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Eating Animals at the Zoo

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Jes Lynning Harfeld **

Abstract

In many zoological gardens, safari parks, dolphinariums, and aquaria (zoos) worldwide, all levels of staff work hard to create enriching environments as well as to highlight welfare initiatives. In these same zoos, however, food for guests and feed for animals are often sourced from unsustainable farming practices and/or produced under welfare detrimental circumstances in industrialized agriculture and fisheries.

The current paper focuses on the concept of animal welfare, as an ethical dilemma for zoos in a broader sense than is usually considered. More specifically, it is an investigation into the apparent discrepancy between official animal friendly values and the lack of regard for the welfare issues surrounding the origins of the meats and fishes offered at zoo restaurants and in animal feeding practices.

That is, we argue that there is a normative double standard at issue in the dichotomy between how zoos approach and assert the value of their exhibited animals and the way they approach and assert the value of the farm animals and fish that are consumed by zoo visitors and fed to zoo animals. Moreover, we explore the fundamental characteristics of this double standard and the actions that zoos can take in order to avoid this ethical animal welfare dilemma.

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Keywords

Zoos, Animal Welfare, Fisheries, Food Ethics, Intensive Farming

Introduction

A day at the zoo may include two types of encounters with animals: first, animals as interesting and exotic beings exhibited in appropriate surroundings, and second, animals as nice meals, snacks or picnic items consumed together with friends or family. Although some establishments allow guests to bring their own food, all zoos offer a large variety of animal-based food to their visitors. The focus of this paper is this food and the dichotomy between sets of values for similar animals in different circumstances.

This paper includes different types of animal parks and exhibitions—from aquaria to major parks with large open habitats. Animals are displayed in many different types of facilities worldwide, from small, roadside animal parks and aquaria to large safari parks and aquaria, housing whale sharks. The exhibits include a large and diverse number of animal species, from mammals to birds and amphibians. Many of these facilities also have children’s zoos, which house goats, sheep, pigs, horses, cows, guinea pigs, rabbits, and other domesticated animal species.

Photo opportunities, camping at the zoo, “wade and swim with” programs, animal encounters, and horse, camel, and elephant rides, as well as animal feedings by the public are all part of many zoos’ day-to-day operations. These programs tend to include general information on the species, their habitats, and ecological threats, but also details about individual animals, such as their names, ages, and likes and dislikes. Hand-outs, flyers, slide shows, and presentations are all used to convey information to the public before, during, or after the activities. The idea is that an up-close-and-personal experience provides the participating visitors with information about the species and the threats they face in the wild but also—and this is crucial—will create an emotional bond to the animal and a desire to help and preserve the species. It is hoped that the activities will induce behaviors such as recycling, responsible consumerism, reduction of car usage, and donations to conservation programs.

Through conservation projects, parks contribute to the protection and conservation of entire ecosystems and species diversity, as well as specific habitats occupied by different

populations of animals. Successful collaborative captive breeding programs and ongoing research into the conservation of endangered and threatened species in the wild are just a few of the activities modern zoos are involved in. Zoos are also contributing to successful reintroduction programs, capacity-building programs and habitat preservation, and are funding in- and ex-situ conservation and research programs. Successful captive breeding and reintroduction programs have been conducted in zoos across the world; for example, the black-footed ferret has been successfully released to multiple sites.¹

Besides the aims of conservation, education, research, and entertainment, modern zoos and aquaria promote and describe, as shown in section two, the importance of animal welfare in their facilities and activities. Keeper talks, information panels, and information available on each company's website inform the public about the facility's efforts to ensure the highest standards of animal welfare.

Zoo education programs convey information about husbandry practices and enrichment and health care programs, and it is important for the zoos to publicly indicate and emphasize undertakings aimed at promoting high animal welfare standards.² High standards of (preventive) health care and training,³ appropriate nutrition,⁴ and housing and social conditions,⁵ as well as enrichment,⁶ are highlighted as being part of an animal welfare program.

This paper will develop in eight sections. First, the paper gives a short clarification of the concept of animal welfare in the context of this paper. Section two is an analysis of the public communication of the zoos and their organizations; the paper reveals both the direct and indirect concern for individual animal welfare and the written requirements to support these policies outside of the operation of the zoo facility. Section three describes the framework of research into zoo menus. The next sections, four and five, present the problems of conventional animal agriculture and fishing. Section six takes up the issue of using live fish as a combination of feed and enrichment in an aquarium. In the seventh section, this paper argues that food consumers need special knowledge in order to be able to

1. Black-Footed Ferret Recovery Implementation Team, "Captive Breeding."

2. Devra G. Kleiman, Katerina V. Thompson, and Charlotte Kirk Baer, *Wild Mammals in Captivity*.

3. Robert J. Young and Cynthia F. Cipreste, "Applying Animal Learning Theory."

4. Walter L. Jansen and Joeke Nijboer, *Zoo Animal Nutrition*.

5. Kleiman, Thompson, and Baer, *Wild Mammals in Captivity*.

6. Jill Mellen and Marty Sevenich MacPhee, "Philosophy of Environmental Enrichment."

make ethical and consistent choices. When consumers buy food while visiting zoos, it is the zoos' responsibility to enable knowledgeable choices by providing menu options and information about animal welfare. The concluding section presents a number of suggestions and alternatives to the current situation.

1. Animal Ethics and Welfare

In the context of zoos, animal ethics could be seen as having two distinct approaches: one aimed at arguing that animals could be kept in zoos if they could live good lives there (welfare) and one arguing that animals should not be kept in confinement at all since this violates certain intrinsic rights (abolition). This paper does not take a stance on whether or not zoos are inherently morally problematic. It does, however, recognize that zoos exist at the present and will continue to exist in the immediate future. Thus, this paper is about the importance of taking zoo animal welfare ethics seriously in a comprehensive way. This paper was written with the understanding that its approach is but one side of a traditional divide in animal ethics⁷ and does little to address the other side: the question of animal rights and possible abolition. However, it is imperative that its perspective on welfare, as well as its arguments about ethics and dichotomy, be accessible within the framework of traditional zoo ethics. The welfare approach provides the ability to bring these arguments inside the normative world of zoos in a way that the abolition/liberation debate does not.

In the context of this paper, animal welfare refers to quality of life as experienced by animals' mental capacity. In this respect, the focus is on a certain aspect of "mind." The arguments of this paper assume the validity of this declaration by Daniel Dennett: "Only mind-havers can care; only mind-havers can mind what happens. If I do something to you that you don't want me to do, this has moral significance. It matters, because it matters to you. It may not matter much, or your interests may be overridden . . . If flowers have minds, then what I do to flowers can matter *to them* . . . If nobody cares, then it doesn't matter what happens to flowers."⁸ This does not necessarily exclude living creatures without minds (e.g.,

7. Jes Lynning Harfeld, "Telos and the Ethics of Animal Farming."

8. Daniel Dennett, *Kinds of Minds*, 4.

flowers) from ethical relevance. It simply means that if those creatures are ethically relevant, the relevance is not based on welfare.

Potential negative welfare for an individual animal is characterized by five domains.⁹ Four of these domains cover the physical aspects that might produce a varied array of negative subjective experiential qualities for the animal, and include (1) food and water deprivation, (2) environmental challenges, (3) disease and injury, and (4) restrictions on behavior and interaction. The fifth domain consists of mental components, such as the feelings of loneliness, thirst, pain, anxiety, boredom, and frustration. Good welfare, however, demands more than the absence or low levels of negative stimuli and experiences. Indeed, if to “fare well” is intrinsically also an experiential quality, the presence of positive subjective experiences is necessary in order to talk validly about good welfare. This means that beyond keeping animals from getting hurt, bored, undernourished, etc., animal caretakers must also focus on creating environments and lives for the animals that allow the possibility of experiencing positive emotions, such as joy, playfulness, and social affection.

When considering zoos and population biology, the concept of “welfare” is often at a different level than “welfare” as was just described. The focus of many zoo activities and, indeed, one of the fundamental pillars of many contemporary and historical zoo programs, has been conservation, i.e. the management of welfare and survival of groups or even entire species. When phrasing the question at this level, one could ask, “How are the tigers doing in India?” and the question would not inherently include the positive experiences of tigers in India. Instead, the question is aimed at uncovering the procreative success of the Indian tigers. To “fare well” in conservation terms is synonymous with the proliferation of the indicated group or species. This is, in practice, almost always related to wild animals; however, it could be used validly to estimate the species success of other types of animals—for example, in agriculture. Nevertheless, species welfare and individual animal welfare are not necessarily intertwined. The modern industrial broiler chicken is probably one of the most successful animals when it comes to species survival and procreation, reaching

9. David J. Mellor, Emily Patterson-Kane, and Kevin J. Stafford, *The Sciences of Animal Welfare*, 6.

population numbers in the billions.¹⁰ Nonetheless, these animals experience a great number of different individual welfare problems.¹¹

2. Mission Statements and Official Codes of Conduct

A zoo is a business, and any zoo that does not generate enough income from guests and donors ceases to exist. That said, the traditional values and visions of conservation, research, and education of the public are intrinsically instrumental to the cost-benefit strategy of running a zoo. They can be understood and used merely as marketing tools and in branding schemes. Often, however, these values and visions are genuine aspects of the reasoning of zoo staff and management—even to the extent that they can be accepted as being disadvantageous to financial success.

To demonstrate a commitment to the three values (or goals) mentioned above, zoos and their umbrella organizations frequently state their concern about individual animal welfare, which is perhaps expressed in most detail by the World Association of Zoos and Aquariums (WAZA). All zoos studied and mentioned in this paper are members of WAZA and its national and regional subsidiaries. Membership of WAZA includes mandatory compliance with the codes of ethics and animal welfare adopted in 2003,¹² and stipulated in chapter 9 of the organization's strategy document *Building a Future for Wildlife*.¹³ This code clearly stipulates that the obligations of zoos under WAZA extend beyond the preservation of species, groups, and habitats and should include a focus on the individual animal. Indeed, it is emphasized that actions “taken should be in the context of species survival without compromising individual welfare.”¹⁴ WAZA rules assert that the environments of animals housed in the zoos should “take into account the animal's behavioral and physiological needs” and that the animals “be free to express ‘normal’ behavior and [. . .] not suffer from thirst, hunger and malnutrition, pain, injury and disease, discomfort, fear and stress.”¹⁵ Not only does the WAZA code of ethics and animal welfare

10. Ricke et al., *Organic Meat Production and Processing*, 13.

11. Werner Bessei, “Welfare of Broilers.”

12. WAZA, “Code of Ethics and Animal Welfare.”

13. WAZA, “Building a Future for Wildlife.”

14. *Ibid.*, 59.

15. *Ibid.*, 62.

require member organizations to ensure that their management practices and conservation efforts are carried out with respect for animal welfare, it also stipulates that members should “promote [. . .] animal welfare to colleagues and to society at large,”¹⁶ and are required to condemn “ill-treatment and cruelty to any animals and should have an opinion on welfare issues for wild animals external to its membership.”¹⁷

At a national level in the UK, the British and Irish Association of Zoos and Aquariums (BIAZA) have similar standards and (somewhat lower) ambitions for the welfare of the animals in their care. Realizing that animal welfare is more than merely the absence of sickness, BIAZA states that physical and mental health and social life are all integral to the accomplishment of an animal’s welfare.¹⁸ For example, BIAZA points to the fact that “an animals’ [sic] behaviour can indicate its underlying psychological state”¹⁹ and notes that aspects such as enrichment and adequate social living conditions can influence such psychological states positively. It is the aim of the BIAZA Living Collections Committee to prioritize research into animal welfare and to “ensure high standards of animal welfare, husbandry and management in BIAZA member zoos and encourage such standards elsewhere.”²⁰

The clear and unambiguous focus on individual animal welfare is, however, rarely included in the publicly-presented goals and visions of the members of WAZA. Many zoos ignore this aspect entirely and focus almost exclusively on conservation issues, while some include it as a secondary point or indirectly in the description of educational programs or other activities. An example of the latter is Copenhagen Zoo, which, like many comparable institutions, has articulated mission and vision statements that are primarily focused on what one might call anthropocentric goals. The zoo views itself first and foremost as a conveyor of recreational activities, educational knowledge, and scientific investigations. However, its mission and vision statements both include goals that are, at least partly, non-anthropocentric. In line with the zoo tradition, these goals mainly pertain to the preservation of animal species and the conservation of biodiversity. Animal welfare is not mentioned specifically on the “Mission and vision” page but could be seen as implied in the vision of

16. *Ibid.*, 60.

17. WAZA, “Code of Ethics and Animal Welfare.”

18. BIAZA, “Animal Welfare.”

19. *Ibid.*

20. BIAZA, “Animal Care and Management.”

being “[k]nown and respected for . . . high standards and quality regarding the keeping of animals and the standard of animal enclosures” and the goal of being a “company with high ethical standards.”²¹ Furthermore, animal welfare is directly mentioned as an aspect of the instructional module on “farm animals, zoo animals and pets”²² for school children. The zoo asserts that animal welfare is an essential consideration with regard to zoo architecture (“The architect—the most dangerous animal in the zoo”).²³ Finally, Copenhagen Zoo emphasizes its membership of the Danish Association of Zoos and Aquaria (DAZA) (and thus indirectly EAZA and WAZA), which, as indicated above, presupposes adherence to a vast number of guidelines pertaining to the protection of individual animal welfare. Similarly, Frankfurt Zoo does not directly mention animal welfare among its goals or values, but advertises its membership of EAZA and WAZA, and thus, it must be assumed, adherence to the animal welfare guidelines of these umbrella organizations. To find mention of animal welfare on the Frankfurt Zoo website, one must browse through a number of answers on their FAQ page. Here, several of the answers are arguments based on animal welfare.²⁴ For example, zoo guests are not allowed to bring their dogs to the zoo, due to the stress that this can cause the zoo animals. Additionally, the absence of polar bears and elephants in the Frankfurt Zoo is explained as being due to the lack of adequate physical environment for ensuring the welfare of these animals.²⁵ Likewise, Helsinki Zoo mentions both environmental awareness and animal welfare among their set of values.²⁶ Givskud Zoo in Denmark has embedded the ethical rules from DAZA, making statements such as, “against a backdrop of increased knowledge about the biology of the animals[,] their physiological and behavioral opportunities must be improved continuously.”²⁷ SeaWorld in San Diego states that they “strive to create an environment that is fun, interesting, and stimulating for the animals” and identify themselves as an organization with a “commitment to animal welfare” and a leader in animal care.²⁸

21. Copenhagen Zoo, “Mission and Vision.”

22. Copenhagen Zoo, “Domestic Animals, Zoo Animals and Pets.”

23. Copenhagen Zoo, “Why Norman Foster?”

24. Frankfurt Zoo, “Frequently Asked Questions.”

25. *Ibid.*

26. Helsinki Zoo, “Tasks of Helsinki Zoo.”

27. Givskud Zoo, “Our Code of Conduct.”

28. SeaWorld San Diego, “SeaWorld’s Animal Welfare.”

3. Feeding Visitors and Zoo Animals

The authors researched and inspected the menus posted online by fifty-five zoos in Europe and North America, using the EAZA and AZA websites to select the zoos. Zoos in the major cities and capitals, and in the geographical north and south of countries, were selected. This research assumed that if words such as “organic” or “animal friendly welfare practices” or the like did not appear, all meat and fish originated from conventional farming practices. Typical food items on the menu were hot dogs, chicken nuggets, hamburgers, fish burgers, fish fingers, schnitzel, roast of ham, shrimp salad, and salmon, all often served with fried or baked potatoes. In the sandwich category, options included ham, salmon, eel, salami, and roast beef. Vegetarian and vegan options were available in only a few places, with vegetarian options more common and vegan options (defined here as those obviously intended to accommodate a vegan diet; for example, dishes with beans, tofu, or tempeh, and not merely a green salad or fried potatoes), only sporadically. Vegetarian options included pasta and lasagna, salads and cheese sandwiches. But the overall selection offered on all menus was meat- and/or fish-based.

After researching fifty-five zoos in Europe and North America, the unfortunate conclusion is that most use meat and fish originating from conventional farming and fisheries. If it is correct to assume that menu items are conventionally produced if not otherwise indicated (i.e., labeled as humane, organic, sustainable, or the equivalent), zoos are not, by default, providing customers with animal products from farms and fisheries concerned about animal welfare.

Some aquaria promoting “sustainable seafood” provide information on their websites about sustainable fisheries and marine conservation and advertise that the marine animals served in their restaurants are procured in an “environmentally friendly” and “ethical” fashion. “Sustainable seafood” is defined as catch sourced from marine life communities monitored for ecological stability or “health.” Practices utilizing a “no-discard policy” aim to keep and bring to shore the entirety of their catch. This rule is considered non-standard among industry fishing practices. Alternatively, so-called “sustainable seafood” may also come from aquaculture, artificially created fish production facilities, usually land-based, that sometimes claim to be “environmentally friendly.” Two of these aquaria are the Monterey

Bay Aquarium and New England Aquarium. A quote from the website of the latter is illustrative: “When you choose ocean-friendly seafood today, you help ensure that we will have plenty of tasty seafood options for years to come. Your seafood choices matter. Some types of seafood are more environmentally friendly than others. The New England Aquarium’s Celebrate Seafood program will help you choose seafood that is good for you and good for the environment.”²⁹ Meat and fish sourced from farms and fisheries concerned about animal welfare can be found on the menus of some zoos. Bristol Zoo Gardens, for instance, states on its website that it offers “a great selection of hot and cold options made using the best local, ethical and sustainable ingredients.”³⁰ These websites and menus, however, do not define what constitutes “sustainable” or “ethical.”

Feeding other animals to carnivorous zoo animals is of course important for their welfare. Animals can be fed meat and/or fish, varying from shellfish to insects, squid, whole carcasses, and large fishes. The way animals are fed can also influence their welfare, as was reported in a study by Bond and Lindburg; they found that “[i]mproved appetites, longer feeding bouts and a greater possessiveness of food characterized the carcass-fed animals.”³¹

Cow, horse, pig, deer, trout, cod, salmon, and herring are some of the species fed to carnivores housed in zoos. There are a few aquaria and zoos that buy their fish from fisheries with the Marine Stewardship Council label. The Marine Stewardship Council states on its website that its guidelines for the ecolabeling of fish and fishery products require that a program have (1) an objective, third-party fishery assessment using scientific evidence; (2) transparent processes with built-in stakeholder consultation and objection procedures; and (3) standards based on the three factors—sustainability of target species, ecosystems, and management practices.³² Though the sources of meat and fish used in zoos and aquaria can vary geographically, animal feeds are generally procured from intensive farming systems that are detrimental to the welfare of farmed animals.

4. The Origins of Meat

29. New England Aquarium, “Celebrate Seafood.”

30. Bristol Zoo Gardens, “Coral Restaurant.”

31. Julie C. Bond and Donald G. Lindburg, “Carcass Feeding of Captive Cheetahs (*Acinonyx jubatus*).”

32. Marine Stewardship Council, “How We Meet Best Practice.”

Given the clearly articulated care for animals and the ostensibly animal-friendly focus of many activities and exhibitions in zoos, it is relevant to explore the lives of animals indirectly influenced by the business of zoos. This section examines the origins of some of the animal-based foods that are served in zoos across the world.

As the initial analysis of zoo menus has demonstrated, the choices of meat, eggs, and dairy products for hungry zoo visitors rarely include products with any type of animal welfare certification, such as the American Humane® Certified program or the EU organic labeling (which incorporates and states principles and policies for the achievement of animal welfare, defined as providing “good food, good living conditions and good healthcare”³³). Instead, most animal food products derive from industrialized animal housing systems in what is commonly referred to as conventional agriculture.

The technological and economical developments in agriculture during the last eighty years have primarily been part of the process of turning conventional farming into “factory farming”—a method of production characterized by its severely negative impact on the welfare of the ever-increasing farmed animal population.³⁴ The suffering this causes individual animals is not necessarily a change from “the good old days.” Many animals in pre-industrialized agriculture also suffered greatly, and, as Harfeld has argued, scientific advances and the general modernization of agriculture have also brought about better medical treatment of sick animals, possibilities for better and more adequate feed, and technology for better winter housing.³⁵ These modern benefits, however, have not precluded the harm of modern industrialized agriculture, which is rife with problems concerning, for example, confinement, social isolation, overcrowding, lack of positive natural behavior, and stress during transport.³⁶

One relevant example of animal suffering in conventional intensive farming concerns the breeding, housing, and transport of the common domestic pig. Pigs are raised for consumption with negligible concern for their comfort or what would commonly be understood to be their “welfare”: the conventional housing and management of pigs

33. European Commission, “Animal Welfare.”

34. David Fraser, “Farm Animal Production,” 181–82, cited in Harfeld, “Husbandry to Industry,” 133.

35. Jes Lynning Harfeld, “Husbandry to Industry,” 133; David Fraser, “Farm Animal Production,” and Peter Sandøe and Stine B. Christiansen, *Ethics of Animal Use*, cited in Harfeld, “Husbandry to Industry,” 133.

36. John Webster, *Animal Welfare*, 12, 28, 63, 258.

provides very little enrichment, imposes limited movement, sometimes through the use of gestation crates, and involves routine surgical procedures (such as tail docking and castration) without anesthesia.³⁷

Tail biting is one example of the many welfare problems endured by pigs in modern industrialized agriculture. Pigs are highly intelligent animals³⁸ with a wide range of possibilities of behavior. Barren and cramped housing systems are not only a problem for the animals because they lead to tail biting. The biters are, in their biting activity, exhibiting a coping behavior that is the result of being denied adequate stimulation.³⁹ Similarly, a number of different problematic behavioral expressions, such as apathy, stress, and stereotypical behavior, can be traced to the lack of opportunity for exploratory behavior.⁴⁰ It is one of the fundamental premises of good zoo animal management that, in order to provide good animal welfare, the mental capacities of different types of animals be met with adequate environments and enrichment. In the case of industrially farmed pigs, such concerns have taken second or no place to the effectiveness of the production system. The pigs have been shaped to fit the system; the system has not been shaped to fit the pigs and their physical and mental capacities. As Bernard Rollin phrases it, this amounts to forcing “square pegs into round holes.”⁴¹

The battery farming of egg-laying hens represents another relevant example of a problematic farming practice that clashes with the ostensible concern for animal welfare of the zoos where the eggs are served. Eggs are not only consumed as products in themselves (boiled, fried, scrambled, etc.), but they are an essential ingredient of a large number of different dishes and pre-made foods. Thus, it can actually be quite difficult for consumers to recognize whether they are eating eggs or not.

There are several different types of housing systems for egg-laying hens. In Denmark, for example, eggs in the supermarket are categorized into four groups: cage eggs, barn eggs, free range eggs, and organic eggs. Each category demands a different and increased level of attention to the welfare of the animals, considering factors such as beak

37. Barnett et al., “A Review of the Welfare Issues for Sows and Piglets in Relation to Housing.”

38. Elise T. Gieling, Rebecca E. [Nordquist](#), and Franz J. van der Staay, “Assessing Learning and Memory in Pigs.”

39. Per Jensen (ed.), *The Ethology of Domestic Animals*, 168.

40. Wood-Gush and Vestergaard, “Exploratory Behavior and the Welfare of Intensively Kept Animals.”

41. Bernard Rollin, *Science and Ethics*, 168; see also Harfeld, “Husbandry to Industry,” 134, 141, 147, 154, 156.

trimming, flooring material, number of hens per square meter, access to daylight and outdoor areas, and total number of hens per flock.⁴²

Since “cage eggs” (from battery farming) are by far the cheapest option, they are the most common choice of institutions that purchase large quantities of eggs, and they are often the eggs used as ingredients in other foods. The substandard lives of battery hens are representative of the most problematic animal welfare issues in modern agriculture. The new EU rules banned traditional battery cages beginning on January 1, 2012 and endorsed new and larger enriched cages.⁴³ This move, however, does not indicate a major breakthrough in the welfare of egg-laying hens in Europe. Not only is it expected that up to one third of the European egg producers are going to disregard the rules for now, the change represents the adjustment from one welfare-detrimental cage system to another welfare-detrimental cage system. The extra room per hen amounts to the size of a standard postcard, far from enough space to permit the caged hens to express innate behavior, such as wing flapping, dust bathing, or even postural changes in order to thermo regulate.⁴⁴ Indeed, some researchers argue that the welfare improvement intended with the new cage systems is highly questionable. Research aimed at measuring the degree of stress through immunological parameters “indicates similar levels of existing stress condition between the [two] caging designs.”⁴⁵

5. The Origins of Fish

Although the official concerns with intensive fishery practices usually center on sustainability and disregard animal welfare,⁴⁶ both are important topics. Pollution from intensive fish farming,⁴⁷ by-catch,⁴⁸ fish dying from suffocation, and the billions of “wasted” animals⁴⁹ are all serious concerns from both individual animal welfarist and conservationist points of view.

42. Animal Welfare Society, “Egg Guide.”

43. Michael C. Appleby, “The European Union Ban on Conventional Cages for Laying Hens.”

44. Michael C. Appleby, Joy A. Mench, and Barry O. Hughes, *Poultry Behavior and Welfare*, 61.

45. Tactacan et al., “Performance and Welfare of Laying Hens in Conventional and Enriched Cages.”

46. European Commission, “Fish Farm Pollution Damages Seabed Ecosystems.”

47. Ibid.

48. Convention on the Conservation of Migratory Species (CMS), “Bycatch of Marine Mammals.”

49. European Commission, “Unwanted Catches and Discards.”

By-catch is “the portion of a commercial fishing catch that consists of marine animals caught unintentionally.”⁵⁰ Each year, poor fisheries’ “management” and “wasteful” fishing practices increasingly decimate the world’s fish stocks. These practices also destroy marine habitats and incidentally kill billions of fish and other marine animals, such as turtles, cetaceans, and birds. The impact from a conservationist point of view is immense, specifically the depletion of fish stocks⁵¹ and waste issues, as well as the many tons of annual by-catch by modern fisheries methods, such as long line⁵² and bottom trawling.⁵³

Animal welfare concerns arise in different fishery practices. In fish farming, problems can include the experience of pain, anxiety and fear, behavioral conflicts, and cannibalism.⁵⁴ Animal welfare concerns can, furthermore, include starvation and crowding-induced stress,⁵⁵ as well as disease caused, in part, by negative stress in the fish.⁵⁶

The Atlantic salmon, *Salmo salar*, is an example of a species that is intensively farmed in vast quantities. Salmon farming begins at hatcheries, landed freshwater holding facilities, where the salmon are hatched from eggs and then raised. Although many modern hatcheries have systems⁵⁷ by which the water is recycled within the hatcheries, many conventional systems still discard the water, including the waste products and feed, into local rivers, damaging the local wildlife.⁵⁸ Once the animals develop into smolts, they are transferred to sea pens housing up to 90,000 fish. The fish are very valuable and numerous measures are taken to protect them. The welfare and lives of other wildlife are threatened by the installation of bird- and seal-scaring devices,⁵⁹ as well as hunting. Hundreds of common and

50. Merriam-Webster Online, s.v. “bycatch.”

51. Steven A. Murawski, “Rebuilding Depleted Fish Stocks.”

52. Sebastian Jiménez, Andres Domingo, and Alejandro Brazeiro, “Seabird Bycatch in the Southwest Atlantic;” Derek J. Hamer, Simon J. Childerhouse, and Nick J. Gales, “Odontocete Bycatch and Depredation in Longline Fisheries;” Miguel Donoso and Peter H. Dutton, “Sea Turtle Bycatch in the Chilean Pelagic Longline Fishery in the Southeastern Pacific.”

53. Lobo et al., “Commercializing Bycatch Can Push a Fishery beyond Economic Extinction;” Álvarez de Quevedo et al., “Sources of Bycatch of Loggerhead Sea Turtles in the Western Mediterranean Other than Drifting Longlines;” [Iiona](#) Stobutzki, Margaret Miller, and David Brewer, “Sustainability of Fishery Bycatch.”

54. Etienne Baras and Malcolm Jobling, “Dynamics of Intracohort Cannibalism in Cultured Fish.”

55. Oppedal et al., “Fluctuating Sea-Cage Environments Modify the Effects of Stocking Densities on Production and Welfare Parameters of Atlantic Salmon (*Salmo salar* L.)”

56. Edward J. Noga, *Fish Disease*.

57. Martins et al., “New Developments in Recirculating Aquaculture Systems in Europe.”

58. D. Clare Backman, Sharon L. DeDominicis, and Robert Johnstone, “Operational Decisions in Response to a Performance-Based Regulation to Reduce Organic Waste Impacts near Atlantic Salmon Farms in British Columbia, Canada.”

59. These devices are commonly referred to as “acoustic deterrent devices” or “seal scramblers.” Whale and Dolphin Conservation (WDC), “Fish Farms and Acoustic Deterrent Devices in the UK.”—Ed.

gray seals are shot every year in Scotland alone in efforts to protect farmed salmon.⁶⁰

An additional problem is the procurement of feed for the salmon. It requires two to four kilograms of fish caught in the wild to produce one kilogram of farmed salmon.⁶¹ New technologies and knowledge of spawning patterns, which vary depending on species, enable the harvesting of forage species as they come together, removing the fish before they have actually spawned.⁶² The survival of wild predator species depends on their ability to find forage schools in their feeding grounds. However, the great ocean predators find that, despite any adaptation for speed, size, endurance, or stealth, they will lose when faced with the machinery of contemporary industrial fishing.⁶³

6. Live Feeding of Fish as Enrichment

Animal welfare of animals housed in zoos is of great concern. But a discrepancy exists between the care for display animals in zoos and the animals used for feeding and in enrichment activities. The housing and care for an animal whose role at the zoo is “food for other animals” is considerably different from the care for an animal whose role is to be visible and on display. Not only is the (social) housing of food animals frequently substandard, these animals also face other challenges. Where allowed by national law, the “food” animals, such as fish and insects, are often fed to predators while still alive in the interest of enriching the predator’s experience or welfare. There is often little concern on the part of the staff with regard to the welfare of these prey “enrichment” animals. For example, fish are dropped into bird, cat, and bear ponds without places to hide, nor with enough conspecifics to school and find safety in numbers. This may also apply to insects. Using live prey in enrichment activities for display animals is a difficult ethical question in itself, but the welfare of prey animals (including opportunities to hide, escape, and/or defend themselves) should be given the highest concern and attention, as well. Within the zoo community, some believe that it is actually more humane to let the prey be killed

60. Butler et al., “The Moray Firth Seal Management Plan.”

61. Naylor et al., “Nature’s Subsidies to Shrimp and Salmon Farming.”

62. Kathleen T. Pirquet, “Follow the Money.”

63. Ibid.

immediately, sparing the animal from a long and stressful death. Consequently, providing hiding and escape opportunities would only prolong their suffering.

From personal observations and experience with live fish enrichment, there are several concerns regarding these practices. Different species of fish can be housed in smaller aquaria or holding tanks, which often lack a species-specific and stimulating environment until they are used for these activities. When these fish are handled for transport to the location where the enrichment will take place, a variety of methods can be used to capture, handle, and transport the fish. During capture, nets of different shapes and sizes are used, not always suited to the different species. Large fish can be captured with small nets that do not hold the size and weight of the animal easily, making the capture even more stressful than necessary. The type of netting used in the catching can also be damaging and painful to the fish. The handling of a fish can also be a stressful event, and it can potentially damage the protective mucous layer. Apart from physically damaging the fish, handling has also been shown to elicit the highest stress response.⁶⁴ For transport, many different types of containers can be used, with or without water. Some buckets are too small to hold the larger fish, resulting in them being transported with only their heads in the water and their bodies sticking out. Alternatively, many fish are transported en masse with minimal amounts of water and/or at high stocking densities. Fish can be moved in the capturing nets, alone or with other fish, submerged, partially submerged, or even without water, all of which are very stressful. When the fish arrive on location, they are not always immediately moved into pools or aquaria. Sometimes several hours go by before they are attended to or used. When they are moved into pools or aquaria, the fish may be thrown individually, be submerged and let out of the net or container, be dumped from the container, or be carefully moved by hand. Different features of housing environments also impact the fish's welfare, with clear concrete pools offering no hiding areas for the prey animals, while other environments can be said to be much more prey-animal friendly. Following from the definition of welfare adopted by this paper, fish intended as prey have their welfare compromised through mishandling, poor housing, and transport conditions.

It might be argued, from a welfarist point of view, that stress or injury does not matter, as fish do not feel pain and/or are going to die soon anyway. However, much recent

64. Michael W. Davis, "Fish Stress and Mortality Can Be Predicted Using Reflex Impairment."

scientific evidence indicates that fish do indeed feel pain.⁶⁵ With this background, zoos employ a double standard when causing unnecessary suffering for prey species while striving to minimize or eliminate suffering for exhibited fish. Similarly, arguing that maltreatment is less problematic because the live fish will die within a short period of time seems unreasonable and contradictory given the stated and implied welfare goals for relevantly comparable animals in the zoo. More research is needed on the welfare of fish used as live prey for carnivores as well as on the methods of introducing and housing prey and predators together.

7. Consumers, Animal Welfare, and Zoo Responsibility

When a visitor at a zoological garden purchases food, the visitor is, besides hungry, exhibiting what we might call value-laden consumer behavior. Such value-laden behavior can be the result of at least three varieties of value origins. First, it may be an aesthetic value with the choice founded in preferences of taste, smell, and texture. Second, it can be cultural or religious behavior in which certain unexamined norms dictate what should or should not be eaten. Finally, it can be ethically founded behavior, resulting in a food purchase choice rooted in reflected-upon notions of “the good” or “doing the right thing.”

Clearly, the latter two value origins do not negate the first, but merely set a certain framework within which the choice is made. Similarly, there can be room for ethical deliberation within the framework of cultural or religious norms and vice versa. For the purpose of this article, the focus is solely on the ethical values in food consumer behavior and feeding practices.

Any ethical deliberation, however, relies on knowledge. Information, experience, and the mental capacity to understand causality are indispensable in the effort to produce sound answers to the question: What ought we to do? Thus, it is a significant ethical problem that the system of modern food production—both in primary agriculture and in processing—has developed during the last century to be progressively and increasingly more difficult for consumers to comprehend and obtain reliable knowledge about the products. Additionally, a well-established discrepancy exists between zoo visitors’

65. Lynne U. Sneddon, “Pain Perception in Fish: Indicators and Endpoint.”

expressed concern for the environment and general animal welfare and their buying behavior as food consumers.⁶⁶ This seems, then, to represent a dual failure of ethical consumer behavior consistency in food purchases. Such consistency is, to a large extent, epistemologically founded. Epistemologically, this consistency depends on an individual's experience of and knowledge about food production, which is not readily accessible to the average consumer today.

As discussed in the section on the origins of meat, the modern food production system in Western countries has intensified and become industrialized. This has led to fundamental changes in the demographics of Western societies. In Denmark, for example, the countryside generates the impression of an agricultural nation; yet, while farming might still be considered part of the national identity, citizen involvement in agriculture has been gradually disappearing. At the beginning of the twentieth century, 40 percent of all adult Danes were employed in agriculture. By 1950, this number had dropped to about 25 percent, and today it is around 3 percent and declining.⁶⁷ Such a fundamental occupational change necessarily leads to a general loss of knowledge and gradual estrangement between the general public and the agricultural industry. At the same time, however, the production of animals, eggs, and milk has increased dramatically, and the Danes have become world leaders in the per capita consumption of meat,⁶⁸ followed closely by other Western countries.

The apparent failure of ethical consistency and the dichotomy between values and action are parallel problems for citizens and for zoo organizations. Both—or at least many representatives of both—exhibit and defend values in areas that are not readily followed in other relevant areas. For zoos, this failure is especially apparent in the differences between the values that the organizations express—figuratively, in their daily work, and literally, in codes of conduct, official documents, and educational program content—and in their purchasing and retailing of food for visitors and display animals. The dichotomy is clear and extensive. The menus of most zoos largely consist of products that originate in traditional intensive agricultural and fishing practices. As discussed earlier, this means that food eaten

66. Richard Shepherd, Maria Magnusson, and Peri-Olof Sjöden, "Determinants of Consumer Behavior Related to Organic Foods."

67. Birgitte Brøndum, Marianne Mackie, and Kamilla E. Nielsen, *60 år i tal: Danmark siden 2. Verdenskrig*, 9; Hans Christian Johansen, *Dansk Historisk Statistik 1814–1980*, 108–09.

68. Torben R. Simonsen, "Danmark er det suverænt mest kødspisende land i verden."

in zoos derives from farming and fishing systems that often severely and intrinsically lack concern for animal welfare.

If zoos are sincere about animal welfare, they must consistently adhere to welfare standards for all species, regardless of categorization (e.g., wild or domesticated for agriculture or companionship). To focus solely on, for example, the welfare of wild or exotic animals, constitutes an anthropocentric definition of animal welfare, rendered into meaninglessness. To support the welfare of exotic pigs like babirusas and not support the welfare of domestic pigs could only be considered inconsistent, irrational, and, for the domestic pigs, unfair.

Zoos are in a unique position to educate the public about animal welfare and to support animal welfare throughout society. Initially, zoos and zoo managers might be, in some respects, as estranged and unknowledgeable about farming practices as the general zoo-going public. However, due to their in-depth knowledge of animals and animal welfare, they are uniquely capable of understanding the welfare impact of different types of agriculture and aquaculture. As organizations whose expressed and tacit values include animal welfare, they have additional obligations regarding food animal production vis-à-vis their specialist knowledge, and they are obliged to share this knowledge with their visitors. Zoos can either obscure consumer understanding of food origins or help to attenuate the distance and estrangement between food production and consumers. In choosing the latter, they would become true advocates of both sustainability and universal animal welfare.

8. Conclusion and Suggestions for New Practices

Throughout this paper, it has been shown that (1) beyond the traditional values and goals of conservation, zoos incorporate and highlight the value of individual animal welfare; and (2) the menus for both zoo guests and display animals consist of meat, dairy, eggs, and/or fish predominantly derived from production systems that are highly problematic from both welfare and sustainability points of view.

This paper does not attempt to introduce or dictate new values or foci for zoos. Rather, it argues that the values and foci already adopted and practiced by the studied zoos must necessarily consider non-display animals, such as feed animals, for the stated values

and foci—i.e., individual animal welfare and conservationism—to be consistent and meaningful. In addition, accepting this argument could and should lead zoos to reflect on and institute more educational themes connected to animal welfare and ecological concerns.

Most importantly, however, zoos could make a significant animal welfare impact by changing their food sales and feed purchase practices. This would entail doing business with certified organizations genuinely adhering to animal welfare and sustainability standards. One possible model currently employed by some zoos involves feeding deceased display animals to predator display animals.⁶⁹

There are a number of organizations equipped to provide information and guidance to zoos wishing to make informed decisions on sources and certification of sustainable and animal welfare-friendly products. These include Compassion in World Farming,⁷⁰ the Marine Stewardship Council,⁷¹ Humane Society International,⁷² and many national and regional equivalents.

By adopting this paper's recommended reforms, zoos have the opportunity to convey a more holistic welfare narrative and better educate the public about animals. Furthermore, as major retailers and consumers, zoos are positioned to significantly increase market demand for agricultural and aquacultural products certified under animal welfare, conservationist, and sustainability standards.

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69. Aalborg Zoo, homepage.

70. Homepage, <http://www.ciwf.org.uk>

71. Homepage, <http://www.msc.org>

72. Homepage, <http://www.hsi.org>

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