

Formation of Green Areas of the Klaipėda City

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(Received in December, 2010; Accepted in March, 2011; Available Online from 18th of April, 2011)

Anotacija

There are described landscape gardening peculiarities in the city of Klaipėda in 17-20th century and the present urban green areas system are analyzed. SWOT analysis of the green area system in the city of Klaipėda is presented in this paper too. High attention is given to the diversity of decorative plants in Klaipėda greeneries: streets and parks. There are discussed the main solutions provided for in the Master Plan of the city of Klaipėda.

Key words: *landscape gardening, Klaipėda city, Master plan, decorative plants.*

Abstract

Straipsnyje aptariami Klaipėdos miesto želdynų formavimo ypatumai XVII–XX amžiuje, analizuojama šiandieninė želdynų sistema. Atlikta želdynų formavimo SSGG analizė. Didelis dėmesys skiriamas Klaipėdos gatvių ir parkų želdynų dekoratyvinių augalų įvairovei. Aptariami svarbiausi Klaipėdos miesto bendrojo plano sprendiniai, susiję su šio miesto želdynų sistema.

Reikšminiai žodžiai: *želdynų formavimas, Klaipėdos miestas, bendrasis planas, dekoratyvieji augalai.*

Introduction

Landscape gardening is especially necessary in places of intense and diverse human activity, especially in the cities, where the gardening becomes significant compositional and structural elements of cities, improves and maintains the quality of cultivated landscape, and provides distinctiveness. By improving the hygienic quality of the environment, as well as the aesthetical view, landscape gardening ensures favourable conditions for living, work, and residence, and develops the general concept of beauty and of the surrounding environment.

Development of the system of urban greeneries is important from the point of view of optimization of urbanized environment and preservation of natural values (Prapiestienė, 2003). The urban landscape gardening system is an aggregate of newly-arranged and existing urban and city outskirt greenery, related to a natural framework, and making a mutually functionally purposeful and compositionally united integer, meeting the needs of the urban community, and ensuring the ecological stability of the urban environment. Therefore, the system of city landscape gardening must be organically integrated into the city's urban, natural, ecological, social and economic environment (Burinskienė et al., 2003; Kučinskienė, 2008; Oldfield, 2008; Willis, Morkel, 2008).

The landscape gardening system must be developed in such a way so that the building complexes are better intertwined into the landscape, and so that the territory is better utilised. One or another disposition of landscape gardening in the city determines the form of their system.

The aim of this research was to discuss on historical data of landscape gardening in the city of Klaipėda, to analyse the present situation, to evaluate strengths, weaknesses, opportunities and threats of the landscape gardening in the city.

Material and methods

There was studied a historical and other literature and documents (i. e., Klaipėda Master Plan). The decorative plants diversity in Klaipėda greeneries were evaluated in the plant vegetative

period of 2006-2010. There were determined woody plant species according to the literature (Coombes, 2002; Navasaitis, 2004) and a percentage of prevailed plant species.

Results and discussion

Historical Review of Landscape Gardening in the City of Klaipėda.

The old historical documents state that in the middle of the thirteenth (13th) century, when the town was being founded, there were many forests around Klaipėda. However, forests soon began perishing due to intense human activities. In the seventeenth (17th) century, the city established the law prohibiting the cutting of green trees, and penalties were imposed for cutting such trees (Tatoris, 1994).

Green space in the city of Klaipėda and its suburbs had a double value: utilitarian, and aesthetic. Strong sea winds and sand blizzards forced the townsmen to create green protective cofferdams to protect the fields and the lagoon junction. To make the city more beautiful, the city's magistrate was arranging the city's squares and requiring that they would be kept in good order, and decorating cemeteries with shrubs and flowers. Wealthy residents, or those returning after travels to foreign countries, planted ornamental gardens at their homes (Krupavičiūtė, Saulėnienė, 2004).

Exurban landscape gardening (currently the city's territory). In 1805, the Lithuanian Military and Domain Chamber issued an ordinance requiring the changing of the areas that were covered with sand into useful forests. By 1811, the sea-coast was planted with Willow, Alder, Birch, and Pine. From the middle of the 19th century, the landscape gardening became consistent and systematic; in 1857, the landscape gardening plan for eighteen years was prepared.

Planting of streets and roadsides with trees. From the second-half of the 18th century, Klaipėda's town streets and suburban pathways were planted with trees. The tradition of planting two trees from both sides of the main entrance from the street was introduced. Authorities advised the planting of: Ashes and Maples (but not Willows or Asps) at the road; in sandy soils, Birches; and in front of the houses, Lindens, Chestnuts, and Ashes. In the beginning of the 20th century, there were attempts to plant each street with different types of trees.

City squares and green parks. In the beginning of the 19th century, the first public squares and parks were established in Klaipėda. In 1820, the first city garden was planted in the place of the former cemetery (the current Naujojo Sodo Street). The City Garden had been in the place of the current K. Donelaičio Square. Concerts were organised in this garden. The square was planted at St. John Church (now Turgaus Street) to replace the burnt houses; trees were planted in the current Lietuvininkų Square. The city's green-areas were complemented by churchyards (e.g., a Birch tree area at St. Jacob's Church), and the old cemetery was turned into a garden. Queen Louise's Square was planted at the Danė River (in front of the current District Building). In the beginning of the 19th century, the planting of the City Park in the location of the current S. Neris Street began (it did not survive). There were two recreational squares at the Klaipėda railway station, from both sides of the central building (one of them, with the natural monument "White Acacia", remains today). The garden-park was prospering at the house of Klaipėda's Riflemen organisation; now it is the public garden at Šaulių Street.

Private gardens. In the 18th century, planting of private ornamental gardens began in Klaipėda. They became popular due to English merchants. Quite large ornamental gardens grew at wealthy homesteads on the right bank of the Dane River, between the current Liepu Street and Dane Street. These gardens were of square shape, with a round or oval parterre in the centre. In the end of the 19th century, the landscape-type gardens emerged.

Cemetery. Urban and suburban greenery was complemented by cemeteries, a place of mass visits by townspeople. These areas were planted with hedges, trees (Beeches, Pines), shrubs, and flowers (e.g., lavenders, perennial daisies) (Krupavičiūtė, Saulėnienė, 2004; Tatoris, 1994; Vareikis, 1993; Zembrickis, 2002; 2004).

The Present Landscape Gardening System in the City of Klaipėda.

Klaipėda is, in terms of population, the third-largest city in Lithuania. The city's area is 98.35 km². Its population totals 182,752 persons (1 January 2010). The city's area-per-head is approximately 540m². Recreational landscape gardening occupies approximately 2 km² of the city's territory (i.e., approximately 10.9 m² per head), and all green areas cover 22.54 percent of the city's territory. For example, in Šiauliai all green areas cover 18.5 percent of the city's territory, and greeneries of public use cover 9.6 percent of all territory (Brinkytė, 2010). In 1975 greeneries of public use in Klaipėda city was about 11.1 m² per head, in 1979 – 8.6 m² per head, in 1989 – 8.5m² per head. And in Vilnius – 10.5, in Kaunas – 15.3, in Šiauliai – 39.1 m² per head in 1989. The areas of gardens of new residential quarters in Klaipėda in 1989 was for 3 times less than in Vilnius and Kaunas, but the areas of forest parks in Klaipėda was by the twice more than in Kaunas and Šiauliai (Prapiestienė, 2003a).

The purpose of Klaipėda's greenery is multifunctional: ecological, preservation of biological variety, recreational, architectural-ascetic, cultural-historical, cognitive, psychological, and scientific. The greenery affects the quality of the living environment: improves the sanitation-hygiene and micro-climatic conditions, regulates air humidity and circulation, makes the climate milder, reduces distribution of noise, dust, and chemical pollutants from the streets and other objects of pollution, and provides optimal living conditions.

The city of Klaipėda features a linear structure. Landscape gardening was formed in the same manner. Development of the city of Klaipėda varies according to the geographical location: the northern and southern parts of the city (the so-called 'sleeping areas') are where the space for formation of a living environment is being created. The development density in the Old Town is very high, and green areas are minimal. Residential areas differ as well. The major portion of private residences is located in the north of the city. Here, people arrange the environment according to their own understanding of beauty.

Meanwhile, complex planting should assist in forming the general landscape; planting cannot be spontaneous.

Landscape gardening in the city must be distributed evenly, especially in residential areas, ensuring convenient access on foot and by transport, and so that the natural framework is its basis.

Upon analysing the existing situation in the city of Klaipėda, it was observed that greenery in multi-apartment house residential areas and between the complexes of residential houses is distributed unevenly. For example, monitoring in the multi-apartment house residential area in the northern part of the city (covering 358,550 m²) has demonstrated that greenery occupies 100,284m² (i.e., nearly one-third of the territory), and its amount per capita is about 30m². Meanwhile, the multi-apartment house residential area in the southern part of the city (covering 525,000m²) occupies only 35,000m² of greenery (i.e., as little as 7 percent of the territory), and its amount per capita is only about 7m².

There are described some strengths, weaknesses, opportunities and threats of the landscape gardening in the city (Table). According to the research data the main strengths of Klaipėda greenery system are the new street reconstruction projects together with planting activities, much attention from Municipality to the balanced development of urbanised environment and other. But there are established some weaknesses and threats too in this system (Table).

The Decorative Plants Diversity in Klaipėda Greeneries.

Plants are a vital component of urban ecology and the city landscape. Plant diversity underpins the sustainable and stable development of city economies and helps to regulate the local climate, reduce noise, and beautify the urban environment – all of which impact on human well-being. Urban landscape ecosystems built up with few species are highly dependent on artificial maintenance. Increasing green spaces and improving the productivity of communities and eco-efficiency cannot be realized without the diversity of plants.

Table. SWOT analysis of green area system in the city of Klaipėda
lentelė. Klaipėdos miesto želdynų sistemos SSGG analizė

STRENGTHS / STIPRYBĖS	WEAKNESSES / SILPNYBĖS
<ol style="list-style-type: none"> 1. The important projects and plans are prepared. It will ensure a purposeful development of the city gardening system: <ol style="list-style-type: none"> 1.1. Reconstruction of Turgaus and Tiltu streets. 1.2. Project for reconstruction of the Klaipėda, Giruliai and Melnragė forests. 1.3. Feasibility study and special plan of the territory of Dane river valley. 1.4. Projection and equipment of new park in the southern part of the city. 1.5. Other projects that will ensure development of the green areas in the city. 2. The composition of the trees and shrubs species in the city greeneries is optimal to determine a high ecological-aesthetical environmental quality. 3. Average rate of greeneries in Klaipėda looks like to the greeneries in the other big cities in Lithuania. 4. The personnel of the Municipality and other institutions are experienced and sufficiently qualified. 5. The Municipality of Klaipėda City and other environmental institutions pay much attention to the balanced development; the aim of the environment protection program is to create prerequisites for a healthy, clean environment, to ensure rational use of natural resources, to preserve the unique landscape and biological diversity. 6. The important projects and plans are prepared in Lithuania. It will ensure a balanced development of the city of Klaipėda. 7. The implementation of strategic planning in Municipality: the Municipality Council has adopted the strategic plan of action for the years 2007 to 2013 and a new master plan of Klaipėda city for the period to 2020. 	<ol style="list-style-type: none"> 1. Frequent deficit of finances for the purposeful greenery system planning. 2. Uneven distribution of greeneries in the city: deficit of green areas in the southern part of the city is visible. 3. A bad physical-aesthetical state of the trees and shrubs in the street greeneries. There are some reasons of this problem: a rough leafage pruning of mature trees, a wrong removal of branches, not disinfect places of the slice. 4. A bad physical-aesthetical state of the hedgerows in the street greeneries: there are identified rarefaction hedgerows. 5. A shortage of colourful flowering decorative shrubs in parks and squares. 6. A bad quality of swards in the greeneries: swards are trample down, because there are unsuitable pathway system. Territories. 7. Territories of parks and squares are not included in the Real-estate Register, indeterminate their dividing lines. 8. The problems of individual transport parking decided insufficiently (especially in housing estates), so the green areas are depredated. 9. The green areas formation and management are implemented without purposeful composition idea. 10. There are insufficient aeropolynological state of greeneries in the city: there are a significant number of allergogenic plants as well.
OPPORTUNITIES / GALIMYBĖS	THREATS / GRĖSMĖS
<ol style="list-style-type: none"> 1. New management projects of urban forests in Klaipėda, Giruliai and Melnragė will enable to administer recreational forests by up-to-date methods. 2. Realization of special plan of the territory of Danė river valley will enable to develop a cultural and ecological tourism. 3. New green areas in the southern part of the city to meet the quality environmental and recreational requirements for the public. 4. When the financing from the EU structural funds is in place, the material base of the greeneries management will be modernised more rapidly. 5. When the strategic management system is implemented, the activities and financial resources of the municipality will be planned more rationally and optimally for the greeneries management. 	<ol style="list-style-type: none"> 1. The decline of green areas regarding to the vandalism. 2. Frequently uncontrolled processes of Klaipėda city and surroundings urbanization and antropogenization. 3. Frequent adjustments of prepared plans: strategic, special, master and other. 4. Climate exchange (a frequent occurrence of strong wind), background pollution (acid rain, emission of harmful chemical material to atmosphere) are damaging to greeneries: trees, shrubs, flowers.

Green-areas in the cities currently are predominated by the local types of leafy trees, with comparatively low number of local and foreign coniferous types. As early as 1806, Friedrich

Heinrich Alexander von Humboldt, the creator of plant geography, wrote, “Even though the character of different parts of the world depends on all environmental phenomena, the most important determinant of natural images is vegetation” (Burinskienė et al., 2003; Coombes, 2002; Juškevičius, 2003; Oldfield, 2008; Ritter, Coombes, 1996; Willis, Morkel, 2008).

The *Tilia* genus species (including the local species, *Tilia cordata* Mill.) are prevailing along the streets of the city of Klaipėda. Another more-common introduced species is *Tilia platyphyllos* Scop. Some less-common *Tilia* L. genera species in Klaipėda include *Tilia americana* L., *Tilia tomentosa* Moench, and *Tilia euchlora* K. Koch. Lime trees amount to approximately seventy percent of trees growing along some streets of the city. For example, in Šiauliai city lime trees amount approximately fifty-four percent of all other trees (Brinkytė, 2010). Limes are popular trees, both in the parks and along the streets (Nekrošienė, 2008; Žeimavičius et al., 2004). The majority of limes in the Green Areas of Klaipėda were planted fifty to seventy years ago. Even though limes can live as long as five-hundred to six-hundred years, when achieving mature age, they contract various fungal diseases.

According to the research data, in the majority of the city of Klaipėda’s green-areas, there were cultivated 39 species and forms of conifers, belonging to three families and nine genus. Although the variety is not very great, however considering that these plants were found also in private areas: in many cases, these statistics surpass the number of plant taxa recorded in the old estates and city parks of Lithuania (Januškevičius, Budriūnas, 1987; Januškevičius, Liagienė, 2000). Even in the Klaipėda City Park and in the Klaipėda Sculpture Park, there is a significantly smaller variety, on average, of plants including conifers, than in other green-areas of the city. This fact indicates the willingness of managers of businesses, institutions, and organisations to improve and decorate their working environment(s).

Planning of Landscape Gardening System in the Master Plan of Klaipėda.

Planning and management of the city’s green-areas is an important landscape management activity. Issues of management and development of the city’s green-areas are continuously investigated by the scientists of the world, as well as of Lithuania. Preparation of master plans of towns involves also the issue of natural environment and especially the formation of green-areas in the town territory. Preparation of master plans of towns involves also the relevant issues of the formation of common use in a landscape gardening system.

Accounting of green elements in the towns is necessary for management and arrangement of green-areas, and for this purpose, it is necessary to perform the taking of inventory of green-areas in towns. Data should be continuously updated in such inventory systems by the entering of new data. Accounting of green-areas would enable estimation of the condition of green-areas in the town territories, and to plan for the development of new green-areas.

Currently, the planning of the green environment in the towns must be based on a great number of legal documents; this method highly encumbers the work of green-area planning, as well as the preparation of projects.

The issue concerning the status of common-use green-areas (i.e., parks, and especially public gardens) arises due to the absence of precise specifications in legislation for the preparation of master plans of towns. No purpose is legally established for green-areas of common public use. The law does not protect the areas of common public use; and for this reason such territories have (only) a temporary status, there is a threat of developing them, or utilising them in other ways.

The Klaipėda Master Plan was approved by the “Resolution of the City of Klaipėda Municipality Board, Number T2-110, of 5 April 2007”.

The solutions provided for in the Master Plan of the city of Klaipėda state:

- The following is necessary, in order to maintain and preserve the existing character of the natural landscape, as well as the abundance of elements for restoration of the natural appearance of landscape and the formation of a more stable natural framework:

1. To form new city forest parks at the Smiltelė Stream, the Danė River, the Pamario Water Reservoir, the third water reservoir (at Melnragė), Giruliai and Summer stages, the leisure park, and the eastern residential territories of the city (by forming new green-areas).
2. To establish the precise rates to be mandatorily preserved, or to be newly planted, in each block/area, by means of the preparation of detailed plans of specific territories.

- It is necessary, in order to provide conditions for the better life quality of the city's population, and also to strengthen the resistance of the natural framework for anthropogenic impact, to preserve the existing network of parks and green-areas, and arrange additional territories with borders for the development of new parks and public gardens. The territories of green-areas and parks should include the old cemetery territories in the city, and detailed plans in these territories should not consider their shrinking in size, if high density of construction is intended.

- To form the stable protective green belts for water bodies at the small tributaries of the Dane River and the Smiltele stream in the territory of the city, by adapting them for public recreational needs.

- In order to reduce the impact of air pollution and noise on human health in the city, the stable green-areas should be formed protecting the residential areas from main streets and industrial areas.

- Protection of water bodies and zones requires the following:

1. Natural territories and territories with low urbanisation.

2. Green-planted areas and lawns should be formed at water bodies, in order to make them resistant to impact and pollution, and to make them able to absorb the pollution. They should be included in a special plan of landscape design (Klaipėdos miesto..., 2007a; 2007b).

These are solutions the basis for priority activities in the improvement of city's environmental quality.

Conclusions

1. The landscape gardening in the city of Klaipėda became consistent and systematic only from the middle of the 19th century, as the streets and suburban pathways were planted with trees from the second-half of the 18th century and the first public squares and parks were established in the beginning of the 19th century.
2. At present urban development of the city of Klaipėda determined the subsequent form of landscape gardening system: smaller or larger isles of greenery are mosaically scattered in the structural pattern of the city. These isles are linked by communication systems, green links, and yard vegetation. But, there are 'spots' in the city that feature an obvious lack of greenery. Deficit of green areas in the southern part of the city is visible.
3. Green-areas in the city of Klaipėda currently are predominated by the local types of leafy trees, especially *Tilia* L. genus, with comparatively of local and foreign coniferous species: there were found 39 species and forms of conifers.
4. Solutions of the Klaipėda Master Plan focus on maintaining and preserving the natural landscape, forming new parks, preserving the existing network of parks and green-areas, and arranging additional territories with borders for the development of new parks and public gardens.

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Klaipėdos miesto želdynų formavimas

(Gauta 2010 m. gruodžio mėn.; atiduota spaudai 2011 m. kovo mėn.; prieiga internete nuo 2011 m. balandžio 18 d.)

Santrauka

Senieji istoriniai dokumentai byloja, kad XIII a. viduryje, kai kūrėsi miestas, Klaipėdos apylinkėse buvo nemažai miškų. Tačiau dėl intensyvios žmonių veiklos miškai greitai pradėjo nykti. XVII a. pasirodė įstatymų, draudžiančių kirsti žalius medžius, už nukirstus medžius buvo grasinama bausmėmis. Tuo metu Klaipėdos miesto ir užmiesčio želdynai turėjo dvejopą – utilitarinę ir estetinę – reikšmę. Stiprūs jūriniai vėjai ir pustomas smėlis vertė miestiečius kurti žaliąsias apsaugines užtūras, kad nebūtų užnešti laukai ir marių protaka. Norėdamas, kad miestas gražėtų, magistratas rengė mieste aikštes, skverus, reikalavo juos tvarkyti, krūmais ir gėlėmis papuošti kapines. Atvykę gyventi turtingieji arba po kitus kraštus pasižvalgę miestiečiai prie savo namų veisė dekoratyvinius sodus.

Šiuo metu Klaipėda – tai trečias pagal dydį Lietuvos miestas. Vienam gyventojui tenka apie 540 m² miesto teritorijos. Rekreaciniai želdynai užima apytikriai 2 km² miesto, t. y. vienam gyventojui tenka apie 10,9 m², o visi žalieji plotai užima 22,54 proc. miesto teritorijos ploto.

Išnagrinėjus esamą situaciją Klaipėdos mieste pastebėta, kad želdynai mikrorajonuose, tarp gyvenamųjų namų kompleksų pasiskirstę nevienodai. Pavyzdžiui, atlikus stebėjimus šiaurinėje miesto dalyje esančiame mikrorajone, kurio plotas apie 358550 m², nustatyta, kad želdynai užima maždaug 100284 m², tai yra beveik trečdalis teritorijos, o vienam gyventojui tenka apie 30 m². Tuo tarpu pietinėje miesto dalyje esančiame mikrorajone, kurio plotas apie 525000 m², želdynai užima 35000 m², tai yra tik 7 proc. teritorijos, o vienam gyventojui čia tenka tik apie 7 m² želdinių.

Didelę reikšmę aplinkos kokybei turi ne tik želdynų pasiskirstymas, bet ir juos formuojančių augalų rūšinė sudėtis. Klaipėdos miesto įvairios paskirties želdynuose (išskyrus KU Botanikos sodą) aptinkama per 100 rūšių vietinės kilmės ir introdukuotų medžių bei krūmų. Gatvių želdynuose labiausiai paplitusios *Tilia L.* genties rūšys, o iš jų – vietinė rūšis *Tilia cordata* Mill. Kita dažniau sutinkama introdukuota rūšis – *Tilia platyphyllos* Scop. Iš mažiau paplitusių *Tilia L.* genties rūšių Klaipėdoje randama *Tilia americana* L., *Tilia tomentosa* Moench, *Tilia euchlora* K. Koch. Kai kuriose miesto gatvėse liepos sudaro apie 70 proc. ten augančių medžių. Tyrimų duomenimis, didesnėje dalyje Klaipėdos miesto želdynų auginamos 39 spygliuočių rūšys ir formos, priklausančios trimis šeimoms ir 9 gentims.

2007 m. balandžio 5 d. Klaipėdos miesto savivaldybės tarybos sprendimu Nr.T2-110 patvirtintas Klaipėdos miesto bendrasis planas. Klaipėdos miesto bendrojo plano sprendiniais siekiama išlaikyti ir išsaugoti natūralų kraštovaizdį, suformuoti naujus parkus, išsaugoti esamą parkų ir skverų tinklą bei suformuoti papildomas teritorijas su ribomis naujiems parkams ir skverams įkurti. Teritorinio planavimo dokumentuose numatyta paruošti erdvines koncepcijas, suformuoti bendriesiems poreikiams reikalingus sklypus bei visuomenines erdves. Nors bendrajame plane ir nužymėti bendro naudojimo želdynai, tačiau jie nėra saugojami juridiskai. Bendrajame plane nėra numatytos esamų skverų rekonstrukcijų ir sutvarkymo projektų strategijos.