



LEGISLATIVE ANALYST REPORT

To: Members of the Board of Supervisors
From: Gabe Cabrera with Fan-Wa Wong and Jeffrey Haddad, Office of the Legislative Analyst (OLA)
Date: September 12, 2008
Re: **San Francisco Zoo** (BOS File No. 080149) (OLA No. 001-08)

SUMMARY OF REQUESTED ACTION

The San Francisco Board of Supervisors approved a motion introduced by Supervisor McGoldrick asking the OLA to analyze the different types of zoos in the world; to discuss best practices in terms of animal welfare, education and conservation; and to compare the San Francisco Zoo in terms of best practices.

EXECUTIVE SUMMARY

The San Francisco Zoo (the "Zoo") is presently the subject of intense debate. Local animal welfare groups, such as *In Defense of Animals*, claim that the Zoo's management and oversight regarding animal welfare is inadequate and that it should be transitioned to an animal rescue facility whose goal would be to provide the best possible quality of life for animals. Indeed, Supervisor Daly has already introduced legislation (File No. 080818) to begin this transition process. The Zoo and its supporters counter that the Zoo has always made animal welfare a priority and that it is making progress in modernizing its exhibits.

This report compares the Zoo's current practices in the areas of animal welfare, education and conservation against standards and policies promulgated by the USDA¹, two national Associations of Zoos and Aquariums², a regional group³ and the World Association of Zoos and Aquariums. It presents the "Five Freedoms of Animal Welfare" in such a way that the Zoo's keeping of animals can be assessed.⁴ This report also identifies zoos around the world that have received the majority of their respective association's awards for achievement in animal welfare, education or conservation. These include the Bronx Zoo, Calgary Zoo (Canada), Chester Zoo (UK), Columbus Zoo, Pretoria Zoo (S. Africa) and San Diego Zoo. Each of these zoos is profiled in Appendix A.

¹ The United States Department of Agriculture (the USDA) enforces the Animal Welfare Act, which requires, among other things, minimum standards of care and treatment for animals exhibited to the public.

² The Association of Zoos and Aquariums (the AZA) in the US and the Canadian Association of Zoos and Aquariums (the CAZA)

³ The European Association of Zoos and Aquaria (the EAZA)

⁴ These freedoms (or general guidelines) originated in the 1960's in the UK to protect farm animals. Since then, governments and animal organizations worldwide have used them to assess the welfare of wild animals in captivity.

Major findings

Most of the San Francisco Zoo's current practices compare favorably against the USDA and associations' standards. However, there are some notable exceptions:

- Regarding animal welfare, the Zoo meets standards on veterinary care, handling of animals, environmental enrichment programs, feeding, watering and sanitation. However, it needs to speed up progress in modernizing older exhibits. Some of the Zoo's animals may be suffering physically and mentally because their enclosures do not meet contemporary zoo standards.
- The Zoo meets most standards on education, but there is room for improvement in some areas. Most notably, it does not have a written education plan with goals, objectives, strategies or performance measures. Without a plan, the Zoo cannot accurately assess the impact of its education efforts.
- Regarding conservation, the Zoo meets standards involving its mission, on-site conservation staff, Species Survival Plans and other conservation programs. However, it needs to develop and implement some form of regular evaluation of its conservation efforts, and finalize a written conservation plan (akin to an education plan), which is currently under review by the Zoo's Board of Directors Conservation Committee.

Highest priority recommendation

We offer several recommendations throughout this report for improving the Zoo. If the Board of Supervisors agrees with them, it can require the Zoo to implement them via the City's Recreation and Park Department (RPD) and Commission, both of which oversee the Zoo. Note that the Joint Zoo Committee advises the Recreation and Park Commission on zoo-related matters. It consists of three members of the Recreation and Park Commission and three members of the Zoo's Board of Directors. Lastly, we are not zoo experts, nor do we claim to be, so an independent consultant should be hired to properly address the major findings regarding animal welfare in this report. We believe that this approach would go furthest to benefit the animals that the Zoo keeps and the public that it serves.

BACKGROUND

The following contains some basic information about the Zoo's management and organizational structures, acreage, animal collection, attendance and annual operating expenses.

Management Structure - The City owns the Zoo and its animals while the nonprofit San Francisco Zoological Society (the "Society") operates it and cares for the animals pursuant to a Lease and Management Agreement entered into between the City and the Society in 1993. This Agreement, which originally was to expire on June 30, 1998, automatically extends for successive periods of five years, not to exceed 99 years. A five-year extension was automatically granted in 2007 and extends until 2013.

Organizational Structure - Under the management of the Society, the Zoo is organized into the following operating departments:

- Animal Care and Conservation
- Education and Animal Resource Center
- Finance
- Human Resources
- Development
- Marketing and Public Relations
- Operations

Acreage - The Zoo consists of approximately 100 acres of indoor and outdoor animal exhibits, gardens, multiple building structures, walkways and public gathering spaces.

Animal Collection - It currently houses 753 individual animals and 203 species, including mammals, birds, reptiles, amphibians, fishes and invertebrates (insects).

Attendance - The Zoo hosted 1,093,000 million visitors in FY 06-07, down from an all-time peak of 1.3 million in FY 83-84 when it opened a giant panda exhibit.⁵

Budget - In 2007, the Zoo's operating expenses totaled \$18,702,586. There is no budget line item for animal welfare. Instead Zoo staff advised us that the line items for "Animals, Collections and Exhibits" and "Children's Zoo" represent spending on animal welfare at the Zoo. These items totaled approximately \$10.3 million (or 55% of the Zoo's total operating expenses).

Also in 2007, the Zoo spent \$891,459 (or 4.8% of its total operating expenses) on education and \$183,286 (or 1%) on conservation. This 1% spent on conservation excludes staff and other operating costs.

For a historical comparison of the Zoo's total operating expenses from 2003 to 2007, see Appendix B.

TYPES OF ZOOS

Urban zoos – These zoos are often owned by the public, funded by governments and run by zoological societies. Most of them are relatively small in size and based within cities or urbanized areas. Some of them are involved in captive breeding, research and education programs. The 100-acre San Francisco Zoo is an urban zoo.

Open-range zoos (or wild animal parks) – Fewer species are exhibited in open-range zoos than in urban zoos, but they are mostly kept in large open enclosures. The 1,800-acre San Diego Wild Animal Park is an open-range zoo.

Roadside zoos – Roadside zoos are usually located on rural roads and on highways outside of cities. They are privately owned businesses that keep relatively small collections of animals, usually confined in homemade cages and enclosures.

⁵ San Francisco Zoo, Master Plan Up-date [August 2007]. p.15

Safari park zoos – A safari park is a zoo-like commercial tourist attraction where visitors can drive in their own vehicles and observe the wildlife, rather than viewing animals in cages or small enclosures.

Rescue zoos (or sanctuaries) – These facilities primarily house unwanted or rescued animals and they are often set up and funded by animal welfare supporters. Their main mission is to provide the best possible quality of life for animals. Examples include the Folsom City Zoo and Austin Zoo and Animal Sanctuary.

Specialized zoos – Some zoos specialize on specific groups of animals. These include aviaries and bird parks, reptile zoos, butterfly gardens and insectariums.

ANALYSIS

The following compares the San Francisco Zoo’s current practices in the areas of animal welfare, education and conservation against the standards and policies promulgated by the USDA and four Associations of Zoos and Aquariums.

For a complete summary of these standards, see Appendix C.

Animal Welfare

➤ Veterinary care

Standards

The USDA requires all zoos in the US to employ a full-time staff veterinarian, while the AZA and CAZA only recommends that they do so. The EAZA and WAZA simply require veterinary care, regardless of whether it is provided by full-time staff or a consultant.

Current Practice

The Zoo meets these standards. It currently employs two full-time staff veterinarians and has a Doctor Advisory Board, consisting of 30 veterinary and human medical specialists, to promote better understanding of animal sciences. Notably, in 1999, the Budget Analyst found that veterinary care at the Zoo is “excellent” and that general care is “good.”⁶

➤ Handling of Animals

Standards

The USDA and associations require zookeepers to have “experience with” or “knowledge of” species under their care.

⁶ San Francisco Budget Analyst Office, Performance Audit of the San Francisco Zoo [January 1999]. p. 2.

Current Practice

Based only upon our review of the current position descriptions at the Zoo, the Zoo meets these standards. For instance, animal keepers must have one year paid experience working with a ranch, farm or exotic animals, and a degree from an institution offering specialized animal management programs with a hands-on component. Senior animal keepers who supervise subordinate staff must have additional knowledge, skills and abilities.

➤ Physical Facilities

Standards

Housing facilities must be “structurally sound” and “in good repair,” according to the USDA’s standards. The associations address disparate issues related to physical facilities. The AZA and CAZA advise zoos to build exhibits that replicate wild habitats, while WAZA requires areas for animals to retreat and separate (i.e., cubbing dens).

Current practice

In 1999, the Budget Analyst found that “nearly three-fourths of the Zoo” needed to be rebuilt and that “most of the older facilities are severely out of date and in a state of poor maintenance.”⁷ Two years earlier in 1997, San Francisco voters overwhelmingly approved a \$48 million bond measure to modernize or rebuild the Zoo.⁸ Since then, the Zoo has completed several major capital improvement projects with bond proceeds (known as Phase II of the Zoo’s Master Plan). In 2006, the Zoo spent the last of its bond proceeds on improvements to certain animal exhibits. However, much work remains to be done. Local animal welfare groups accuse the Zoo of mismanaging its bond proceeds, spending more on visitor facilities than on animal exhibits. In fairness to the Zoo, new visitor facilities were listed among the proposed Phase II projects and all of them were recognized as critical by the Zoo and others. Indeed, in 1999, the Budget Analyst found that the Zoo’s existing visitor facilities were “substandard and inadequate.”⁹ Notably, the Zoo advised the OLA that inflationary costs due to unanticipated delays in the City’s issuance of bonds and other costs related to the Zoo’s compliance with ADA requirements effectively reduced by approximately 14% the amount of funds available for all Phase II projects. Today, approximately one-half of the Zoo has been rebuilt, primarily its western side, but its eastern side needs significant improvements. Other critics accuse the Zoo of improperly designing and/or operating its animal exhibits. In a letter to the Board of Supervisors dated February 21, 2008, Peter Shroud, former Senior Curator of the Melbourne Zoo and former Director of the Werribee Open Range Zoo, writes “the design of the [African] Savanna exhibit is highly problematic” because “the central public viewing area in the exhibit occupies perhaps the most sheltered part of the exhibit landscape, denying this sheltered space to the animals and forcing them into more exposed areas.” Regarding the new Grizzly Gulch exhibit, Mr. Shroud writes that it “occupies a relatively small area” although space around it does not appear to be limited

⁷ 1999 Performance Audit, p. 69.

⁸ Also in 1997, the Society’s Board of Directors began a \$25 million campaign to raise private funds to support renovation of the Zoo.

⁹ 1999 Performance Audit, p. 69.

and that a significant portion of it is unnecessarily “hot-wired to exclude access by the bears.” These criticisms are countered by Robert Jenkins, the Zoo’s Director of Animal Care and Conservation, who advised the OLA that several AZA officials and “a large number of experienced professionals familiar with the design and operation of animal enclosures” have inspected the African Savanna and Grizzly Gulch exhibits and that “no one has made the observations referenced [by Mr. Shroud] in our draft report.” Mr. Jenkins also advised us that the Zoo has temporarily hot-wired at least one section of the Grizzly Gulch exhibit because it was damaged by the bears and that the Zoo intends to repair it in the near future. We readily admit that formulating an opinion about the Zoo’s design and operation of its African Savanna and Grizzly Gulch exhibits is beyond our expertise and scope of this legislative report. Therefore, the OLA believes that an independent consultant should be hired to examine the current configurations of these exhibits; to report findings regarding their design and operation; and to make specific recommendations for improvement, if necessary.

➤ Space Requirements

Standards

Neither the USDA nor the associations mandate specific dimensions for animal enclosures. However, all of them state (in different ways) that enclosures must have sufficient space to allow animals to express their natural behaviors.

Current Practice

In 2007, the authors of the Zoo’s Master Plan Up-date recommended that the Zoo “allocate sufficient space within each exhibit zone to accommodate the specific lifestyles of key iconic mega-fauna.” Whether there is sufficient space within the Zoo’s existing exhibits is unclear. Robert Atkinson, former Curator of Woburn Safari Park and Head of the Wildlife Department for the Royal Society for the Prevention of Cruelty to Animals, believes that a number of the Zoo’s exhibits are too small. In a letter to the Board of Supervisors dated February 27, 2008, Mr. Atkinson writes, “I cannot understand how the Zoo thinks a small, bare earth enclosure with a stump in it is good enough for a rhinoceros, or any animal.” He is also critical of the Zoo’s polar bear exhibit. Regarding the polar bear that paces back and forth at the front of the exhibit, Mr. Atkinson writes, “When a wide-ranging carnivore is cooped up in a tiny barren enclosure, the frustrated behaviors are likely to manifest themselves as stereotypies.”¹⁰ In response to these criticisms, the Zoo’s Director of Animal Care and Conservation advised us that the Zoo and RPD are currently building a new rhinoceros exhibit that is scheduled to be completed in the Fall 2008 and that Mr. Atkinson’s observation about the polar bear demonstrating “stereotypic” behavior ignores the fact all of the Zoo’s other bears, including 2 other polar bears, 2 spectacled bears and 2 grizzly bears, do not show this behavior. The Director also states that the subject polar bear is a rescued animal who may have learned to pace elsewhere and that despite her pacing, she shows no indication of stress or other abnormality at this time. Be that as it may, the OLA reviewed the research literature on applied animal behavior and discovered that although it may be

¹⁰ It has been hypothesized that stereotypies (or repetitive movements like pacing) are caused by confinement in small enclosures.

impossible to give an animal the exact amount of space it occupies in the wild, animals in captivity have the ability to adapt to a wide range of conditions without developing stereotypies, and that for each particular stress factor (in this case, limited space), each animal has a range, called its “normal adaptive range,” which it can tolerate and react to normally.¹¹ The limits of this range vary for each animal. Determining whether the subject polar bear is living within her limits is beyond our expertise and scope of this legislative report. Therefore, the OLA believes that an independent consultant should be hired to make this determination for the subject polar bear and the Zoo’s other animals; to report finding regarding their physical and mental health; and to make specific recommendations, if necessary.

➤ Enrichment Programs

Environmental enrichment means the addition or modification of objects in a captive animal’s environment to stimulate species-appropriate behaviors.

Standards

All the associations require environmental enrichment programs. The USDA has no such requirement.

Current Practice

The Zoo meets these standards. Under the Zoo’s Animal Training and Enrichment Program, animal care workers actively research and propose new forms of animal enrichment activities designed to stimulate species-specific behavior and to enhance overall welfare.

➤ Feeding, Watering and Sanitation

Standards

The USDA and most associations have written standards regarding feeding, watering and sanitation. The USDA’s standards are the most explicit. They require zoos to provide species-specific diets; to make drinking water available at all times or as often as necessary to maintain the health and comfort of animals; and to routinely remove excreta from enclosures.

Current Practice

The Zoo appears to meet these standards. Each of the animal sections at the Zoo has a set of procedures for the operation of the work area. These are called “Primary Work Area Procedures.” They are maintained on site at the work area and address animal identification, nutrition, safety, operating procedures, maintenance and other important information.

¹¹ Blackshaw, J. Notes on Some Topics on Applied Animal Behaviour [June 1986, Updated 2003]. p. 91

➤ Number of Employees

Standards

Neither the USDA nor associations mandate a specific number of zookeepers. The USDA simply requires a “sufficient number” to maintain appropriate husbandry practices, while the AZA and CAZA recommend an “adequate number” to care for the animals and run programs.

Current Practice

Based upon a survey of other comparably sized zoos, the Zoo appears to have a sufficient number of zookeepers. In 2006, the Zoo’s animal-to-keeper ratio was 1:10 for mammals, 1:30 for birds, 1:44 for amphibians and reptiles and 1:240 for fishes.¹² This compares to the total average of 1:11 for mammals, 1:60 for birds, 1:85 for amphibians and reptiles and 1:328 for fishes. Note that keeper-to-animal ratios depend upon the species of animal kept. For instance, elephant keepers may have only 4 to 5 animals in their care, while flamingo keepers could reasonably have 100 or more.

Education

Note that while the associations have education and conservation standards, the USDA is only concerned with animal care.

➤ Mission, Plan and Staff

Standards

Three associations require zoos to include education in their mission statements. The WAZA only recommends it. The AZA and EAZA require zoos to have a written education plan, while CAZA and WAZA only recommend it. All advise zoos to have trained staff to run education programs.

Current Practice

The Zoo meets some of these standards but not others. The word “education” is not used in the Zoo’s mission statement – *to connect people with wildlife, inspire caring for nature and advance conservation action*, but it is an implied element. The Zoo has several policy documents that guide and shape its education programs.¹³ However, it has no written education plan that includes goals, objectives, strategies or performance measures. Without such a plan, the Zoo cannot accurately assess the impact of its education efforts. Examples of education plans can be found on the AZA’s Resource Center web page.¹⁴ Currently, the Zoo employs a Director of Education and has an Education Advisory Panel, consisting of 10 education specialists, who help to plan and review the Zoo’s education programs.

¹² San Francisco Zoo, Animal Keeper Report to the Zoo Board’s Finance Committee [February 2006].

¹³ These include San Francisco Zoo’s Four Key Messages [May 2001]; Three Fundamental Criteria for Zoo Education Programs [June 2008]; and Pyramid of Engagement [June 2008].

¹⁴ <<http://www.aza.org/RC/index.html>>

➤ Education Programs

Standards

All the associations advise zoos to offer education programs to a wide variety of audiences through a variety of methods, such as publications, exhibit interpretations, on-site presentations, tours, summer camps, etc. The AZA and CAZA advise zoos to stress conservation in programming. The EAZA suggests animal behavior, zoo animal management and variety of life as topics. The WAZA recommends programming for all ages and abilities.

Current Practice

The Zoo appears to meet these standards. Its Education Department offers a total of 22 education programs, including 5 youth programs, 4 children's programs, 3 school programs, 3 toddler programs, 2 adult programs, 2 adult classes, 2 overnights and a community access program. Although methods may vary, all of these programs are designed to inspire an appreciation and understanding of wildlife, according to the Zoo's Education Director.

➤ Program Evaluation

Standards

All the associations advise zoos to evaluate their education programs on a regular basis for effectiveness, content and updating with current scientific information.

Current Practice

The Zoo meets these standards. For each education program, evaluation forms are used to measure participant satisfaction as well as program impact (i.e., conservation-knowledge, attitudes and behavior). This tells the Zoo what is working well and what it should improve, according to the Zoo's Education Director. Based upon this feedback, the Zoo can adjust its programs if necessary. Notably, in 2007, the Zoo established an ongoing, collaborative partnership with San Francisco State University's Public Administration Program, which conducts in-depth, formal evaluations of education programs as requested by the Zoo. A recent evaluation found that the long-term results of the Zoo's Nature Trail Program on its adult alumni are "highly positive."¹⁵

➤ Audience

Standards

The AZA advises zoos to have a clear understanding of their audiences' needs, including the needs of under-represented groups and groups with disabilities. The EAZA advises them to educate all visitors, while the WAZA recommends that they target various groups for focused conservation education.

¹⁵ Dr. Gen, S., etal. San Francisco State University, Public Administration Program. San Francisco Zoo Nature Trail: Thirtieth Anniversary Evaluation [July 2007]. p. 3

Current Practice

The Zoo meets these standards but there is room for improvement. Since 1993, the Zoo has surveyed its visitors on a periodic basis to identify their characteristics and attitudes regarding the Zoo. The last survey was conducted by a private market research and consulting firm in July and August 2007. It showed that the primary reason for visiting the Zoo was an interest in animals (90%) followed by bringing children (71%).¹⁶ The authors of the 2007 Master Plan Up-date point out that there is insufficient knowledge of the needs or motivations of teenagers in school programs and adults.¹⁷ The Zoo recognizes this need. We recommend that it study these groups more closely to gain a better understanding of their needs.

➤ Reference Library

Standards

Three associations advise zoos to maintain a reference library appropriate to the size and complexity of their institutions. This library should be available to all zoo staff and volunteers and according to the EAZA, to the public where practical.

Current Practice

The Zoo meets these standards. The Zoo has a resource library, which is available to all Zoo staff and volunteers, as well as to outside educators by appointment. It is not open to the public on a drop-in basis because, according to the Zoo, public demand for such access is limited. Plus, the Zoo does not have a full-time staff librarian to operate it on a drop-in basis.

Conservation

➤ Mission, Plan and Staff

Standards

Two associations (the AZA and CAZA) require zoos to include conservation in their mission statements. The AZA requires while the WAZA only recommends that zoos have a written conservation plan. This is similar to the education plan required or recommended by all the associations. No association requires zoos to employ conservation staff. However, the WAZA recommends that where possible zoos hire field conservation staff for work in the wild.

Current Practice

The Zoo meets some of these standards but not others. The word “conservation” is used in the Zoo’s mission statement - *to connect people with wildlife, inspire caring for nature and advance conservation action*. It is in the process of developing a written conservation plan (akin to an education plan), which is currently under review by the Zoo’s Conservation Committee. The Zoo should forward the plan to the Board of Supervisors for review once it is completed. Lastly, the Zoo employs a full-time Director

¹⁶ Morey Group. San Francisco Zoo - Visitor Survey Report [July & August 2007]. p. 11

¹⁷ 2007 Master Plan Up-date. p.15

of Animal Care and Conservation to run on-site conservation programs but it has no field conservation staff.

➤ Species Survival Plans

A Species Survival Plan (SSP) is a cooperative population management and conservation plan for a selected species in zoos and aquariums throughout the world.

Standards

The AZA and EAZA require while the CAZA only recommends that zoos participate in every SPP that pertains to an animal in their collection.

Current Practice

The Zoo meets these standards. It currently participates in over 30 SSP programs, working to conserve species ranging from Madagascan Radiated Tortoise and Reticulated Giraffes to black rhinos and gorillas.

➤ Other Programs

Standards

The AZA requires while the CAZA only recommends that zoos participate in other wildlife conservation programs. The WAZA encourages zoos to cooperate with the wider conservation community, including wildlife agencies, conservation organizations and research institutions.

Current Practice

The Zoo meets these standards. Currently, four of the Zoo's animal care staff serve as coordinators of national population management plans for Marbled Teal (eastern European duck), Caracal (African wild cat), Eurasian Eagle Owl and the native San Francisco garter snake.

➤ Program Evaluations

Standards

All the associations except the CAZA advise zoos to evaluate their conservation programs on a regular basis. This can be as simple as measuring money spent and/or people reached, or as complex as measuring the success of motivating visitors to participate in conservation action.

Current Practice

The Zoo does not meet these standards. Currently, it has no written evaluation procedures. It should develop and implement some form of regular evaluation of its conservation efforts. The Zoo recognizes this need. It advised the OLA that it is developing a "conservation audit" of its operations to be implemented in the near future. We recommend that the Zoo forward its audit findings to the Board of Supervisors for review.

FIVE FREEDOMS OF ANIMAL WELFARE

The following compares the San Francisco Zoo's current animal keeping practices against the "Five Freedoms of Animal Welfare."¹⁸

1. Freedom from hunger and thirst by ready access to fresh water and a diet to maintain full health and vigor

Each of the animal sections at the Zoo has a set of procedures for the operation of the area. The OLA reviewed examples of these procedures and found that they contain species-specific diets and provisions to assure fresh water for animals. Of course, whether the Zoo implements these procedures properly is a different matter and one that is best suited for a performance audit.

2. Freedom from thermal and physical discomfort by providing an appropriate environment including shelter and a comfortable resting area

The affect of the Zoo's microclimate on the animals remains an open question. In the Budget Analyst's 1999 audit, Dr. Joel Parrott, the current Director of the Oakland Zoo, stated, "Why the City of San Francisco chose this location for the old Fleishackker Zoo is hard to understand. The toll that the weather (cool, wind, fog, and salt air) takes on the structures is mentioned in the accreditation report, as is the potential for the weather's affect on the animal's health." However, he also stated, "The general impression of [Zoo] staff is that the animals acclimate to the climate and do well (even those that are tropical species)." For an explanation of why acclimation is possible, see our discussion about the normal adaptive range of captive animals under the Space Requirements section. In his final analysis, Dr. Parrott recommended that the Zoo only exhibit animals that can "acclimate to cooler temperatures" or that "originate from cooler climate zones." The Zoo advised us that it is already doing what Dr. Parrott recommended.

3. Freedom from injury and disease and pain by prevention or rapid diagnosis and treatment

This freedom really describes an ideal state. Wild animals in captivity, like all animals, get hurt or sick from time to time. This may occur through no fault of zoos and sometimes despite their best efforts to prevent injury and disease. As previously noted, in 1999, the Budget Analyst found that veterinary care at the Zoo is "excellent" and that general care is "good." It is important to note that the Zoo makes available a handbook on zoonotic diseases to all Zoo staff. This handbook outlines where disease has historically been found, the populations it was found in, signs and symptoms of the disease and what steps were needed to prevent the spread of the disease.

4. Freedom to express most normal patterns of behavior by providing sufficient space, proper facilities and company of the animal's own kind, and

¹⁸ Scott, P.W., etal. UK Department of the Environment, Transport and the Regions. Zoo Standards Review Group's Recommendations on Revised Secretary of State's Standards of Modern Zoo Practice [July 1999].

5. Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering

These two freedoms require a great degree of objectivity. We therefore believe that an independent consultant should be hired to determine whether the Zoo keeps animals in exhibits that are large enough to meet their needs (i.e., to walk, run, climb, fly, swim, etc.). Recall that no enclosure will give an animal the exact amount of space it occupies in the wild, but also that for each particular stress factor (e.g., limited space), each animal has a “normal adaptive range,” which it can tolerate and react to normally without developing stereotypies, such as pacing. The consultant will need to answer some basic questions. What is the home range of the species in the wild? How does this compare to its current living space? Is there sufficient space to allow the species to express its natural behaviors? As discussed earlier, there exists evidence that one of the Zoo’s polar bears is suffering mentally because she may be living outside the limits of her normal adaptive range.

OTHER JURISDICTIONS

The following identifies zoos around the world that have received the majority of their respective Association of Zoos and Aquariums’ awards for achievement in animal welfare, education or conservation.

<u>Animal welfare</u>	<u>Education</u>	<u>Conservation</u>
Pretoria Zoo (S. Africa)	Bronx Zoo	Calgary Zoo (Canada)
San Diego Zoo	Chester Zoo (UK)	Columbus Zoo

Figure A (below) shows that as a percentage of its total expenses, the San Francisco Zoo’s support of animal welfare is slightly higher than the Pretoria Zoo’s (50%) but significantly lower than the San Diego Zoo’s (82%).

Figure A

Institution	Total Expenses (2006)	% Animal Welfare
Pretoria Zoo (S. Africa)	\$10 million	50%
San Diego Zoo	\$165 million	82%
San Francisco Zoo	\$19 million	55%

Sources: Various financial statements

Notes: The SF Zoo’s expenses are for the year ended June 30, 2007

Figures B & C (on the following page) show that the San Francisco Zoo’s support of education as a percentage of its total expenses is lower than the Bronx Zoo and Chester Zoo’s (both 6%) and that its support of conservation is lower than the Calgary Zoo and Columbus Zoo’s (5% and 2% respectively).

Figure B

Institution	Total Expenses (2006)	% Education
Bronx Zoo	\$45 million	6%
Chester Zoo (UK)	\$32 million	6%
San Francisco Zoo	\$19 million	5%

Sources: Various financial statements

Notes: The Bronx Zoo's expenses are for 2005.

Figure C

Institution	Total Expenses (2006)	% Conservation
Calgary Zoo (Canada)	\$23 million	5%
Columbus Zoo	\$35 million	2%
San Francisco Zoo	\$19 million	1%

Sources: Various financial statements

Notes: The SF Zoo's 1% does not include staff and other costs

The Zoo may wish to bring its support of animal welfare, education and conservation in line with the budgets of the above-noted zoos. This alone is, of course, no guarantee that the Zoo will achieve their same successes, but it is likely to improve the Zoo's programs and services in these areas.

CONCLUSION

Most of the San Francisco Zoo's current practices compare favorably against the USDA and associations' standards. There are some notable exceptions, however. The biggest involve the Zoo's physical facilities, education planning and evaluation of conservation programming. Therefore, based on our research and analysis, the OLA recommends the following actions:

- (1) An independent consultant should be hired to examine the current configurations of the Zoo's African Savanna and Grizzly Gulch exhibits; to report findings regarding their design and operation; and to make specific recommendations for improvement, if necessary. This consultant should also determine whether the polar bear demonstrating "stereotypic" behavior and the Zoo's other animals are living within their "normal adaptive range" (i.e., within conditions they can tolerate and react to normally without developing stereotypies); to report finding regarding their physical and mental health; and to make specific recommendations, if necessary.
- (2) The Zoo should develop and implement a written education plan with goals, objectives, strategies or performance measures;
- (3) The Zoo should establish some form of regular evaluation of its conservation efforts, and finalize a written conservation plan (akin to an education plan), which is currently under review by the Zoo's Board of Directors.

APPENDIX A

Bronx Zoo, New York

The Bronx Zoo is a part of a system of urban wildlife parks managed by the nonprofit Wildlife Conservation Society. The other parks include the New York Aquarium, Central Park Zoo, Prospect Park Zoo and Queens Zoo.

Awards - Its Education Department is arguably the best in the US. To date, it has received the AZA's "Education Award" 10 times (more times than any other zoo in the US).

Program Highlights - The Education Department offers 73 programs, including 21 school programs, 12 family programs, 11 teacher workshops, 6 distant learning classes, 5 wildlife theater productions, 3 adult programs, 3 summer programs, 3 teacher information classes, 3 classroom series, a children's program, a teacher membership program, teaching fellowships, docent-led tours and the Teens For Planet Earth web site.

Budget - In 2005, the Bronx Zoo's operating expenses totaled \$45,260,591. Of this, \$2,684,233 (6%) was spent on education programs.

Calgary Zoo, Canada

The nonprofit Calgary Zoological Society runs the Calgary Zoo and a conservation center.

Awards - To date, the Calgary Zoo has received the CAZA's "Conservation Award" 3 times (more times than any other zoo in Canada). This award recognizes an individual or institution for achievement in the field of conservation.

Program Highlights - The Calgary Zoo conducts conservation research on black-footed ferrets, burrowing owls, Northern Leopard frogs, Swift foxes, Vancouver Island marmots and whooping cranes. It also supports field conservation projects. Many are relevant to species it houses. It currently supports 3 projects in North America, 2 in Africa, 2 in Asia and one in South America. Several times a year, it publishes a newsletter where it describes its conservation plans and updates.

Budget - In 2006, the Calgary Zoo's annual operating expenses totaled \$23,259,000 Canadian dollars (the equivalent amount of US dollars today). Of this, \$800,000 (3%) was spent on conservation research and \$400,000 (2%) on field projects.

Chester Zoo, United Kingdom

Founded as a "zoo without bars", the North of England Zoological Society (the "Chester Zoo") claims to be the UK's best zoo. Its stated vision is of a diverse, thriving and sustainable natural world and its mission is to be a major force in conserving bio-diversity worldwide.

Awards - To date, the Chester Zoo has received the British and Irish Association of Zoos and Aquariums' (BIAZA) "Education Award" 11 times (more times than any other zoo in the UK or Ireland). This award recognizes innovative and effective education projects.

Program Highlights – Its Education Division offers 21 programs, including 9 for primary schools and 14 for secondary schools. Its library with public access houses a collection of books, journals, reports, student projects and conference proceedings. Exhibit signage presents information in an entertaining way, while a team of presenters gives short, snappy informative talks.

Budget - In 2006, the Chester Zoo's annual operating expenses totaled 18,636,000 UK pounds (the equivalent of approximately \$32 million US dollars today). Of this, £957,000 or approximately \$1.9 million US dollars today (6%) was spent on education programs.

Columbus Zoo, Ohio

Known as the home of Jack Hanna, the Columbus Zoo and Aquarium is a leader in wildlife conservation. It has had success in breeding endangered species, particularly the Western lowland gorilla.

Awards - To date, the Columbus Zoo has received the AZA's "International Conservation Award" 4 times (more times than any other zoo in the US) and "North American Conservation Award" 2 times. Both awards recognize exceptional efforts toward habitat preservation, species restoration and support of bio-diversity in the wild.

Program Highlights - The Zoo runs 4 on-site conservation projects. They involve coral, freshwater mussels, Eastern Plains garter snakes and manatees. It also supports field conservation projects worldwide. During 2006, it provided \$690,000 in conservation grants to more than 70 projects in 34 countries. Each year, it publishes a report where it details its plans for and support of conservation projects.

Budget - In 2006, the Columbus Zoo's operating expenses totaled \$35,267,715. Of this, \$690,000 (2%) was spent on field projects. Its budget for its on-site projects was unavailable.

Pretoria Zoo, South Africa

The National Zoological Gardens of South Africa (the "Pretoria Zoo") is a facility of the National Research Foundation (NRF), a government research foundation.

Awards - The African Association of Zoos and Aquaria (PAAZAB) has not honored the Pretoria Zoo with any awards. However, the Pretoria Zoo was the first institution to be accredited by PAAZAB in 2001.

Program Highlights - The Pretoria Zoo operates two conservation centers. Its center at Lichtenburg breeds endangered species, including white rhino, Pere David's deer, Cape mountain zebra, scimitar-horned oryx and Arabian oryx. Its center at Mokopane breeds black rhino, roan antelope, tsessebe (savannah and floodplain antelope) and lemurs.

Budget - In 2006, the Zoo's operating expenses totaled 78,478,000 South African rand (the equivalent of approximately \$10 million US dollars today). Of this, we assumed that R 39,252,000 (50%) or approximately \$5 million US dollars of "running costs" represented spending on animal welfare.

San Diego Zoo, California

The nonprofit Zoological Society of San Diego (ZSSD) operates the San Diego Zoo, its Wild Animal Park and the department of Conservation and Research for Endangered Species (CRES).

Awards - While the AZA does not issue an award for animal welfare, we used its "Edward H. Bean Award," which acclaims the reproductive success of a species, and its "Exhibit Award," which recognizes excellence in animal display and exhibit design as rough proxies for achievement in animal welfare. To date, the San Diego Zoo has received the Bean Award 7 times (only two other zoos have received it more times) and the Exhibit Award 2 times (only the Bronx Zoo has received it more times).

Program Highlights - CRES has contributed to captive breeding of giant pandas, including 3 births at the San Diego Zoo. Other research and breeding programs at CRES involve the California condor, several species of Hawaiian birds, the San Clemente Loggerhead Shrike, white rhinoceros, black rhinoceros, Sri Lankan elephants, Caribbean rock iguanas and the Pacific pocket mouse.

Budget - In 2006, the ZSSD's operating expenses totaled \$164,512,000. Of this, we assumed that \$135,079,000 (82%) under the line item for "Exhibition Facility Operations" represented spending on animal welfare.

APPENDIX B

TOTAL BUDGET - HISTORICAL COMPARISON

	<u>2003</u>	<u>2007</u>	<u>\$ Chg From 2003-2007</u>	<u>% Chg From 2003-2007</u>
REVENUES AND SUPPORT				
Program revenues: ¹				
Admissions	\$ 3,270,181	\$ 4,491,394	\$ 1,221,213	37%
Membership dues	\$ 1,785,168	\$ 2,200,326	\$ 415,158	23%
Retail commissions	\$ 883,309	\$ 1,371,345	\$ 488,036	55%
Retail sales, rides and rentals	\$ 677,961	\$ 1,062,477	\$ 384,516	57%
Fund raising and ticketed events	\$ 539,777	\$ 833,691	\$ 293,914	54%
Education ²	\$ 464,670	\$ 721,687	\$ 257,017	55%
Parking	\$ 436,472	\$ 620,445	\$ 183,973	42%
Children's Zoo	\$ 61,303	\$ 70,528	\$ 9,225	15%
Lorikeet	\$ 31,830	\$ -	\$ (31,830)	N/A
Total program revenue	\$ 8,150,671	\$ 11,371,893	\$ 3,221,222	40%
Other support:				
Management fee	\$ 4,000,500	\$ 4,120,000	\$ 119,500	3%
Contributions and bequests ³	\$ 2,151,320	\$ 3,461,592	\$ 1,310,272	61%
Investment income	\$ 186,862	\$ 629,497	\$ 442,635	237%
Other Income	\$ 47,138	\$ 108,579	\$ 61,441	130%
Reimbursement from bond proceeds	\$ 75,187	\$ -	\$ (75,187)	N/A
Total support	\$ 6,461,007	\$ 8,319,668	\$ 1,858,661	29%
Total revenues and support	\$ 14,611,678	\$ 19,691,561	\$ 5,079,883	35%
OPERATING EXPENSES				
Program services:				
Animals, collections and exhibits	\$ 7,661,757	\$ 9,221,881	\$ 1,560,124	20%
Children's Zoo	\$ 772,567	\$ 1,126,253	\$ 353,686	46%
Membership services	\$ 732,987	\$ 1,087,147	\$ 354,160	48%
Education ⁴	\$ 974,022	\$ 891,459	\$ (82,563)	-8.5%
Retail operations	\$ 727,360	\$ 938,650	\$ 211,290	29%
Admissions and other program expenses ⁵	\$ 866,545	\$ 780,761	\$ (85,784)	-10%
Total program services	\$ 11,735,238	\$ 14,046,151	\$ 2,310,913	20%
Supporting services:				
General and administrative ⁶	\$ 1,697,978	\$ 1,797,841	\$ 99,863	6%
Fund raising	\$ 969,609	\$ 1,281,717	\$ 312,108	32%
Marketing	\$ 662,899	\$ 1,373,362	\$ 710,463	107%
Buildings and grounds	\$ 76,081	\$ -	\$ (76,081)	N/A
Interest	\$ 61,466	\$ -	\$ (61,466)	N/A
Depreciation ⁷	\$ -	\$ 203,515	\$ 203,515	N/A
Total supporting services	\$ 3,468,033	\$ 4,656,435	\$ 1,188,402	34%
Total operating expenses	\$ 15,203,271	\$ 18,702,586	\$ 3,499,315	23%
EXCESS (DEFICIENCY) OF REVENUES AND SUPPORT OVER PROGRAM AND SUPPORTING SERVICES	\$ (591,593)	\$ 988,975		

Notes:

1. Program revenues and other support were grouped under support and revenues prior to 2006.
2. The education line item included travel prior to 2006.
3. Contributions and bequests were two separate line items prior to 2006.
4. The 8.5% decrease in education from 2003 to 2007 is the result of a budgeting change, according to the Zoo. Prior to 2004, the Koret Animal Resource Center was budgeted under education. After 2004, it was budgeted under animals, collections and exhibits.
5. Admissions and other program expenses were two separate line items prior to 2006.
6. General and administrative were grouped under general administration prior to 2006.
7. Depreciation was included in various department expenses prior to 2006.

APPENDIX C

Organization	USDA	AZA	CAZA	EAZA	WAZA
Authority	Code of Federal Regulations, Title 9 (Part 3, Subpart F)	Accreditation Standards and Related Policies, 2008 Edition	Accreditation Process Guide, 2005 Edition	Minimum Standards for the Accomodation and Care of Animals in Zoos and Aquaria, 2006 Edition; Education Standards; Code of Practice	Code of Ethics and Animal Welfare; The World Zoo and Aquarium Conservation Strategy
Standards and Policies					
Animal Welfare					
<i>Veterinary Care</i>	Full-time staff veterinarian and veterinary care programs are required	Full-time staff veterinarian is recommended	Full-time staff veterinarian is recommended	Veterinary care is required (through full-time staff or consulting veterinarian)	Veterinary care is required
<i>Handling of Animals</i>	Licensees must demonstrate experience with and knowledge of species maintained	Keepers should have knowledge of restraint procedures for the animals under their care	Keepers should have knowledge of restraint procedures for the animals under their care	Animals to be handled only by, or under the supervision of, competent trained staff	Appropriate husbandry practices are required
<i>Physical Facilities</i>	Housing facilities must be structurally sound and maintained in good repair	Exhibits should replicate wild habitats and no single specimen exhibits unless biologically correct for the species involved	AZA standards and policies/Enclosures should contain furniture and natural or man-made shelters	Environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species	Areas for animals to retreat and to allow separation of animals (eg, cubbing dens) are required
<i>Space Requirements</i>	Enclosures must have sufficient space to allow normal posture and social adjustments with adequate freedom of movement	Enclosures must be of a size and complexity sufficient to provide for the animal's physical, social and psychological well being	No written standards or policies	Enclosures to be of sufficient size as is needed for the welfare of the particular species	Exhibits must be of such size and volume as to allow the animal to express its natural behaviors
<i>Enrichment Programs</i>	No written standards or policies	Formal enrichment program is required	Formal enrichment program is recommended (mandatory by 2008)	Provide appropriate environmental and behavioral enrichment	Enclosures must contain sufficient material to allow behavioral enrichment

Organization		USDA	AZA	CAZA	EAZA	WAZA
	<i>Feeding</i>	Species-specific diets required; Food must be wholesome, palatable and free from contamination	Animal diets must be of a quality and quantity suitable for each animal's nutritional and psychological needs; Regular testing of diets for nutritional analysis and suitability recommended	AZA standards and policies/Animal food preparations must meet all local, provincial and federal regulations	Food and drink provided for animals to be of the nutritive value and quantity required for the particular species	No written standards or policies
	<i>Watering</i>	If drinking water is not accessible at all times, it must be provided as often as necessary for the health and comfort of animals	No written standards or policies	Drinking water must be available to all specimens	Food and drink provided for animals to be of the nutritive value and quantity required for the particular species	No written standards or policies
	<i>Sanitation</i>	Excreta must be removed from enclosures as often as necessary to prevent contamination, minimize disease and reduce odors	Good housekeeping must be practiced	Good housekeeping must be practiced	Proper standards of hygiene, both in respect of the personal hygiene of the staff and that of the animal enclosures and treatment rooms to be maintained	No written standards or policies
	<i>No. of Employees</i>	A sufficient number of trained employees to maintain the professionally acceptable level of husbandry practices	An adequate number of trained staff to care for the animals and to run the institution's programs	An adequate number of trained staff to care for the animals and to run the institution's programs	No written standards or policies	No written standards or policies
Education						
	<i>Mission</i>	No written standards or policies	Education must be a key element in the mission of the institution	Education must be an element in the mission statement of the institution	The education role of the zoo is to be clearly stated in its written mission statement	Education should be an element in the mission statement of the institution

Organization		USDA	AZA	CAZA	EAZA	WAZA
	<i>Plan</i>	No written standards or policies	The institution must have a written education plan that matches current industry standards and that includes goals and objectives	The institution should have a written education plan that matches current industry standards, and that includes goals and objectives (required by 2009)	Must have a written education policy, identifying educational components and setting out methods by which these components are directed towards the different sections of the zoo's audience	The institution should produce a written education policy and a strategic development plan for education
	<i>Staff</i>	No written standards or policies	If an education department exists, it must be under the direction of a paid staff person who is trained or experienced in education programming	If an education program exists, it must be under the direction of a paid staff person who should be trained or have experience in educational programming	At least one member of staff within the institution should be responsible for a professional implementation of the education policy. Staff must have some training in education	The institution should make a suitably qualified member of staff responsible for developing and overseeing educational activities, and should make sure that trained staff and/or volunteers are available
	<i>Programs</i>	No written standards or policies	Programming should include local/global conservation issues and topics, the role of zoos and aquariums in conservation, information on AZA and other conservation-oriented organizations, as well as include ways the institution can act as a resource in its community for conservation education and related issues	Programming should include local/global conservation issues and topics, the role of zoos and aquariums in conservation, information on CAZA and other conservation-oriented organizations, as well as include ways the institution can act as a resource in its community for conservation education and related issues	Educational components might include such topics as animal behavior, zoo animal management, variety of life, etc. and methods for delivering educational programs might include (a combination of) the exhibits themselves, identification labels, graphic displays, zoo guide books, etc.	Formal education programs designed for all ages and abilities are recommended

Organization	USDA	AZA	CAZA	EAZA	WAZA
<i>Audience</i>	No written standards or policies	The institution should have a clear understanding of its audience's needs, including the needs of under-represented groups and groups with special abilities	No written standards or policies	Zoo education should be targeted at the entire zoo visitation and consistent with the World Zoo Conservation Strategy	The institution should target various groups for focused conservation education (e.g., decision makers, business leaders, consumers, parents, teachers, students and children)
<i>Reference Library</i>	No written standards or policies	A reference library appropriate to the size and complexity of the institution should be available to all institution staff members and volunteers	A reference library appropriate to the size and complexity of the institution should be available to all institution staff members and volunteers	A reference library appropriate to the size and complexity of the zoo should be maintained and made available to all staff members, and possibly to the public where practical	No written standards or policies
<i>Program Evaluations</i>	No written standards or policies	Exhibits, interpretive programs and other education programs should be evaluated on a regular basis for effectiveness, content and updating with current scientific information	Education programs should be evaluated on a regular basis for effectiveness, content and updating with current scientific information	The zoo must demonstrate that it is carrying out its education policy, by reference to specific projects, figures of attendance, evaluation procedures and research	The institution should use a variety of methods to evaluate the impact of its conservation education and training programs
Conservation					
<i>Mission</i>	No written standards or policies	Conservation must be a key element in the mission of the institution	Conservation must be an element in the mission statement of the institution	No written standards or policies, however, members recognize that the furtherance of wildlife conservation is an important objective of EAZA	No written standards or policies, however, the institution must make clear to the general public that its mission is one of conservation
<i>Plan</i>	No written standards or policies	The institution must have a written conservation plan/strategy	No written standards or policies	Promote and support biodiversity conservation/Allocate resources to conservation efforts/Engage visitors in conservation issues and projects	The institution should pursue a strategy of integrated conservation (ie, integrate all aspects of its work with conservation activities)

Organization		USDA	AZA	CAZA	EAZA	WAZA
	<i>Staff</i>	No written standards or policies	No written standards or policies	No written standards or policies	No written standards or policies	The institution should recruit, train and support field conservation staff
	<i>Species Survival Plans</i>	No written standards or policies	The institution must participate in every Species Survival Plan that pertains to an animal in its collection	The institution should participate in every Canadian Species Survival Program that pertains to an animal in its collection	Ensure that the programs comply with the International Union for Conservation Union/Species Survival Commission's Reintroduction Specialist Group Guidelines	No written standards or policies
	<i>Other Programs</i>	No written standards or policies	The institution must actively participate in AZA wildlife conservation programs, as well as in regional or international conservation programs	The institution should actively participate in CAZA's and other wildlife conservation programs at appropriate levels based on budget and/or staff size	Members adhere to the World Zoo and Aquarium Conservation Strategy	The institution should cooperate with the wider conservation community including wildlife agencies, conservation organizations and research institutions to assist in maintaining global biodiversity
	<i>Program Evaluations</i>	No written standards or policies	Conservation programs should be evaluated on a regular basis	No written standards or policies	Regularly evaluate and document conservation efforts to demonstrate their on-going effectiveness and make that information available	The institution should use a variety of methods to evaluate the impact of its conservation education and training programs