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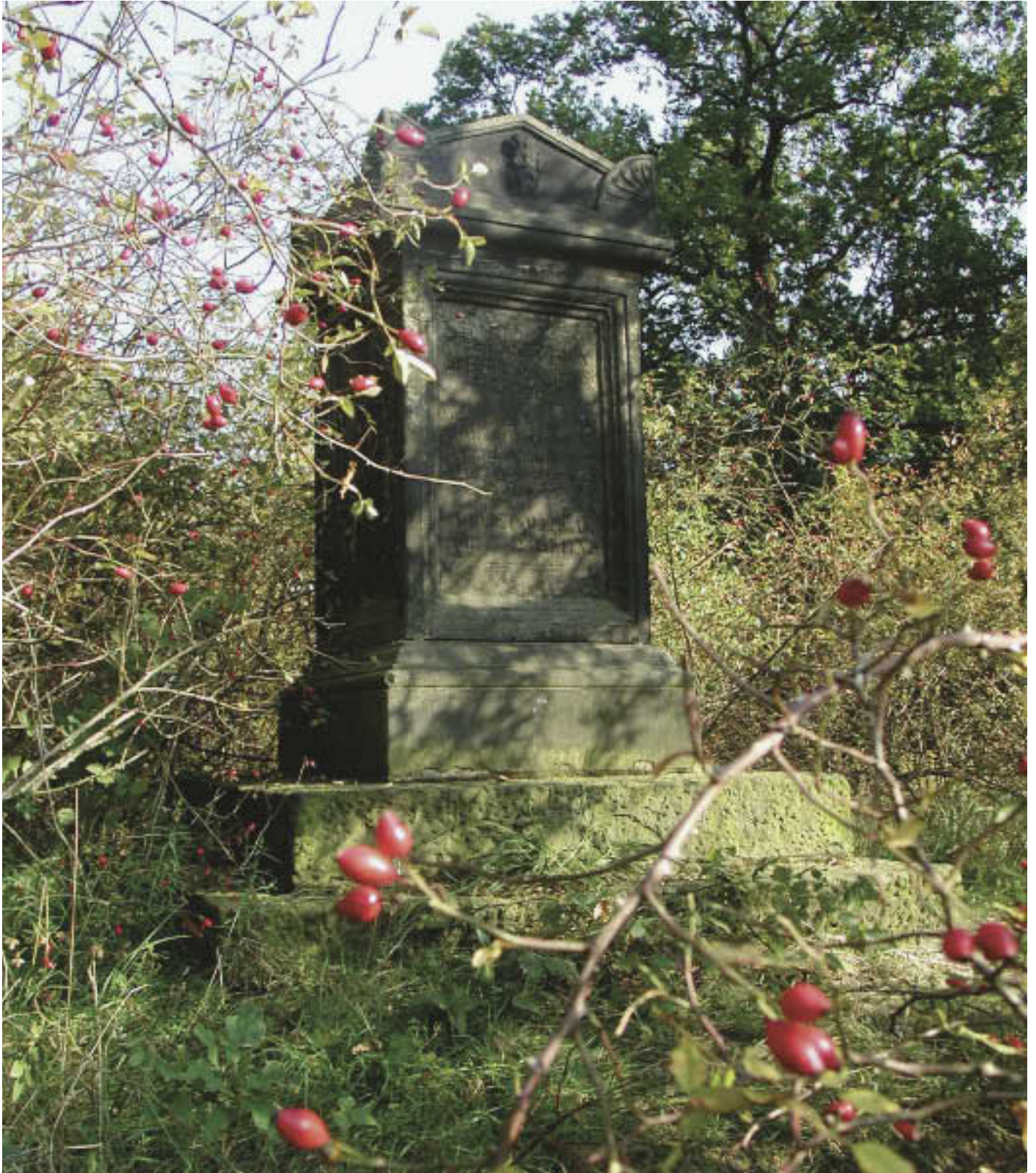


Nature in a World Heritage Garden Kingdom of Dessau-Wörlitz



Biosphärenreservat
Mittelelbe





*„HEAR, CHILDREN, A VOICE OF WARNING /
CAREFUL TOIL CREATED THESE HILLS AND THESE COPPICES
TO PROTECT THE FIELD-PRESERVING DYKES FROM THE ICE
WHICH WOULD DESTROY THEM / USE ALL MEANS TO PRESERVE THEM“*

(Prince Franz, inscription on the Proteus Stone, around 1795)

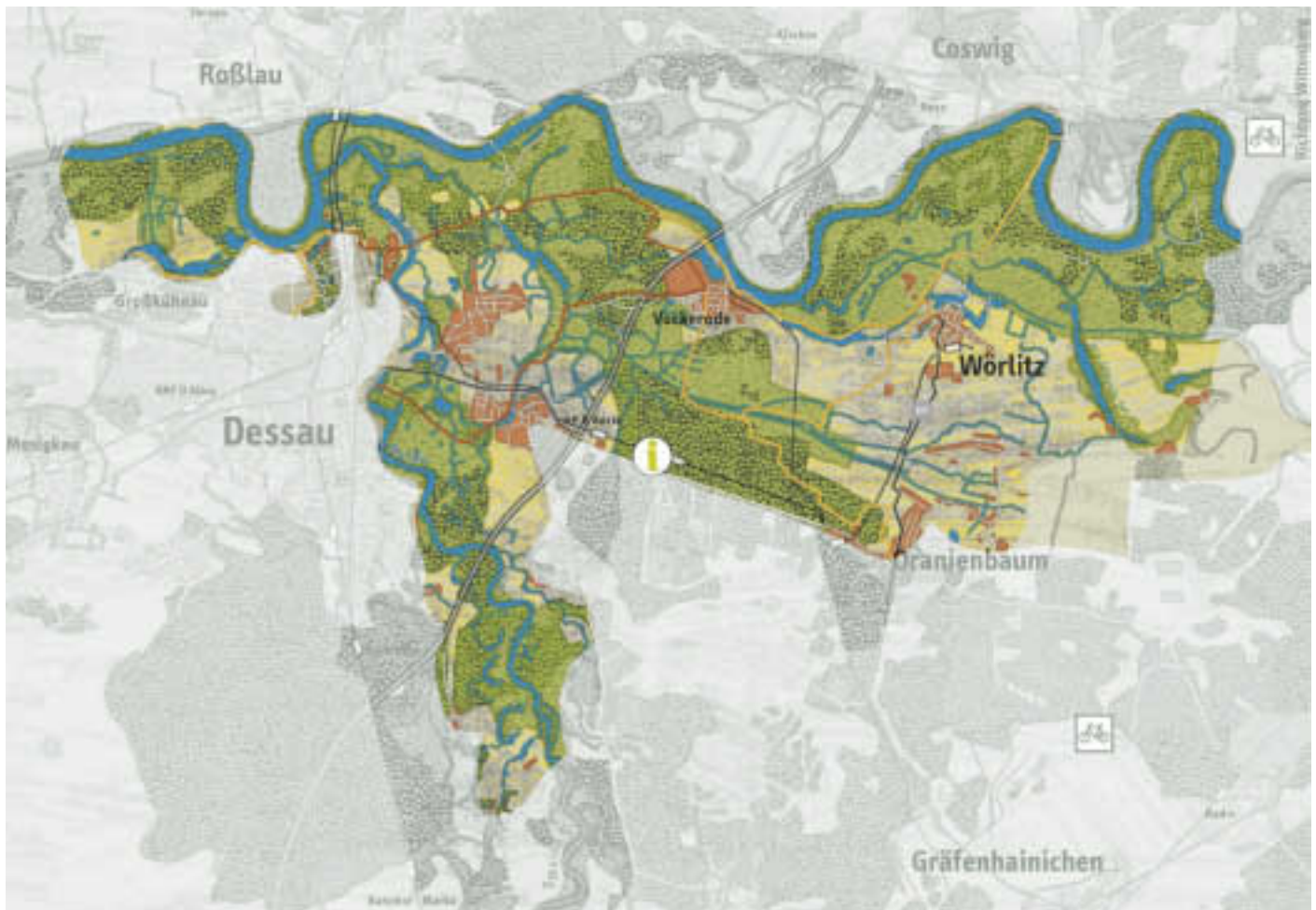
Dessau-Wörlitz Elbe floodplain

Objects of protection working together

Prince Franz, full royal name LEOPOLD III. FRIEDRICH FRANZ OF ANHALT-DESSAU, lived from 1740–1817 and transformed his little principality in the spirit of the Enlightenment of the time. He undertook a forward-looking programme of developing and embellishing the landscape. Along with his landscape architect, Friedrich Wilhelm Freiherr von Erdmannsdorff, the Prince recognised the beauty of nature and made use of the full range of impressive forms the landscape elements had to offer.

It was Leopold I in particular, FRANZ' grandfather, who came from Dessau, who laid the foundations for the development of the land by draining low-lying land and constructing dykes to protect against flooding. During his reign, Prince Franz connected „the good with the useful“ and transformed parts of the natural floodplain of the Elbe and Mulde rivers into an artistically designed cultural landscape. Some of the particularly impressive elements which define the landscape include: solitary oaks and woodland pastures,

fruit plantations and avenues, dykes and floodplain meadows, backwaters, riverside woodland and long vistas. In all of this, the original nature always remains the basis for the structures. Thanks to the caring maintenance of the riverbank habitat, many species characteristic of the valley have been retained. The maintenance of this historic cultural landscape also contributes to the continued existence of these animal and plant species.



Solitary oaks and woodland pastures

From a strong tree to an ecosystem

At the beginning of the 18th Century, the riverside woodlands were extensively cleared to meet the growing demand for wood for construction and fuel, and for intensive woodland pasture. Only oaks and wild fruits were spared, as a result of their fruits and the pig farming they permitted. The oaks were also protected by a princely decree, since their long-lasting hard wood had always been sought after. This decree, the so-called Oak Rule,

declared that the Prince owned all of the oaks, regardless of who owned the ground on which they stood. The thinned-out wood, in which the oaks in particular had been retained, was the starting point for the design of the entire landscape. The result is impressive old trees, standing alone or in small groups across the floodplain meadows. As well as pig farming, keeping wild animals also played a significant role in the development of coherent groups

of trees, as in parks. These woodland pastures are characterised by the lack of shrubbery and intensive use of the grassland in the herb layer, and can still be seen extensively in the Garden Kingdom of Dessau-Wörlitz today.

Old oaks arranged in rows in front of dykes are evidence of historic flood protection. During the winter, these old oaks serve as ice-breakers in the event of a flood, thus protecting the dyke from damage.

These solitary trees are almost all common oak, *Quercus robur*. The oldest of these trees in the Garden Kingdom of Dessau-Wörlitz is estimated to be around 650 years old and has a trunk diameter of 2.32m and a circumference of 7.30m at chest height. The old oaks provide a habitat for many animal species, including the large tree-dwelling beetles such as *Cerambyx cerdo*, *Lucanus cervus* and the *Osmodera eremita*. The size of the populations of these ancient woodland relic species is extraordinary by Central European standards, since the trees in the solitary oak meadows and woodland pastures ensured their prevalence. The Middle Elbe is the centre of proliferation for the *Cerambyx cerdo* in Central Europe.



Solitary oak – *Quercus robur*

The wide variety of woodpecker species is a further indicator of how old the trees are. *Dendrocopos medius*, which is characteristic of the Central Elbe area, is particularly worth mentioning. Further woodpecker species include *Dendrocopos major*, *Dryocopus martius*, *Picus viridis*, *Picus canus*, *Dryobates minor* and *Jynx torquilla*.

Both then and now, the meadows dotted with solitary trees form aesthetic bridges between the stylised gardens and the natural riverside woodland. Long vistas running through artificially created, yet natural-looking landscape structures allowed the observer to experience the effect of all the landscape elements. Unfortunately, later construction has meant that often only sections of the long vistas remain.

Alongside their historic cultural significance, the old oaks are also valuable for nature conservation, which is why the care and maintenance of the cultural historic landscape is the main focus of the biosphere reserve administration. Keeping the remaining long vistas clear, replanting solitary oaks and supporting open land management all contribute to securing this cultural heritage for the future.



Lucanus cervus is one of the largest beetles in Central Europe. It can grow up to 8 cm long.



Sheep – pasture

Plantations / avenues

The fruit tree

Avenues and rows of trees connected towns and villages to the landscape, steered the gaze of the traveller towards his destination and brought structure to the wide open landscape. Records show that the oldest avenue in the Garden Kingdom was created in 1762. This avenue of linden trees in Dessau-Waldersee leads from the Jonitzer Mühle to the castle Luisium.

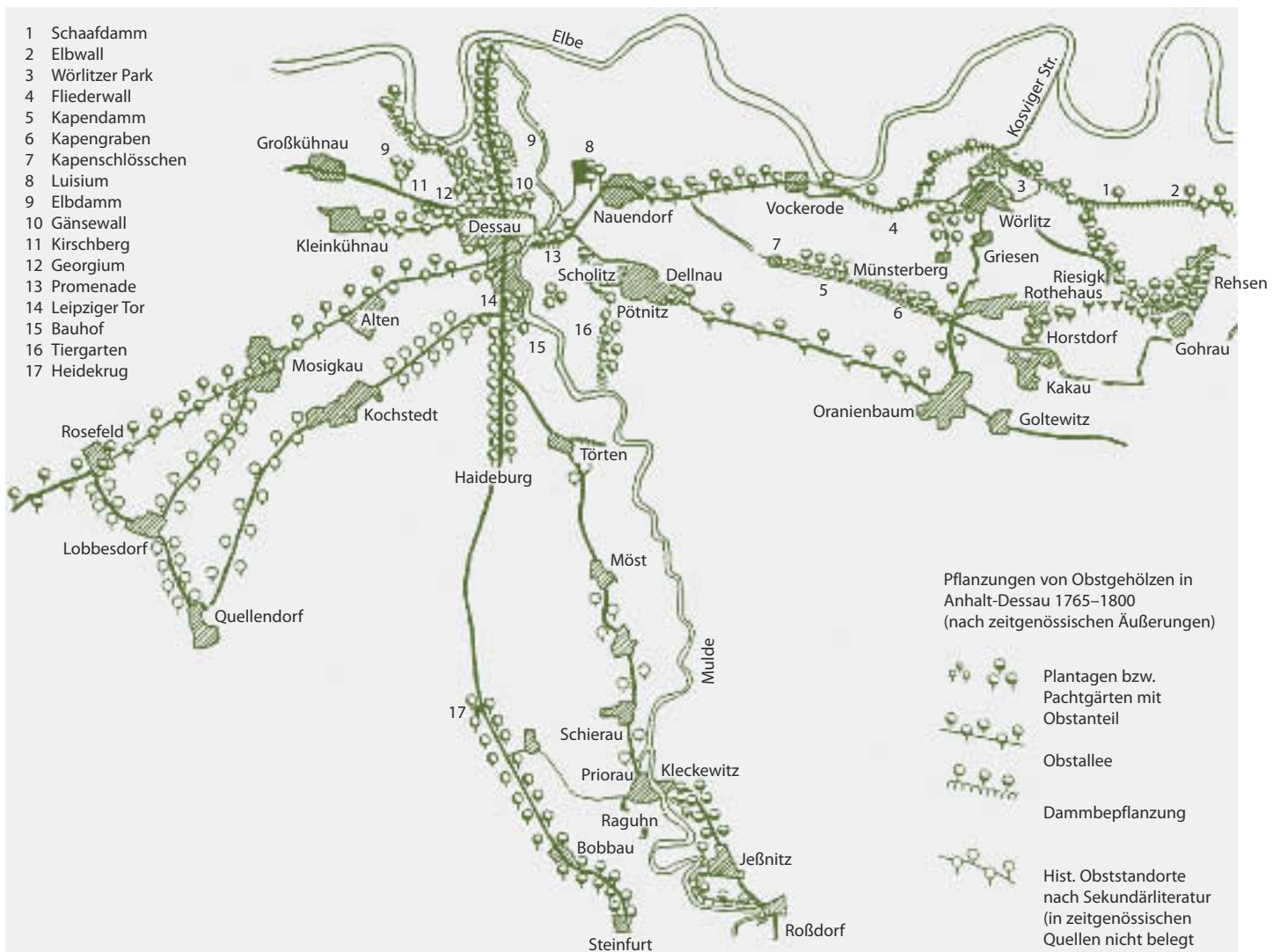
In addition, specific tree species were used in the landscape to point the way, help with orientation and provide structure. As well as *Populus nigra* »Italica«, which can be seen from a great distance, other trees were planted, including *Pinus nigra* as a route marker, *Platanus x hispanica* for marking dyke crossings or “tree gate” oaks to mark trench crossings.



Münsterberger Wall historic avenue



Populus nigra »Italica«



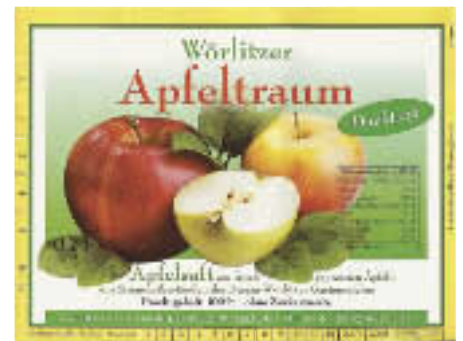
Overview of the historic fruit trees along the avenues, on dykes, in plantations and gardens, according to Dr. K. Lott, 1991

Prince FRANZ paid particular attention to “fruit-bearing trees”. He ordered that fruit trees be planted along the new or improved paths and roads, on ridges and in meadows. Further fruit plantations in the parks, estates and along the roads provided an important source of income and tied in with his belief in the synthesis between “the useful and the good”. The fruit tree avenues and fruit plantations make a wonderful contribution to the landscape, both with the fruit blossom in Spring and during the Autumn harvest. From a nature conservation point of view, the old orchards are valuable habitats for many plant and animal species. The combination of pasture land and maintained woodland is especially important for maintaining specific orchards for nature conservation purposes.



Luisium castle

The old fruit trees are also important gene reserves for fruit varieties. It is important that they are retained by replanting, in order to reduce the loss of old varieties. The Förder- und Landschaftspflegeverein [Society for Promotion and Landscape Maintenance] of the Middle Elbe biosphere reserve maintains, cares for and uses the remaining trees in the orchards of the Garden Kingdom of Dessau-Wörlitz. Today, small regional processing companies produce single-species juices and jams.

Butterfly on fallen fruit – *Vanessa atalanta*

Hardwood floodplain

A natural habitat in the cultural Elbe Valley

Hardwood floodplain woodland takes up a large proportion of the space in the Garden Kingdom of Dessau-Wörlitz. It represents a natural connection to the landscapes created in the Garden Kingdom, but the way today's mixture of species came about can also be traced back to the history of its use by people. The wood in the forest was used for building or as fuel. Wood was our source of energy for the longest period of our cultural history. In the late 18th and early 19th centuries, the woodlands were characterised by mediaeval shrubbery and mid-level woodland management. The woodland pasture, orchards and even temporary use as fields after clear felling

indicate the intensive use of the forest floor in the past. As a result of this wide range of uses and the extreme conditions provided by a location in a river valley prone to frequent flooding, only certain types of tree were able to hold their ground. These types of tree and bush in the oak, elm and hardwood floodplain woodland are today documented together in a plant community. Because of the wide variety of locational conditions, different formations of hardwood floodplain are recognised using the level of nutrients and moisture. Significant tree species in the hardwood floodplain include: *Quercus robur*, *Fraxinus excelsior*, *Ulmus minor*, *Ulmus laevis* and *Carpinus betulus*.

The hardwood floodplain woodland is used for wood to this day. Properly managed forestry allows some of the historic images of the hardwood floodplain woodland to be retained. This use of the hardwood floodplain woodland is the opposite of the concept of biosphere reserves, which is to create retreats for the plant and animal world. For this reason, hardwood floodplain woodlands near Dessau-Wörlitz in the Central Elbe valley were included in Protection Zone I of the biosphere reserve. The wood is not used in Protection Zone I, so that in these woodland areas, hardwood floodplains and their natural communities can develop according to today's conditions without human intervention.

The hardwood floodplain woodlands on the banks of the Elbe near Dessau-Wörlitz are known for their wide variety of animals and plants. In Spring in particular, the unfiltered sunlight shining through the naked treetops encourages the first blossoms of the spring flowers to push through the forest floor. The ground is covered with the white-flowered *Anemone nemorosa* and *Gagea lutea*, whose yellow flowers make it a real eye catcher.



Scilla vindobonensis











As well as the spring bloomers which define the view, warmth-loving spring geophytes, such as *Scilla vindobonensis* and *Symphytum tuberosum*, are also typical of the Elbe Valley at Dessau-Wörlitz. Birds of prey are characteristic inhabitants of the edge of woodland. One is a species whose centre of proliferation is in Saxony-Anhalt – *Milvus milvus*. *Haliaeetus albicilla* is another hunter of the skies, and can now also be found breeding in the area. A singing bird, *Luscinia megarhynchos*, is another species characteristic of the edges of woodland.



Ulmus laevis



Euonymus europaeus

Native inhabitants of sun-drenched areas of the hardwood floodplain include day butterflies such as *Satyrrium pruni* and *Satyrrium walbum*. In Spring, when the flood channels are still filled with the remains of the winter floods, two species of primeval shrimps can be observed in the shallow water. *Eubbranchipus grubii* and *Lepidurus apus* can only survive the drying out of their habitat in summer thanks to resistant dauer stages.



Anemone nemorosa

Cultural grassland

Valuable biotopes or cultural relic?

The origination of the grassland is closely linked to the historic population of the Central Elbe region. The settlers needed pasture for their cattle. The growing importance of agricultural space becomes clear in the middle of the 19th Century, as the solitary oaks are pushed back. While there were still 24,015 solitary trees in 1849, just 5,553 were counted in 1872. Extensive floodplain meadows were created during this time, and the mixture of species in them today can still be traced back to their historic cultivation. The combination of “wild” species and species which came about in the pasture land is the cultural result of this grassland.

Examples which could be mentioned here include *Cnidium dubium* as a characteristic representative of the river valley, as well as *Trifolium pratense* as a plant species which originated in pasture land. As farming methods were modernised, such as with the introduction of harnessed team mowing equipment, larger areas of meadow could be farmed quickly. But the growing cattle herds needed pasture too. Today’s maintenance work on the pasture land not only cares for meadows containing a wide variety of species for nature conservation, but also in order to retain the historic cultural meadow views.

Today, the pasture land in the parks and designed outside areas is still home to a range of species typical of the floodplain meadow habitat. Characteristic species in the river valleys of the Middle Elbe biosphere reserve include *Cnidium dubium*, *Iris sibirica*, *San guisorba officinalis* and *Galium boreale*. These species, common to river valley meadows with variable water levels, are still part of small meadow areas in the Luisium and Kühnau parks, indicating the original character of the park locations. River valley meadows with a large number of species cover large areas of the outside space still used extensively for farming. One example showing the connection of animal species to this habitat is *Maculinea nausithous*. This rare butterfly only lays its eggs in the flowers of the great pimpernel, where they then develop to the larva stage. They then develop fully into butterflies in the nest of the ant *Myrmica rubra*.



Pasture with cattle in the biosphere reserve

The inclusion of valley sand terraces in the design of the park is especially prevalent in Kühnau Park. In small areas, typical representatives of these neglected grassland locations can still be found here, although valley sand areas were also included in the design of structured open landscape. The following maintenance activities in relation to the designed landscape elements indirectly led to characteristic locations being retained with the vegetation of the Elbe Valley. Notable plant species in these dry valley sand terraces within the Garden Kingdom include: *Biscutella laevigata*, *Peucedanum oreoselinum*, *Asperula cynanchica* and *Thymus pulegioides*. The Middle Elbe biosphere reserve administration contributes to the maintenance of the cultural grassland through management planning and practical maintenance service.



Cnidium riverbank meadow



The *Maculinea nausithous* butterfly on the herbal plant *Sanguisorba officinalis*



Backwaters

Standing and full of life

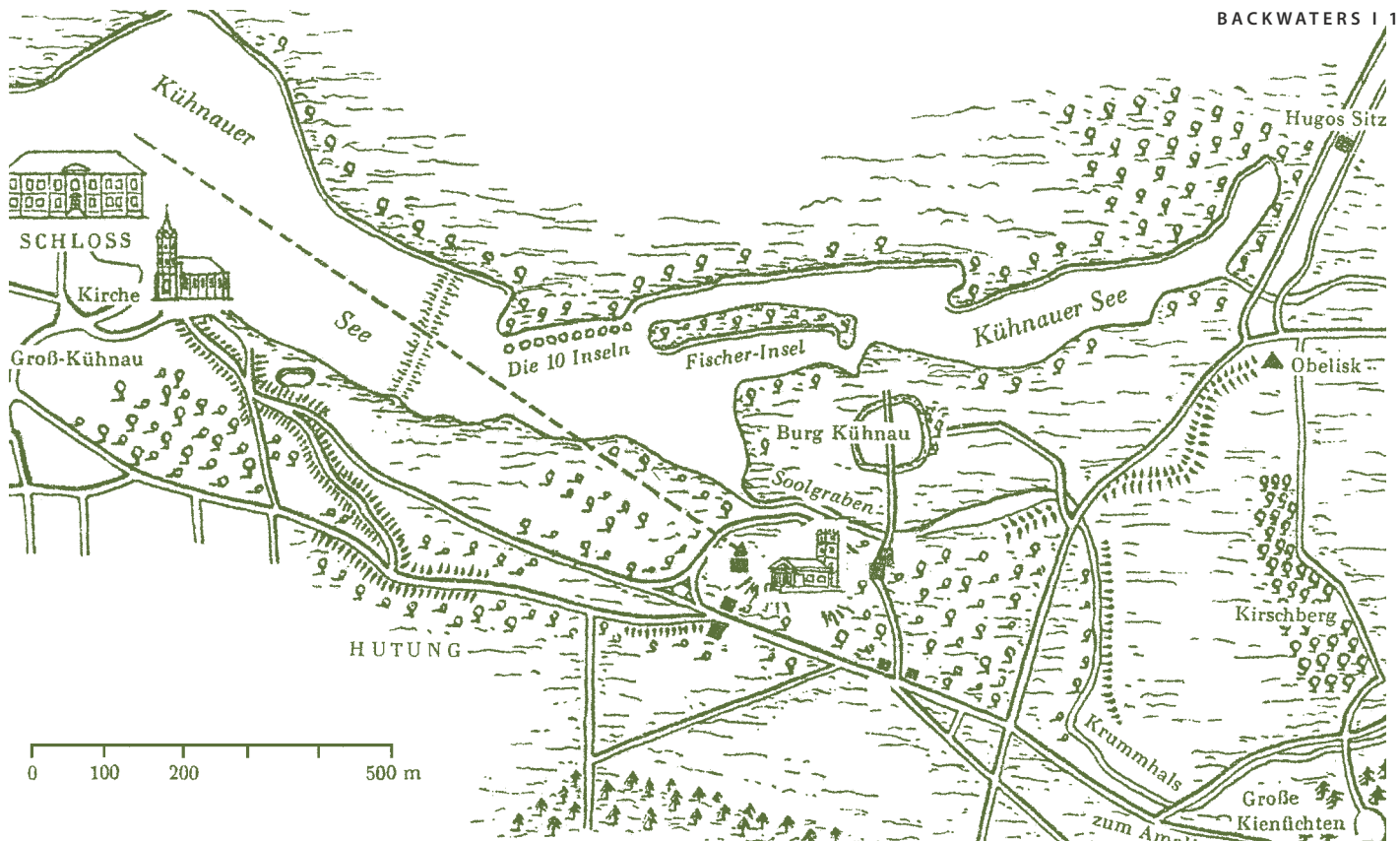
Backwaters are characteristic habitats on the Elbe, Mulde and Saale rivers. To find the story of how these nutrient-rich areas of standing water came about, we have to go back into the history of shifting river flows. Today, the construction done on the river means that no more backwaters will be able to form in the Central Elbe area.

Many backwaters in the biosphere reserve have therefore been restored by dredging in order to push back areas which were silting up. One example of a restored backwater is Lake Kühnau, at around 39 hectares. It is not only significant from the point of view of nature conservation, but has also been included as a landscape element in the design of

Kühnau Park. Cultural historic aspects were therefore taken into account when restoring the lake. Incorporating further backwaters in the parks of the Garden Kingdom of Dessau-Wörlitz emphasises the connection between nature and culture. For example, further backwaters are integrated into the design of the parks at Wörlitz and Luisium.



View across Lake Kühnau, with Kühnau church in the background



As well as their cultural historical significance, these backwaters also remain an important habitat for plants and animals typical of the area. The temperate Central Elbe Valley is characterised by species of water plant which prefer warmer locations, including:

Trapa natans, *Salvinia natans*, *Stratiotes aloides* and *Najas minor*. *Castor fiber albicus* represents the animal kingdom. In the parks especially, its tree-felling activities make protection necessary for trees near to the water's edge. *Aeshna viridis* has an obligatory connection to water containing water soldiers, since it requires this floating plant as a place to lay its eggs. By participating in restoration concepts for backwater habitats and their implementation, the biosphere reserve administration contributes to the maintenance of this cultural and biological heritage.



Backwater with *Butomus umbellatus*



Cygnus olor

Historic flood protection

Artificial habitats

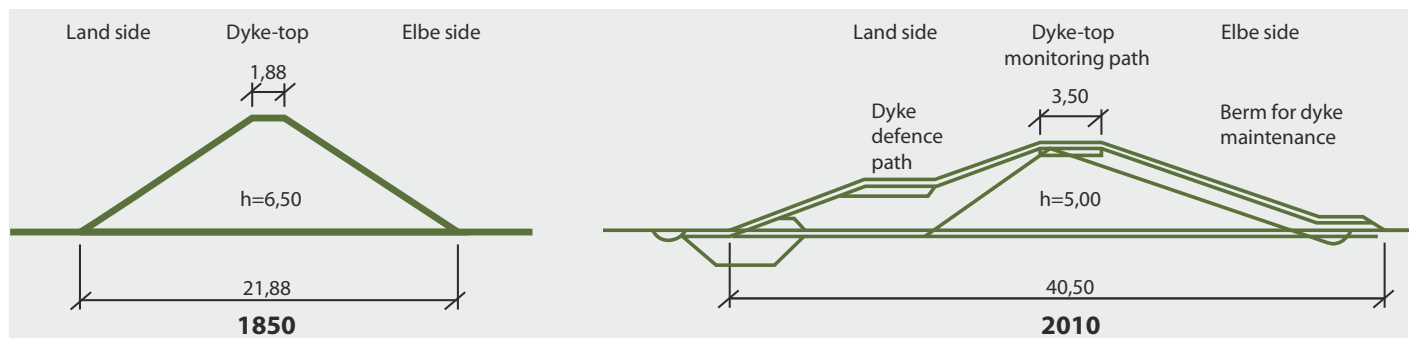
Flemish settlers began building the dykes as early as the mid-12th Century. These were circular embankment systems which encircled the villages, fields and meadows. Over the centuries, wall structures grew up, following the river

through all its meanders and slotting harmoniously into the landscape. The first wall, the “Bärenwall”, named after Count Albrecht the Bear, was built to the north of the settlement of Wörlitz. With plenty of views of the riverbank

landscape, the dykes were used as flood-proof connections between towns and villages, such as the main road between Dessau and Wörlitz. The wall guard houses, such a characteristic feature of the landscape, had many functions.



Winter in the Garden Realm



The structure of the dykes in different centuries

In order to protect against floods, building materials were stored and dyke tenders accommodated. During the wall fruit harvest, dykes were used to store fruit and equipment. The guard houses were located at regular intervals to provide the best possible flood protection, making them also ideal for use as resting places for travellers. Around 850 years of building dykes left its mark on the structure of the dykes, as can be seen in the diagram on page 14. Their long history of use makes old dyke systems cultural assets worthy of protection, and significant natural monuments. Furthermore, these constructions are home to an invaluable wealth of species. Constant maintenance in the form of mowing and sheep grazing resulted in meadows with a wide range of species growing up on the old dyke structures, some of which remain to this day. Notable plant species on these old dykes include *Clematis recta*, *Silene viscosa*, *Koeleria macrantha* and *Dianthus deltoides*. Today, many old dyke locations are threatened as plant and animal habitats as a result of modernisation work on flood protection.



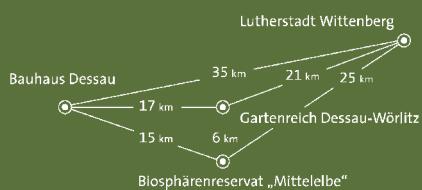
Ice drift and its power to destroy a dyke



Oaks on the Berting dyke reduce ice damage



LUTHER BAUHAUS GARTENREICH



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