
The Role Of Husbandry In The Health & Wellbeing Of Exotic Animals In Captivity

The role of husbandry in the health and wellbeing of exotic animals in captivity and how this will affect their medical care

There are a multitude of aspects that contribute to the care and well-being of exotic animals in captivity. One of the most crucial aspects of their care is husbandry. Husbandry is defined as the cultivation of production of animals [1]. There are many aspects that are encompassed by the term "husbandry" these include but are not limited to; nutrition, environment, behavior, and disease prevention/control [2]. Without these aspects of animal care, the incidence of stress, disease, and death would increase drastically within captive animal populations.

Captive animals are typically expected to be able to maintain a longer life expectancy than wild animals. However, in order to accomplish this, adequate husbandry practices need to be in place to provide the animals with everything they need. One of the aspects of husbandry that is paramount to their well-being and longevity is nutrition. Diets for exotic and wildlife species are particularly crucial due to the need to mimic the diet found in the wild. These diets have been developed by observing wild habits, oral morphology, GI tract morphology, research on nutrient requirements and practical experience [3].

While we try to mimic their natural diet as closely as possible, the food that is typically included in the wild animal diet is not commercially available. Therefore, it is our job is to utilize human agricultural products [4]. If the diets are not formulated, prepared, and presented properly, the animal may face nutritional deficits as a result. While additional supplementation to the diet may not always be required, it is typically included regardless. It is important to note that over-supplementation of a nutrient is possible and can potentially cause toxic effects [3]. Without proper nutrition, animals are pre-disposed to diseases not only caused by dietary deficiencies or excess, but they can also be more susceptible to other diseases due to an overall poor condition.

Another aspect of husbandry that can have an enormous impact on the health and well-being of exotic animals in captivity is stress. It has been studied in many species that being in captivity can increase the levels of stress hormones such as cortisol. Studies on species such as the cheetah, captive black rhinoceroses, African green monkeys, and armadillos have shown that captivity can cause severe systemic changes that can affect their health [5]. Chronically stressed animals can be faced with a number of health issues. The immediate effects of stress

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are well known; they typically involve cellular changes such as high white blood cells (leukocytosis), elevated neutrophil count (neutrophilia), and a low lymphocyte count (lymphopenia) [6].

However, the long-term effects of stress on the body can cause more severe and permanent changes. Some of the changes that can be seen in captive animals are hyperplasia of the adrenal cortex. This indicates that the animal is under chronic stress and has a higher production and therefore circulation of corticoid hormone levels [5]. Studies in animals have shown that the exposure to excessive stress can have effects on the body such as a delay in wound healing. It can also have a negative impact on the gut health of an animal, which is already a consideration we have to make as we formulate diets for captive species, and it can have effects on the cardiovascular system as well [6]. This means that animals under chronic stress can be prone to more diseases and complications in their life, leading to an increase in the instance and type of veterinary care that may be needed.

Behavior-based husbandry is multifaceted. It can range from providing an animal with the enrichment of a tree to climb to training them to present limbs for blood draws or other medical procedures. "Behavior based husbandry incorporates all elements of good animal welfare, good health, psychological well being, and natural behavioral expression" [7]. It is a combination of not just aspects of the environment such as the design of their enclosure, but also their interactions with people such as their keepers, and each other. These aspects of behavior-based husbandry can help lower the stress levels of the animal, which can also help improve their quality of life. It is also important, however, that we present the animals with challenges such as placing their food in different areas of the enclosure, or opportunities for social interaction, so that the animal may continue to be mentally stimulated [7].

Activities such as these can help decrease the likelihood or severity of displacement or neurotic behaviors such as pacing or potentially harmful, self-mutilating activities (such as overgrooming). Animals also generally have to be trained to tolerate medical procedures, while humans can be cooperative for activities such as physical exams and medication administration, these activities can be foreign and therefore frightening for an animal. Some behaviors that may be taught to these animals include placing themselves in a specific area for radiographs or even presenting an offspring that may need medical attention [8]. All of these aspects of behavioral husbandry can help to enrich the lives of the animals and help aid in the quality of their care.

Disease control and prevention is possibly one of the most crucial aspects of animal husbandry. "With the movement of animals and agents throughout the world, explosive outbreaks of disease may occur, unless the responsible persons know which species may be closely associated and follow appropriate husbandry practices and appropriate quarantine procedures" [2]. Since animals in captivity may have contact with substrates, animals, environments, and

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people that they normally would not, they may be exposed to more and different diseases than they would in the wild.

This makes it our job to be sure they are as prepared as possible by administering vaccinations and following quarantine and isolation protocols when necessary. Each facility carries out its own protocols when it comes to quarantine and isolation, however, the overall goal is to help minimize the risk and incidence of disease in their populations. Aspects in captivity that play a role in increased risk of disease include local wildlife, human interaction, and the illegal wildlife trade. For example, in 1999 many crows in New York state were dying of a new unknown disease (later determined to be West Nile Virus), and it was posing a threat to the animals that were in captivity in those areas. Precautions had to be put in place in order to help minimize the chances of the captive animals becoming exposed to the disease [9].

Another instance where local wildlife animals can pose a health threat to animals in captivity is the transmission of diseases such as leptospirosis through rat feces. It is therefore imperative that proper disease control measures are in place when dealing with captive animals. The care of wildlife and exotic species in captivity is complicated and ever-changing. Husbandry can play a vital role in the health and well-being of animals by helping to ease the stress of a new environment and trying to make it seem as much like home as possible. Husbandry includes many aspects of animal care; their nutritional requirements, stress management, their behavior, and disease control are only a few. In order for animals to have the best quality of life and to receive the best medical care possible, it is crucial that proper husbandry practices be utilized.

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