

Prepared by San Diego Zoo Global

GUIDANCE FOR APPROPRIATE AND ACCEPTABLE DESTINATIONS: AFRICAN ELEPHANTS AND SOUTHERN WHITE RHINOCEROS



Response to Decisions: 18.152-18.156
SDZG



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BACKGROUND

Resolution Conf. 11.20 (Rev. CoP18) of the Convention on International Trade in Endangered Species has evolved over the course of two decades to down-list several populations of African elephants and southern white rhinoceros, placing them under Appendix II “for the exclusive purpose of allowing export of live animals to appropriate and acceptable destinations.” Its 18th meeting of the Conference of the Parties in July, 2019, established Decisions 18.152 – 18.156, formally defining the term “appropriate and acceptable destinations” as follows.

18.152 - 18.156 Definition of ‘appropriate and acceptable destinations’

18.152

Decision directed to: Secretariat

The Secretariat shall:

- a) create and maintain a dedicated webpage on the CITES website to make available the non-binding guidance contained in document CoP18 Doc. 44.1 and to compile reference materials, published references, best practice examples, examples of Parties’ appropriate and acceptable destination findings and suitably equipped to house and care for living specimens’ findings, and other relevant information;
- b) issue a notification within 90 days of the close of the 18th meeting of the Conference of the Parties containing the non-binding guidance contained in document CoP18 Doc. 44.1 on the provisions of paragraph 2 a) of Resolution Conf. 11.20 (Rev. CoP18) on *Definition of the term ‘appropriate and acceptable destinations’* for living specimens of Appendix-II species subject to an annotation referring to ‘appropriate and acceptable destinations’, as well as Article III paragraphs 3 (b) and 5 (b) for living Appendix-I specimens; and inviting Parties to submit relevant material for the CITES webpage created under paragraph a);
- c) source additional relevant information for inclusion on the dedicated webpage created under paragraph a); and
- d) issue a notification within 30 days of the close of the 73rd meeting of the Standing Committee inviting Parties to provide feedback on experience with using the guidance contained in document CoP18 Doc. 44.1 as well as the information provided on the CITES webpage created under paragraph a) and report this to the Animals Committee and Standing Committee for their consideration and recommendations, as appropriate.

18.153

Decision directed to: Secretariat

The Secretariat shall consult with Parties whose elephants are listed in Appendix II and who have exported wild caught elephants to a non-elephant range State since CoP11 on their implementation of Resolution Conf. 11.20 on *Definition of the term ‘appropriate and acceptable destinations’*, in particular considering the role and responsibility of the State of export in Article IV and Resolution Conf. 16.7 (Rev. CoP17) on *Non-detriment findings*, and provide the information received to the Animals Committee, for its consideration.

18.154

Decision directed to: Parties

Parties are:

- a) invited to use the non-binding guidance contained in document CoP18 Doc. 44.1 when considering whether the proposed recipient of a living specimen is suitably equipped to house and care for it; and
- b) encouraged to submit relevant information for the webpage created under Decision 18.152, paragraph a).

18.155

Decision directed to: Animals Committee

The Animals Committee shall:

- a) prepare non-binding best practice guidance on how to determine whether “the trade would promote *in situ* conservation”, in line with the provisions of paragraph 2 b) of Resolution Conf. 11.20 (Rev. CoP18), in consultation with the Secretariat;
- b) building on the existing non-binding guidance contained in document CoP18 Doc. 44.1, prepare more detailed species-specific guidance for living specimens of African elephants and southern white rhinoceros, in consultation with relevant experts (including species and zoological facility experts) and the Secretariat;
- c) make the guidance and any recommendations available for consideration and endorsement by the Standing Committee; and
- d) review the report from the Secretariat on feedback from Parties called for in Decision 18.152 paragraph d) and make recommendations, as appropriate, for consideration by the Standing Committee.

18.156

Decision directed to: Standing Committee

The Standing Committee shall:

- a) consider the report of the Animals Committee, regarding the non-binding guidance developed under Decision 18.155 paragraphs a) and b), and the guidance contained in document CoP18 Doc. 44.1 and make recommendations, as appropriate, including possible revisions to Resolution Conf. 11.20 (Rev. CoP18) and any other relevant Resolution, for consideration at the 19th meeting of the Conference of the Parties; and
- b) review the report from the Secretariat and any comments and recommendations coming from the Animals Committee on feedback from Parties called for in Decision 18.152 paragraph d) and make recommendations, as appropriate, for consideration by the Conference of the Parties at its 19th meeting.

INTRODUCTION

Currently there are numerous published guidelines for the care and welfare of captive animals including African elephants and rhinos in zoos and sanctuaries (AZA, 2012 & 2020; BIAZA, 2016; ZAA, 2020; EAZA, 2014; WAZA, 2015), including comprehensive guidance ranging from staff training, to medical care and end of life decisions. All of these serve as suitable guidelines for the care of African elephants and white rhinos cited in Decision 18.155, paragraph b. The guidelines provide a series of inputs designed for caretakers and cogent performance standards for the facilities in which the animals live. As a supplement to those guidelines, adding a framework for assessing how those actions and designs are impacting the animals that are part of such a program (measurable outcomes) can provide a more robust set of guiding principles. Much of the guidance on both inputs and outcomes comes from scientifically validated measures of animal welfare.

The scope of this document is to provide a universal barometer designed to measure the welfare of captive African elephants and white rhinos, thus defining the suitability of a destination as appropriate and acceptable, based on the inputs found in the annex of Notification to the Parties No. 2019/70 with a set of validated, measurable outcomes. The connection between known inputs of appropriate animal care and the validated indicators of positive welfare is modeled by an outcome-based animal care model known as the 'Opportunities to Thrive' (Vicino, G. A. & Miller, L.J. 2015), which will also serve as the guiding principle for this document.

Guidance for Elephants and Rhinos

The annex of Notification to the Parties No. 2019/70 [Notification 2019/70] outlines a host of agreed upon inputs that will form the foundation of this guidance document, and are as follows:

Non-binding guidance for determining whether a proposed recipient of a living specimen is suitably equipped to house and care for it.

With regards to the provisions of paragraph 2 a) of Resolution Conf. 11.20 (Rev. CoP17) and Article III, paragraphs 3 (b) and 5 (b) of the Convention, factors that should be considered when determining whether the proposed recipient of a living specimen is suitably equipped to house and care for it may include, but are not limited to:

- a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type);*
- b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places);*
- c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species);*
- d) Dietary needs (species-specific food and nutritional requirements, access to potable water);*
- e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine);*

f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved);

g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed);

h) Management (facility's adequate record-keeping); and

i) Any other taxon-specific considerations.

By selecting appropriate outcomes correlated with inputs described in the *Opportunities to Thrive* and Notification 2019/70, we can target an adaptive care program with a simple “yes or no” measure.

The following table details how a managed care program applies an input category (in this case ‘Opportunity’), evaluates its efficacy by measuring the corresponding outcomes associated with it and aligns it with the guidance provided in Notification 2019/70. *For an example on how to apply this system, please see Appendix I. For an example of how to present the findings from an assessment, please see Appendix II*

OPPORTUNITY FOR A STRATEGICALLY PRESENTED, WELL BALANCED DIET

Using current scientific knowledge to validate that the animals are being fed an appropriate food in a way that encourages natural feeding behaviors, physically and temporally.

Primary Input:

Is it evident that you are able to supply fresh water and a suitable, species-specific diet in a way that ensures full health and vigor, both behaviorally and physically?

Measurable Outcome	CITES 2019/70 Guidance
Animals have a healthy weight.	d) Dietary needs (species-specific food and nutritional requirements, access to potable water)
	h) Management (facility's adequate record-keeping)
Animals search food in a manner consistent with natural history (using senses and problem solving).	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	d) Dietary needs (species-specific food and nutritional requirements, access to potable water)
	g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)
	i) Any other taxon-specific considerations
Animals acquire (physical activity, specialized adaptations, or body position) food in a manner consistent with natural history.	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	d) Dietary needs (species-specific food and nutritional requirements, access to potable water)
	g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)
	i) Any other taxon-specific considerations

Measurable Outcome	CITES 2019/70 Guidance
<p>Observed feeding (processing) behavior is consistent with natural history.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>
	<p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>
	<p>i) Any other taxon-specific considerations</p>
<p>The amount of time spent feeding is similar to natural history.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>
	<p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>
	<p>i) Any other taxon-specific considerations</p>

OPPORTUNITY TO SELF MAINTAIN

An appropriate environment including shelter and species specific substrates and structure that encourage opportunities to self-maintain.

Primary Input:

Is there evidence that you are supplying a robust environment, including proper shelter and species-specific substrates that encourage opportunities for self-maintenance with appropriate environmental factors related to thermoregulation, grooming, mobility and cognitive health?

Measurable Outcome	CITES 2019/70 Guidance
Animals exhibit normal thermoregulation behavior (move when hot or cold to different areas).	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)
	i) Any other taxon-specific considerations
Animals use substrate and structures within the habitat to maintain good skin, foot/joint condition.	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)
	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)

Measurable Outcome	CITES 2019/70 Guidance
	<p data-bbox="579 237 1403 373">g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p data-bbox="579 380 1078 411">i) Any other taxon-specific considerations</p>
<p data-bbox="198 764 540 863">Animals' physical condition changes seasonally to adapt to seasonal changes.</p>	<p data-bbox="579 422 1349 632">a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p data-bbox="579 638 1382 737">b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p data-bbox="579 743 1403 810">c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p data-bbox="579 816 1386 915">e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p data-bbox="579 921 1386 1020">f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p data-bbox="579 1026 1403 1163">g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p data-bbox="579 1169 1078 1201">i) Any other taxon-specific considerations</p>
<p data-bbox="198 1493 553 1629">Animals' physical condition is maintained by appropriate lighting in appropriate spectrum and schedule.</p>	<p data-bbox="579 1220 1349 1430">a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p data-bbox="579 1436 1382 1535">b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p data-bbox="579 1541 1403 1608">c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p data-bbox="579 1614 1386 1713">e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p data-bbox="579 1719 1386 1818">f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p data-bbox="579 1824 1403 1898">g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>

Measurable Outcome	CITES 2019/70 Guidance
	<p>and behavioural enrichment, ability to separate the group where needed)</p> <p>i) Any other taxon-specific considerations</p>
<p>Animals express appropriate behavioral responses to challenges presented by changes in the environment.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>i) Any other taxon-specific considerations</p>

OPPORTUNITY FOR OPTIMAL HEALTH

Rapid diagnosis and treatment of injury or disease while providing supportive environments that increase the likelihood of healthy individuals and animals are given the benefit of clear lines of communication between all departments responsible for the care of the animals.

Primary Input:

Is there evidence that you are able to identify and address causes of injury or disease, while providing supportive environments that prevent illness and increase the likelihood of healthy individuals?

Using emerging scientific knowledge, are you able to evaluate if the animals' care regimen benefits from a clear line of communication between all responsible parties?

Can you ensure that roles and responsibilities are well defined and that all involved parties are operating within their area of expertise as part of a collaborative effort?

Measurable Outcome	CITES 2019/70 Guidance
Animals are in a good state of health and show no signs of disease (excluding current medical conditions that are managed effectively).	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	h) Management (facility's adequate record-keeping)
	i) Any other taxon-specific considerations
All parties involved in animal health are operating within their area of expertise as part of a collaborative effort to achieve a common goal.	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	h) Management (facility's adequate record-keeping)
	i) Any other taxon-specific considerations
Roles and responsibilities of each involved party are well-defined, with clear understanding of who will serve as an adviser and who will serve as a decision maker with respect to animal health.	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	h) Management (facility's adequate record-keeping)
	i) Any other taxon-specific considerations
Reporting of concerns regarding animal health is easy, efficient, timely and effective.	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	h) Management (facility's adequate record-keeping)
	i) Any other taxon-specific considerations
There is evidence that proactive care and health of the animals are promoted to prevent injury and disease.	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)
	h) Management (facility's adequate record-keeping)
	i) Any other taxon-specific considerations

OPPORTUNITY TO EXPRESS SPECIES-SPECIFIC BEHAVIOR

Using current scientific knowledge to validate that animals are being given the opportunity to express meaningful behaviors at a frequency that meets the needs of the species' natural history. This includes, but is not limited to, appropriate developmental conditions (social/cognitive/life stage), enriched social environment, complex environmental experiences, lack of maladaptive behaviors and a strong and responsive relationship with the environment.

Primary Input:

Is there evidence that you provide quality spaces and appropriate social groupings that encourage species-specific behaviors at animal-determined frequencies and natural diversity?

Measurable Outcome	CITES 2019/70 Guidance
<p>Animals express behavior at a frequency and diversity that is consistent with natural history (activity budget).</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>
	<p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p>
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>
	<p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p>
	<p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p>
	<p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>
	<p>h) Management (facility's adequate record-keeping)</p>
	<p>i) Any other taxon-specific considerations</p>
<p>Animals express normal social behavior (group living, mating, solitary life stage, pair bond, etc...).</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>

Measurable Outcome	CITES 2019/70 Guidance
	<p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>
<p>Animals respond appropriately to challenges, problem solving and environmental changes in a way that is consistent with natural history.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>

Measurable Outcome	CITES 2019/70 Guidance
<p>Animals are responsive to learning new skills (via training) and show motivation to engage.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>
	<p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p>
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>
	<p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p>
	<p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p>
	<p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>
	<p>h) Management (facility's adequate record-keeping)</p>
	<p>i) Any other taxon-specific considerations</p>
<p>Animals DO NOT engage in stereotypic behavior.</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p>
	<p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p>
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>
	<p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p>
	<p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p>
	<p>h) Management (facility's adequate record-keeping)</p>
<p>i) Any other taxon-specific considerations</p>	

OPPORTUNITIES FOR CHOICE AND CONTROL

Providing conditions in which animals can exercise control and make choices to avoid suffering and distress, engage in meaningful behavior to acquire beneficial resources and emotional states. Using current scientific knowledge to evaluate if the animals are being given the opportunity to make choices related to spatial and social organization and training programs are based on the principles of positive reinforcement. Enriched Experiences and exhibit conditions should include problem solving and opportunities to make choices based on varying degrees of challenge that the animal is motivated to engage.

Primary Input:

Is there evidence that you provide conditions in which animals can exercise control and make choices to enhance the quality of their lives and to make behavior meaningful?

Measurable Outcome	CITES 2019/70 Guidance
Animals express behavior consistent with making choices of space use.	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)
	e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)
	g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)
	h) Management (facility's adequate record-keeping)
Animals show motivation to engage in behavior that is meaningful to them.	a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)
	b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)
	c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)

Measurable Outcome	CITES 2019/70 Guidance
	<p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>
Animals use the environment to acquire resources that benefit them.	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>
Animals use control over interactions (keeper, con specific, intra-specific) based on outcomes that are consistent with natural history (acquiring resources, avoiding conflict and injury, etc...).	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p>

Measurable Outcome	CITES 2019/70 Guidance
	<p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>
<p>Any training or conditioning is based on positive reinforcement (except for animals in pre-release conditions).</p>	<p>a) Physical housing (size and space [adequate space to display normal behaviour; to expand as the animal grows; availability of indoor/outdoor housing; and if animal is on public display, availability of private, off exhibit area], construction materials, shelter from sun/rain, safety and security measures, suitable arrangements for quarantine, substrate type)</p> <p>b) Species-specific enclosure furnishings (for example provisions of pools, climbing equipment, hides, nest boxes, plants and hiding places)</p> <p>c) Animal care and husbandry (climate conditions, including correct temperature and light; water quality parameters for aquatic species)</p> <p>d) Dietary needs (species-specific food and nutritional requirements, access to potable water)</p> <p>e) Adequate provisions of suitable veterinary and animal care (sufficient numbers and expertise of staff who care for the animals, disease considerations, preventative medicine)</p> <p>f) Wildlife laws (comply with all relevant wildlife laws and/or regulations and possess all appropriate permits and licenses for the species involved)</p> <p>g) Social well-being and animal behaviour (appropriate social groupings for the species, methods of integration, appropriate social and behavioural enrichment, ability to separate the group where needed)</p> <p>h) Management (facility's adequate record-keeping)</p> <p>i) Any other taxon-specific considerations</p>

SECTION 2

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APPENDIX I (Animal Welfare Assessment Tool SDZG, 2020)

INTRODUCTION

Animal Welfare Assessments are conducted regularly (Table 1.) by the care staff in order to identify areas of opportunity and to encourage dialogue across every level of the organization. We also use the survey at any time we have an area or species in which a deeper look is warranted. The assessment tool is based on our guiding principles of animal welfare and is meant to encourage critical thinking, open conversations, and creative problem solving. There is no score, or right answer, but the discussion should lead the group or individual to an outcome that is in the best interest of the animal. Because the Opportunities to Thrive are based on measuring and evaluating validated measures of welfare, we are able to maintain an objective assessment that matches our principles and keeps the responsibility for decision making in the hands of the practitioners with a strictly animal-centric approach. The survey can be taken as an individual or with a group of stakeholders, in which the assessors are asked to provide evidence for all answers to the following five questions, each including the input and a corresponding set of outcomes. **Inputs** refer to anything that is having a direct impact on the animals. That includes, but is not limited to, weather, environmental conditions, anything caretakers provide, husbandry and management strategies, etc. **Outcomes** are what we use to measure how the animals are responding to those inputs. That includes, but is not limited to, behavior, overall health and body condition, social interactions, and physiological health. The survey asks for respondents to indicate which measured outcomes are aligned (left side) with the specific Opportunity associated with that question, or unaligned (right side) with that Opportunity.

FAQ'S about the survey

Do I assess individual animals, whole groups, or multiple species? Ideally individuals will complete an assessment for their primary string or enclosure assignment. It is important that they list the species they are assessing on each survey, regardless if it is a single animal (rattlesnake), a group of con-specifics (gorillas), or a mixed species exhibit (field enclosures, aviaries, aquaria).

What if I think that all of the hoof stock in an exhibit are assessed at one level, but a few individuals are assessed at another level? In that case you can fill out an individual survey for any animals or species that do not match what the whole group assessment determined.

Is it bad if I answer “no” to any of the questions? Absolutely not! This program is designed to be an assessment so that we can target interventions, or evaluate areas in which we have an opportunity to improve, change, or even, in some cases, reduce our impact. CHECKING NO IS NOT A FAILURE ON ANYONES PART.

What if I don't know what Outcomes the animal exhibits? Take the time to watch your animals, ask your peers if they see these things, talk to the transportation teams (buses, trams, caravan, etc.) and inquire whether they ever see these outcomes. Keepers are highly trained, skilled individuals who have a strong sense of what the animals are doing. If they don't, we should do everything in our power to make sure they do.

What if I don't know anything about the animals' natural history? Take some time to do a little research, you may find you know more than you think. It is the case, however, that some species are understudied and we simply do not have the right information about them. In that case, shift your assessment to balance it against best practices, and use your best understanding of how the exhibited outputs are allowing the animal to thrive.

Table 1.

<p>1. OPPORTUNITY FOR A STRATEGICALLY PRESENTED, WELL BALANCED DIET: Using current scientific knowledge to validate that the animals are being fed an appropriate food in a way that encourages natural feeding behaviors, physically and temporally.</p> <p>(Input) Is it evident that you are able to supply fresh water and a suitable, species-specific diet in a way that ensures full health and vigor, both behaviorally and physically?</p>	
<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals have a healthy weight. <input type="checkbox"/> Animals search food in a manner consistent with natural history (using senses and problem solving). <input type="checkbox"/> Animals acquire (physical activity, specialized adaptations, or body position) food in a manner consistent with natural history. <input type="checkbox"/> Observed feeding (processing) behavior is consistent with natural history. <input type="checkbox"/> The amount of time spent feeding is similar to natural history. 	<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals DO NOT have a healthy weight. <input type="checkbox"/> Animals DO NOT search food in a manner consistent with natural history (using senses and problem solving). <input type="checkbox"/> Animals DO NOT acquire (physical activity, specialized adaptations or body position) food in a manner consistent with natural history. <input type="checkbox"/> Observed feeding (processing) behavior is NOT consistent with natural history. <input type="checkbox"/> The amount of time spent feeding is NOT similar to natural history.
<p>2. OPPORTUNITY TO SELF MAINTAIN: An appropriate environment including shelter and species specific substrates and structure that encourage opportunities to self-maintain.</p> <p>(Input) Is there evidence that you are supplying a robust environment, including proper shelter and species-specific substrates that encourage opportunities for self-maintenance with appropriate environmental factors related to thermoregulation, grooming, mobility and cognitive health?</p>	
<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals exhibit normal thermoregulation behavior (move when hot or cold to different areas). <input type="checkbox"/> Animals use substrate and structures within the habitat to maintain good fur, feather, skin or scale condition. <input type="checkbox"/> Animals' physical condition changes seasonally to adapt to seasonal changes. <input type="checkbox"/> Animals' physical condition is maintained by appropriate lighting in appropriate spectrum and schedule. <input type="checkbox"/> Animals express appropriate behavioral responses to challenges presented by changes in the environment. 	<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals DO NOT exhibit normal thermoregulation behavior (move when hot or cold to different areas). <input type="checkbox"/> Animals DO NOT use substrate and structures within the habitat to maintain good fur, feather, skin, or scale condition. <input type="checkbox"/> Animals' physical condition DOES NOT change seasonally to adapt to seasonal changes. <input type="checkbox"/> Animals' physical condition is NOT maintained by appropriate lighting in appropriate spectrum and schedule. <input type="checkbox"/> Animals DO NOT express appropriate behavioral responses to challenges presented by changes in the environment.
<p>3. OPPORTUNITY FOR OPTIMAL HEALTH Rapid diagnosis and treatment of injury or disease while providing supportive environments that increase the likelihood of healthy individuals and animals are given the benefit of clear lines of communication between all departments responsible for the care of the animals.</p> <p>(Input) Is there evidence that you are able to identify and address causes of injury or disease, while providing supportive environments that prevent illness and increase the likelihood of healthy individuals? Using emerging scientific knowledge, are you able to evaluate if the animals' care regimen benefits from a clear line of communication between all responsible parties? Can you ensure that roles and responsibilities are well defined and that all involved parties are operating within their area of expertise as part of a collaborative effort?</p>	
<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals are in a good state of health and show no signs of disease (excluding current medical conditions that are managed effectively). <input type="checkbox"/> All parties involved in animal health are operating within their area of expertise as part of a collaborative effort to achieve a common goal. <input type="checkbox"/> Roles and responsibilities of each involved party are well-defined, with clear understanding of who will serve as an adviser and who will serve as a decision maker with respect to animal health. <input type="checkbox"/> Reporting of concerns regarding animal health is easy, efficient, timely and effective. 	<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals are NOT in a good state of health and show signs of disease (excluding current medical conditions that are managed effectively). <input type="checkbox"/> All parties involved in animal health are NOT operating within their area of expertise as part of a collaborative effort to achieve a common goal. <input type="checkbox"/> Roles and responsibilities of each involved party are NOT well-defined, with clear understanding of who will serve as an adviser and who will serve as a decision maker with respect to animal health. <input type="checkbox"/> Reporting of concerns regarding animal health is NOT easy, efficient, timely and effective.

<input type="checkbox"/> There is evidence that pro-active care and health of the animals are promoted to prevent injury and disease.	<input type="checkbox"/> There is NOT evidence that pro-active care and health of the animals are promoted to prevent injury and disease.
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4. OPPORTUNITY TO EXPRESS SPECIES-SPECIFIC BEHAVIOR: Using current scientific knowledge to validate that animals are being given the opportunity to express meaningful behaviors at a frequency that meets the needs of the species' natural history. This includes, but is not limited to, appropriate developmental conditions (social/cognitive/life stage), enriched social environment, complex environmental experiences, lack of maladaptive behaviors and a strong and responsive relationship with the environment.

(Input) Is there evidence that you provide quality spaces and appropriate social groupings that encourage species-specific behaviors at animal-determined frequencies and natural diversity?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals express behavior at a frequency and diversity that is consistent with natural history (activity budget). <input type="checkbox"/> Animals express normal social behavior (group living, mating, solitary life stage, pair bond, etc...). <input type="checkbox"/> Animals respond appropriately to challenges, problem solving and environmental changes in a way that is consistent with natural history. <input type="checkbox"/> Animals are responsive to learning new skills (via training) and show motivation to engage. <input type="checkbox"/> Animals DO NOT engage in stereotypic behavior. 	<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals DO NOT express behavior at a frequency and diversity that is consistent with natural history (activity budget). <input type="checkbox"/> Animals DO NOT express normal social behavior (group living, solitary life stage, pair bond, etc...). <input type="checkbox"/> Animals DO NOT respond appropriately to challenges, problem solving and environmental changes. <input type="checkbox"/> Animals are NOT responsive to learning new skills (via training) and show motivation to engage. <input type="checkbox"/> Animals engage in stereotypic behavior.

5. OPPORTUNITIES FOR CHOICE AND CONTROL: Providing conditions in which animals can exercise control and make choices to avoid suffering and distress, engage in meaningful behavior to acquire beneficial resources and emotional states. Using current scientific knowledge to evaluate if the animals are being given the opportunity to make choices related to spatial and social organization and training programs are based on the principles of positive reinforcement. Enriched Experiences and exhibit conditions should include problem solving and opportunities to make choices based on varying degrees of challenge that the animal is motivated to engage.

(Input) Is there evidence that you provide conditions in which animals can exercise control and make choices to enhance the quality of their lives and to make behavior meaningful?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals express behavior consistent with making choices of space use. <input type="checkbox"/> Animals show motivation to engage in behavior that is meaningful to them. <input type="checkbox"/> Animals use the environment to acquire resources that benefit them. <input type="checkbox"/> Animals use control over interactions (keeper, con specific, intra-specific) based on outcomes that are consistent with natural history (acquiring resources, avoiding conflict and injury, etc...). <input type="checkbox"/> Any training or conditioning is based on positive reinforcement (except for animals in pre-release conditions). 	<p>Please check ALL MEASURED OUTCOMES that support this answer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animals DO NOT express behavior consistent with making choices of space use. <input type="checkbox"/> Animals DO NOT show motivation to engage in behavior that is meaningful to them. <input type="checkbox"/> Animals DO NOT use the environment to acquire resources that benefit them. <input type="checkbox"/> Animals DO NOT use control over interactions (keeper, con specific, intra-specific) based on outcomes that are consistent with natural history (acquiring resources, avoiding conflict and injury, etc...). <input type="checkbox"/> Any training or conditioning is NOT based on positive reinforcement (except for animals in pre-release conditions).

NOTE: Consider the animals' current life history stage (neonate, aged animal, etc...) and the context (animal under medical care, animal has a chronic disease, etc.) in order to make an accurate assessment. Checking "yes" or "no" does not preclude you from using outcomes in both columns.

ANALYSIS

The main priority for this assessment is to trigger open dialogue and encourage staff to discuss how we apply our guiding principles of animal welfare and the experience of the animals in our care. There is, however, also a strong need to collect meaningful data in order to compare specific strategies and monitor changes over time. Since the Opportunities to Thrive are based on the presence or absence of validated measures of welfare (both positive and negative), we analyze both inputs and outcomes. Four primary metrics will be evaluated and used for comparison:

Meets Opportunity (% Meets Opp): This figure simply represents the percentage of respondents in a group or subgroup that reported that the assessment found the animals were being given the corresponding Opportunity to Thrive. If the respondent marked “yes” they were indicating that the animal was being given the appropriate **Inputs** that are typically associated with the **Outcomes** related to the specific Opportunity (%0-%100).

Measured Aligned Outcomes (% MAO)*: Represents the percentage of all possible Measured Outcomes that are aligned with the corresponding Opportunity selected by the respondents. This can be interpreted as the presence of positive indicators of welfare that are linked to the Inputs associated with the Opportunity (%0-%100).

Measured Unaligned Outcomes (% MUO)*: Represents the percentage of all possible Measured Outcomes that are not aligned with the corresponding Opportunity selected by the respondents. This can be interpreted as the absence of positive indicators of welfare that are linked to the Inputs associated with the Opportunity (%0-%100).

Certainty Score: Respondents are asked to rate their level of certainty for knowing each of the outcomes they reported on a scale from 1-Low to 3-High. The confidence score is an average of all of the respondents’ ratings for each outcome and can be used to identify areas in which staff members can focus attention.

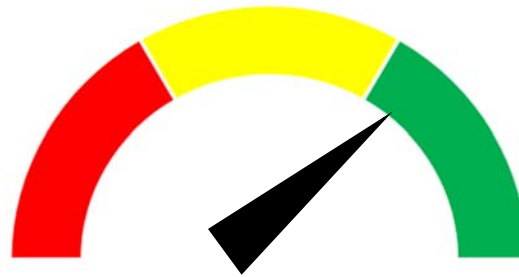


**It is important to remember that these two metrics are distinct from one another, participants should select one or the other, and if unsure the default should be 'unaligned'.*

APPENDIX II (Example Animal Welfare Report SDZG, 2020)

Total Data Tables

Below are the raw data tables for each of the five main questions and corresponding responses to each of the Aligned or Unaligned Outcomes (Table 2). The number reflects the proportion of respondents who checked the corresponding MAO or MUO and can be used to identify areas in need of further discussion. The Confidence score corresponding to each of the outcomes is also listed and color coded, from High (green) to Low (red)



Average Certainty Score = 2.31

Table 2

OPPORTUNITY FOR A STRATEGICALLY PRESENTED, WELL BALANCED DIET:									
Animal(s) have a healthy weight		Animal(s) locate food in a manner consistent with natural history (using senses, and problem solving).		Animal(s) acquire (physical activity, specialized adaptations, or body position) food in a manner consistent with natural history.		Observed feeding (processing) behavior is consistent with natural history.		The amount of time spent feeding is similar to natural history.	
Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned
94.48%	5.52%	81.64%	18.36%	74.79%	25.21%	93.34%	6.66%	61.85%	38.15%
Certainty Score									
2.50		2.00		2.17		2.17		1.83	
OPPORTUNITY TO SELF MAINTAIN									
Animal(s) exhibit normal thermoregulation behavior (move when hot or cold to different areas)		Animal(s) use substrate and structures within the habitat to maintain good fur, feather, skin, scale, and physical condition.		Animal(s) physical condition changes seasonally to adapt to seasonal changes		Animal(s) physical condition is maintained by appropriate lighting in appropriate spectrum and schedule.		Animal(s) express appropriate behavioral responses to challenges presented by changes in the environment.	
Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned
96.76%	3.24%	94.86%	5.14%	85.35%	14.65%	90.01%	9.99%	83.73%	16.27%
Certainty Score									
2.83		2.33		1.83		2.33		2.67	

OPPORTUNITY FOR OPTIMAL HEALTH

Animal(s) are in a good state of health and show no signs of disease (excluding current medical conditions that are managed effectively).		All parties involved in animal health are operating within their area of expertise as part of a collaborative effort to achieve a common goal		Roles and responsibilities of each involved party are well-defined, with clear understanding of who will serve as an adviser and who will serve as a decision maker.		Reporting of concerns regarding animal health is easy, efficient, timely and effective.		There is evidence that pro-active care and health of the animals are promoted to prevent injury and disease.	
Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned
98.19%	1.81%	96.86%	3.14%	93.15%	6.85%	91.44%	8.56%	91.75%	8.25%
Certainty Score									
2.50		2.50		2.33		2.67		2.50	

OPPORTUNITY TO EXPRESS SPECIES-SPECIFIC BEHAVIOR

Animal(s) express behavior at a frequency and diversity that is consistent with natural history (activity budget).		Animal(s) respond to challenges, problem solving, and environmental changes in a way that is consistent with natural history.		Animal(s) express normal social behavior (group living, mating, solitary life stage, pair bond, etc...).		Animal(s) are responsive to learning new skills (via training) and show motivation to engage.		Animal(s) DO NOT engage in stereotypic behavior.	
Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned
83.92%	16.08%	93.91%	6.09%	89.06%	10.94%	76.31%	23.69%	94.86%	5.14%
Certainty Score									
2.00		2.00		2.17		2.17		2.67	

OPPORTUNITIES FOR CHOICE AND CONTROL

Animal(s) express behavior consistent with making choices of space use.		Animal(s) show motivation to engage in behavior that is meaningful to them.		Animal(s) use the environment to acquire resources that benefit them.		Animal(s) use control over interactions (keeper, con specific, intra-specific) based on outcomes that are consistent with natural history (acquiring resources, avoiding conflict and injury, etc...).		Any training or conditioning is based on positive reinforcement (except for animals in pre-release conditions)	
Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned	Aligned	Unaligned
96.19%	3.81%	90.96%	9.04%	94.29%	5.71%	94.58%	5.42%	86.39%	13.61%
Certainty Score									
2.67		2.00		2.00		2.17		2.67	

This table format allows for a targeted intervention that would make the most sense to bring our alignment between Inputs and Outcomes closer to each other. Although there are a myriad of ways to use these results to improve animal welfare, in this example we will focus on three specific result groupings:

1. Results in which our alignment can be improved and the certainty score is high:

If one is to look at the result from the outcome ‘Animal(s) express appropriate behavioral responses to challenges presented by changes in the environment’ the care staff is quite certain this outcome is unaligned, so we need to focus our energy on developing strategies to increase adaptability, problem solving, and skill acquisition for the particular animal or species.

Animal(s) express appropriate behavioral responses to challenges presented by changes in the environment.	
Aligned	Unaligned
83.73%	16.27%
2.67	

2. Results in which our alignment is high but the certainty score is in the middle.

If one is to look at the result from the outcome ‘Animal(s) us the environment to acquire resources that benefit them’, it has a relatively high level of alignment, but only a medium level of certainty from the care staff. This result provides an opportunity to increase staff training and explore strategies in which animals make meaningful choices, and how to interpret them.

Animal(s) us the environment to acquire resources that benefit them.	
Aligned	Unaligned
94.29%	5.71%
2.00	

3. Results in which our alignment score is low and our certainty score is low:

If one is to look at the result from the outcome ‘The amount of time spent feeding is similar to natural history’, it is clear that the care staff shares both a divided opinion and a lack of certainty in their answer. Our next step is to rigorously evaluate the feeding strategy to develop a plan that increase the amount of time spent feeding while concurrently providing more observation time for our staff to more effectively measure the outcomes of these strategies.

The amount of time spent feeding is similar to natural history.	
Aligned	Unaligned
61.85%	38.15%
1.83	