

# **Environmental Education Plan for the Nuremberg Zoo**

(As of December 2019)

# Table of Contents

1. Introduction	4
2. Employees Responsible for Education	4
2.1 Zookeepers	4
2.2 Zoo Guides	4
2.3 Employees of Zoo Education	4
2.4. Employees Responsible for Self-guided Educational Offerings	5
2.5 Other Employees	5
3. Target Audiences	5
3.1. Target Group of Visitors Looking for Relaxation	5
3.1.1 Zoo Landscape Design	5
3.1.2 Signage and Interpretation	6
3.1.3 Commentated Feedings/Animal Presentations	7
3.1.4 Zoo Days	7
3.1.5 Lecture Program	7
3.1.6 Exhibitions	7
3.2. Target Groups of Interested Groups or Families	8
3.2.1 Guided Tours (Morning and Evening Tours, Walking)	8
3.2.2 Animal Encounters	8
3.2.3 Children’s Birthdays	8
3.2.4. Holiday Programs	9
3.3. Target Group of the Involuntary: School Classes and Kindergartens	9
3.3.1 School Classes	9
3.3.2. Kindergartens	10
3.4 Accommodation Offerings	10
3.5 Target Group „Homo faber“: the Bionicum	11
3.6 Training	11
3.6.1 Students	11
3.6.2 Student Teachers	11
3.6.3 Teachers	12
3.6.4. Other Target Groups	12
3.7. Supervised Work in the Zoo	12
3.7.1 W- and P-Seminars	12
3.7.2 Accreditation Work	12
3.8 Self-guided Educational Offerings	13
3.8.1 Website	13

3.8.2 Print Media	13
3.8.3 Social Media	13
3.8.4 The Zoo App	13
3.9 Cooperation with Educational Institutions	13
3.10. A new offering: Mittelbüg Estate	14
4. Facilities	14
4.1. Seminar Room, Lecture Theatre and Former Taxidermy Workshop	14
4.2. Nature Experience Garden	15
4.3. Blue Saloon	15

For ease of readability, this environmental education plan of the City of Nuremberg Zoo does not use gender-specific pronouns. Personal references are only written in the masculine form; however, they refer to both men and women in the same way.

# 1. Introduction

The objectives to be communicated by the City of Nuremberg Zoo, are dictated by law: Every zoo in the EU must be committed to maintaining biodiversity. The material for this work is also dictated by law:

1. In and ex-situ species protection
2. Research
3. Education

Education is a unique pre-requisite, as this work is non-negotiable for every zoo, while the licensing authorities are given discretion in the areas of species protection and research.

The zoo acts according to its motto "Experience diversity, protect diversity!" and must, within the limits of its capabilities:

- impart knowledge on biodiversity,
- generate understanding of ecological and socio-economic relationships,
- raise awareness of the individual responsibility of citizens for the conservation of biodiversity,
- Inspire the public to open up the topic of biodiversity and take responsibility for learning ways they can adapt their behaviors. Ultimately, the zoo should create competencies to act for environmental and species protection.

## 2. Employees Responsible for Education

### 2.1 Zookeepers

Zookeepers at the Nuremberg Zoo are divided into eight different areas and have completed three years of training as zookeepers. There are also apprentices in animal care from all three years of apprenticeship. In addition to vocational school lessons and practical training in the various areas, they usually receive a teaching unit once a week from zoo education, animal feed, animal care, public relations and gardening staff. The animal keepers receive support preparing for animal presentations from curators and zoological management.

### 2.2 Zoo Guides

Zoo guides are casual staff who report to the zoo educators. These are mostly biology or education students and work at the zoo for an hourly rate. These staff members total about 20-25 people who can take over events after an induction phase and subsequent examination by zoo educators. Meetings take place once a month, ten times a year, where the zoo guides are trained mostly by zoo educators, but also by other employees at the zoo (e.g. management, veterinary medicine).

### 2.3 Employees of Zoo Education

Four permanent employees currently staff the Zoo Education Unit. Of these staff, there are two zoo teachers. One zoo teacher works 25 hours a week and is a qualified secondary school teacher. The second staff member works a total of 27 hours a week in the zoo, is a certified biologist and works as the deputy chair for the Association of German-speaking Zoo pedagogues (Verband deutschsprachiger Zoopädagogen e.V. - VZP). Regular participation in conferences and training courses in the Franconian, German-speaking and European area is intended to ensure high quality, modern zoo education.

Furthermore, two part-time positions (20 hours per week each) are responsible for booking and organising leisure activities for the zoo's education department.

Additionally, two interns complete a voluntary ecological year (Freiwilliges ökologisches Jahr FÖJ) in the zoo and provide valuable support in zoo education and animal care.

## 2.4. Employees Responsible for Self-guided Educational Offerings

In addition to directly communicating with visitors through zookeepers, zoo guides or zoo educators, the Nuremberg Zoo also offers a range of self-guided educational offerings inside and outside the zoo grounds. This includes all published texts, from signage and interpretation, information on the zoo in social media and print media, to information on the zoo website. Various employees work in these areas, for example press officers, zoo teachers and curators. One or more employed biologists validate the factual accuracy of this information or more employed biologists.

## 2.5 Other Employees

Strictly speaking, every employee of the zoo takes on an educational role either directly or indirectly during his or her service. There is no discernible difference between the various professional groups in the zoo. From the visitor's perspective, questions are asked of a zoo employee, an adequate answer is expected. It is therefore essential that every employee is informed about current events at the zoo. This is made possible by regularly sharing information during service meetings.

# 3. Target Audiences

## 3.1. Target Group of Visitors Looking for Relaxation

Around 1.0-1.1 million people visit the Nuremberg Zoo every year. The vast majority, an estimated 700,000 visitors, do not actively participate in zoo educational events. Nevertheless, the Nuremberg Zoo offers a number of information options.

### 3.1.1 Zoo Landscape Design

If one wanted to see all the enclosures in the zoo and maybe have a coffee, a visitor needs about four hours. If this visitor were to read all the signage and interpretation with interesting information about the animals in the zoo on their way, they would have to be able to read and take in around 250 A4 pages of content, plus a number of themed information boards. That would be exhausting, not relaxing.

So how can we impart knowledge and understanding about the animals and plants in the zoo to visitors? It can only happen through visual, acoustic and olfactory sensory experiences, via images (in their head or on their smartphone) and memories. These pictures have to be purposefully designed. That is why zoo education is included in every enclosure and all design planning so that the images that we create are designed in a conscious and targeted manner to intuitively convey information about animals and plants.

#### **Example Enclosure for Meerkats and Yellow Mongoose (2013):**

- The facility was purpose-built with a line of sight directly through to the giraffe enclosure. In order for the animals to optically merge with the giraffes and ostriches from the main viewpoint, horizontal enclosure fencing could not be higher than 1.2m, although the yellow mongoose can jump 1.4 m from the ground. **Information:** Giraffes, ostriches, yellow mongoose and meerkats share a habitat.
- Obscure the likeness between meerkats and yellow mongoose. The animals are very similar, but upon closer inspection they behave very differently. **Information:** Even with apparently the same way of life, their distinctly different adaptations to their shared habitat can be seen.

- As a rule, meerkats are kept in sandy enclosures. In the zoo, the entire enclosure is densely planted with grass and perennials. The honey locust look just like spiky African acacias. **Information:** The animals do not live in the desert, but in savannahs with the acacias, that are essential for the survival of giraffes.
- The selection of perennials ensures flowering varies over 8 months of the year. **Information:** Steppes are not barren grasslands, but are among the most fertile soils and habitats. The flowers represent the vitality of the living space.

Zoo guides can then explain the information contained in the enclosure design in detail during their tours.

In accordance with this basic principle of zoo design, the facilities for small Mediterranean animals, for manatees, martens, fishing cats, lynxes, goiter gazelles and many more, have been developed and renovated or redesigned in recent years. Additionally, the selection of animal species also plays a significant role. How long visitors spend at an exhibit does not depend on the size of the animal, but rather on their activity level. For this reason, populations of small, social animal species with high daily activity have been greatly expanded (martens, Dwarf and Yellow Mongoose, meerkats, Ground squirrels, Turquoise tanager, Croaking Ground-Dove, Kaiser's Spotted Newt, leaf-cutter ants).

The degree to which behaviour is recognised and then provides an emotional experience, which goes on to produce memories for visitors, is directly proportional to the time spent viewing a species.

For the vast majority of zoo visitors, the primary - albeit not obvious to the visitor - mode of information dissemination includes the vegetation, design materials, enclosure facilities, soil substrate and profile, as well as the socialisation of different animal species in an enclosure or enclosure complex. This (habitat) information is taken home in the form of pictures as a memory and/or as photos and not only is it not lost, but it is often shared via social media.

This concept should be continued when designing new enclosures.

### 3.1.2 Signage and Interpretation

Enclosure signage and special interpretation signage provide information that answers many questions. They fall under the obligation that a zoo has to fulfill, to provide information.

Enclosure signs are showcased at all enclosures and intend to give visitors the opportunity to independently obtain basic information on the species shown. The respective enclosure signage contains a photo, a distribution map, a brief profile and a short description on one or two aspects of the biology of the species. If the animal species is managed in an EEP, this is shown by the inclusion of the EEP logo on the sign. The color of the respective sign allows the visitor to assign the animal shown to the large habitats of forest (dark green), water (blue), desert (yellow), mountains (brown), domestic and farmyard (light green). The signs of the species that cannot be assigned to one or more of these habitats are grey. Work is currently underway at high speed to establish a different interpretation sign layout in the zoo. In addition to a more modern structure, the threat status of each species will be more clearly visible, according to their IUCN listing. The role of the zoo in species and nature conservation should also be more clear in the descriptive text. In some systems, supplementary signs are displayed, which delve into individual topics. For example, things like gender differences in antelopes, or information on mutilation caused by the poor posture of bearded dragons in the zoo which were taken in from sanctuaries.

In addition to the species-specific way-faring signs, special boards and interactive elements can also be found around the zoo. These deal with overarching topics. Special signs already exist, for example, in the area of the Blue Salon and the lagoon. They display information on aspects of the keeping of seals, dolphins and manatees, the biodiversity and threat to marine habitats and the nature and species conservation efforts of the zoo. At the artificial sand dune in the entrance area, reference is

made to the ecological importance of the sand habitats in the north of the city (Knoblauchsland). This bespoke signage is to be gradually expanded upon to include topics such as desertification in the area of the Desert house or the influence of climate on various animal species around the zoo grounds.

Interactive elements can already be found all over the zoo grounds. These enable learning through all senses and require interaction from the visitor. For example, there is already a folding box system in the Children's Zoo, which illustrates the use of various animals by humans. A small interactive exhibition about wood is planned for the upper outdoor area for rhinos.

However, zoo employees are acutely aware that signs are only read sporadically by visitors.

### 3.1.3 Commentated Feedings/Animal Presentations

During their visit to the zoo, visitors have the opportunity to attend up to six different, commentated feedings (penguins, polar bears, otters, seals, lions and tigers). In addition to information on the feed composition and quantity, the animal keepers also provide information on the different animal individuals, their natural habitat and their way of life. In addition, depending on the season and the day of the week, between two and five dolphin presentations on interchangeable topics are showcased in the zoo. Their biology, way of life, as well as their habitat and its threats are communicated to a large number of visitors. Both commentated feedings and dolphin presentations are announced daily on the website and on the onsite information monitors around the zoo grounds.

Even with impromptu feeding of animals, for example reptiles and invertebrates in the Natural History House, zookeepers are always available to answer visitor questions.

All these offerings are available to visitors free of charge.

### 3.1.4 Zoo Days

Various campaign days take place throughout the year, which aim to educate visitors on topics such as zoo biology, ecology or nature and species protection under a different motto.

During all these days, visitors are given the opportunity to see the zoo "through different eyes", but also to question their own behaviour and their consequences. To do this, it is imperative not only to provide information, but also to provide a multi-sensory experience, which evokes an emotional response through interactive displays.

### 3.1.5 Lecture Program

In cooperation with the Bund Naturschutz in Bayern e.V. and the Landesbund für Vogelschutz in Bayern e.V., the Nuremberg Zoo offers a large range of lectures, free of charge. In 2019 alone, 35 lectures were offered on zoo-specific topics (e.g. "Popular with the young and the old - the Children's Zoo"), travel reports (e.g. "Finland - wilderness in the land of a thousand lakes") but also nature conservation (e.g. "Can the loss of species still be stopped?") and research aspects (e.g. "Observations and research on the migration of our birds across the Sahara.") were shown and linked.

### 3.1.6 Exhibitions

The Nuremberg Zoo offers various artists a small, manageable exhibition space in the Natural History House. When selecting the exhibitions, it is important that there is a connection between the zoo and the art. Photographic exhibitions are the most common, but in addition to classic animal photographs, habitats ("The Green Roof of Europe") or a behavioural enrichment project have also been showcased.

## 3.2. Target Groups of Interested Groups or Families

Booking a tour at the zoo requires initiative, that is, interest. Tour participants are people whose interest in animals has already been piqued. It does not matter whether the interest was sparked by a previous visit to the zoo, a TV documentary, beautiful animal pictures or simply a personal recommendation. Around 8,500 people in around 1,000 groups take advantage of this opportunity each year.

In addition to relaxation and the direct animal experience, these people expect more in-depth, age-appropriate information on one of the 20 topics that they have chosen and paid for.

### 3.2.1 Guided Tours (Morning and Evening Tours, Walking)

Guided tours provide knowledge and understanding at various educational levels, the weighting and level of detail of which are tailored to the interests and prior knowledge of the visitor (duration approx. 2 hours) e.g. in the following format:

- The starting point is at the species, which will be presented and experienced
- Starting with the individual animals, peculiarities of the species are explained
- Via the presented species, there are cross-references to relationships with, and interactions with other animal species (possibly also living in the zoo).
- Specific adaptations that the species have to their natural habitat and the resulting dependencies of the animals on the integrity of the habitat.
- Finally, there are specific requirements for keeping animals as well as explanations of the threats to their habitat and reasons for the extinction of many animal and plant species, their importance and functionality within the ecosystem is explained with simple examples. The function of the animals in the zoo is also explained, as an example. Are they part of a breeding program? Are they released into the wild? Do they serve as ambassadors for members of the same species or habitats? Are they part of a research program? Issues relating to the ethical legitimacy of animal husbandry in general and zoos in particular can also be included.

The central element and pivotal point of this educational approach is the initial animal encounter, from which all further explanations are based.

In 2018, 6,402 people took part in one of the 1,247 tours.

### 3.2.2 Animal Encounters

That is why there are eleven different, one-hour guided tours, which are called "Visit your Favourite Animal". The penguin experience is extremely popular in comparison to the other animals, even in comparison to popular species like squirrel monkeys. Similar offerings of two hours duration include "Visit the Monkey House", "Encounters in the Amazon" or the "Encounter with Dolphins".

At the workshop "Zoo Animal Enrichment", as the subtitle "All Hands Full!" implies, visitors help build enrichment activities for the animal residents of the zoo.

By focusing on one or a few animal species or a single habitat, visitors have the opportunity to learn more about animal and species protection, which enables them to critically assess their own consumption behaviour.

### 3.2.3 Children's Birthdays

The children's birthdays that can be booked in the Nuremberg Zoo are low-threshold offerings that are tailored to the respective age of the participating children. The selection of topics are extensive: They include animal themes such as "From big and small cats!" Or "The big crawling". Here the



animal is the focus and acts as a starting point to learn about ecological relationships. On the other hand, zoo themes such as "When zoo animals travel" or "You can play with food - in the zoo" are also available. These focus on aspects of zoo animal husbandry such as the exchange of zoo animals as part of the EEP's or behavioural enrichment.

#### 3.2.4. Holiday Programs

The Zoo has been offering holiday programs for the City of Nuremberg for several years. These are mainly open to financially disadvantaged families.

With the support of the Manfred Roth Foundation (Manfred-Roth-Stiftung), one of the most important local foundations, a new five-day environmental education program was created and trialed in 2019. The program aims to familiarize "inner-city children" between the ages of eight and twelve during their holidays, with the environment through animal-based nature encounters within the framework of education for sustainable development (Bildung für nachhaltige Entwicklung - BNE). The experience from the zoo's previous educational offerings flows into this concept - such as the overnight stays in the Blue Salon or the encounter programs in the Nature Experience Garden. It is also geared towards the BNE. A master's student developed a workable, implementable and economically appropriate concept, which could be included in the zoo's offerings.

In addition to the concept, an extensive evaluation of the increase in knowledge was also carried out, and the evaluation findings are expected in due course.

### 3.3. Target Group of the Involuntary: School Classes and Kindergartens

Kindergarten and schoolchildren usually do not decide to visit the zoo themselves. The children's expectations and reactions are therefore diverse, when they take part in the lessons at the zoo school.

#### 3.3.1 School Classes

The zoo school offerings do not relate to an expected level of previous knowledge, but rather to an expected cognitive maturity level, which is organized by age groups, regardless of school types. The supervising teachers can either suggest topics themselves or choose a topic from a list provided by the zoo school. Most of the time, teachers work with the zoo school to find a suitable topic for a certain group, which meets both the teachers' requests and the ability of the zoo.

In order to give the zoo a stronger profile as an extra-curricular learning place from a teacher's perspective, the learning content of the zoo school has been adapted more and more over the last five years to align with the curriculum of schools, without reducing the existing wide range of topics. In the end, a zoo school lesson should be recognized as a full teaching unit within the curriculum.

The method of imparting knowledge in the zoo school teaching units relies on the principle of the original encounter as well as all other educational offerings. This encounter with animals repeatedly proves to be an unbeatable motivator for students to take an active part in class and works well with all age groups and maturity levels.

Spot checks of learning outcomes have shown that the knowledge imparted during zoo school lessons can still be reliably recalled after two weeks, which was not the case with regular classes at school.

In 2018, 5,438 students took part in one of the 236 school visits.

### 3.3.2. Kindergartens

The Nuremberg Zoo has developed various programs for kindergarten groups from the age of 3 years. These are deliberately kept short with a duration of 30 minutes, so as not to overwhelm the children. Basically two types of animals are treated, their similarities and differences are examined. In addition to the training of observation skills and the playful imparting of biological facts, each program contains a core message. With the very popular topic "lions and tigers", for example, the question is always answered whether a predator is bad because it kills other animals. This may sound banal, but corresponds to the world through a child's eyes: to them the predator is evil. By teaching them about ecological relationships such as the predator-prey relationship between, for instance, the Siberian Tiger and wild boar, to the child, the tiger becomes the "health police of the wild boar". In the "Insects and Spiders" lesson, both groups of animals are shown to be fascinating, interesting creatures when the children meet the living animals. Fear of the animals is also be reduced through the animal encounter.

In 2018, 1,064 children participated in 57 events.

### 3.4 Accommodation Offerings

In 2006, the zoo school took another step in the educational concept journey: 24-hour and multi-day programs. The main focus of these programs is to give children aged 8 to 12 years the opportunity to learn about complex environmental issues. The 1-2 nights included in the program gives children the opportunity to experience domestic nocturnal animals, from owls, to bats, to fireflies. Living and sleeping in the immediate vicinity of domestic pets (in summer) or manatees (in winter) gives the children experiences that are unique to many of them.

Each program has a thematic focus that is based on the principles of education for sustainable development. When spending the summer in a tent, the focus is on the theme of nutrition. Based on the diet of the zoo animals, the various human diets are discussed and examined. The various methods of food production and the resulting ecological consequences are explained in an exemplary and age-appropriate manner and options for action are outlined in the subsequent discussion. Winter nights, on the other hand, focus on signs of life in marine habitats: after the species kept in the zoo and adapted to life in the sea have been observed and discussed, the children can interactively work out the various threats to this habitat in groups. In this way, and through the facilitated discussion that follows, the children develop an understanding of how their actions in Franconia, far from the sea, affect maritime habitats. This imparting of management skills is intended to create awareness of the students own sustainable options for action. At the end of each program, participants receive a certificate to keep, which, in addition to the group photo, also contains some of the information they have learned, as a reminder.

Many children touch animals for the first time in their lives at these tent camps, zoo school camps or overnight stays in the Blue Salon. Many are initially very afraid of the nighttime noises and their perceived vulnerability in the tent. The duration and intensity of the experience creates lasting memories and a deeper understanding of "nature" as they experience it firsthand.

A further expansion of these offerings is being developed. On one hand, the profile of the existing leisure activities in particular should be further developed in order to convey a more expansive understanding of nature. On the other hand, new locations and target groups need to be reached. For example, overnight stays at Gut Mittelbüg are to be offered and, in addition to children, overnight stays for adults are to be created.

### 3.5 Target Group „Homo faber“: the Bionicum

In 2014 the "Bionicum", financed by the Bavarian Ministry of the Environment (Bayerisches Umweltministerium) and operated by the State Office for the Environment (Landesamt für Umwelt), opened its doors in the Natural History House of the zoo. This excellent, high-quality educational exhibition was curated by four employees from the State Office for the Environment. The tours teach biodiversity from the point of view of technical knowledge storage. The Bionicum has around 40,000 visitors annually, and around 2,500 participants take part in over 150 events. In recent years, despite the different sponsors, there has been an ever increasing cooperation in the field of education. This cooperation should be further developed.

### 3.6 Training

In addition to working in the leisure sector and with educational institutions, another educational focus is the training for intermediators (teachers). The overarching goal is always for the zoo to be seen as more than just an excursion destination and is viewed as an extra-curricular learning location. Efforts to protect nature and species as well as research work are always discussed as examples. Again and again, participants are given the opportunity to ask questions in a non-threatening environment.

The following always applies: if participants have a positive experience at the zoo, they are more likely to view the goals of zoological gardens positively in general and particularly those of the Nuremberg Zoo.

#### 3.6.1 Students

The zoo education department offers 24-hour advanced training courses for students from the surrounding universities on the subject of "The Zoo as an Extra-curricular Learning Location." In preliminary discussions, key topics are determined with the heads of departments. Regular modules are, for example, "Dealing with Your own Fears of Contact with Spiders and Insects", "Communicating Difficult Relationships", "Practical Tips for using an Extracurricular Learning Location", "Wording and Framing", "Age-appropriate Communication of Content", "Animal Husbandry Yesterday and Today"...

Participants in the course "Zoo Biology" from the Johann-Wolfgang-Goethe-Universität in Frankfurt am Main, regularly stay overnight in the Nuremberg Zoo. The focus of this program is on the interlinking of research and species protection in the zoo and the communication of challenging topics.

Participants of the above mentioned programs only pay for meals, no further costs are charged.

Additionally, a one-day course on the subject of "animal observation" is offered once a year for teaching students at the Friedrich Alexander University in Erlangen-Nuremberg. This teaches student teachers the basics of biological animal observation. Theoretical units and practical exercises in the zoo area alternate, so that the participants can experience difficulties and limitations. This course is completely free of charge.

#### 3.6.2 Student Teachers

The training programs for student teachers in the Nuremberg Zoo are designed to last four hours. Depending on the type of school in which the teacher training is completed, the subject matter differs. For Primary School teachers, the focus is more on topics like "Dealing with Your Own Fear of Spiders and Insects", "Practical Tips for using an Extra-curricular Learning Location", "Wording and Framing", "Age-appropriate Content Communication" amongst others. For High School teachers, the

focus is more on topics like "Conveying Difficult Relationships", "Animal Husbandry Yesterday and Today" and "Animal Observation". Offers of help from the zoo school are always discussed, such as technical advice or the provision of materials from the schools collection.

Presentations are often made available, especially for teaching samples, including technical or practical assistance.

### 3.6.3 Teachers

Since 2016, full day teacher training courses have been offered annually. These take place in cooperation with employees of the Friedrich Alexander University Erlangen-Nuremberg and the Bionicum on changing topics. Teachers from all over Bavaria attend.

In addition, individual inquiries from teacher collectives are available. In these cases, the teachers enquiring can choose a topic themselves or topics can be defined in consultation with the zoo.

Training courses for teachers are offered free of charge in the Nuremberg Zoo.

### 3.6.4. Other Target Groups

The Nuremberg Zoo is also involved in the training and further education of customs and fire service employees. The training for customs employees is intended to deepen and expand their knowledge on the laws of nature and species protection. The events for the fire brigade, however, focus on how to safely handle different, potentially dangerous animals. For the fire brigade, as well as for the zoo, there are four to six events each year with an average of 25 participants. Veterinarians and biologists from the zoo carry each of these events out.

Zoo employees also act as experts for animal customs matters appointed by the Federal Agency for Nature Conservation.

## 3.7. Supervised Work in the Zoo

### 3.7.1 W- and P-Seminars

In the upper level of the Free State of Bavaria, each student must attend a science-introductory seminar (W seminar) and a project seminar (P seminar).

The W seminars are assigned to a department (usually biology, in the case of the zoo) and a general topic (e.g. Behavioural Observations on an Animal Species; Animal Enrichment). The zoo education department is available to help the students as a mentor, source of information and facilitator. In 2015, 91 pupils from 5 institutions were looked after.

In the P-seminars, groups of schoolchildren plan, work on and evaluate a project together with an external, non-school partner (e.g. the zoo). Two of these projects are due to start this year: a project group will develop a teaching unit on the topic of "biodiversity". A second group will be asked how to teach a school class different adaptation to different living spaces in terms of content and experiments.

### 3.7.2 Accreditation Work

Teaching students have to do accreditation work (in some federal states this is called state examination work). The course "The Evergreen Classroom", for example, is based on such work and showcases a multi-sensory experience of the Evergreen Rainforest habitat. A similar course is currently being developed on the subject of "Adaptation to Desert Habitat" or signage in the zoo explaining the different types of forests on earth.

## 3.8 Self-guided Educational Offerings

### 3.8.1 Website

The zoo's website contains a wealth of information. Interested visitors can find an array of information here to plan their zoo visit: opening and feeding times, admission prices, the enclosure plan, but also a zoo dictionary and information about construction work or closures. Furthermore, the website also offers a platform for communicating activities in the zoo in the areas of climate, species and nature conservation or conservation breeding. The integrated contact form gives visitors to the website the opportunity to ask questions to the zoo online.

Zoo education also appears on the website. Here visitors can find information on the various formal and informal educational offerings. There are currently two zoo itineraries available for different age groups. These are intended for the leisure sector and guide children from the Entrance to the Aqua Park. There are plans to expand this offering to include itineraries that have specific learning goals that can be achieved through through-provoking questions and observation assignments.

### 3.8.2 Print Media

The Association of Nuremberg Zoo Friends (Verein der Tiergartenfreunde Nürnberg e.V.) and the Nuremberg Zoo publish the Zoo Newspaper (Tiergartenzeitung) every six months. It has a circulation of around 196,350 copies and is included in the Nürnberger Nachrichten and the Nürnberger Zeitung. In this way, readers in the vicinity of the city who do not visit the zoo can also be reached. Expertly supervised by the management of the zoo, a wide variety of topics are dealt with: In 2019, for example, the articles ranged from the EAZA campaign "Silent Forest" to research activities supported by the zoo to protect harpies in South America as well as art in the zoo.

MANATI magazine is the official magazine for the Association of Nuremberg Zoo Friends and Nuremberg Zoo, which is published twice a year. With a circulation of 5,000 copies, it presents the reader with a colourful mix of diverse topics. Reader-friendly animal portraits or impressive reports alternate with news from the zoo or our club life.

"Nanu!?" In the children's newspaper for the Nürnberger Nachrichten and the Nürnberger Zeitung there is a monthly portrait of an animal put together by zoo education staff.

### 3.8.3 Social Media

The Nuremberg Zoo operates its own Facebook page named "Tiergarten Nürnberg" with almost 43,000 subscribers. This media channel offers the opportunity to provide information about current events in the zoo, but also to promote educational offers and nature and species conservation efforts to a large audience. Visitors, interested parties and critics can also contact zoo staff directly and ask questions.

### 3.8.4 The Zoo App

Developed in cooperation with the Paritätischen Wohlfahrtsverband Bayern and with the support of the Nuremberg Zoo Friends Association, the first version of the Zoo app was published in 2019. This navigation app is intended to assist visitors to safely reach their desired destination. The app particularly targets people with physical disabilities, as well as families with small children and the elderly.

## 3.9 Cooperation with Educational Institutions

The Nuremberg Zoo maintains partnerships with the Berthold Brecht School (Berthold-Brecht-Schule) and the Johannes Scharrer High School (Johannes-Scharrer-Gymnasium). Both schools operate a school zoo, which mainly keeps invertebrates. The zoo provides both the know-how and the animals.

This ensures a high standard of animal husbandry. This way, non-zoo visitors (schoolchildren and parents visiting the school) get a positive impression of the zoo's work. The pupils can become interested in animals that are otherwise perceived as disgusting and fear of contact can be reduced.

The zoo also works closely with the House for Children (Haus für Kinder). A "Sheep Course" was held once with kindergarten children and once with elementary school students. Biological expertise was imparted through eight lessons, where the children also could learn about the production of wool through their own practical work.

### 3.10. A new offering: Mittelbüg Estate

As well as the actual zoo grounds, the Nuremberg Zoo also operates an agricultural estate, the Mittelbüg Estate (Gut Mittelbüg). Here, organic farming is carried out to supply the animal residents of the zoo, and various farm animals are also kept here.

Since 2019, the zoo education department has used this property increasingly. The target groups already reached are diverse: On the one hand, the focus is on educational institutions such as daycare centers and kindergartens, schools and after-school care centers and educational centers such as adult education centers. Also, organizations in municipal or independent sponsorship such as youth welfare offices, family houses and associations are served with offerings. Development is planned to offer this as a product for private groups such as children's birthday parties or overnight stays.

The following overarching goals were formulated:

- Participants in the educational programs should develop a cognitive, emotional and interactive relationship with wild and useful plants, as well as wild and farm animals.
- Participants should be able to get to know simple cycles of producers, consumers and destructors on the site of organic certified agriculture and be able to name essential connections.
- Participants should learn the importance of careful land use and measures to increase animal welfare and be able to draw conclusions about their consumption behavior.

## 4. Facilities

The entire zoo grounds and the Mittelbüg estate serves as learning locations for various target groups. The rooms and locations are also available for use by the zoo education department.

### 4.1. Seminar Room, Lecture Theatre and Former Taxidermy Workshop

The Natural History House was opened in 1989 in the Nuremberg Zoo. It offers space for animal husbandry, the Bionicum exhibition and office space. With the lecture theatre and the seminar room, there are two rooms for the zoo educational department that can be used for teaching lessons, children's birthdays or holiday programs.

Until 2014, a taxidermist was employed at the zoo, who was in charge of the collection stored in the Natural History House. The former taxidermy space now serves as a workshop for handicrafts and a place for workshops.

#### 4.2. Nature Experience Garden

The Nature Experience Garden originally served as an enclosure for guanacos and was used as a shared space by the zoo education department. One section is still used for housing sheep, with the other area being used as a tent site. Round tents are set up here in summer and used for overnight camps. Two portable toilets are available during this time period (June to September). A solid wooden hut is available for material storage and as an undercover classroom.

#### 4.3. Blue Saloon

The Blue Saloon is open to visitors during opening hours as an underwater viewing bay for the manatee and dolphin lagoon. This room is also used for the extremely popular overnight stays in the Blue Salon. Dolphins and seals love to interact with the children in the evenings, which offers an exceptional experience for all participants.