

UNIVERSITÀ DEGLI STUDI DI PADOVA

Department of Comparative Biomedicine and Food Science

First Cycle Degree (B.Sc.)  
in Animal Care

*Management and rehabilitation of exotic and wild  
animal species in European sanctuaries*

Supervisor  
Prof. *Giorgio Marchesini*

Submitted by  
*Corrado Maiorino*

Student n. *1222088*

ACADEMIC YEAR 2023/24

## **INDEX**

<b>Summary .....</b>	<b>1</b>
<b>Acknowledgements .....</b>	<b>2</b>
<b>1. Introduction .....</b>	<b>3</b>
<b>1.1. The Transforming Meaning of the Term <i>Sanctuary</i> through time .....</b>	<b>3</b>
<b>1.2. Animal Sanctuaries in Europe: Legislative Gaps and Organisational Commitments ....</b>	<b>4</b>
<b>2. Study Methods .....</b>	<b>7</b>
<b>3. Analysis and Discussion .....</b>	<b>9</b>
<b>3.1. Rescue and Arrival at the Sanctuary .....</b>	<b>10</b>
<b>3.2. Healthcare and Diet Management.....</b>	<b>13</b>
<b>3.3. Behavioural and Psychological Rehabilitation.....</b>	<b>17</b>
<b>3.3.1. Environmental Enrichment .....</b>	<b>20</b>
<b>3.3.2. Training .....</b>	<b>22</b>
<b>3.3.3. Socialisation Projects .....</b>	<b>24</b>
<b>3.4. Beyond Size: Effective Enclosure Management for Sanctuary Animals .....</b>	<b>27</b>
<b>3.5. Relocation .....</b>	<b>30</b>
<b>4. Felida Big Cat Sanctuary and the Story of Lion Nikola and Lioness Vasylyna .....</b>	<b>33</b>
<b>5. Conclusion.....</b>	<b>40</b>
<b>Appendix .....</b>	<b>41</b>
<b>References .....</b>	<b>45</b>

## **Summary**

This dissertation investigates the management and rehabilitation practices in European animal sanctuaries exclusively dedicated to wild and exotic species, such as big cats, brown bears, and primates for example. It explores the challenges in restoring appropriate species-specific behaviours in abused animals, even within space-limited sanctuaries, and examines strategies to better accommodate animal needs. Emphasis is placed on behavioural and psychological rehabilitation using enrichment activities and positive reinforcement training, alongside medical recovery through proper diet and medical procedures. The thesis also considers socialisation projects where feasible, bureaucratic hurdles in rescuing and relocating animals, and the comprehensive process from rescue to relocation even beyond European borders.

In order to showcase the capabilities of sanctuaries, I will illustrate a case study of two lions rescued approximately 2000 km apart in eastern Europe and eventually rehomed to a large sanctuary in South Africa after a meticulous rehabilitation and socialisation process at Felida Big Cat Sanctuary in the Netherlands.

This work wants to underscore the vital role that animal sanctuaries play as both temporary refuges and potential permanent homes for the animals they host.

## Acknowledgements

I would like to express my deepest gratitude to everyone who kindly accepted to be interviewed or to fill out my questionnaire. Without their precious insights, this thesis would not have been possible.

Many thanks to:

- *Dietmar Crailsheim*, Research Project Coordinator & Maintenance and Construction Coordinator at Fundació Mona
- *Annelies Friedl*, Head of Animal and Facility Management at Bear Sanctuary Arbesbach
- *Nancy Gothe*, competency manager at Stiftung für Bären
- *Jon Klein Hofmeijer*, Team Leader of the Primate Department at Stichting AAP
- *Daphne Pels*, animal caretaker at Stichting Leeuw
- *Frederik Thoelen*, biologist at Natuurhulpcentrum
- *Kalina Valchinkova*, Head of Animal and Facility Management at Bear Sanctuary Belitsa
- *Juno van Zon*, Head of Animal and Facility Management at Felida Big Cat Sanctuary

## 1. Introduction

While most people are familiar with the word zoo and can easily picture what it is, I found out that when I asked individuals outside the animal care field – such as relatives or friends – what an animal sanctuary is, they were often puzzled and associated the term with something sacred or religious. This lack of awareness brings out the fact that animal sanctuaries are not widely recognised in general knowledge. Therefore, this dissertation aims to provide a comprehensive overview of animal sanctuaries, tracing the origins and evolution of the term *sanctuary* to its contemporary application as ‘animal sanctuary’, then shifting the main focus to the management and rehabilitation practices employed in European facilities.

### 1.1. The Transforming Meaning of the Term *Sanctuary* through time

According to Fusari (2017), the term *sanctuary* has a rich etymological history that reflects its evolving meaning over time.

The Oxford English Dictionary (OED) traces the noun *sanctuary* to post-Augustan Latin, initially meaning “*the private cabinet of a prince*”. It entered English via Old French with a religious connotation, denoting a sacred place offering immunity to fugitives or debtors. This primary sense, recorded since 1374, extended to other definitions, including an area where wildlife is protected, first attested in 1879. Another historical use of *sanctuary* related to hunting rights, though this is now obsolete. The term also encapsulates the broader idea of protection and shelter, as seen in the OED's definition: “*Immunity from punishment and the ordinary operations of the law secured by taking refuge in a sanctuary*”, and functioned as a verb, meaning to place in safety, until the late seventeenth century. Thus, *sanctuary* evolved from its aristocratic and religious origins in ancient Rome to denote areas of animal protection.

This historical progression shows that *sanctuary* initially pertained to religious contexts (from 1380), hunting (1603), general protection (1615), and, more recently, wildlife conservation (1879).

As stated by Fusari (2017), contemporary usage data from the British National Corpus (BNC) reveals 802 occurrences of *sanctuary*, most frequently in phrases like *bird sanctuary*, *wildlife sanctuary*, and *animal sanctuary*. While the religious sense of the word persisted, contemporary usage predominantly associates sanctuaries with spaces where animals receive human care and protection. This shift in meaning from a concrete religious concept to a broader abstract idea of safety and immunity reflects a metaphorical evolution, wherein the original notion of sanctuary as a refuge for humans has been extended to encompass the idea of safeguarding nonhuman creatures. Today, the word *sanctuary* carries a positive connotation, implying a place of refuge for vulnerable beings, deserving of compassion and protection.

It's worth noting that in her comparative analysis of the terms *sanctuary* and *shelter* on the BNC, Fusari (2017) observes that both words are linked with animals, but the former often refers to wild animals, while the latter is associated with domestic and farm animals. This distinction is particularly relevant to the purpose of my dissertation, as I will define *sanctuary* exclusively facilities that host wild and/or exotic animal species, excluding those that care only for domestic and/or farm animals.

## 1.2. Animal Sanctuaries in Europe: Legislative Gaps and Organisational Commitments

While the word zoo has been legally defined on a European level as “*permanent establishments where animals of wild species are kept for exhibition to the public for 7 or more days a year, with the exception of circuses, pet shops and establishments...*” (Council Directive 1999/22/EC, article 2), there is no general European agreement on the definition of the term *animal sanctuary*, or *wildlife sanctuary*. This lack of consensus has led to varying interpretations and applications of the term.

Two specific legal definitions are reported here because they make a clear reference to the term *sanctuary*:

- According to the Italian Ministry of Health (2023), “*sanctuary is defined as facility that provides shelter for cattle, horses, sheep, goats, pigs, cervids, camelids, poultry, rabbits, bees, and aquaculture species registered with a ‘permanent shelter’ designation*”. This definition actually falls under the broader category of “*shelter for animals other than dogs, cats and ferrets, namely centres for the accommodation of wild and non-wild terrestrial animals, for the rehabilitation or care of seized, confiscated animals found on the territory*”. [Manuale Operativo per la Gestione del Sistema I&R (Allegato 1 al Decreto 7 marzo 2023, G.U. n. 113 del 16/05/23); Capitolo 2.4 Sezione 12, Collezioni Faunistiche. Translated from Italian by the author]
- According to the Kosovo Assembly (2006), animal sanctuary “*shall mean a specially equipped place for the boarding of seized, stray, confiscated and ownerless animals, as well as animals which are in need of assistance.*” [Law No. 02/L-10: Law on Animal Welfare. United Nations Interim Administration Mission in Kosovo (UNMIK); Article 3]

Due to the absence of standardised legislative definition and provisions about animal sanctuaries at the European level, and the difficulty in finding the exact term *sanctuary* in national legislations, it is essential to consider the perspectives of international animal welfare organisations to give a better picture of the philosophy and operations of these facilities.

According to the Global Federation of Animal Sanctuaries (GFAS), an animal sanctuary is defined as a “*facility that provides temporary or permanent safe haven to animals in need*” offering excellent and humane care within a non-exploitative setting and implementing ethical policies regarding activities such as guided tours, commercial trade, exhibition, acquisition, disposition, and breeding practices. GFAS underscores that the acquisition of animals should be legally and ethically sound, prioritising the animals' best interests and refraining from actions that encourage commercial animal trade. Furthermore, true sanctuaries, including those engaged in animal rehabilitation for potential release or adoption by other facilities, typically abstain from intentional breeding of captive animals, with limited exceptions permitted under specific circumstances. Humane euthanasia is considered a final recourse for animals experiencing irredeemable suffering, guided by a policy developed by the sanctuary, rescue, or rehabilitation organisation to ensure ethical considerations govern this decision. While not obligatory, GFAS accredited sanctuaries may authorise educational tours if they are conducted under guided supervision, serve educational purposes, and meet stringent criteria aimed at protecting animal welfare and visitor safety.

A similar, perhaps stronger, definition is provided by the Performing Animal Welfare Society (PAWS) that states that “*a true sanctuary respects the integrity of individual animals, providing safe, healthy, and secure refuge in enclosures specifically designed for the unique animals whom they support*”. In contrast, pseudo-sanctuaries are often for-profit organisations that offer minimal care, breed animals for attraction, often exploiting the positive association with the term ‘sanctuary’. (PAWS, ‘What is a Wildlife Sanctuary?’).

Furthermore, since many of the sanctuaries analysed in this dissertation fall under the umbrella of facilities accredited by Four Paws International, a “*global animal welfare organisation for animals under direct human influence, which reveals suffering, rescues animals in need and protects them*”, it is fundamental to incorporate their perspective in this introduction.

Four Paws operates wild animal sanctuaries based on stringent animal welfare and husbandry standards known as the Four Paws Quality Standards. These guidelines, developed with scientific input and expert consultation, aim to achieve the highest standards in wild animal care. The sanctuaries focus on providing animals with a natural, stress-free environment where they are not displayed for public entertainment. Enclosures are designed to allow animals to engage in natural behaviours, with features such as rich vegetation, water sources, and hiding places. Animals are given as much freedom as possible to establish their own routines, with care tailored to individual needs by experienced caretakers and veterinarians. Natural feeding practices are encouraged, using strategies like hidden food to stimulate foraging or hunting behaviours. There is no hands-on contact between

animals and visitors, and animals are not trained or used for shows. Environmental enrichment is provided to promote species-specific behaviours and enhance the animals' quality of life. Breeding is strictly prohibited to maximise rescue capacity and prevent more animals from living in captivity. Visitors are educated about animal welfare and the importance of such facilities, with some sanctuaries offering guided tours.

To sum up, Four Paws is committed to providing lifelong care for all rescued animals, ensuring they live in a safe, species-appropriate home for the rest of their lives.

To conclude this introductory section, it's necessary to mention the European Alliance of Rescue centres and Sanctuaries (EARS) as all the facilities discussed in this thesis are Partners.

EARS is a collaborative network dedicated to enhancing animal welfare with the mission to *“represent rescue centres and sanctuaries across Europe and enable them to work together to achieve mutual animal welfare and conservation goals”*.

Their objectives include ensuring wild animals in need receive appropriate care and gaining proper recognition and support for rescue centres and sanctuaries within the EU and at the national level. The alliance leverages its collective knowledge to reduce the trade and exploitation of wild animals and promotes high standards of care and rehabilitation for rescued wildlife through information exchange.

All EARS partners must operate a rescue and rehabilitation centre or sanctuary in Europe, be a legal entity with the necessary permits, and commit to providing humane and responsible care. They must ensure that their resident animals can express natural behaviours, maintain good physical health, and receive professional veterinary care. Members must not buy, sell, or trade animals and should work towards reducing the need for these facilities through education and conservation efforts. Public visits are allowed only for educational purposes, without physical contact between visitors and animals. Research can be done only if it does not compromise animal welfare and appropriate measures to prevent further reproduction of captive animals must be employed, adhering to the EARS No-Breeding Policy. Euthanasia is reserved for terminally ill or critically injured animals, determined by a multidisciplinary team. All partners must follow species-specific guidelines for rehabilitation (and rehoming when possible), and actively engage with the alliance, sharing knowledge and information. By adhering to these standards, they work to eliminate the underlying causes necessitating the existence of such facilities.

## 2. Study Methods

The idea of this topic for my thesis was born during my traineeship experiences in the Netherlands at two different facilities: Felida Big Cat Sanctuary, a small and old sanctuary with only six big cats at that time, and Stichting AAP, a big institution with more departments for several species and many volunteers and employees. The differences and similarities encountered stimulated my curiosity to further research on management and rehabilitation practices in animal sanctuaries. Consequently, I decided to focus on this kind of facilities only on a European level to better understand how rescued exotic animals can be restored to a more appropriate species-specific life, although the environment we can provide them hardly resembles their distant natural habitat. Then my interest expanded beyond exotic species to include also wild European ones, such as brown bears, given the great number of bear sanctuaries spread across Europe.

Relying solely on my memories from the traineeship experiences and on the information I could gather during that time was obviously not sufficient for a comprehensive analysis of European sanctuaries. Therefore, I sought to contact all EARS partner facilities to request interviews via videocall or responses to a questionnaire I elaborated using the online platform Google Modules.

The queries, predominantly open-ended, were designed to have a general overview of management and rehabilitation practices of resident animals, including their rescue and arrival at the sanctuary, the daily work in animal care, and preparations needed for relocation to other facilities when possible (see Appendix). The questions for both interviews and questionnaires were largely identical: the main difference was that the interviews allowed for more clarification on certain topics and more insights on the single facility, while the questionnaire was mostly built with the intention to have a comparison between the different sanctuaries and not tailored specifically for each of them.

Eight different organisations replied positively to interview/questionnaire enquiries, while others declined mentioning their heavy workload at the centre. Five filled out the questionnaire, two participated in interviews, and one kindly engaged in both. Interviewees and respondents were all paid staff with various roles, including chief animal caretakers and Head of Animal and Facility Management.

The institutions object of my work were:

- **Natuurhulpcentrum**, a centre in Oudsbergen, Belgium, that rescues and rehabilitates sick and injured native wildlife and also works as a temporary sanctuary for rescued or confiscated exotic and wild captive animals.
- **The Primate Department at Stichting AAP** in Almere, the Netherlands, composed of the Primate Rehabilitation Building (PRB), a well-equipped facility with three wings (west, north,

east), allowing for optimal rehabilitation and socialisation processes for the different species of primates (such as barbary macaques, rhesus macaques, vervet monkeys, hamadryas baboons, and more) housed there, and the Islands, where stable social groups formed at the PRB find temporary sanctuary until suitable, long-term placements are secured.

- **Stiftung für Bären**, a foundation that runs two Alternative Bear Parks in Germany, one in Thuringian Worbis and the second in the Black Forest, where brown bears, wolves and lynxes find permanent sanctuary.
- **Stichting Leeuw**, a rescue facility that provides temporary or permanent sanctuary to big cats in need, situated on the Hoenderdaell Estate in Anna Paulowna, the Netherlands.
- **Bear Sanctuary Arbesbach** (Austria), the first and smallest sanctuary for captive brown bears in need established by Four Paws in 1998.
- **Bear Sanctuary Belitsa** (Bulgaria), run by Four Paws in cooperation with the French foundation Brigitte Bardot, which offers an appropriate, lifelong home for former dancing bears from Bulgaria and Serbia and bears from other cruel private keepings in other eastern European countries.
- **Felida Big Cat Sanctuary** (Nijeberkoop, the Netherlands), also run by Four Paws, a special care facility where physically and mentally traumatised big cats find permanent or temporary accommodation.
- **Fundació Mona**, a rescue and rehabilitation centre near Girona (Spain) where abused chimpanzees and macaques find a forever home and recover from their previous lives as circus artists, television actors, and even pets.

### 3. Analysis and Discussion

Animals residing in sanctuaries originate from a variety of circumstances. Some were kept illegally as pets and subsequently confiscated by local authorities, while others may have escaped from private owners or even been intentionally released in attempt to escape prosecution. Additionally, many animals may have been living in zoos that failed to meet certain standards of husbandry and welfare, leading to their relocation due to closure of these facilities. Sanctuaries also serve as a refuge for ‘retired’ laboratory animals, those rescued from circuses, as well as former dancing bears (part of a centuries-old tradition of bears trained to perform using cruel methods) and restaurant bears (kept in tiny cages near restaurants or hotels, where they are exhibited as tourist attractions).

Addressing the underlying causes of such situations is crucial, as sanctuaries ultimately aim to eradicate the need for their own existence. The most effective tools for preventing these conditions are most likely legislation and raising public awareness through education. A pertinent example, even if only limited to one practice of animal abuse, is the eradication of the tradition of dancing bears in the Balkan region, particularly in Bulgaria.

In 1992 the Bulgarian Ministry of Environment and Waters issued a regulation declaring the Brown Bear (*Ursus Arctos*) a protected species, thereby restricting hunting permits only for ‘dangerous’ animals. Further progress was made in 2002 when the Hunting and Game Protection Act removed it from the game species list. Additionally, the Bulgarian environment has implemented international regulations and agreements, such as CITES, the Bern Convention, and the EU Habitat Directive 92/43/EEC, which contribute to the protection of Brown Bears and their habitat (Floor, 2005). Despite the legal protection of the species and the consequent prohibition of private bear ownership in Bulgaria, inadequate law enforcement meant that the practice of dancing bears persisted, necessitating intervention by organisations such as Four Paws.

In an interview for the BBC, Dr. Amir Khalil, veterinarian and Director of Reveal and Rescue Response at Four Paws, explained that efforts to raise public awareness about the plight of dancing bears in Bulgaria led to many hotels, particularly in Sofia and along the seaside, refusing to allow bear owners to perform on their premises. This progressively discouraged the keeping of dancing bears as owners were struggling to sustain their livelihoods, and in 2007 the last Bulgarian dancing bears were rescued and brought to Bear Sanctuary Belitsa. According to Four Paws, there are no longer any dancing bears in Southeastern Europe nowadays: the last were rescued in 2009 in Serbia and in 2017 in Albania, and subsequently brought to the Bulgarian bear sanctuary. Dr. Khalil noted in his interview that “*it is a tradition from the Middle Ages that no longer exists and will never come back*”, at least in the Balkan region.

On the other hand, the lack of legislative regulations in certain cases, the improper enforcement of existing laws, and, perhaps most critically, the non-uniformity among the different legislations adopted by EU member states, continue to hinder the fight against animal abuse. For example, EU countries do not share a consistent approach in regulating the trade of animal species to be kept as pets (also including exotic and wild species). Some of them employ negative lists, banning certain species for conservation or safety reasons; others use a positive list, allowing only approved species; while some other nations do not even have any laws for this issue. These inconsistencies among EU member states complicate the distinction between legal and illegal trades, enabling cross-border criminal activity and hindering international law enforcement efforts, while also making it challenging to monitor and enforce existing trade regulations across the Union. Therefore, the establishment of a common and strict EU positive list, as proposed by Eurogroup for Animals and Animal Advocacy and Protection (AAP) in their White Paper, is imperative. This positive list should provide a definition of *companion animals*, filling the gap in the EU legal framework, and only species (or breeds) recognised as such would be approved for trade.

For the purposes of this dissertation, I will not delve into the further details about the fight against animal abuse. Instead, my queries during interviews and on the questionnaire investigated how animals from such conditions are rescued and brought to different sanctuaries, rehabilitated, and eventually relocated when feasible.

### **3.1. Rescue and Arrival at the Sanctuary**

There are several ways through which situations of animal suffering are uncovered and subsequently addressed. Typically, sanctuaries have a limited role in the actual rescue operations. For example, organisations such as Four Paws have specialised teams dedicated to identifying instances of animal abuse and arranging potential rescues that collaborate with sanctuaries, where the animals are ultimately placed, but often operate independently from the sanctuaries themselves. Instances of animal mistreatment can also be detected and reported to sanctuaries and animal welfare organisations by private individuals and local NGOs who observe such situations within their communities. Other sources can be official entities, such as local authorities, border control, and the government, especially in case of confiscations.

As testified by interviewees and questionnaire-respondents, the process from rescue to the arrival of an animal at a sanctuary is typically lengthy, ranging from one or two months to even a year, and highly dependent on a case-by-case scenario. However, when rescues or confiscations occur within the same country as the sanctuary, the transfer is generally faster and can be almost immediate. F. Thoelen, biologist at Natuurhulpcentrum, explained that they can receive confiscated animals even

with minimal notice: for instance, on the day of our interview, they ‘welcomed’ twentyfive exotic birds just an hour after receiving the call from the police. Confiscations can also occur incidentally, such as when local authorities conducting drug searches, for example, unexpectedly discover exotic and wild animals kept illegally, necessitating immediate relocation. In general, after verifying sufficient capacity, Natuurhulpcentrum accepts animals confiscated by the Belgian government. Similarly, AAP in the Netherlands accommodates certain mammal species confiscated by the Dutch government.

Most rescues, though, are protracted due to the extensive bureaucracy involved, particularly in cases of international transfers, and are further complicated when the originating country is outside the EU. Additionally, legal issues can significantly delay the process: legal proceedings concerning private ownership can extend over years, and challenges in proving abuse or illegal possession can further impede progress. In any case, some documents and sometimes a period of quarantine in the country of origin are required before rescue and transfer to a sanctuary can actually happen. The documentation needed can usually include CITES and TRACES certificates.

A CITES certificate is an official document issued by the relevant government authority of a country that is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This certificate is required for the international trade of species listed in the CITES Appendices, ensuring that the trade is legal, sustainable, and traceable. It includes details such as the type of document (e.g., export permit, re-export certificate, import permit), the scientific and common names of the species, the quantity, and the source, and is often accompanied by specific conditions related to the transport and handling of the species. [CITES, Resolution Conf. 12.3 (Rev. CoP19)]

A TRACES certificate is an official document used within the European Union's TRACES (Trade Control and Expert System) platform. TRACES is an online management tool developed by the European Commission to facilitate and streamline the tracking and control of the import, export, and intra-European trade of animals, animal products, food, and feed. It ensures that these movements comply with EU regulations on animal health, public health, and food safety. The system provides a digital and paperless workflow, enhancing traceability, transparency, and cooperation among EU and non-EU authorities and traders (European Commission, TRACES).

Setting aside the required bureaucracy, it is crucial to address other considerations and adjustments necessary before a new animal can be admitted to a sanctuary. Foremost among these is ensuring enough capacity to accommodate incoming animals, namely sufficient space in both the quarantine enclosures and the enclosures where the animals will be transferred post-quarantine. Medical checks, conducted before and/or after transport, must be arranged to assess the animal’s health condition, and necessary vaccinations, such as for rabies, must be administered to mitigate any potential health risks.

A practical consideration prior to transport can be checking that the crate or cage used during the transfer can be easily and safely connected to the gating systems at the sanctuary, thus avoiding the need to anaesthetise the animal and preventing additional stress. Planning the arrival day is also crucial and this means ensuring the presence of sufficient staff members (sometimes including volunteers and interns) to assist with unloading the transport crate (especially for larger animals), releasing the animal into its new enclosure, and monitoring it during its initial adjustment period.

All interviewees and questionnaire-respondents indicated that an incoming animal is always placed in an isolated enclosure upon arrival at the sanctuary, regardless of whether it has already undergone quarantine prior to transport. This means that a new animal is initially housed either in a legally designated quarantine area or in an ‘adaptation enclosure’ tailored to facilitate acclimatisation to the new environment, prepared according to the species and individual needs.

At Felida Big Cat Sanctuary, for example, the designated area for new arrivals features numerous platforms and steps to prevent animals from falling and injuring themselves. This space is specifically designed for incoming animals requiring physical rehabilitation, as they may lack the ability to climb, jump, or run. Similarly, at Belitsa adjustments are made based on the individual condition of the arriving bear: for instance, if an animal has visual or mobility issues, it is placed in a flatter enclosure to accommodate its needs.

The isolation or quarantine period varies significantly among the facilities examined in this dissertation. This variation is partly due to the different types of sanctuaries hosting diverse species and it sometimes underscores dissimilarities in quarantine regulations across different EU countries even for the same species.

For example, Bulgarian law mandates a 30-day quarantine for incoming bears at Belitsa, during which they are initially kept in indoor enclosures before being gradually introduced to the outside and eventually integrated into the larger enclosures at the sanctuary after the adaptation and quarantine period. Similarly, at Bear Sanctuary Arbesbach incoming bears must be quarantined for at least four weeks, unless otherwise specified by authorities. In contrast, according to N. Gothe, competency manager at Stiftung für Bären, not all animals arriving at the foundation’s two sanctuaries undergo quarantine; however, legal regulations require a minimum six-week quarantine for those coming from outside the EU.

At Felida and Stichting Leeuw the quarantine or isolation period is generally one month, possibly extending until all medical checks and test results confirm the absence of infectious diseases and parasites. Fundació Mona follows a similar practice, isolating new arrivals for a few weeks until test results are received and infectious diseases are ruled out, even though quarantine is not legally mandated.

Stichting AAP has two dedicated quarantine facilities: one for chimpanzees and another for smaller mammals. Animals are quarantined for a minimum of six weeks up to three months before being moved to other departments.

At Natuurhulpcentrum most animals are normally quarantined for one month, with primates requiring three months due to the risk of diseases such as tuberculosis and hepatitis B. For this reason, primates are typically checked six to seven times during quarantine, whereas other animals, such as large carnivores, are generally examined two to three times.

There is also considerable variation in the philosophy regarding whether an animal in quarantine or in an adaptation enclosure can have visual contact with other animals. Among the facilities discussed, Felida has perhaps the most clearly defined rule: during the initial adaptation period, new animals cannot see other animals at the centre; they can only hear them to avoid overstimulation and stress, helping them relax in their new environment. For this reason, the outdoor enclosure opposite the adaptation enclosure is usually left empty and the new animal is gradually introduced to the others from a distance, with visual contact adjusted based on the reactions.

In some cases, the degree of visual contact depends on the location of the quarantine enclosure. At Stichting Leeuw animals in quarantine have no contact with others due to the building's complete isolation from the rest of the sanctuary. In contrast, at the two bear sanctuaries operated by Four Paws, bears in quarantine may or may not see other bears from a distance, depending on the specific quarantine enclosure.

At AAP visual contact during quarantine varies based on the species and individual needs. If it is beneficial for the animals to see conspecifics, it is facilitated; if not, it is avoided. Similarly, at Fundació Mona animals in quarantine can usually see each other, but staff can regulate this contact to prevent discomfort or stress. Interestingly, D. Crailsheim, Research Project Coordinator at Fundació Mona, noted that it is often preferable for future potential group members not to be within sight while housed separately.

### **3.2. Healthcare and Diet Management**

Health monitoring is a crucial component of animal care and can be divided into invasive and non-invasive methods. The former means anaesthetising an animal for a comprehensive medical examination conducted by a veterinary team, while the latter includes daily observations by animal caretakers to assess overall health of the animals and the collection of samples, such as faecal and urinary samples, without the need for sedation.

A full veterinary check is always carried out before transport or upon arrival at the sanctuary. Subsequently, some organisations adhere to a schedule for invasive checks, while others, considering

the potential negative effects of anaesthesia, prefer to perform comprehensive medical examinations only when strictly necessary.

At Belitsa a second check-up is performed approximately two months after the initial examination done before transport and it includes ultrasound exams, X-rays, blood sampling, deworming, and vaccinations if needed. Following this second veterinary check, the sanctuary's protocol requires clinical examinations at least once every three years, with additional checks as needed if health issues arise. Similarly, at Arbesbach regular checks are conducted approximately every two years.

At AAP the frequency of medical checks depends on the species, but generally a six-month check-up and a one-year check-up are conducted during the first year, followed by examinations every three years thereafter.

In all other centres discussed, full veterinary examinations are typically not scheduled regularly but are performed as necessary based on the individual animal's condition.

Notably, at Fundació Mona efforts are made to train most animals to undergo health checks, including ECG, echography, and blood sampling, without the need for sedation.

In the daily care routines overseen by the animal caretakers, numerous parameters can be assessed visually. These can include evaluating and scoring the body condition of animals based on observable physical characteristics such as muscle and fat deposits. Caretakers also scrutinise the overall appearance of the animals, paying attention to the condition of their eyes, mouth, nose, and coat. Mobility and behaviour, together with appetite and feed intake, are observed closely to detect any changes that may indicate discomfort or illness. Moreover, caretakers inspect the teeth, paws, and claws of trained animals to ensure they are in good condition. During routine enclosure cleaning, feces are checked for consistency and appearance, while urine is occasionally collected using specific trays for subsequent urinalysis. Furthermore, microscopic examinations of faecal samples are conducted to rule out the potential presence of parasites.

At Felida Big Cat Sanctuary, for example, it is customary to assess the status of the feces collected during the daily cleaning tasks, considering factors such as colour, texture, and content, and assigning a general score from 1 to 4. Additionally, faecal samples are examined inhouse for parasites typically on a monthly basis.

Singularly, the animal caretakers at Belitsa have three distinct techniques of non-invasive health assessment, some of which include the aforementioned methods. The first one, termed "*quality of life assessment*", involves overall observations of body condition, appearance and walking. The second method, medical training, consists of specialised training for bears to facilitate health checks: some bears are trained to open their mouths for dental inspections, others are trained to present their bellies for monitoring surgical stitches, and some are trained to present their paws to check for dermatitis

caused by excessive pacing on concrete surfaces. The third one, and perhaps the most innovative among the facilities, is mobility assessment using enrichments conducted once a month: various enrichment items of similar attractiveness (to avoid test bias) are placed at different heights, and the highest point reached by each bear is recorded. This test is particularly important for evaluating the mobility and physical capabilities of older bears.

The health assessments conducted by animal caretakers gain additional significance given that, among the facilities examined, only AAP employs an on-site veterinary team. The other organisations have contractual agreements with external veterinarians who visit the sanctuaries on a scheduled basis or in emergencies, rather than being permanent staff members. For instance, Natuurhulpcentrum has agreements with two veterinarians who visit the centre once or twice a week, ensuring that a veterinarian is present at least four times a week (or more frequently if necessary); but this arrangement is set to change in October 2024, when Natuurhulpcentrum will employ a full-time veterinarian. In a similar way, Felida has recently added a veterinarian to their team as of June 2024. However, veterinarians from the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin continue to come and lead medical procedures, maintaining a longstanding partnership with Four Paws. IZW's specialised wildlife veterinarians conduct major medical procedures and full veterinary checks, such as the annual health assessments for bears at Belitsa. This collaboration is particularly crucial because Bulgaria lacks specialised wildlife veterinarians, necessitating the expertise of external professionals.

The involvement of veterinarians in diet planning varies among facilities. AAP is a unique case, because it has a completely separate department, the Central Kitchen, where all the meals for the different animal departments are prepared following detailed diet plans devised by the veterinary team. Caretakers at AAP are not involved in meal preparation: their responsibility is limited to sorting and checking the crates containing the prepared meals for each animal delivered from the Central Kitchen.

In contrast, at other sanctuaries, diet planning is typically the responsibility of the Chief Animal Caretaker (or the Head of Animal and Facility Management), often in collaboration with the entire team of caretakers and with input from wildlife-specialist nutritionists. It is noteworthy that Natuurhulpcentrum, functioning as an 'emergency sanctuary', occasionally receives species they have not previously housed; in such instances, they seek dietary advice from zoos and other facilities experienced with those species, ensuring that the nutritional needs of all animals are met appropriately.

Feeding regimens vary significantly depending on the species for obvious reasons and, to some extent, on sanctuary practices.

Regarding the content of diets, I draw upon my experiences during traineeships at AAP and Felida, as this aspect was not covered in my interviews and questionnaires. Primates at AAP's PRB receive pellets for breakfast, fruit, hard and leafy vegetables for lunch, and carrots or fruit again for dinner. At Felida the big cats are provided with an average of 25-30 kg of meat per animal weekly, sourced primarily from horses and beef unsuitable for human consumption, baby goat carcasses, and occasionally roadkill. The diet includes bone, hair, skin, and specific organs, supplemented with a multivitamin mix usually combined with linseed oil.

Feeding frequency is one area where practices can diverge significantly between organisations, even for the same animal family or species. For instance, at Stichting Leeuw adult animals are fed once a day for six days a week, with just one fasting day. In contrast, at Felida and Natuurhulpcentrum they strive to mimic natural eating patterns observed in the wild, where predators do not consume prey daily. Consequently, adult big carnivores at these centres have three 'true' feeding days, with smaller portions on the fasting days for administering medications, training, and enrichment.

Analogously, while the monkeys at the PRB at AAP are fed three times a day, the primates at Fundació Mona are fed on average four to five times a day.

The feeding frequency for brown bears is a different case altogether, varying seasonally to accommodate hibernation needs. At Belitsa, for example, bears are fed once a day in spring, gradually increasing to twice a day by early summer, and reaching three times a day in summer. The quantities grow progressively towards autumn to prepare bears for winter hibernation, during which they are obviously not fed at all. According to N. Gothe of Stiftung für Bären, each bear requires about 20000 kcal during peak season, typically between late summer and early autumn.

Feeding modalities also diverge across facilities, primarily based on the housing conditions of the animals. At AAP's PRB, the feeding process begins with sorting the crates and buckets delivered from the Central Kitchen, during which seeds are scattered among the more anxious monkey groups to alleviate stress and prevent self-mutilation due to anticipation of feeding time. The provision of feed follows a precise order outlined in the wing's work instructions, generally prioritising animals undergoing socialisation projects, followed by those exhibiting stereotypic behaviours, and always starting with the highest-ranked individuals within each group. The practical feeding tasks involve throwing feed over the enclosure roof to ensure even distribution or placing it on feeding trays or bowls secured outside the enclosures for intake monitoring. In contrast, at the Islands at AAP, where enclosures have a more naturalistic design, feed is provided by throwing it from a terrace overlooking the four different outdoor enclosures during a singular feeding time (a distinctive feature of the Islands

compared to the PRB). The feeding modalities for primates at AAP partly deviate from Fundació Mona, where first and last meals are always provided indoors and controlled per individual.

For big cats, after they are locked outside, meals are generally placed in their indoor enclosures for hygiene and cleaning purposes before allowing the animals back inside. For bears there are typically two methods: throwing the feed over the fence into the outdoor enclosures or scattering and hiding it around the enclosure to stimulate scavenging behaviour. This latter method involves securing the bears in another part of the enclosure or a separate enclosure before allowing them back in to find the hidden food.

These feeding protocols highlight approaches aimed at meeting the animals' specific needs and behaviours, while also ensuring the caretakers' safety.

Providing a proper diet to animals residing in sanctuaries is a crucial aspect of their rehabilitation, as many come from situations of poor animal husbandry. As a matter of fact, the most common medical issues faced by animals in sanctuaries often stem from nutritional imbalances and inadequate, unsanitary housing conditions prior to their transfer. These health problems typically include dental issues, chronic kidney disease (especially in big cats), metabolic bone diseases, and ingrown claws. Degenerative joint diseases such as osteoarthritis and osteoarthrosis, which are often age-related, are also prevalent. Bears sometimes develop cancers, which need to be surgically removed when possible and monitored for metastasis. In severe cases, the primates at Fundació Mona may suffer from heart conditions.

F. Thoelen of Natuurhulpcentrum highlighted that incoming animals often face parasitic infestations, primarily internal parasites like intestinal worms and occasionally external parasites, due to previous poor housing conditions. In extreme cases, the centre even receives emaciated animals.

### **3.3. Behavioural and Psychological Rehabilitation**

Most animals arriving at sanctuaries have experienced tragic pasts and require not only proper husbandry practices but also comprehensive behavioural rehabilitation programs. These animals have often endured unsuitable conditions of captivity, leading to health issues (like those mentioned in the previous section) and behavioural abnormalities such as stereotyped behaviours.

Stereotypic behaviours are “*repetitive behaviours induced by frustration, repeated attempts to cope, and/or central nervous system (CNS) dysfunction*” observed in animals in captivity (Mason, 2006).

Data collected from my interviews and questionnaires indicate that the most prominent behavioural stereotypies among sanctuary animals are pacing and circling, namely walking back and forth or in circles in the same part of the enclosure, particularly prevalent in carnivores and bears. Bears are also prone to head-weaving, while primate species can exhibit rocking back and forth and self-induced

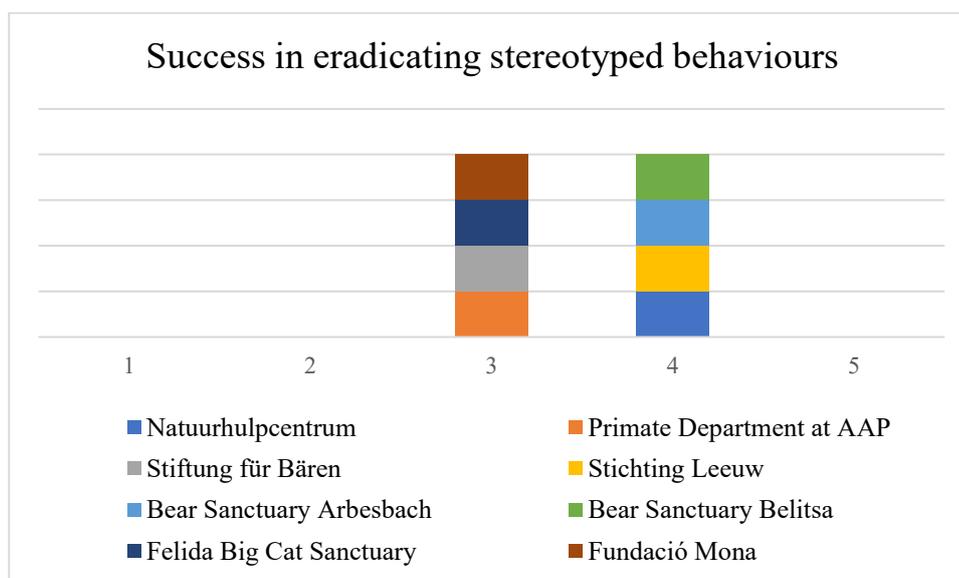
vomit. Over-grooming and, in extreme cases, self-mutilation are abnormal behaviours common across all species.

Eradicating all these behaviours, or at least minimising the stress factors causing them, is critical to the animals' rehabilitation, and there are several strategies that can be employed to achieve this.

Preventing monotony and boredom is essential, as the animals must be provided with as many options as possible to avoid resorting to stereotyped behaviours despite all the intrinsic limitations of captivity. For this reason, most sanctuaries strive to challenge the animals by changing feeding regimes, shifting them between enclosures, and, most importantly, employing enrichment, training, and socialisation programs. These last three approaches are considered among the most effective according to insights gained from my traineeship experiences.

Medications can also aid in managing stereotypic behaviours: for example, clomipramine, a tricyclic antidepressant, is occasionally administered to animals at Felida, and in the past midazolam, a benzodiazepine CNS depressant, has been used in cases of self-injurious stereotypic behaviours.

Furthermore, in sanctuaries open to the public, it is crucial to manage animal visibility and mitigate stress caused by visitors: this can be achieved by relocating the affected animal to a different enclosure or more simply by redirecting visitor access. At Belitsa, for example, only 40% of the sanctuary terrain is open to visitors. The rest, including enclosures for animals with health or behavioural issues, is strictly off-limits to ensure their well-being and privacy. Even within accessible areas, visitors see only a portion of the enclosures, allowing bears to retreat to hidden areas if they feel uneasy. All tours are guided, and visitors must be accompanied by a staff member, further ensuring the animals' safety and comfort. This approach is generally preferred over free-roaming tours.



**Table 1:** scores 1=rarely successful to 5=always successful

Complete eradication of stereotyped behaviours is however highly challenging, if not impossible to a certain extent. As a matter of fact, the average success score in eradicating stereotypies, as reported by the eight organisations surveyed in this research, is 3.5 out of 5, with none assigning a perfect score of 5 indicating complete success (see Table 1). Achieving to eliminate stereotypic behaviours strongly depends on the duration and severity of the animal's prior traumatic conditions. Indeed, research indicates that animals subjected to prolonged periods of improper housing conditions develop more persistent behavioural issues that are exceedingly difficult to eliminate. In contrast, animals rescued at an early age and subsequently exposed to enriched environments have a significantly higher likelihood of overcoming stereotypic behaviours (Lewis et al., 2006).

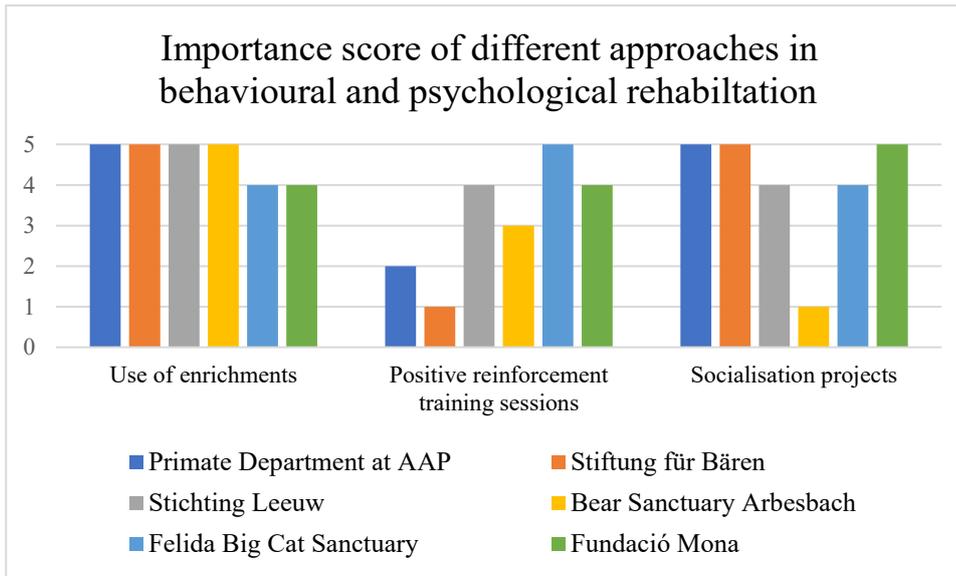
For example, at Belitsa bears rescued after 15-20 years of abuse as dancing bears continue to recur to stereotypies on a regular basis, whereas more recently rescued bears exhibit fewer or no stereotypic behaviours. This highlights the strong correlation between the probability of eradicating behavioural abnormalities and the past of each individual animal.

Interestingly, according to J. van Zon, Head of Animal and Facility Management at Felida Big Cat Sanctuary, the complete eradication of stereotypic behaviours is essentially impossible. This raises an ethical consideration: what is crucial is providing animals with as many options as possible to engage in activities other than stereotyping, rather than attempting to force an animal out of a behaviour that may help them calm down and relax.

As mentioned before, I identified enrichment, training sessions, and socialisation projects as the three primary strategies employed to prevent or eradicate stereotypic behaviour and, more broadly, to support behavioural and psychological rehabilitation of sanctuary animals. The aim was to investigate and analyse the importance and prioritisation of these approaches according to the practices and policies of the different sanctuaries (see Table 2).

According to K. Valchinkova, Head of Animal and Facility Management at Bear Sanctuary Belitsa, it is neither accurate or feasible to rank these strategies in terms of importance, as each has its own benefits and different approaches are more effective for different animals. In our interview, she emphasised that some bears showed behavioural and psychological improvements through training sessions, while others benefited more from increased enrichment activities. Therefore, the application of these strategies must be tailored to the individual needs of each animal.

With this important consideration in mind, I explored the detailed application of each of the three across different sanctuaries.



**Table 2:** scores 1=not always necessary to 5=crucial

### 3.3.1. Environmental Enrichment

Environmental enrichment involves modifications to an animal’s enclosure or the introduction of objects or stimuli designed to enhance welfare. These enrichments aim to provide specific behavioural opportunities and create more complex and stimulating environments (Swaisgood & Shepherdson, 2006).

The implementation of enrichment is the most consistently emphasised approach among the various organisations surveyed, registering a mean importance score of 4.6/5 among six respondents, with four rating it as crucial. (see Table 2) Indeed, enrichments are provided daily at all the facilities discussed, typically following a weekly or monthly schedule. The design of these schedules varies across facilities, primarily falling into two categories: item-based and goal-based enrichment plans. At Belitsa, for example, they employ a yearly goal-based enrichment program tailored to the specific behaviours targeted for each animal. From this overarching plan, weekly schedules are constructed, detailing which bear will receive specific types of enrichment on particular days.

In contrast, during my traineeship at AAP’s PRB I observed a distinct absence of structured planning regarding the provision of enrichment items to animals. Decisions are made daily based on information recorded on a weekly board, delineated by days from Sunday through Saturday. Individuals responsible for enrichment – whether volunteers, interns, or caretakers – must diligently document each day’s provisions, ensuring that no animal or group of animals receives the same enrichment more than two or three times per week. For instance, if a particular animal received ‘Enrichment A’ on Sunday, it cannot be offered again on Monday, necessitating alternative enrichments on subsequent days. To facilitate planning and variability of enrichment items, records are typically maintained on the board for a week before being cleared. While I understand that the

intention behind this approach is to ensure variety and unpredictability in enrichments provided to animals, I found it to be notably inefficient and time-consuming. This operational framework poses challenges primarily because of the great number of animals (around seventy at the PRB) and due to the limited availability of materials for crafting enrichment items, which must be shared across the facility's three wings, complicating the preparation process significantly. A monthly or weekly schedule would offer greater control over enrichment activities, encompassing both preparation and cleaning routines more efficiently. Such a structured approach would ensure the timely availability of necessary enrichment items whenever they are required.

However, it is also true the PRB has an extensive list of approximately twenty possible enrichment items that can be crafted that, to a certain extent, compensates for the lack of a structured enrichment schedule. These items, essentially 'toys' filled with various food items like popcorn, seeds, carob, and raisins, can be categorised based on their size: those that fit through the bars of enclosures (e.g., 'disks' and 'envelopes'), which can be provided at any time, and larger items (e.g., 'frisbee towers' and logs with holes stuffed with food) that are introduced during enclosure cleaning. Additionally, specific instructions posted on each wing's door detail which animals or groups cannot receive certain enrichment items due to safety or individual needs. This list is extremely helpful in facilities housing a large number of animals, like the PRB, where there is limited time for creativity and innovation in terms of enrichment. A similar approach is found at Fundació Mona, where creativity is also limited to a list of allowed enrichments.

Instead, in smaller sanctuaries or those housing fewer animals, such as Felida, creativity in enrichment ideas is more feasible, but always ensuring the safety of the animals.

With the animals' safety as the number one priority, two main philosophies concerning the provision of enrichment can be identified: one more 'permissive', allowing completely artificial toys, and another more 'naturalistic', striving to provide enrichments made only of natural elements. This distinction is particularly evident among the bear sanctuaries analysed in this dissertation. At Abersbach they provide a variety of enrichment items, including artificial toys such as boomer balls of various sizes, food puzzles made from both artificial and natural materials like wooden logs, tree stumps, and steel barrels, and more. In contrast, at Belitsa the requirement is to use natural elements, so all enrichments, especially the 'toys', are made of natural materials, with exceptions for occasional cardboard boxes and hessian bags filled with feed. An even more 'extremely' natural approach is employed at the bear sanctuaries run by Stiftung für Bären, where, according to N. Gothe, the natural forest habitat, the presence of other animals forming a community, and the practice of feeding in diverse locations, are already enriching by themselves as they try to mimic wild conditions as closely as possible.

With this natural approach to enrichment in mind, it is important to recognise that enrichment encompasses more than just material items or 'toys', but it refers to any novelty introduced to animals with the aim of stimulating them, including changes in the environment and sensory experiences. This can involve moving vegetation, rearranging branches, and introducing new olfactory stimuli such as herbs, spices, and perfumes. Among these non-material enrichments, the use of synthetic pheromones at Felida stands out as particularly unique.

Natural pheromones are chemical signals secreted by animals that trigger a behavioural response in members of the same species. Pheromones used for captive big lions are the synthetic counterparts of Cat Appeasing Pheromones (CAP) and Facial Pheromones (F3). CAP is a specific type of pheromone secreted by nursing female cats, that has a calming effect on kittens, promoting a sense of security and reducing anxiety. F3 are secreted by cats from glands located around their face and are associated with creating a familiar and secure environment, influencing social behaviours positively. Research has demonstrated that the use of synthetic CAP and F3 pheromones significantly influences the behaviour of captive lions. Key findings include increased play behaviour and enhanced social interactions, demonstrating enhanced well-being and reduced stress (Martínez-Macipe et al., 2015).

Felida employs synthetic pheromones in the form of spray to manage and influence the behaviour of their resident animals. These spray-pheromones are utilised in various ways to achieve desired outcomes, as elucidated by J. van Zon during our interview. They can be administered directly onto animals, after careful training aimed at desensitising against the spray, or within their environment. For instance, before transport of an animal, the sanctuary staff spray the pheromones inside the transport crate and the new enclosure. This ensures that the animal is consistently exposed to the calming scent, facilitating a smoother transition. When sprayed on one single animal, both the same animal, as the scent remains constantly near it, and others in adjacent enclosures benefit from the effects of pheromones. Preferably, the pheromone is applied to all target animals to ensure the 'message' is uniformly received.

Moreover, the use of pheromones is not only merely limited to calming behaviour, rather it can also stimulate exploratory behaviour. Finally, it's crucial to say that pheromones act purely as messages without chemical altering an animal or its hormonal structures and their effects dissipate immediately once removed, underscoring their role as non-invasive behavioural tool.

### **3.3.2. Training**

Sanctuary animals are always trained with the *'protected contact' method*, meaning that training sessions always occur through a safety barrier between the animal and the caretaker. This technique

benefits both parties: it ensures the safety of the caretakers by preventing potential injuries and grants animals more control, allowing them to decide whether to engage in training, with the option to leave whenever they wish (Doyle, 2017). The principle applied to all training sessions is the positive reinforcement technique, that involves presenting a rewarding stimulus after a desired behaviour is performed. Typically, the reward is something that the animal finds motivating, such as food or another desirable outcome. The essence of this method is to provide a positive consequence for a specific behaviour, thereby strengthening that behaviour and increasing its likelihood. Positive reinforcement enhances animal welfare by reducing stress and anxiety, as it avoids punishment or aversive stimuli. This technique facilitates training, making the process enjoyable and mentally stimulating for animals, while also providing opportunities to exhibit natural behaviours. Additionally, positive reinforcement strengthens the bond between animals and their trainers or caregivers, fostering trust and cooperation. Overall, it contributes to improved behavioural welfare by giving animals a sense of control and predictability in their environment (Fernandez, 2022).

While enrichment was rated similarly by all organisations, the perceived importance of training sanctuary animals varies significantly. Among six respondents, five different scores were assigned, highlighting different philosophies and approaches (see Table 2). Indeed, the implementation of training differs greatly across the surveyed organisations.

Standing out again with the most natural approach, sanctuaries run by Stiftung für Bären do not implement any training at all. Similarly, at AAP's PRB training is minimal and primarily focused on facilitating movement between enclosures and preparing for transport, due to AAP's strict hands-off policy which aims to minimise human-animal interaction to avoid compromising the animals' socialisation process, the primary focus at the PRB.

In contrast, other facilities emphasise training to foster positive relationships between animals and caretakers. Training is primarily conducted for health assessments, veterinary treatments (such as needle desensitisation to facilitate hand sedation), cooperative enclosure shifting, and transport preparation ('crate training'). Training sessions typically involve the use of a target to guide the animal's behaviour and a clicker, the sound of which animals learn to associate with a reward.

Before starting to train an animal, it is crucial that the animal has acclimated to its new environment and does not exhibit stress in the presence of caretakers. A common approach is to begin with simple trust-building sessions during quarantine or in the adaptation enclosure, a few days after the animal's arrival. These sessions often involve 'hand-feeding' (always through a barrier to ensure safety) without demanding specific behaviours, allowing animals to associate caretakers with positive experiences.

According to J. van Zon , it is important to start training as soon as possible to help animals understand the caretakers' presence and purpose. Once a good cooperative animal-caretaker relationship has been established, meaning that the animal does not show any signs fear, stress or aggression towards the caretaker, the proper training with more advanced sessions can start.

It is also essential to consider each animal's health condition and individual characteristics. For instance, at Belitsa caretakers avoid training sessions requiring excessive movement or standing for bears with mobility issues, and simultaneous training sessions involving multiple bears are conducted for those that become anxious when separated from the group.

Training, like many aspects of animal care, often defies 'one-size-fits-all' solutions, requiring instead approaches tailored to the unique situations of each individual animal.

### **3.3.3. Socialisation Projects**

Socialisation projects are efforts by sanctuary staff to introduce animals to one another for the establishment of new groups (even just a pair) or addition to existing groups. During these processes animals learn the social skills necessary to live compatibly in a more natural social setting with conspecifics.

Socialisation scored an average importance of 4/5 among sanctuary organisations, highlighting its significance in the rehabilitation of sanctuary animals. A. Friedl, Head of Animal and Facility Management at Bear Sanctuary Arbesbach, was the only respondent to rate it as *not always necessary* (1/5). She emphasised that socialisation should only be pursued if there is evidence that it will improve the wellbeing of the animals involved, such as when more insecure animals could benefit from the presence of a conspecific. In contrast, J. Klein Hofmeijer, Team Leader of the Primate Department at AAP, operates under the assumption that all primates are potential candidates for socialisation.

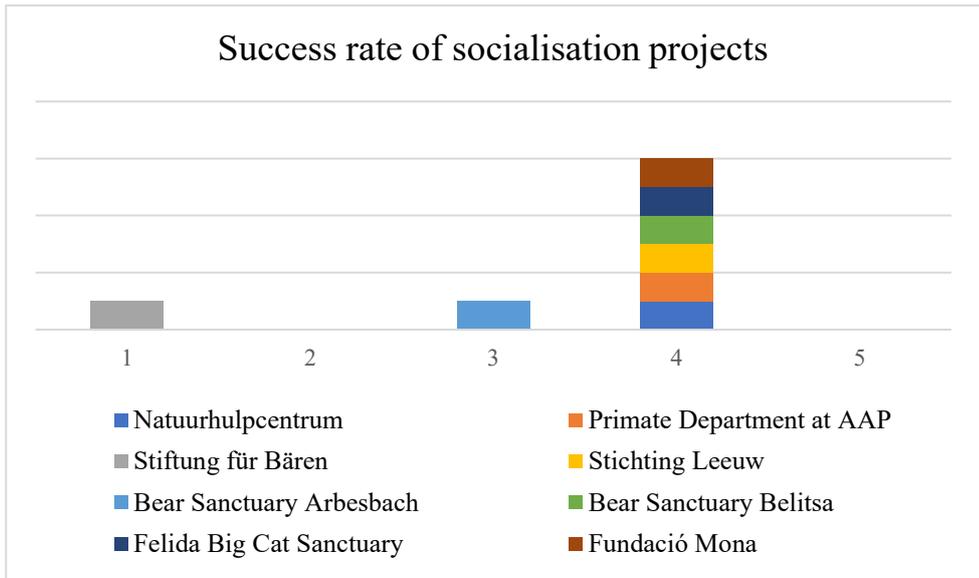
Provided that the animals have been habituated to the new environment and caretakers, individual characteristics, history, and health conditions of each animal must be considered as they play crucial roles in determining the feasibility of socialisation. Animals with no prior experience of living with, or even seeing, a conspecific may lack the social skills necessary for safe interaction, making the potential for aggressive interactions particularly dangerous. Additionally, animals with severe health issues, debilitating physical problems and genetic disorders may never reach the last stage of socialisation, namely cohabitation, rather could benefit from being housed next to a conspecific in the best-case scenario.

Finding suitable matches can also be quite challenging especially due to the lack of control sanctuaries have over the animals they receive, leading to potential absence of appropriate combinations of age,

characters, and size. Other factors that can hinder the swift development of socialisation processes include limited space, as seen at the PRB, where too many animals are housed in close proximity. Additionally, limited resources, such as time and qualified staff, pose significant challenges since socialisation processes require careful and continuous monitoring.

A socialisation process typically follows three stages: sensory contact, limited tactile contact, and full contact. This progression helps manage stress and aggression during the formation of social groups. Initially, animals are allowed to see, smell, and hear each other without physical contact. Methods include visual access or rotating animals through a shared enclosure, as well as transferring scents via bedding or marked materials (Andrews, 1998; Law & Tatner, 1998; Goulart, 2002, as cited in Powell, 2010). Next, animals can touch each other through barriers such as fencing or mesh. In some cases, animals may become overly excited by tactile barriers, requiring adjustments (Craig, 2007, as cited in Powell, 2010). Finally, animals are allowed full physical interaction. Initial full-contact sessions should be brief and positive, gradually increasing in duration based on the animals' responses. Consistent sessions are crucial to prevent setbacks (Andrews, 1998; Burks et al., 2004, as cited in Powell, 2010).

The timing of socialisation is also critical, with respect to their reproductive cycles, particularly for certain species. At Belitsa, for example, all socialisation processes are conducted during the mating season when bears are calmer and males show positive behaviours associated to mating even if castrated. The process includes a long period of observations and starts with moving bears to neighbouring enclosures and then closer to enclosures separated by a gate. Only after careful evaluation is a full-contact trial socialisation attempted, with all caretakers present and veterinarians on site ready to intervene if necessary. Depending on the bears' reactions, the process may involve temporary separations or could be successful from the first attempt, but it is crucial that all social introductions occur during the mating season to maximise the chances of success.



**Table 3:** scores 1=rarely successful to 5=always successful

The success rate of socialisation projects across the eight organisations surveyed averaged a score of 3.5, with none assigning a perfect score of 5 (meaning always successful), emphasising the difficulties in achieving complete success (see Table 3). For instance, at Belitsa a female bear failed to socialise successfully with three different males despite showing some interest, leading to the conclusion that she is better off in a solitary enclosure.

This complexity highlights the necessity of tailored approaches for each animal, emphasising the individualised nature of successful socialisation projects in sanctuary settings.

Moreover, it is essential to note that these socialisation projects do not aim to establish breeding groups, as sanctuaries adhere to strict no-breeding policies. Various contraceptive methods are employed to achieve this. At Fundació Mona, for example, female chimpanzees are administered birth-control pills, and male Barbary macaques undergo vasectomies. [A vasectomy involves the surgical cutting or sealing of the vas deferens, the tubes that carry sperm from the testicles to the urethra, thereby preventing sperm from being included in the semen during ejaculation.] Similarly, at Felida male lions are vasectomised rather than castrated. Vasectomy is preferred, because castration (surgical removal of the testes) leads to mane loss due to the significant drop in testosterone, which regulates hair growth and melanin production essential for mane development and maintenance. Manes are necessary as they signal genetic and phenotypic fitness, influence female mate choice, and play a role in social dominance among males. In captivity, maintaining these traits supports lions' psychological health and natural behaviours (West & Packer, 2002).

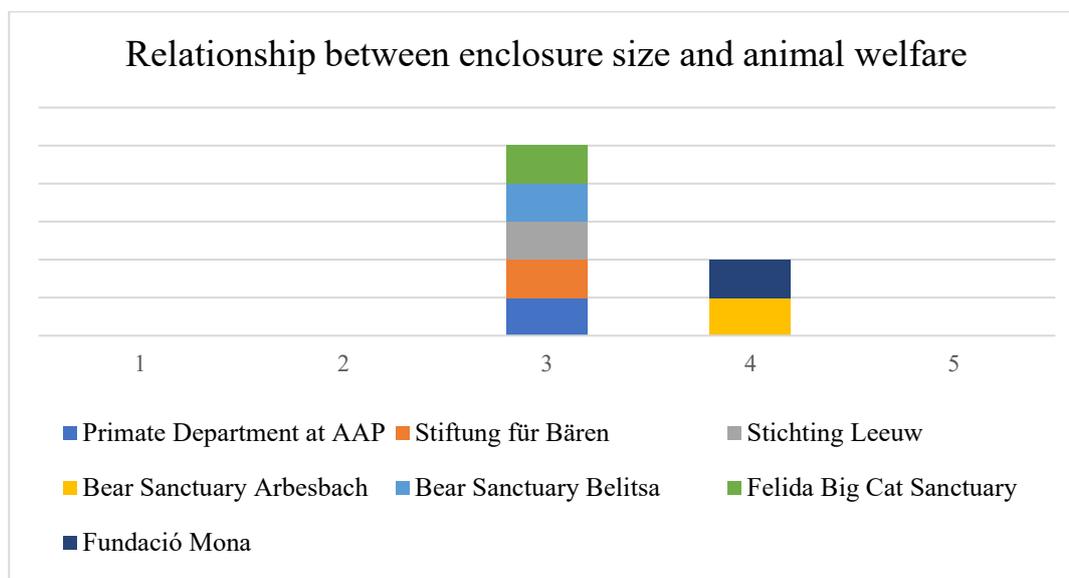
In contrast, male brown bears at Belitsa undergo full castration upon arrival, as no behavioural disadvantages are observed. Occasionally, female bears may require ovariectomy (complete removal of both ovaries and the uterus) or ovariectomy (removal of both ovaries while retaining the

uterus) due to cancers. Lionesses may also need these surgeries for cancer prevention or when frequent oestrous cycles cause stress.

These contraceptive measures are essential for maintaining the no-breeding policy implemented by every sanctuary to reduce the number of exotic and wild animals in captivity, but do not compromise the socialisation efforts aimed at enhancing the well-being of sanctuary animals.

### 3.4. Beyond Size: Effective Enclosure Management for Sanctuary Animals

In animal sanctuaries, that are still captive contexts where almost every aspect of an animal's routine is under human control, size is only one of the many factors that influence animal welfare, and possibly not the most important. As discussed previously, enrichment, training, and socialisation play crucial roles. Consequently, although I collected data on enclosure sizes at each surveyed centre, making direct comparisons would be unwise due to the variability of species across these sanctuaries. Such a comparison would be more appropriate if data were collected from multiple sanctuaries housing similar species, which was the initial objective at the time when the questionnaire was written.



**Table 4:** scores 1=little to no impact on animal welfare and 5=strong impact on animal welfare

Instead, rather than analysing enclosure size as mere numbers, it is more insightful to discuss its potential impact on animal welfare. According to seven respondents, enclosure size has an average impact of 3.3/5 on animal welfare (see Table 4). This score suggests a neutral stance, highlighting the complexity of the issue that goes beyond simple spatial measurements. The general sentiment from the collected responses is that larger enclosures are not inherently superior as size alone does not guarantee improved welfare. The quality of the enclosures and management practices are paramount. Larger enclosures that are poorly maintained or lack complexity may not enhance welfare and can

even be detrimental. The specific needs of individual animals must also be considered: some may not feel comfortable in large areas due to their backgrounds or medical conditions. At Stichting Leeuw, for example, there are blind animals that reasonably thrive better in smaller spaces where it is easier to familiarise with the environment to know how to locate corners, shade and shelter.

It is essential to incorporate various assets within any enclosure to offer animals choices, options, and occupation in their daily routines. These can include different types of furnishing, such as platforms and swimming pools for example, and the other aspects addressed in chapter 3.3. Space diversity within an enclosure is also very important: animals should have the opportunity to find shade, shelter from the rain, sunny places, and for bears to dig dens.

While larger enclosures can offer more benefits, the focus should remain on creating a varied, stimulating, and flexible environment. Many strategies can mitigate the limitation of smaller spaces, while still ensuring the highest standards of animal care.

Notably, all eight organisations surveyed are constantly striving to improve the condition of existing enclosures and/or have plans to expand them or build new ones to better accommodate animal needs. At Belitsa, for instance, enclosures with rocky terrain unsuitable for digging or housing bears that have not learned to dig yet have artificial dens to ensure appropriate hibernation places. From my traineeship at Felida, I recall the internal relocation of Simba, a lion with motor skill issues resulting from a mix of malnutrition and inbreeding, whereby platforms were adjusted and lower steps were added before introducing him into his new enclosure. Felida is also one of the sanctuaries where completely new enclosures (both indoor and outdoor) are currently being built. Likewise, at Arbesbach, housing at the moment just three bears, new enclosures are under construction to increase capacity.

At Stichting Leeuw plans are underway to increase enclosure sizes by reducing their number, effectively combining two enclosures into one. In contrast, at Natuurhulpcentrum, functioning as ‘emergency sanctuary’ for many exotic animal species, it is preferable to have two smaller enclosures rather than a larger one to increase capacity. This is mainly because the centre provides short-term temporary care and aims to rehome their animals to bigger sanctuaries and better-run zoos as soon as possible.

While enclosure size is a factor in animal welfare, the quality and complexity of the environment, tailored to the specific needs of the animals, play a more critical role in ensuring their well-being.

Providing a species-appropriate natural habitat to European native species, such as brown bears, is usually not problematic. However, the situation is markedly different for exotic animals, as it is often infeasible to recreate their distant natural habitats within European sanctuaries, necessitating more

adjustments. For this reason, enclosure appearance diverges significantly between bear sanctuaries and the other centres, varying also depending on the type of organisation.

All the bear sanctuaries discussed are set in completely natural forests, facilitating the rehabilitation process as brown bears are restored to a species-appropriate habitat after years of mistreatment and poor husbandry. Bear Sanctuary Belitsa, for example, is built in a natural bear habitat in the Rila Mountains, where 16 bears (a group of four young bears, three pairs, and six solitary individuals) reside at the time of writing. It encompasses a 16-hectare mixed forest of coniferous and broadleaf trees, divided into seven enclosures, three of which are part of the quarantine area, with the remaining four further divided by gates to allow for the shifting of bears between enclosures.

In contrast, European sanctuaries hosting exotic species struggle to replicate natural habitats in terms of appearance, land formation, and vegetation. As a result, enclosures at these centres often have a naturalistic or artificial appearance (see question Appendix for definitions). However, it is important to note that sanctuary animals are typically part of a long lineage of many generations bred in captivity, having never experienced their natural habitats. While living in species-specific environments would be beneficial, the various strategies discussed so far in this dissertation can significantly enhance the welfare of sanctuary animals, compensating for the environmental disadvantages.

The appearance of enclosures, including their substrates, varies between organisations. For instance, at Natuurhulpcentrum, described by F. Thoelen during our interview as a ‘hospital’, enclosures are built and furnished to be flexible and accommodate multiple species. The substrate is typically concrete covered with sand or woodchips for ease of cleaning and disinfection, always avoiding natural turfs to prevent parasitic infestation. Similarly, at AAP’s PRB enclosures are high-roofed cages furnished with artificial elements like beams and platforms for climbing, with a concrete floor covered with deep litter of woodchips, facilitating cleaning due to the high number of enclosures and animals. The outdoor enclosures at Felida, Fundació Mona, and Stichting Leeuw, instead, have a more naturalistic look, utilising the existing vegetation and natural soil (grass, ground, and/or gravel) of the sanctuary terrain.

This divergence in enclosure design greatly influences cleaning protocols, a crucial aspect of animal care, as high hygienic standards are essential for ensuring the safety and well-being of both animals and caretakers. This is particularly true for outdoor spaces, where artificial enclosures require more thorough and constant cleaning compared to naturalistic and completely natural environments. For example, in natural areas like bear sanctuaries, outdoor enclosures do not necessarily require daily cleaning and are cleaned only when waste accumulates. In contrast, all indoor enclosures at the surveyed sanctuaries, being completely artificial, require regular, often daily, cleaning. These indoor

spaces usually have concrete, or occasionally wooden, floors, covered with hay, straw, or woodchips, and are sometimes furnished with bedding platforms. At Belitsa, in particular, the substrate of indoor enclosures is adjusted based on the usage by each bear: for bears that frequently use these indoor spaces, the floor is covered with hay and woodchips, which are regularly changed. If a bear uses the indoor space for hibernation, a significant amount of hay and straw is provided and subsequently removed and the space disinfected after hibernation.

During cleaning procedures, maintaining high standards of hygiene and disinfection is paramount for managing and controlling parasites and pests. Preventative measures include using different cleaning materials for different enclosures and separate waste disposal. Additional methods, not strictly related to cleaning, include keeping feed fresh or refrigerated, vaccinations, faecal sample examinations, and deworming plans. For example, at Belitsa bears undergo deworming twice a year with two different medications to prevent resistance, regardless of positive test results. Similarly, the big carnivores at Natuurhulpcentrum are treated against helminths four times a year.

Finally, factors like water availability and temperature are also essential to be addressed. Depending on resources, in some sanctuaries drinking water is provided by auto-filling bowls, whereas in other cases it must be provided manually. Temperature control is crucial, especially during winter in colder countries, for exotic species like big cats and primates, which need the option to choose between outdoor and heated indoor environments.

### **3.5. Relocation**

Relocation, or rehoming, refers to the transfer of one or more animals from a sanctuary to another facility, such as a larger sanctuary or a zoo that upholds high welfare standards, with the objective of enhancing husbandry conditions.

While relocation is not part of the policy at all bear sanctuaries surveyed or at Fundació Mona, where animals receive permanent care, it is often a focal point at the other centres that adopt a philosophy that can be encapsulated in a Three Rs approach: Rescue, Rehabilitation, and Relocation.

AAP and Natuurhulpcentrum strive to rehome their animals to multiple facilities across Europe, and sometimes even beyond the European territory. However, according to F. Thoelen, finding a suitable relocation partner for animals can be challenging due to the need for superior husbandry conditions and verification of welfare standards, often involving external animal welfare organisations. Moreover, reputable zoos require animals with documented genetic backgrounds, which sanctuary animals typically lack. Conversely, less reputable zoos, which might accept animals without genetic histories, are not considered suitable destinations. This combination of high welfare standards and

documentation requirements complicates the identification of appropriate and ethical relocation partners.

In contrast, this challenge is mitigated for Felida and Stichting Leeuw, as they benefit from established partnerships with their ‘sister’ sanctuaries, Lionsrock Big Cat Sanctuary and The Lions Foundation in Schrikkloof Nature Reserve respectively, both located in South Africa. These partnerships provide predetermined relocation destinations, ensuring that their animals can be rehomed to facilities with known high welfare standards, thereby streamlining the relocation process and bypassing the complexities associated with verifying new relocation partners.

Reasonably, not all animals can be rehomed and determining the suitability of an animal (or group of animals) for relocation involves assessing several factors, such as age, health condition, behavioural and psychological status, and life background. Animals with significant chronic health conditions may require specialised care that cannot be adequately provided in a new environment, potentially compromising their welfare. Likewise, animals exhibiting complex behavioural issues, including stereotypies, may struggle to integrate into new social structures or environments. Furthermore, an animal's prior life experiences, such as prolonged mistreatment or a past as pet, can impact their ability to adapt to change and interact positively within new surroundings.

Additionally, at AAP the establishment of large, socially and clinically healthy groups facilitates the process of identifying suitable relocation opportunities and mitigates the likelihood of animals needing to return to AAP post-relocation. Instances may arise where animals are left solitary or group sizes diminish due to natural mortality. In such cases, returning individuals can potentially be integrated with other animals at AAP to rebuild larger social units conducive to subsequent relocation efforts.

Preparing for the relocation of animals typically involves several months of meticulous planning, with a standard preparation period ranging from three to six months. This timeframe accounts for essential bureaucratic processes, such as obtaining CITES certificates, export and import permits, and health certificates, which can vary depending on the destination. Additional factors that may extend this period include waiting for enclosure construction or specific quarantine requirements. The logistical preparations encompass a comprehensive assessment of the relocation partner and project (particularly for relocations from centres like AAP and Natuurhulpcentrum), detailed transport planning, and coordination with logistical companies specialised in the import and export of wildlife. Critical steps before transfer include conducting thorough health checks, administering necessary vaccinations and parasitic treatments, implementing anti-conception measures, and facilitating social introductions among the animals. Crate training is crucial to acclimate the animals to transport conditions, and pre-export isolation might be needed in certain cases. In the final stages, efforts are

made to mimic the partner's routine, and knowledge transfer occurs between the current and future caretakers, ensuring a smooth transition and continuity in care for the relocated animals.

To sum up, for European sanctuaries hosting exotic species relocation is typically the ultimate goal, often envisioned from the moment of rescue, to provide more species-appropriate housing conditions. While some animals may find a permanent home within these sanctuaries due to health and behavioural conditions, relocation represents the culmination of the rehabilitation process for others. This practice not only enhances the welfare and living conditions of the animals, but also aligns with the overarching goals of rescue, rehabilitation, and relocation that guide these sanctuaries.

#### **4. Felida Big Cat Sanctuary and the Story of Lion Nikola and Lioness Vasylyna**

To showcase the capabilities and efforts of sanctuary staff to restore animals to an appropriate life, this chapter is dedicated to the rehabilitation story of lions Nikola and Vasylyna, briefly encompassing all aspects from the rescue to their relocation from Felida in the Netherlands to Lionsrock in South Africa.

Nikola and Vasylyna were rescued more than 2000 km apart: Nikola was roaming alone and hungry around the municipality of Butva in Montenegro, while Vasylyna was found in the war-torn streets near the city of Kharkiv in Ukraine.

Lion Nikola was only a five-month-old cub at the time of his rescue. He was found in an abandoned house in February 2022, by the Environmental Protection Agency of Montenegro, in collaboration with the local NGO "Center for the Protection and Research of Birds of Montenegro" (CZIP), local hunters, and firefighters. Prior to his rescue, Nikola had been smuggled into the country and kept illegally by a private individual who had posted pictures of the cub on social media. It remains unclear whether Nikola escaped or was released by his owner following public backlash.

After his rescue, Nikola was initially housed in a dog kennel in Podgorica before being moved to a temporary, self-constructed enclosure at a government facility, clearly not suitable for a lion cub. Due to Montenegro's lack of facilities for big cats, the urgency to transfer Nikola to the Felida became evident.

From the moment of rescue, specialists from Four Paws, including J. van Zon and a veterinarian from the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin, were involved in Nikola's care. Upon their first visit to Nikola's shelter, they conducted a general health check, administering IV fluids due to severe dehydration and muscle loss. During this examination, a problem with the foreskin of Nikola's penis was identified, which could have led to urination issues and infections. This medical issue was later resolved through surgery, where the foreskin was opened and loosened.

As seen in chapter 3.1., the process of transferring Nikola to Felida was protracted, taking five months (until June 2022) to complete all the necessary paperwork. According to J. van Zon, the primary challenge was Montenegro's non-EU status and its designation as a rabies-risk area. Despite a negative rabies titre test, regulations required a six-month quarantine for animals from such regions before entering the EU. Fortunately, this period was reduced to four months for Nikola.

During this interim period, providing optimal care for the young lion was crucial. J. van Zon and the IZW veterinarian made regular visits to monitor Nikola's well-being, offer guidance, and provide enrichment. When they were not present, staff from the Environmental Protection Agency and volunteers ensured Nikola received multiple daily feedings and general care. A week before transport, crate training was conducted to avoid the need for anaesthesia for his journey to Felida.

In August 2022, lioness Vasylyna was found alone, surviving the wreckage of war on Ukraine's streets in the Kharkiv region after escaping from private keeping in a house. Local authorities tracked down her owner and convinced him to give up Vasylyna. Fortunately, and with the assistance of the founder of a wild animal rescue station near Kiev called Wild Animal Rescue, they managed to capture her and transport her to the centre as a temporary solution. Due to the war, the centre was overwhelmed with animals, necessitating the adaptation of an old horse stable to house Vasylyna. This makeshift enclosure, essentially a concrete box with a straw-covered floor, was clearly inadequate as a long-term solution.

Despite the constraints, they conducted a general health check, including X-rays, blood tests, and ultrasounds. However, due to the limited resources and the busy situation, a proper rehabilitation program with necessary enrichment and training was not implemented. Because of the war situation Four Paws specialists could not visit the centre near Kiev, unlike their involvement with Nikola in Montenegro, but local colleagues supported Wild Animal Rescue despite lacking experience with big cats. Moreover, as direct training was not feasible, Vasylyna was eventually anaesthetised for transport. Unfortunately, this situation was protracted for approximately a year, as the ongoing war complicated the arrangement of necessary paperwork for Vasylyna's transfer to Felida, which occurred in June 2023.

For trans-European transfers, such as those involving Nikola and Vasylyna, air transport is often not a feasible option due to the difficulty in finding airlines and logistical companies used to transporting wild animals. Consequently, despite the longer duration, road transport is usually considered easier and more practical. During such journeys, the animal's health is closely monitored by a veterinarian who always travels with the team for the entire trip. Regular stops are typically made approximately every two hours to check on the lion, provide water, and offer food if necessary. The constant presence of a vet ensures that the animal's health and stress levels are continuously monitored and managed. Notably, once inside the transport crate, big cats typically calm down and are not as stress-sensitive as animals like zebras or antelopes, making the transport process more manageable.

The number of stops and the duration of the journey usually depend on several factors, including the number of drivers, road conditions, and the efficiency of border crossings. During Nikola's transport the border crossings were swift. However, border crossings can sometimes cause delays due to document checks or heavy traffic. For instance, during Vasylyna's transport, the border between Ukraine and Poland was notably congested, and the overall situation was more tense due to the ongoing conflict.

As explained in chapter 3.3.1., Felida features an adaptation enclosure for new arrivals where visual contact with the other animals at the sanctuary is usually prevented. The reactions to the new environment and the time spent in this enclosure varied between Nikola and Vasylyna.

Nikola's adjustment process was notably prolonged due to his heightened sensitivity to the surrounding sounds and his younger age upon arrival. Having been isolated in Montenegro only used to human interaction, Nikola had limited prior exposure to other animals and environmental stimuli, necessitating an extensive period for acclimatisation. He required time to understand the implications of encountering other animals, engaging in activities such as climbing, and adapting to routine changes like being confined indoors or allowed outside.

Conversely, Vasylyna's adjustment was comparatively straightforward; upon her arrival, she spent the initial two days sleeping, indicative of her exhaustion. Her previous residence at Wild Animal Rescue, where she had already been in proximity to other animals, likely contributed to her shorter adjustment period. While Nikola was introduced to other animals from a distance after one month, Vasylyna's integration was much quicker, likely within a week. After all the results of the medical checks showed that both lions were in perfect health, by the end of her first month at Felida she was already placed next to Nikola to begin the initial steps of their socialisation process.

As discussed in chapter 3.3.1., enrichment is a crucial component of the rehabilitation process for sanctuary animals, including those at Felida. There, enrichment is introduced as early as possible to foster flexibility in the animals' mindsets. Without regular enrichment, the sudden introduction of new stimuli can cause significant stress. Thus, Felida aims to maintain a continuous enrichment program to promote adaptability. Their enrichment strategy typically progresses from natural, simple items to more complex, artificial ones. Initially, small and non-threatening objects, such as scents or natural materials that are safe for ingestion, are introduced. Gradually, more complex materials, such as plastic balls or hessian bags, are added. This gradual progression helps the animals learn to interact with enrichment objects appropriately, minimising the risk of harmful behaviours, such as ingesting non-edible items.

Both Nikola and Vasylyna were really young when they were first introduced with enrichments and they responded rather positively. Nikola had already been provided with enrichments in his temporary shelter in Montenegro, underscoring the importance of early enrichment for young animals. With Vasylyna, it is unclear if she had received enrichment at Wild Animal Rescue, but Felida initiated enrichment shortly after her arrival, and she immediately showed a keen interest.

Their progress in engagement and stimulation with enrichments was meticulously tracked, since at Felida it is standard practice to document all enrichment activities in the Animal Record Keeping Systems (ARKS) software.

Similar to the enrichment process, training sessions for both Nikola and Vasylyna commenced almost immediately: probably even the day after their arrival at the sanctuary, given their relaxation in the presence of the caretakers, the training began with hand-feeding. The standard training protocol at Felida involves starting with hand-feeding, followed by the introduction of a clicker, which signals that a click sound is associated with receiving food. Subsequently, a target is introduced for the animals to touch, leading to the training of various behaviours such as 'up', 'sit', 'down', crate training for transport, and more.

Nikola had already undergone preliminary training in Montenegro, including hand-feeding by volunteers and crate training, which facilitated his swift adaptation to the training regimen at Felida. His familiarity with human interaction and hand-feeding enabled him to quickly grasp the training process. In contrast, Vasylyna exhibited a more intense and reactive disposition. While she did not dislike training, her eagerness for food made her more assertive, often pushing her face against the fence to obtain more food. This food-driven intensity occasionally made it challenging for her to learn new behaviours. However, once Vasylyna understood the concept of training, she demonstrated considerable intelligence and quickly acquired numerous behaviours.

During their initial months at Felida, caretakers conducted targeted daily observations as part of Nikola and Vasylyna's routine care. For Nikola, particular attention was paid to assessing any discomfort related to his foreskin. This concern was also re-evaluated during a comprehensive veterinary examination in July 2023, coinciding with his vasectomy procedure. Conversely, Vasylyna's physical development was closely monitored due to her limited muscle mass, attributable to limited mobility options in her enclosure at Wild Animal Rescue. Consequently, adjustments were made to ensure her welfare and progress were optimally managed.

Following Vasylyna's internal relocation next to Nikola one month after her arrival, observational focus shifted towards their interactions.

In our interview, J. van Zon elucidated that prior to placing two lions in adjacent enclosures, it is imperative that both animals are fully acclimated to their respective environments, and, preferably, they should be introduced to a novel enclosure. This helps to prevent aggressive territorial defence behaviours, as an animal may react negatively to the presence of a new animal encroaching on its territory. For this reason, before Vasylyna was moved next to Nikola, he was temporarily relocated to a different enclosure. Subsequently, when she was placed next to Nikola's previous enclosure, he was returned to his original space. During my traineeship, I observed an additional precautionary measure: Nikola's enclosure, situated between two others, was adjusted such that the adjacent enclosure opposite Vasylyna's remained empty. This ensured that Nikola's attention was solely focused on

Vasylyna without distraction from another neighbouring animal. From her new enclosure, Vasylyna was similarly isolated from all other animals at Felida, with Nikola as her sole adjacent neighbour. Upon placing Vasylyna and Nikola in adjacent enclosures, systematic observations were conducted to assess social behaviours. These observations meticulously recorded both positive interactions, such as head grooming, licking through the fence, and attempts to rub against each other, as well as any signs of aggression, such as hissing or defensive behaviours. These behaviours were documented daily using the continuous recording technique on the Boris platform (Behavioural Observation Research Interactive Software).

Initially, Vasylyna exhibited fear towards Nikola, who persistently attempted to chase her despite the barrier. However, as they became accustomed to their new proximity and learned to stand face to face without issue, the Felida team commenced a gradual exchange of their enclosures. This allowed each lion to explore the other's territory and familiarise themselves with each other's scents.

Their whole socialisation process was supported by the use of oxytocin, a hormone known for its role in social bonding in various species. For lions, research has demonstrated that oxytocin facilitates social bonding by increasing prosocial behaviours and reducing social vigilance. This hormone can help lions form and maintain social bonds, even between unfamiliar individuals. Oxytocin promotes affiliative behaviours and decreases territorial aggression, making it a potential tool for managing social interactions in captive settings. This approach can be especially useful in scenarios such as introductions of unfamiliar lions or reconciliations of pairs that have had negative social interactions, leading to improved social cohesion and welfare in managed populations (Burkhart et al., 2023). Oxytocin was administered intranasally through a spray, against which Nikola and Vasylyna needed to be desensitised with training sessions, as it has to bypass the blood-brain barrier to be effective.

In early January 2024, Nikola and Vasylyna had their first full-contact interaction and were successfully socialised. However, their integration was not complete, as training and feeding continued to occur in separate enclosures. According to J. van Zon, while joint feeding is beneficial for social behaviours and establishing a hierarchy, this is less applicable in a captive environment with only one male and one female. In such situations, particularly during the initial phase of cohabitation, it is preferable to feed them separately to mitigate the risk of aggression, as they have not yet acclimated to eating together.

To facilitate their transition from being housed separately to being together, a modified enrichment plan was implemented. During their separation, enrichment activities were scheduled simultaneously, with some activities conducted through the fence, such as providing bamboo sticks. This approach allowed Nikola and Vasylyna to observe each other engaging in play. Once cohabitation commenced,

food-related enrichment was avoided to prevent potential aggression over food resources. Initially, the team at Felida offered enrichment items that were not highly appealing to either Nikola or Vasylyna to minimise defensive behaviours. For instance, since Nikola showed a particular fondness for playing with plastic balls, these were withheld initially to avoid any defensive responses. Gradually, more appealing enrichment items were introduced, always ensuring multiple items were available simultaneously to provide choices and reduce competition.

In late April 2024, following successful crate-training sessions and the completion of all necessary paperwork and logistical arrangements, Nikola and Vasylyna were transferred to the Lionsrock Big Cat Sanctuary in South Africa. Preparations for this relocation had commenced prior to the successful socialisation of the young lion couple. The team at Felida had determined early on that the lions would be transferred to Lionsrock regardless of the socialisation outcome due to their youth and robust health. Once positive interactions were observed between them, it was merely a question of whether their socialisation would be successfully completed at Felida or at Lionsrock, as varying environments can elicit different reactions from animals.

Kim, an experienced animal caretaker at Felida, accompanied Nikola and Vasylyna to ensure their comfort throughout the journey. As the presence of a familiar caretaker serves as a stabilising factor, it is standard practice to send a Felida caretaker with animals being relocated to Lionsrock. The caretaker not only knows the animals but is also known by them, which facilitates the transition. This practice proves invaluable during the initial weeks, as the caretaker introduces the animals to new feeding areas, routines, and handling procedures.

Kim focused on essential training for Nikola and Vasylyna, including gate training and procedures for separating them. She also utilised and observed the effects of pheromones, assessing their impact during transport. Her stay at Lionsrock lasted a month, during which she observed the lions' adjustment and ensured their well-being. As the lions acclimated successfully, she extended her support to the Lionsrock team in other tasks.

This relocation also functioned as a job exchange program, allowing Felida and Lionsrock staff to share knowledge and practices. Such exchanges, when feasible, enhance the professional development of the staff and contribute to improved animal care practices across both sanctuaries.

In conclusion, the story of Nikola and Vasylyna exemplifies the profound impact that European sanctuaries, such as Felida, can have on restoring exotic animals to species-appropriate lives, despite their often tragic past. The diligent efforts of the Felida team, and all parties involved in the rescue operation, have culminated in a remarkable transformation. After a difficult start to their lives, today

Nikola and Vasylyna thrive in a sanctuary built within their natural habitat, residing in an enclosure nearly ten times larger than those at Felida.



Nikola and Vasylyna in their new enclosure at Lionsrock Big Cat Sanctuary (© Four Paws)

## **5. Conclusion**

Animal sanctuaries exist to address the consequences of human ignorance and cruelty, as instances of animal abuse are frequently uncovered across Europe. Animals rescued from such conditions require more than mere relocation to sanctuaries; many have endured traumatic experiences and may not even know what it really means to behave like proper animals. Sanctuaries thus provide an environment where these animals have a chance to be themselves again, with staff dedicating significant efforts to management and rehabilitation practices aimed at restoring these animals to a dignified, species-appropriate life.

The aim of this work was to investigate these sanctuary practices within the European context. While I found a general similarity in philosophies and goals among these facilities, as they belong to the same association, differences were observed when I delved into the specifics of management and rehabilitation practices. These differences can be attributed to a variety of factors, including the more obvious ones such as the diversity of species housed at different sanctuaries, the varying resources available, and divergence of visions on certain aspects. The purpose of these centres is usually to provide individualised care: sanctuary teams meticulously consider each animal's personality and unique characteristics, tailoring every aspect of their care to best meet their needs. For all these reasons, it is often impractical to define a 'one-size-fits-all' approach and a great deal of flexibility is needed to ensure the well-being of sanctuary animals. Cases like that of Nikola and Vasylyna demonstrate that tailored management and rehabilitation programs at animal sanctuaries can significantly improve the lives of formerly abused animals.

## Appendix

### Questionnaire and Interview queries

1. How is a situation of animal abuse usually revealed?

Please explain the process that leads to the confiscation of an animal and the subsequent decision to transfer it to your sanctuary.

Also point out if this is mainly a responsibility of (bigger) external organisations and if the sanctuary's involvement in this whole process resides mainly in the 'accommodation' of new-coming animals

2. How long does it usually take from the detection of an animal in need - to be transferred to your sanctuary - to the actual arrival?

What are the main factors that normally affect all of this process? (local authorities, private ownership etc)

3. What kind of preparations need to be made before the arrival of a new animal (or group of animals) to your sanctuary?

4. Are new animals always quarantined? If so, how long does the quarantine period last?

5. Can the animal(s) in quarantine have visual contact with the other animals present at the sanctuary?

Please also briefly explain why or why not

6. How frequently are medical checks performed? Specifically, how often is each animal typically examined in the clinic?

7. Please list your contraceptive methods (castration, vasectomy, sterilization, implants...) and specify if the targets for contraception are only males or females or both  
(this question was not in the questionnaire from the beginning)

8. What elements do caretakers routinely assess during non-invasive health checks? For example, observations might include the appearance of feces.

Note: Non-invasive health checks refer to evaluations conducted visually without the need for medical instruments.

9. What are the most common medical issues faced by the animals in your care?

10. Is there a vet that works at the sanctuary? If not, are they the same person you contact in case of emergencies?

11. Who's in charge of planning the diet of the animals at the sanctuary?

This includes deciding how many meals per day the animals require, if any supplements and any other special considerations are needed.

12. How many times a day are the animals fed?

If the sanctuary hosts more than one category of animals, please specify the feeding frequency for each type. For example, “Big cats: once a day, Bears: twice a day, Primates: three times a day”.

13. How and where are the animals fed?
14. What are the most common stereotyped behaviours observed in the animals at your sanctuary?
15. Please list your strategies to eradicate stereotyped behaviours
16. Rate the success in eradicating stereotyped behaviours from 1 to 5, with 1 being *rarely successful* and 5 *always successful*
17. In the context of mental and behavioural rehabilitation of the animals at your sanctuary, rate the application of the following in terms of importance (with 1 being not always necessary and 5 crucial): use of enrichments, positive reinforcement training sessions, socialisation projects
18. How often do you provide enrichments?
19. Is there a fixed weekly/monthly schedule for the enrichments?
20. Can you be creative in making enrichments or is there a strict list of enrichment items you have to choose from? Please make examples of enrichments usually provided at your sanctuary
21. Do you train the animals at your sanctuary? If so, how often and what for? Examples include needle desensitization, promoting good human-animal relationships, and to prepare for transport
22. How do you determine when an animal is ready to start training sessions?
23. How do you determine if an animal is a candidate for socialisation?
24. What are the main challenges in implementing socialisation projects?
25. Rate the success of socialization projects at your sanctuary from 1 to 5, with 1 being rarely successful and 5 always successful
26. How large (m<sup>2</sup>) are the enclosures at your sanctuary on average? If the sanctuary hosts more than one category of animals, please specify the average size of the enclosures for each animal ‘category’.
27. Rate the relationship between enclosure size and animal welfare according to your sanctuary's vision from 1 to 5, with 1 *little to no impact on animal welfare* and 5 *strong impact on animal welfare*
28. If a sanctuary has small enclosures, do you believe this implies poorer animal welfare? If so, what do you think are the best strategies that can make up for it?

29. In your experience, do larger enclosures usually result in improved welfare for the animals?

Please explain your perspective

30. Have you made any structural changes to improve the conditions of the enclosures? If so, please describe them.

31. Have you got any projects or plans to build new enclosures or expand existing ones?

32. What kind of enclosures are present in your sanctuary? (for example, realistic natural habitat, naturalistic habitat, artificial habitat)

This question refers to outdoor enclosures exclusively.

If the sanctuary hosts more than one category of animals, please specify if the type of enclosure changes with each animal 'category'.

Consider these definitions to answer this question:

- realistic natural habitat: reproduces the real habitat in appearance, land formation, vegetation
- naturalistic habitat: stylistic use of natural elements with little attempt to replicate the natural habitat
- artificial habitat (does not look anything like the natural habitat): use of artificial elements to accommodate animal needs, such as platforms and beams for climbing in enclosures dedicated to primates for example

33. What kind of substrate is in the enclosures at your sanctuary? (for example, concrete or chopped wood sticks)

This questions refers to indoor enclosures and artificial outdoor enclosures.

If the sanctuary hosts more than one category of animals, please specify if the type of substrate changes with each animal 'category'.

34. Do all animals have access to indoor enclosures?

35. How often do you clean indoor and outdoor enclosures? Do you follow a weekly schedule?

36. How do you manage temperature, humidity, water (quality), light and other environmental needs the animals at your sanctuary might have?

37. Can pathogens, parasites and pests be controlled? If so, please explain how

38. If your sanctuary is open to visitors, do the enclosures include areas where animals can hide and have privacy from people?

39. Is relocation part of the policy of your sanctuary?

40. Does your sanctuary have partnerships with other facilities, such as zoos or other sanctuaries, for relocating animals? If so, please mention at least one organization to which you have relocated most of your animals. Specify if you relocate your animals even outside of Europe

41. What makes an animal (or a group of animals) suitable for relocation?
42. How long in advance do you normally prepare for a relocation? Are there any factors that have an impact on this?
43. What are the usual preparations that need to be addressed before a relocation?  
Please include both practical (for the animal and the transport) and bureaucratic (paperwork etc.) ones
44. Does it ever happen that an animal (or a group of animals) that had been previously relocated needs to go back to your sanctuary? If so, why?

## References

- BBC News (2018). The man who saved Bulgaria's dancing bears  
<https://www.bbc.com/news/av/stories-45021433>
- Burkhart, J. C., Heilbronner, S. R., & Packer, C. (2023). Oxytocin administration is a potential tool for behavioral management in felids. *Frontiers in Mammal Science*, 2, 1148214.  
<https://doi.org/10.3389/fmamm.2023.1148214>
- CITES. *Permitting and certificates* [Resolution Conf. 12.3 (Rev. CoP19)].  
<https://cites.org/sites/default/files/documents/E-Res-12-03-R19.pdf>
- Doyle, C. (2017). Captive wildlife sanctuaries: Definition, ethical considerations and public perception. *Animal Studies Journal*, 6(2), 55-85. <https://ro.uow.edu.au/asj/vol6/iss2/5>
- EARS. “What We Do” <https://ears.org/about-ears/what-we-do>  
“Become a Partner” <https://ears.org/join-ears/become-a-partner>
- Eurogroup for Animals and Animal Advocacy and Protection (AAP) (2023). EU Positive List: White Paper [https://www.eurogroupforanimals.org/files/eurogroupforanimals/2023-03/2023\\_03\\_efa\\_EU%20Positive%20List\\_White%20Paper.pdf](https://www.eurogroupforanimals.org/files/eurogroupforanimals/2023-03/2023_03_efa_EU%20Positive%20List_White%20Paper.pdf)
- European Commission. TRACES [https://food.ec.europa.eu/horizontal-topics/traces\\_en](https://food.ec.europa.eu/horizontal-topics/traces_en)
- European Union. (1999). *Directive 1999/22/EC of the European Parliament and of the Council of 29 March 1999 relating to the keeping of wild animals in zoos*. Official Journal of the European Communities, L 094, 24/04/1999, p. 24-26. <http://data.europa.eu/eli/dir/1999/22/oj>
- Fernandez, E. J. (2022). Training as enrichment: A critical review. *Animal Welfare*, 31(1), 1-12.  
<https://doi.org/10.7120/09627286.31.1.001>
- Floor, L. (2005). Action plan for the Brown bear in Bulgaria: A description of the start of the research. Forest and Nature Conservation, Wageningen University  
[https://www.bearsinmind.org/Uploaded\\_files/Zelf/Report Brown bears Bulgaria Liesje Floor.pdf](https://www.bearsinmind.org/Uploaded_files/Zelf/Report%20Brown%20bears%20Bulgaria%20Liesje%20Floor.pdf)
- Four Paws International. “FAQs on Four Paws Sanctuaries” <https://www.four-paws.org/about-us/faqs-collection/faqs-on-four-paws-sanctuaries>
- Fusari, S. (2017). What is an Animal Sanctuary? Evidence from Applied Linguistics. *Animal Studies Journal*, 6(2), 137-160. <https://ro.uow.edu.au/asj/vol6/iss2/8>
- GFAS. “What is a Sanctuary” <https://sanctuaryfederation.org/about-gfas/what-is-a-sanctuary/>  
“Position Statements” <https://sanctuaryfederation.org/about-gfas/position-statements/>
- Kosovo Assembly (2006). *Law No. 02/L-10: Law on Animal Welfare*. United Nations Interim Administration Mission in Kosovo (UNMIK)  
<https://gzk.rks-gov.net/ActDocumentDetail.aspx?ActID=2411>
- Lewis, M. H., Presti, M. F., Lewis, J. B., & Turner, C. A. (2006). The neurobiology of stereotypy I: Environmental complexity. In G. Mason & J. Rushen (Eds.), *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare* (2nd ed., pp. 190-226). CABI.

Martínez-Macipe, M., Lafont-Lecuelle, C., Manteca, X., Pageat, P., & Cozzi, A. (2015). Evaluation of an innovative approach for sensory enrichment in zoos: Semiochemical stimulation for captive lions (*Panthera leo*). *Animal Welfare*, 24, 455-461. <https://doi.org/10.7120/09627286.24.4.455>

Mason, G. (2006). Stereotypic Behaviour in Captive Animals: Fundamentals and Implications for Welfare and Beyond. In G. Mason & J. Rushen (Eds.), *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare* (2nd ed., pp. 325-356). CABI.

Ministero della Salute (2023) *Manuale Operativo per la Gestione del Sistema I&R* (Allegato 1 al Decreto 7 marzo 2023, G.U. n. 113 del 16/05/23)  
[https://www.salute.gov.it/imgs/C\\_17\\_pubblicazioni\\_3323\\_allegato.pdf](https://www.salute.gov.it/imgs/C_17_pubblicazioni_3323_allegato.pdf)

PAWS. “What is a Wildlife Sanctuary?”

[https://www.pawsweb.org/what\\_is\\_a\\_wildlife\\_sanctuary.html](https://www.pawsweb.org/what_is_a_wildlife_sanctuary.html)

Powell, D. M. (2010). A Framework for Introduction and Socialization Processes for Mammals. In D. G. Kleiman, K. V. Thompson, & C. K. Baer (Eds.), *Wild Mammals in Captivity: Principles and Techniques for Zoo Management* (2nd ed., pp. 49-61). University of Chicago Press.

Swaisgood, R., & Shepherdson, D. (2006). Environmental enrichment as a strategy for mitigating stereotypies in zoo animals: A literature review and meta-analysis. In G. Mason & J. Rushen (Eds.), *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare* (2nd ed., pp. 256-285). CABI.

West, P. M., & Packer, C. (2002). Sexual selection, temperature, and the lion's mane. *Science (New York, N.Y.)*, 297(5585), 1339-1343. <https://doi.org/10.1126/science.1073257>