



# ZOOS AND AQUARIUMS IN THE 21ST CENTURY

The role zoos play in animal welfare,  
education and conservation.

# THE ROLE OF ZOOS & AQUARIUMS IN THE 21ST CENTURY

## AIMS

To gain a knowledge and understanding of:

- The role of zoos and aquariums in the 21st Century.
- The global, national and regional zoo and aquarium communities and their roles.
- What good conservation is and how it relates to good animal welfare.
- A zoo's overarching role in education about the natural world, respect for animals and how it contributes to conservation programmes.

## OBJECTIVES

- Recognise the history of zoos and aquariums and what a modern zoo and the global zoo community looks like.
- Recognise the important role zoos and aquariums can play in education, research and conservation.
- Identify the links between good animal welfare and conservation, education and research.
- Recognise the role of animal care staff in the modern zoo.
- Plan what you can do to ensure that your facility contributes towards global conservation and good animal welfare.



## REASONING

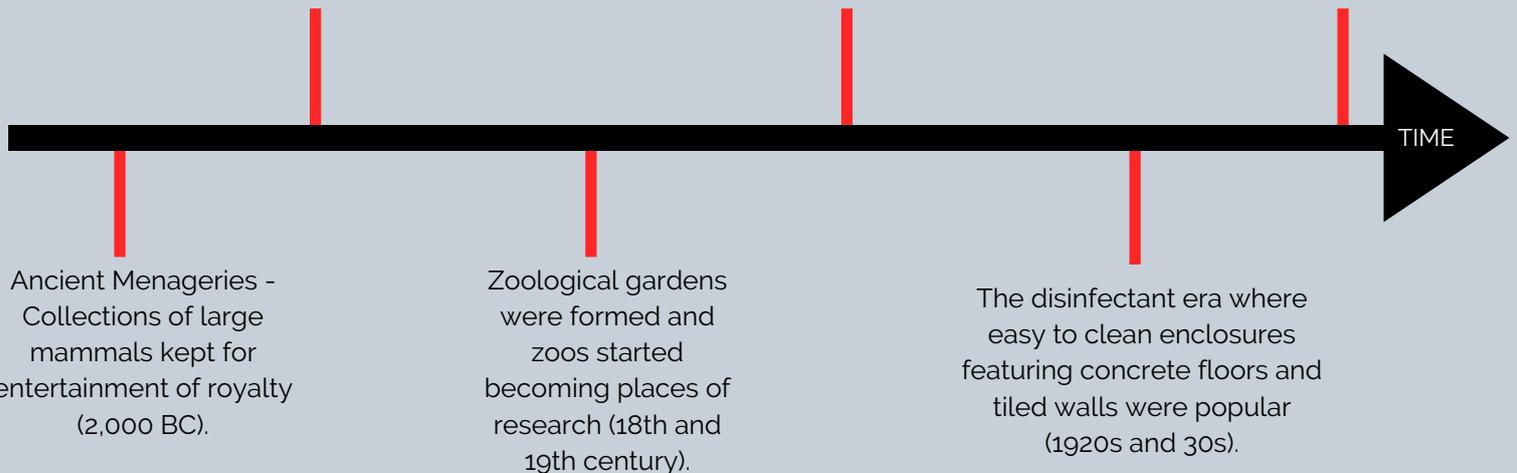
- Understanding the role of a zoo in the 21st century.
- Recognising the importance of each zoological collection and their particular role within the global community.
- Understanding the links between good animal welfare and conservation, research and educational success.

# ZOOS THROUGHOUT THE AGES

Zoos became public places (13th - 17th century).

Wild habitats began to be represented within enclosures. Alternatives to cages and bars, such as moats started to be explored (early 20th century).

Naturalistic enclosures with high standards of welfare and a conservation ethos (1970s onwards).



The word zoo is short for zoological park or gardens. People have kept animals for thousands of years, but facilities have not always resembled what we now know as zoos, with records dating back to circa 2,500BC when private menageries were owned by Egyptian kings and Chinese emperors. Subsequently, ancient Romans and Greeks kept exotic animals, often as a display of status and wealth. Later accounts from medieval times describe collections kept by European royalty until the 1700s when zoos began transforming into public institutions.

The late 1700s and early 1800s witnessed the formation of zoological societies such as the Zoological Society of London. This period in European history was when science, logic and reason were promoted as ideals for society and government.

The late 1900s saw the emergence of the modern zoo concept where animals were bred and kept to support the conservation of the species and to educate rather than entertain the public. Most modern zoos are now run by either corporate businesses or charitable organisations.



**Q. Do you know what the first zoo was in your country? How has it changed since it first opened?**



# THE ROLE OF ZOOS & AQUARIUMS

The global zoo and aquarium community has the potential to play an important role in conservation, education and research. They can play an integral role in helping humans to understand and care for animals and environments. Through education and inspiration they can influence changes in attitudes and actions towards the protection of the planet. Zoos and aquariums can offer close encounters with fascinating and rare species whilst providing a healthy population of genetically diverse individuals for conservation purposes.

However, with this opportunity comes a great level of responsibility, as alongside conservation actions and educational messages, it is a zoo's and aquarium's duty to provide appropriate care and a high standard of welfare for all animals in their care.



## WHAT MODERN ZOOS ARE WORKING TOWARDS

Zoos and aquariums have come a long way from ancient menageries where animals were kept simply as something curious and exotic to stare at. In the past, enclosures were cages with very little stimulation and animal care staff had no knowledge of how to properly care for the animals held inside. The more we learn about animal husbandry and welfare science, the more we can work to improve the lives of animals in zoos around the world.

Modern zoos work towards providing the best possible standard of care for all their animals. Welfare can be ensured by the building and maintenance of safe, stimulating habitats which provide natural behavioural and environmental opportunities for a species. Animals are kept in appropriate social groups with an appropriate programme of enrichment, a well-balanced nutritious diet presented in a natural and interesting way, and excellent proactive and reactive veterinary care.

Modern zoos are also active in supporting and collaborating with conservation organisations, carrying out in situ and ex situ conservation and research programmes and providing novel and inspiring educational programmes.



# THE ROLE OF ANIMAL CARE STAFF IN THE MODERN ZOO

The role of animal care staff has changed dramatically over the years. The most important aspect of the job used to be cleaning but that is only one part of the role. There are many other considerations such as ensuring appropriate nutrition is provided, carrying out enrichment and animal training, and providing an environment that is safe but stimulating. Animal care staff are responsible for the daily care of their animals and must be able to understand what good welfare means to that species and individual, as well as understand biological and social needs and be able to meet those needs through their daily care.



**Animal care staff need to be trained and competent in a wide variety of skills to ensure that the animals in their care experience the best welfare practices possible. These skills include:**

- Knowledge of the biology and welfare needs of the species in their care.
- Accurate observation of indicators of poor health such as injury, disease and evidence of compromised welfare.
- Experience in escape procedures, health and safety considerations and hygienic practices.
- Experience in animal handling that is not detrimental to welfare.
- Observational skills of behaviours and knowledge of what they mean.
- Communication skills with other staff members to ensure vital information is passed on to the entire animal care team regarding husbandry, nutrition and welfare issues/concerns.
- Accurate and reliable record keeping regarding a variety of animal behaviour and husbandry practices.
- Being inventive when it comes to ways in which welfare standards can be improved e.g. creative use of enclosure space, inventive enrichment devices etc.
- Being compassionate about the individuals in their care.



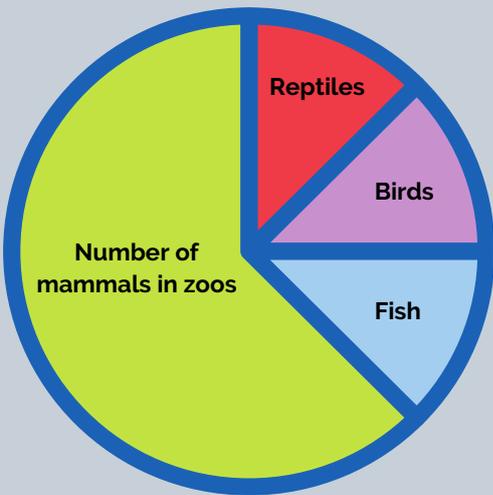
Photo by Peter Bonser

Opportunities for further training should be provided to staff to encourage development of abilities and skills. Learning how to safely and positively train an animal, how to formulate a diet and how to provide basic health care are all useful in terms of continued professional development but will also contribute towards improving welfare standards within the facility too.

Staff numbers will also have an impact on welfare. The number of personnel and their levels of expertise should be sufficient to attend to all the needs of every animal at all times.



# BIODIVERSITY IN A MODERN ZOO



## TAXONOMIC BIAS

Taxonomic bias is when one taxa is favoured over another. Within zoos there is often a tendency to focus on mammals. Other taxonomic groups are often less represented in zoos, less researched and offered fewer conservation protection measures. However, there are many benefits to holding unusual or less charismatic species of various taxonomic groups. For example, some groups such as insects are just as fascinating to watch as larger species but require less space to provide an environment which is suitable to meet their welfare needs.

Many of these less represented animals are actually more endangered and would benefit from well managed breeding programmes and the protection of a captive setting. It is also important that visitors learn to appreciate and understand all types of animals, and that zoos engage in the conservation of all species, not just mammals.

## NATIVE SPECIES

Representing native species in a zoo is both important and cost effective. Native species will often be acclimatised to the climate and therefore have fewer environmental requirements from an enclosure e.g. heating and humidity. Native species will also benefit from local habitats and plant life much more than an exotic species which might require an entirely new habitat to be built.

Educating visitors about local native species can be very important to encourage people to understand what wildlife is around them and how they can have a positive (or negative) impact on it.

Parts of the zoo can also benefit from encouraging local native species. For example, if the zoo has a garden, it will benefit from pollinating insects which can be encouraged through building a small insect habitat within the zoo. It is important to be mindful of pest species to ensure they are not encouraged at the same time.



**Q. Does your zoo hold any native species? If so, how do you think they benefit the zoo and the visitors?**



# TYPES OF ZOOS

**Urban and Suburban Zoos** These zoos are located in or near cities. They are often smaller than other zoos due to the constraints of being within the urban environment. Often these zoos have some sort of historic value or are a historic landmark, which can make it more difficult to expand or redesign them. For example, some enclosures within older zoos are protected buildings, meaning they cannot be redesigned or changed. Some suburban zoos can be larger and create more natural enclosures that utilise the surrounding environment.

**Safari Parks** These are usually much larger than urban zoos and allow the visiting public to drive through the parks in their own cars to see the animals in large, enclosed areas. Often found outside of urban areas, they offer a more immersive experience.

**Petting Zoos** These zoos can often be found inside a large zoo or as a stand alone facility. They usually allow the petting and feeding of domesticated animals such as sheep, goats and rabbits.

**Aquaria** These usually only hold aquatic and semi-aquatic species, although do occasionally have a smaller terrestrial species area. The species are often from both marine and freshwater environments.

**Marine Parks** These usually hold a combination of fish and marine mammals, such as dolphins or orca as well as pinnipeds, arctic foxes and polar bears. They are sometimes called dolphinariums. Many marine parks hold marine animal shows where animals will entertain the public through displays. However, due to continuous criticism by animal welfare groups, and increasing understanding of the complex environmental and social needs of these animals, these are slowly changing or being reduced.

**Virtual Zoos** Some modern zoos are utilising virtual reality technology such as holographic displays and 3D experiences to enhance the visitor experience. The use of online resources and smartphones to offer educational materials and virtual tours are also being trialled amongst facilities. Whilst these aspects have not yet overtaken traditional animal displays, they do provide an alternative immersive experience in which animals can be viewed.



# THE GLOBAL AND REGIONAL ZOO COMMUNITIES

The World Association of Zoos and Aquariums (WAZA), is the unifying organisation for the world zoo and aquarium community. WAZA has around 400 zoo or aquarium members (2020) and over twenty regional zoo association members. These regional associations either represent a single country, specific region, or encompass a number of different countries, associations and affiliate organisations. For example, the South East Asian Zoo Association represents around seven different countries and over 70 different members.

The goal of WAZA is to guide, encourage and support zoos and aquariums and like-minded organisations in animal care and welfare, environmental education and global conservation. They provide guidelines on animal conservation and animal welfare, and have a code of ethics and welfare that their members must abide by. Zoos shouldn't work in isolation and being part of a global or regional zoo community can help inspire positive change and provide knowledge as to how to make those changes happen.

## ZOO ASSOCIATION ACCREDITATION

An accredited zoo is one that is licensed and a member of an association (usually national or regional). An accreditation process is usually carried out by an industry body to demonstrate their member's ability to meet standards. These standards are usually focused on education, conservation and animal welfare. An accreditation programme provides a standardised framework for zoo association members to follow and stimulates continuous improvement, ensuring the animals in a facility can experience a good standard of welfare. By having a transparent process that assesses members against a standard, you can assure visitors that the zoos they are visiting meet accreditation standards. This standard should be:

- Public - so visitors should know if a zoo member has met the accreditation standards or not.
- Independently reviewed - not reviewed by the zoo itself.
- An assessment against pre-determined standards set by the zoo association.
- Ongoing - the zoo must ensure they meet the pre-determined standards regularly.



Not all zoo associations have an accreditation or certification programme. Some associations allow zoos to become a member where they are provided with suggested guidelines to follow but are not mandated to do so. This means that while they are part of a membership body, the zoo members do not have to meet any particular set of standards.

**Q. Is your zoo a member of its national or regional zoo association? If so, does the association have a formal accreditation programme?**



# THE GLOBAL AND REGIONAL ZOO COMMUNITIES

## REGULATORY FRAMEWORKS AND LEGISLATION

Regulatory Frameworks are any laws, regulations, decrees and policies officially developed and approved by the government. They will be made up of specific requirements, codes of practice and guidance on zoos as a whole and how they should be run.

Where you are in the world will dictate which regulatory frameworks have an impact on your facility. Some regions are governed by specific legislation that impacts animal care facilities e.g. EU directives, or alternatively, you may also be regulated by national legislation. It is useful for all staff, including animal care givers, to research and understand what legislation will impact them and their facility. A lack of effective animal welfare legislation can lead to poor welfare practices as there is no protection and enforcement of the treatment that animals undergo dictated by law. Many countries have prevention of cruelty legislation but not 'duty of care' legislation which is more specific to captive animal care and welfare. Regulations and professional recommendations can change so it is important to stay up to date with changes in policy that might impact your work and the animals you care for.

It is important to differentiate between zoo accreditation standards and a country's national legal standards. Often zoological association standards and national legal standards can be quite different, so it is important that zoos meet multiple types of regulatory standards. While some zoo associations may use a national legislation as their sole guiding standard, others may use it in conjunction with their own standards or set completely separate standards.



**Q. How do you think zoo accreditation and zoo legislation helps improve animal welfare standards in zoos?**



# ZOOS & CONSERVATION

Zoos and aquariums have a responsibility to protect all species, both in captivity (ex situ) and in the wild (in situ). From a global conservation perspective, zoos can significantly contribute to conservation efforts by uniting to address the decline of a vast number of species and habitats. This is important both for the natural world and for human survival.

Unfortunately species are declining at an alarmingly rapid rate around the world, but working together is a very effective way of contributing to conservation efforts. Many zoos contribute to habitat protection projects and conservation efforts occurring in the wild, not just at the zoo. Projects such as anti-poaching, wildlife trafficking awareness, reintroduction programmes and human-animal conflict reduction projects all benefit from zoo and zoo personnel support.

Zoos can combine resources and expertise with other zoos and in conjunction with global conservation organisations to collaboratively tackle species conservation, whilst inspiring visitors to care about the environment and increase awareness of the need for wildlife protection.

Zoos primarily deal with three aspects of conservation – practice, advocacy and research.

- **Conservation practice** entails captive breeding, species reintroduction programmes, species survival plans and the use of zoo revenue for conservation programmes in the wild.
- **Conservation advocacy** includes public engagement, promoting awareness, advocating stewardship, and fundraising events and schemes.
- **Conservation research** is conducted on wildlife biology, population dynamics, animal behaviour, health and welfare and there are also publications generated by zoos on animal care in captivity.

Wildlife conservation is protecting a species and its habitat to prevent it from going extinct. One way of doing this is to maintain a healthy population of animals. Good zoos breed animals that are at risk of extinction in the wild and are genetically distinct. These animals can contribute to viable captive populations that can help support wild populations in number and in genetic diversity.

However, zoos don't work alone and many collaborate on studbook-based breeding programmes. By working collectively with other zoos, comprehensive breeding programmes ensure there is genetic variation in the captive population.



**Q. What does conservation mean to you? Why do you think it is important to your local community, to your country and to the planet?**



# CONSERVATION - BREEDING PROGRAMMES

Black-footed ferrets, Partula snails, the Przewalski's wild horse, and California condors, have all had successful zoo breeding programmes which have helped the species recover from the brink of extinction. However, not all reintroduction programmes are successful, including species such as snow leopards and western lowland gorillas.

Many zoos around the world have participated in extensive conservation breeding programmes to breed endangered species that may otherwise go extinct in the wild. There are animal species currently classified as extinct in the wild which are being actively bred in zoos and aquariums. Without this, these species might be lost forever, but taxonomic bias can result in the focus being primarily on mammalian species.

Breeding programmes are challenging to run, and it is important to ensure that the cause of population threats in the wild have been eliminated before reintroductions occur. Breeding programmes need to work hand in hand with in situ conservation efforts to ensure that animals have a viable habitat to be released back into. As with any breeding programme in a zoo, the purpose of the breeding and the future offspring's health and welfare should be considered and planned for prior to breeding.



It is very important for zoos to carefully consider which species they will allow to breed, as this can have an impact on the welfare of the adult and offspring. Uncontrolled breeding can create over crowding, stress and aggression, and surplus animals can end up in unsuitable enclosures. When zoos participate in managed breeding programmes, either as part of a zoo association or independently, the programme must be managed so only genetically important animals are bred which reduces surplus animals. Recommendations to breed (or not), are made by a coordinator or studbook keeper and must be followed. If a species is allowed to breed, whole of life care must be ensured.

**Q. Do you know how many breeding programmes your zoo participates in?**

**Are the species involved endangered and what threats do they face?**



# CONSERVATION - THREATENED SPECIES

## THE IUCN RED LIST OF THREATENED SPECIES

The IUCN Red List of Threatened Species is an online resource that classifies the level of risk of extinction each species of animal and plant is currently experiencing. Global evaluation of species' numbers and the reasons contributing to the decline of that species are examined and that species is then placed in a category which reflects its risk of becoming endangered or extinct.

The IUCN Red List helps identify species needing urgent support and identifies key habitats that need to be protected. This listing helps zoos identify which species to prioritise for breeding and where to focus their in situ conservation efforts.

## WHAT DOES IT MEAN?

**In situ** conservation (or research) refers to efforts that take place within the natural world such as wild species monitoring, natural habitat restoration or reintroduction of species.

**Ex situ** conservation (or research) refers to activities that take place outside of the natural environment, such as within zoos. These activities might include breeding programmes, education and captive research.

## PARTNERING WITH CONSERVATION ORGANISATIONS

Many zoos and zoo associations form collaborations between external conservation organisations. Expertise and knowledge can be swapped between organisations as well as dedicated education and fundraising activities linked to the project.

For example, the Whitley Wildlife Conservation Trust operates two zoos in the UK, as well as three nature reserves. They also support several international organisations which work towards conservation of species native to that region.



Below are a list of indicators that can be useful for zoos to improve their conservation performance:

- Does conservation thought define policy decisions?
- Is there sufficient organisational funding for conservation activities?
- Is there a functional conservation department?
- Does the institution advocate for conservation?
- Do conservation education programmes effectively target children and adults?
- Does the facility contribute directly to habitat protection locally and internationally?
- Do exhibits explain and promote conservation efforts?
- Do internal policies and activities protect the environment?



**Does your facility undertake ex situ projects or support in situ projects? Could you be doing more for these projects?**



# ZOO EDUCATION

Visiting a zoo or aquarium offers the potential to be educated about the environment and the species that inhabit it, whilst experiencing an enjoyable outing. The connection people make when they see a happy, healthy animal helps them to understand the importance of the natural world. This connection can lead to an interest in helping to conserve animals and habitats.

Observing animals is an educational experience in itself, but offering talks from animal care staff who know the animals best can have a massive educational impact. Putting up signs by each enclosure can highlight facts and conservation threats for each animal. Zoos are in a powerful position to be leaders in biological education.

Research has shown that people enjoy their zoo experience less when they observe frustrated or bored animals which are not showing normal behaviours. This can lead to fewer visitors over time. Visitors often know the difference between an abnormal behaviour such as excessive pacing and a normal behaviour such as playing. It is a zoo's responsibility to ensure that the animals visitors are seeing are happy and healthy, which will likely encourage return visits and positive reviews.



Photo by Andy Watson



## HOW DO WE LEARN IN A ZOO?

Zoos are considered to be informal learning environments. Many factors can play a role in what is learnt within a zoo and whether this can help to positively change the behaviour of the visitor. For example, providing clear communication and attainable calls to action (such as using less plastic or the welfare implications of having an exotic pet), may be more effective in encouraging human behavioural changes in visitors.

Studies have shown that an exhibit design that is more natural improves a visitor's behaviour as well as being better for the animals. Naturalistic environments and animals which are stimulated and active are often observed for longer by visitors.

Types of educational opportunities that are often offered at a zoo include:

- Appropriate signage and zoo trails.
- Age specific educational lessons run by a dedicated educational team.
- Staff talks - for example during a species' feeding time.
- Educational animal displays.
- Feeding animal sessions.
- Outreach events where animals are taken off site to schools etc.

# ZOO RESEARCH

Zoos can participate in conservation, education and welfare research projects that support studies of animal populations in the wild, species recovery efforts, veterinary care for wildlife diseases and how to best encourage changes in attitude and action for animals by the public.

Below are just some of the ways in which research in zoos can help animal welfare, education and conservation.



- It allows zoos to understand problems that we come across in animal management and welfare so we can more effectively provide best practice animal care.
- It helps us understand and solve potential problems in our conservation activities. For example, good research and data collection helps us ensure we apply best practice when releasing animals into the wild to ensure their survivability.
- Ex situ veterinary research can help conservationists provide better care to rescued and sick animals.
- In situ conservation research can also help us understand an animal's needs in captivity and improve animal welfare. For example, if an animal has a large home range, it means it will need a large enclosure in captivity. Observations in the wild about an animal's behaviour can help change how we manage them in captivity and provide them with the environment that is best suited to their needs.
- What an animal eats is very important to its overall well-being. Nutritional research can help us understand if we are providing our animals with the most appropriate diets.
- Zoo education research can help us understand what drives people to take action for animals and the environment as well as helping zoos improve their educational offers.
- Sharing research findings between facilities can further our understanding of the animals in our care as well as comparing research projects to prevent duplication.

## WHO CAN CARRY OUT RESEARCH?

Animal care staff, curators, vets and conservation teams and even the public can take part in research within a zoo. Asking visitors to take a survey is a great way to understand their motives and collect data. Animal care staff can collect simple data every day that can contribute to longitudinal studies (repeated observations of the same variable over a long time) on animal behaviour and health. Curators can coordinate zoo-wide research, while in situ conservation teams can apply research action and findings in the field.

**What research does your facility undertake? How do you think it has helped your zoo or projects you are partnered with?**



# ZOO RESEARCH

In a zoo, we have the opportunity to study animals closely and observe their physical health and natural behavioural repertoire over a period of time. This data can be invaluable to help us form an understanding of those animals and how best to care for them. Through careful research, improvements can be made in all aspects of animal care, from animal husbandry practices to animal diets. Animal care staff are in an ideal position to collect data through observational research as they are working with the animals every day.

When carrying out research, do not make assumptions about what you might find during your study as this, particularly during observational studies, may cause bias with your data collection. For example, don't assume your animal dislikes certain food just because they didn't eat it one day. Collection of data over time is very important.

First of all consider what you want to study and why. For example, do you want to know if your animal would or wouldn't benefit from having a different environment or do you want to know if they prefer different types of food in order to provide them with a varied but enjoyable diet? Or do you think that your animals seem more stressed during different times of day and want to find out why? Discovering more about an animal will allow you to make adjustments in their management in order to provide welfare improvements for that individual or group of animals. Don't forget to read around the subject and read up on relevant research that has already been published before deciding on a research topic.

Next, consider how you might design your research to collect the data you need. Consider when you have access to the animals, what factors you may need to vary to test your study and always make sure that you design research that is safe for both you and the animals.

When conducting your study ensure it aligns with ethical practices such as utilising unobtrusive observation methods. Once complete, share your findings with other facilities to ensure they benefit from your research too.

## ETHICAL CONSIDERATIONS

It is important to have an ethical review of each research project to ensure animal welfare is safeguarded during research procedures. Ethics committees are important for both research practices and for providing guidance on husbandry procedures which may have welfare implications. For example, an ethical committee might meet to discuss issues such as euthanasia, pinioning, or animal introductions, as well as potential research projects.

An ethics committee usually comprises of animal care staff, animal managers and zoo curators, as well as representatives from regional associations. Discussions in an ethics committee should ensure animal welfare is given top priority in the decision-making process.



# SUMMARY

The concept of a zoo has existed for hundreds of years, but the modern zoo is very different to what it used to be. The modern zoo has a responsibility and important role to play in conservation, education and research. It should be within the modern zoo's mission and vision that they are committed to ensuring they meet all three objectives whilst maintaining good standards of animal welfare. Globally, the modern zoo can be supported by being a member of an accredited zoo association which can provide best practice guidelines and standards. These standards should also be underpinned by a national regulatory framework and legislation.

Conservation can be done independently by a zoo or in conjunction with other zoos or conservation bodies. It can be local, for native species, or international and can be carried out in situ or ex situ. Research carried out by zoos helps underpin effective conservation and education programmes whilst securing good animal welfare standards. Anyone in a zoo can carry out research which can contribute to the various zoo objectives. Globally, millions of people visit zoos and aquariums annually and these facilities have a responsibility to effectively educate and inspire visitors, by providing modern and high standards of animal welfare.

Collaborative breeding programmes, selective educational materials and promoting the active work that your zoo can do for animal conservation and captive animal welfare is very important. Animal care staff in modern zoos can significantly contribute to a zoo's success by providing excellent standards of care and enriching environments for their animals, which will provide positive welfare experiences and stimulate visitors to engage and connect with the animals.

## IMPORTANT POINTS TO REMEMBER

- The modern zoo should have a commitment to achieve good conservation, education, research and animal welfare standards.
- Animals can be extinct in the wild but preserved in zoos or released back into safe habitats in the wild. Zoos have a powerful role to play in the conservation of species and the habitats they live in.
- A good zoo association can provide support through an effective accreditation programme.
- Animal care staff have multiple roles and can contribute to the zoo's conservation, education and research programmes.
- A zoo's role is to inspire and educate visitors. The provision of good animal welfare significantly helps contribute to this.
- Breeding in zoos is important, but careful consideration must be given to why an animal is being bred, and its whole of life care.
- Collaborative breeding programmes between zoos help maintain genetic diversity. Good welfare is essential for breeding programmes to be truly successful.
- In situ research is a great way to understand what animals' needs are in the wild and provide for them in a captive environment.
- Ex situ research can support improved practices in animal welfare. For example, combining studies on behaviour and our knowledge of a species' natural biological needs can help us understand when an animal is coping (and not coping) with its environment.
- Conservation, education, research and welfare should be the goals of a modern zoo.

# QUICK QUESTIONS

## Global Zoo Community

- **What is the function of a national or regional zoo association?**
- **What does accreditation mean?** How can accreditation help a zoo or aquarium?
- **Why is it important to have regulatory frameworks for zoos in place?**
- **How do you think national legislation standards may differ to zoo association standards?** Does your country have national legislative standards?

## The Modern Zoo & Animal Care Staff

- **How is a modern zoo different to a zoo that was around a few hundred years ago?**  
Do you think the changes are positive in terms of animal welfare?
- **Why are modern zoos important for conservation, education and research?**
- **How does a modern zoo ensure a high standard of animal welfare?**
- **What other roles, aside from cleaning, do animal care staff have?** Why is it important to have enough animal care staff in a zoo?

## Conservation

- **What role can zoos play in national and international conservation?**
- **What does the IUCN do and why is it important to conservation efforts?** Does your zoo utilise the IUCN red list system?
- **Why do you think good welfare is important for good conservation?**
- **How do you think poor welfare compromises conservation and education efforts?** Are there any welfare issues in your zoo that might be compromising a conservation project?
- **How do breeding programmes contribute to conservation?** Why do you think good welfare is important for breeding and conservation?
- **Do you manage any breeding programmes?** Are they managed effectively? How do you think they could be managed better?

## Education

- **What do you think zoos can teach their visitors?** How can this be achieved?
- **What long-term impacts do you think zoo education can have on human behaviour?**  
Why is this important for animal welfare and conservation?

## Research

- **What is in situ research and what is ex situ research?**
- **How can research help improve the conservation programmes at a zoo?**
- **List three ways research can help improve animal welfare?** Who could carry out this research?

# ACTIVITIES



IMAGINE YOU HAVE TO GIVE A PUBLIC TALK TO A GROUP OF VISITORS AT YOUR FACILITY. THE TALK IS ABOUT HOW YOUR ZOO IS HELPING PROTECT A SPECIES FROM EXTINCTION IN THE WILD. LIST ALL THE POINTS YOU WOULD TALK ABOUT AND WHY YOU THINK THEY ARE IMPORTANT. WHAT QUESTIONS DO YOU THINK THE PUBLIC MIGHT ASK YOU?

YOU MIGHT LIKE TO CONSIDER THE FOLLOWING:

- IS THIS SPECIES ENDANGERED, CRITICALLY ENDANGERED, OR EXTINCT IN THE WILD? HOW CAN YOU FIND OUT?
- ARE YOU BREEDING THIS ANIMAL AND IF SO WHY? (CONSIDER IF THE ANIMAL IS PART OF A BREEDING/RELEASE PROGRAMME INTO THE WILD).
- IS YOUR ZOO CARRYING OUT IN SITU RESEARCH INTO THIS SPECIES?
- IS YOUR ZOO WORKING IN PARTNERSHIP WITH OTHER ZOOS OR INTERNATIONAL ORGANISATIONS TO PROTECT THIS SPECIES?
- DO YOU THINK THE CURRENT ANIMAL ENCLOSURE INSPIRES VISITORS TO SUPPORT YOUR ZOO'S CONSERVATION EFFORTS? IF NOT, WHAT CHANGES WOULD YOU MAKE?
- HOW COULD YOU EDUCATE YOUR VISITORS FURTHER AND ENCOURAGE THEM TO SUPPORT THE ZOO'S CONSERVATION AND RESEARCH PROGRAMMES?



YOU HAVE BEEN ASKED TO CREATE AN EDUCATIONAL SIGN THAT WILL PRESENT THE CONSERVATION EFFORTS OF A SPECIES THAT YOU CURRENTLY HOLD IN THE ZOO. DESCRIBE AN OUTLINE OF WHAT YOU WOULD INCLUDE IN THE MESSAGE AND HOW YOU WOULD PRESENT IT.

YOU MIGHT LIKE TO CONSIDER THE FOLLOWING:

- HOW WILL YOU ENCOURAGE YOUR VISITORS TO READ YOUR SIGN AND MAKE IT LOOK INTERESTING?
- HOW IS YOUR CHOSEN SPECIES DIRECTLY CONTRIBUTING TO CONSERVATION EFFORTS?
- WILL THE BEHAVIOUR OF THAT SPECIES (ACTIVE/RESTING/EATING) AFFECT THE VISITORS AND IF SO, HOW WILL THIS IMPACT ON HOW YOU PRESENT YOUR SIGN?
- IS YOUR ZOO CONTRIBUTING TO ANY IN SITU RESEARCH OR CONSERVATION FOR THAT SPECIES? HOW CAN YOU SHOW THIS IN YOUR MESSAGE?
- HOW COULD YOU EDUCATE YOUR VISITORS FURTHER AND ENCOURAGE THEM TO SUPPORT THE ZOO'S CONSERVATION AND RESEARCH PROGRAMMES?

# ACTIVITIES



**ONE OF YOUR MACAQUES IS SHOWING ABNORMAL BEHAVIOURS WHEN THERE ARE A LOT OF VISITORS IN THE ZOO. DESIGN A SIMPLE RESEARCH PROGRAMME TO HELP YOU AND THE ZOO UNDERSTAND HOW THE VISITORS MIGHT BE IMPACTING ANIMAL BEHAVIOUR AND HELP INFORM WHAT CHANGES YOU MIGHT MAKE TO IMPROVE THE SITUATION. YOU MIGHT WANT TO CONSIDER THE FOLLOWING:**

- **WHAT ARE THE NATURAL AND NORMAL BEHAVIOURS FOR MACAQUES?**
- **WHAT DO YOUR HISTORICAL RECORDS ABOUT THIS MACAQUE TELL YOU?**
- **ARE CONSIDERATIONS SUCH AS TIME OF DAY AND TIME OF YEAR IMPORTANT? WHY MIGHT THESE IMPACT MACAQUE AND VISITOR BEHAVIOUR?**
- **DO YOU HAVE A WAY OF ASSESSING JUST THE INDIVIDUAL BEING AFFECTED OR WILL THE ENTIRE TROOP BE ANALYSED? WHICH DO YOU THINK WILL BE MORE BENEFICIAL AND WHY?**
- **HOW CAN YOU ASSESS MACAQUE BEHAVIOUR WITHOUT BEING PRESENT (AS THIS MIGHT IMPACT THE RESULTS)?**
- **HOW CAN YOU ASSESS VISITOR NUMBERS AND BEHAVIOUR AND DIFFERENTIATE WHETHER ONE OR BOTH OF THESE CONTRIBUTING FACTORS MIGHT BE IMPACTING THE MACAQUES?**



**YOU ARE TOLD THERE IS AN ENDANGERED NATIVE SPECIES OF BUTTERFLY THAT VISITS YOUR FACILITY. YOU AND YOUR TEAM WANT TO HELP THIS SPECIES TO THRIVE AND EDUCATE THE PUBLIC ABOUT THE SIGNIFICANCE OF THIS SPECIES. CREATE A PLAN OF ACTION FOR THIS SITUATION. CONSIDER THE FOLLOWING:**

- **WHAT CAN YOU DO TO ENCOURAGE THE SPECIES TO THRIVE IN YOUR FACILITY? WHAT DOES IT NEED MORE OF AND WHAT DOES IT NEED LESS OF?**
- **WHAT EDUCATIONAL MATERIALS MIGHT BE EFFECTIVE IN PROMOTING THE WORK YOU ARE DOING TO HELP THIS SPECIES?**
- **ARE THERE LOCAL OR NATIONAL GROUPS THAT YOUR FACILITY SHOULD BECOME INVOLVED WITH BECAUSE OF THE PREVALENCE OF THIS SPECIES?**
- **SHOULD YOU INVOLVE THE GARDENING TEAM WITH THIS PROJECT GIVEN THE RELIANCE OF THE SPECIES ON PLANT LIFE?**