

SHORT NOTE Saving *Rhododendron* species: preservation and storytelling at the Botanical Garden of Copenhagen (Natural History Museum Denmark)

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Abstract

Over the past decade, the condition of the rhododendron collection in the Botanical Garden of Copenhagen has gradually declined. In 2020, the Garden initiated a project to save its rhododendrons with a new landscape plan that is more ecologically authentic and more closely represents the genus's natural environment. The project involved relocation and propagation of the plants while simultaneously introducing a new visual interpretive design for communicating the stories related to rhododendrons. In this article, we describe the endeavour of establishing a new home for the Garden's rhododendron collection – comprising approximately 200 species, some of which are threatened – in the newly established Rhododendron Quarter. Today, this site is one of the most popular areas of the Garden, a place where visitors can slow down, enjoy the plants and gain knowledge through the interpretive displays.

The rhododendron collection in the Botanical Garden of Copenhagen

The Botanical Garden of Copenhagen (now part of the Natural History Museum Denmark) was established in 1600. In 2000, to celebrate its 400th anniversary, members of the Danish Rhododendron Society generously donated plants representing approximately 130 *Rhododendron* species to the Garden. About one-fifth of the plants were of wild origin and the donation constituted a significant expansion of the rhododendron collection. At that time, an

area to house the collection was established close to the lake in the Garden, with a base of woodchips and sphagnum peat around the plants. Over the last decade, the condition of the rhododendron collection has gradually declined, primarily due to the soil becoming too compacted for the plants to thrive.

A project to save the plants was initiated in 2020. This involved the creation of a rocky and hilly landscape representing a more authentic environment, and at the same time introducing an innovative visual interpretive design for communicating the stories related to rhododendrons.

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Saving the rhododendrons – new landscaping, relocation and conservation

Back in 2020, many of the rhododendrons were suffering from a lack of air around their roots, due to soil compaction and decomposition of the woodchips originally used in the soil mixture. The decomposition had also led to a lower acidity of the soil (around pH 6.5). This figure is higher than the preferred range for rhododendrons, which typically prefer soils with a pH of between 5 and 6 (Turner *et al.*, 2020). As the health of the plants generally declined, fungus attacks were common, and some of the plants looked old. To save the rhododendron collection, the plants were first relocated to a temporary location in the Garden with more suitable conditions. The root systems of rhododendrons are relatively shallow and fibrous, which makes it possible to free the plants from the soil by carefully digging a large circle around them. This allows even large rhododendrons to be moved without damaging them. Once the plants were free, a pallet fork or the grab on a smaller tractor was used to move the plants, first to the temporary site and later to the final location within the Garden. The plants were moved between late autumn and early spring and replanted in sphagnum peat to allow for a suitable acidity (pH 5–6), humidity, drainage and lightness in the soil structure. Sphagnum peat was sourced from Sweden from suppliers operating under Swedish regulations requiring post-extraction site restoration. According to Swedish industry data, the annual harvesting volumes are substantially lower than the estimated annual peat accumulation rate, and peat is therefore considered a slowly renewable resource.

Where possible, plants were propagated through grafting, cuttings or air layering – particularly for species that were either old, rare or red-listed. Given the poor condition of many of the plants, the most suitable approach was determined on a plant-by-plant basis. Seed propagation with controlled pollination (with flowers enclosed in small cloth bags) was also tried.

At the same time, a new landscape plan was designed by Henrik Færgemann Hansen, a student of landscape architecture, and the project received generous financial support from the A.P. Møller Foundation. Included in the project was the task of designing and creating visual interpretations for the new Rhododendron Quarter.

Over the winter of 2022, an old *Malus* area in the Garden was transformed into a more ecologically authentic landscape for rhododendrons (Fig. 1). Here, the 1,800 m² slope was landscaped using 350 tonnes of rocks to evoke the mountainous landscapes of the Himalayas, the native habitat of many species of *Rhododendron*. Small twisting paths, stepping stones, benches and waterfalls complement the area. The Rhododendron Quarter surrounds the newly renovated Victoria Greenhouse, built in 1874, the same year as the large Palm House.

In the spring of 2023, the rhododendrons were transplanted to the landscaped ground (Figs 2 & 3), together with further donations of plants from members of the Danish Rhododendron Society. With approximately 180 rhododendrons in place, the visual interpretive approach to create an outdoor exhibition could now begin.

Storytelling in the Rhododendron Quarter

The Botanical Garden is a part of the Natural History Museum Denmark, which plans to



Fig. 1 The construction site of the new Rhododendron Quarter. Photo: Tina Jørgensen.

open a new museum building in spring 2027. The aim of the new museum is to strengthen visitors' curiosity, knowledge and sense of empowerment for the future, and the

interpretive approach for the Rhododendron Quarter adopted the same philosophy. In the newly landscaped space, we created an outdoor exhibition that showcases stories



Fig. 2 Rhododendrons waiting to be replanted in the new Rhododendron Quarter. Photo: Tina Jørgensen.



Fig. 3 A recently replanted *Rhododendron glanduliferum* in the new Rhododendron Quarter. Photo: Tina Jørgensen.

about rhododendrons and draws parallels between the living collections and the indoor museum exhibitions.

The vision behind the new Rhododendron Quarter was to expand our visitors' knowledge and invite them to see and appreciate the plants in a new light through engaging stories about the genus and through the design of the Rhododendron Quarter. The Garden attracts nearly one million visitors per year of all ages and backgrounds – dedicated rhododendron enthusiasts, casual garden lovers, families with children, school groups and international visitors. A clear goal was therefore to tailor our approach to these diverse visitor profiles through texts with varying levels of detail and a wide range of angles, from taxonomic topics to fun facts.

From the outset, another important goal was to highlight the vital work carried out by botanic gardens worldwide in conserving threatened plants *ex situ*. The horticultural and botanical staff work to safeguard plants for the future by keeping them alive, propagating threatened species and sharing plant material with other botanic gardens. However, this work is often unsung and unknown to the public, so we decided to make information about it a core component of the outdoor exhibition.

Finally, it was essential that the visual interpretations should function well in all seasons and blend harmoniously with the plants and landscape without overshadowing them, even when the rhododendrons are not in bloom (Fig. 4). This led to an innovative design in which the



Fig. 4 There are stories for all seasons within the Rhododendron Quarter. This sign concerns the healing tea that can be made from *Rhododendron groenlandicum*. Photo: Tina Jørgensen.



Fig. 5 An illustration of flowering rhododendrons on the reverse side of one of the larger signs, creating a scenic backdrop. Photo: Tina Jørgensen.

panels are mounted on a light frame with air between each panel and the frame to make them appear less 'solid' against the foliage. Moreover, the larger signs feature subtle illustrations of flowering rhododendrons on the reverse side to create a scenic backdrop (Fig. 5). Panels about individual species

include delicate botanical illustrations (Fig. 6). All the illustrations used were created by historical artists, with image reproductions sourced from stock photography agency Alamy.⁵

⁵ <https://www.alamy.com/>



Fig. 6 Sign including botanical illustration of *Rhododendron ponticum*. Photo: Tina Jørgensen.

As the rhododendron collection is alive and dynamic, the signs needed to be portable so they can follow plants if they are relocated. Due to the shallowness and loose structure of the soil and sphagnum substrate, the signs were designed with a flat, heavy base (Fig. 7).

The interpretive approach follows the same overall hierarchy of texts as the new museum, with signs in both Danish and English to cater for local and international visitors:

1. Large signs at the entrances to the Rhododendron Quarter welcome visitors and introduce the landscape with stories about the origin of rhododendrons, how they reached our part of the world, threatened species and the conservation work that is being done to protect them (Figs 8 & 9).
2. Medium-sized signs carry general facts about the genus, such as variation, flowering and defence mechanisms against cold and drought.
3. Small signs relate stories about individual species, illustrated with the plants in flower as a visual aid for visitors at times when they are not in flower. These include stories about Arctic rhododendrons used as a medicinal tea, Denmark's only wild species, taxonomy and how toxins that are present in plants to protect them against being eaten can cause honey to become poisonous.
4. A few signs for children, featuring playful illustrations, carry short texts about chemical defence and the many rocks used to create the rhododendron landscape.



Fig. 7 Construction of the panels and their metal frames. The heavy base ensures they are stable but also portable when necessary. Photo: Tina Jørgensen.

With the new interpretive display in place, the Garden's role of preserving threatened plants via *ex situ* collections has become much more obvious to its visitors. Most

visitors recognise and appreciate the rhododendrons during their flowering season. This familiarity offers an excellent opportunity to share stories and knowledge



Fig. 8 One of three larger signs by the entrance welcoming visitors to the Rhododendron Quarter. Photo: Tina Jørgensen.

about these remarkable plants and the natural environments in which they are found. The Rhododendron Quarter has become a harmonious and aesthetically pleasing outdoor exhibition space (Fig. 10) and one of the most popular areas in the Garden. It is a place to slow down, engage with the plants, gain new knowledge and reflect on the natural world with the help of the stories we are telling.

Importantly, the health of the rhododendrons has also improved in their new setting and some of the attempts at propagation have been successful. In the years to come, the horticultural staff will continue to propagate, with a particular focus on rare and threatened species, and

to plant the resulting specimens in the Rhododendron Quarter. The improved growing conditions also help to maintain the collection intact and, in that way, contribute to the preservation and protection of these plants. This will also provide the Garden with an opportunity to engage more actively in international conservation programmes for endangered *Rhododendron* species.

Reference

TURNER, A.J., ARZOLA, C.I. & NUNEZ, G.H. (2020). High pH stress affects root morphology and nutritional status of hydroponically grown rhododendron (*Rhododendron* spp.). *Plants*, 9(8): 1019. <https://doi.org/10.3390/plants9081019>



Fig. 9 One of the larger signs at the entrance to the outdoor exhibition in the Rhododendron Quarter, with the focus on conservation. Photo: Tina Jørgensen.



Fig. 10 Site of the outdoor exhibition in the Rhododendron Quarter. Photo: Tina Jørgensen.