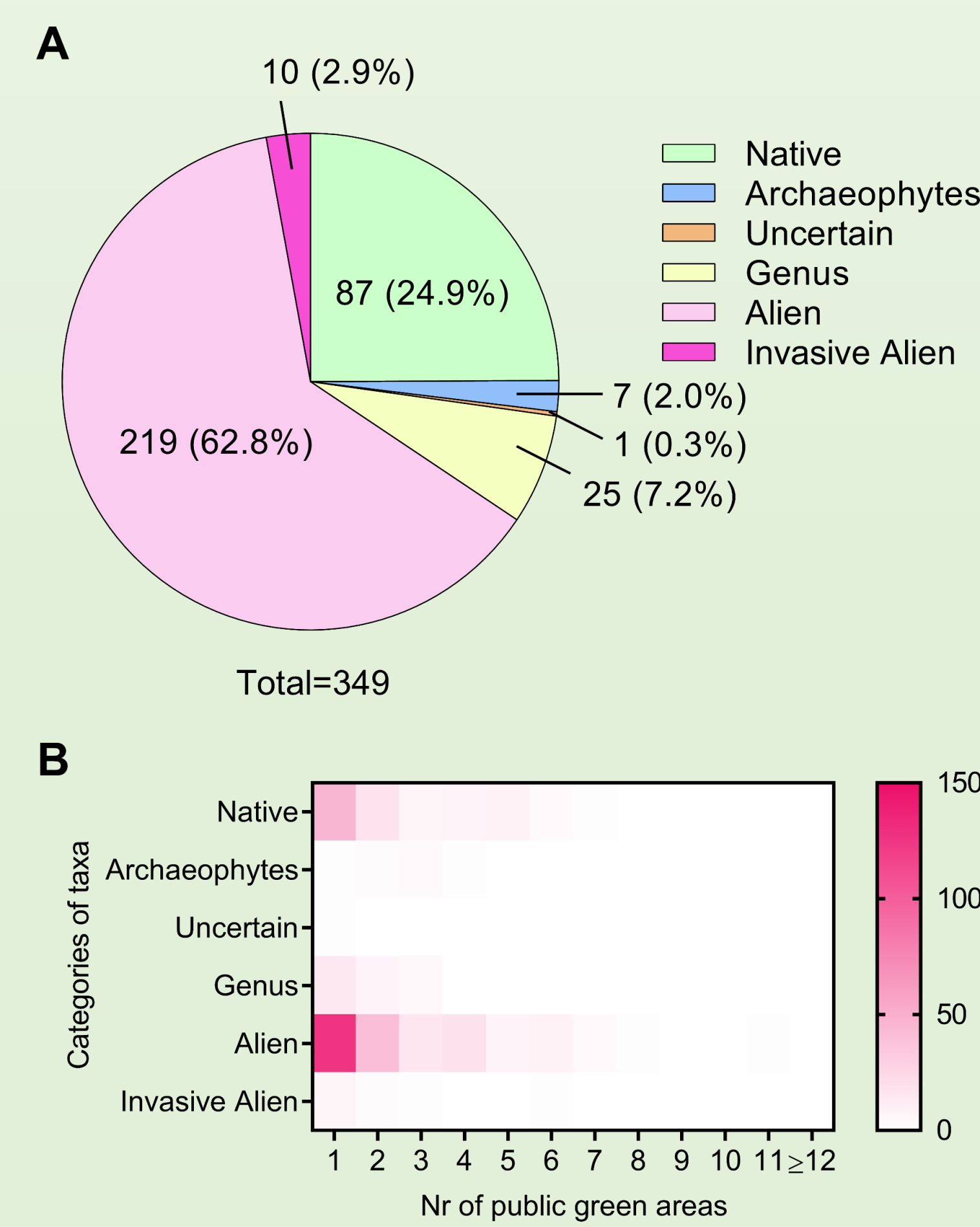


Figure 3: Ornamental plants in the public green areas.

A: 349 taxa were identified. Again, alien taxa represent majority (62.8%) and native taxa the second biggest (24.9%) category of ornamental plants. 10 distinct IAPs were also found!

B: High heterogeneity prevails also in the public green areas. 55.3% of taxa are present in only a single green area, just 0.3% in more than half and none in all the surveyed public green areas.

Table 3: Most frequent ornamental plants in the public green areas

Taxon	Classi- fication	Freq. in public green areas		Freq. in private gardens		Freq. in market	
		N	%	N	%	N	%
<i>Catalpa bignonioides</i> Walter	Alien	11	61.1	1	10.0	8	61.5
<i>Prunus laurocerasus</i> L.	Alien	8	44.4	9	90.0	7	53.8
<i>Liriodendron tulipifera</i> L.	Alien	7	38.9	2	20.0	7	53.8
<i>Betula pendula</i> Roth	Native	7	38.9	1	10.0	7	53.8
<i>Cornus sericea</i> L.	Alien	7	38.9	1	10.0	6	46.2
<i>Rhus typhina</i> L.	Alien	7	38.9	0	0.0	3	23.1

Table 4: IAPs detected in the public green areas

Taxon	Freq. in public green areas	
	N	%
<i>Ailanthus altissima</i> (Mill.) Swingle	6	33.3
<i>Impatiens glandulifera</i> Royle	3	16.7
<i>Broussonetia papyrifera</i> (L.) L'Hér. ex Vent.	2	11.1
<i>Reynoutria japonica</i> Houtt.	2	11.1
<i>Asclepias syriaca</i> L.	1	5.6
<i>Celastrus orbiculatus</i> Thunb.	1	5.6
<i>Cenchrus setaceus</i> (Forsk.) Morrone	1	5.6
<i>Cortaderia jubata</i> (Lemoine) Stapf	1	5.6
<i>Heracleum mantegazzianum</i> Sommier & Levier	1	5.6
<i>Reynoutria x bohemica</i> Chrtěk & Chrtěková	1	5.6

Most of the IAPs were detected sporadically (1–2 green areas), but *Ailanthus altissima* was found in 6 (33.3%) of the cases!

Conclusions

The range of ornamental plants on the market and the occurrence of taxa in public green spaces and private gardens in Slovenia is extremely diverse.

No IAPs were detected on the market or in private gardens.

10 IAPs were found in public green areas, most only sporadic, with *Ailanthus altissima* occurring in 1/3 of sites.

Alien ornamentals dominate Slovenian plantings, underscoring the need for harmonized species lists (black, orange, white) and non-invasive alternatives to limit future spread.

Funding