General Guidance for the Inspection of Captive Tiger Facilities

October 2024

Acknowledgement from the Department of Forestry (DOF), Lao PDR

The Department of Forestry (DOF), representing CITES Lao PDR, acknowledges and adopts the "General Guidance for the Inspection of Captive Tiger Facilities" to be applied in Lao PDR. This comprehensive guideline will contribute to enhancing the management, monitoring, and regulation of captive tiger facilities, ensuring that practices align with national conservation priorities and international requirement and standards.

We extend our sincere thanks to all partners involved in the development of this guideline, especially Developed by WWF, Born Free Foundation, Environmental Investigation Agency UK, Esther Conway (WildCats Conservation Alliance), Four Paws International, Joshua Elves-Powell, ZSL Institute of Zoology, Melody Bomon (Laos Conservation Trust for Wildlife), Michael Brocklehurst, Tiger and Leopard Conservation Fund in Korea, TRACE Wildlife Forensics Network, TRAFFIC, Wildlife Justice Commission, and the Zoological Society of London.

The collaboration of these expert organizations has been invaluable in providing technical expertise, research, and best practices that will strengthen our efforts in the conservation of tigers and improve the management of captive tiger populations in the country.

On this day, the Department of Forestry commits to the effective implementation of this guideline, ensuring that they support both the protection of biodiversity and the responsible operation of facilities that house these important species.

October 14 2024

Director General of the Department of Forestry, Lao PDR

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Contents

1. Background

The purpose of this guidance is to aid governments in carrying out inspections of tiger facilities keeping or breeding tigers, to ensure compliance with the relevant laws and regulations, whilst working toward or implementing a phase out of non-conservation breeding operations (for definition and evaluation of what constitutes conservation breeding operations see Appendix 1). The inspection process is used to ensure that the facility is not a captive tiger facility of concern, that there is no movement of tigers in and out of facilities and that animal welfare and safety standards are upheld. A "captive tiger facility of concern" is defined as a facility that keeps or breeds tigers in captivity with an intent (or reasonable probability) of directly engaging in the commercial trade in tigers and/or their body parts and derivatives. This guidance does not replace the criminal procedures that should be followed, including unannounced warranted inspections or raids, in the event law enforcement has received information of criminal activity on the site. Inspections may also contribute towards, but do not fulfill the entire needs for, regular audits of all captive tigers in all facilities within countries with captive tiger facilities of concern. Audits are needed to centrally register the number of tigers, and each tiger's sex, age group, DNA profile, stripe pattern and, where available, microchip details.

This guidance provides detailed information on captive tigers and their care, and guidance on questions to ask and observations to make during inspections, including on the site and facility suitability; business, husbandry and welfare practices; and security practices (both health and safety, and biosafety). This should enable those undertaking the inspection to identify issues of concern, which include live and dead tigers and their parts and products entering commercial trade (domestic or international), poor animal welfare conditions, human safety risks, and/or a lack of effective management which may facilitate involvement in trade, poor welfare conditions or risk of human injury/death.

Such inspections aid Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to fulfill paragraph 1h) in Resolution Conference 12.5 (Rev. CoP19), which urges "*those Parties and non-Parties in whose territories there are facilities keeping tigers and other Asian big cat species in captivity to ensure that adequate management practices and controls are in place and strictly implemented to regulate the activities of these facilities, including measures that will enable accurate record keeping for all Asian big cats kept in captivity as well as for the disposal of specimens from Asian big cats that die in captivity, to prevent parts and derivatives from entering illegal trade from or through such facilities, and that these management practices are regularly reviewed to ensure that they are adequate to prevent Asian big cat specimens from entering illegal trade from or through such facilities*".

2. Planning an inspection

Inspections should be carried out at a frequency determined by a management plan, with ad hoc inspections also undertaken. Ideally, and where access is legally mandated, inspections should be carried out without prior notification to the facility owner/manager, in order that the usual operations and conditions are observed. Where access cannot be guaranteed, as short notice as possible should be given to ensure access is enabled without sufficient time for the movement of tigers or significant alterations from existing operations.

Whilst not mandatory, there are significant benefits, to all parties concerned, in requesting independent oversight of the inspection process. Independent oversight could come from intergovernmental organizations or non-governmental organizations, which should not have a conflict of interest, such as a memorandum of understanding (MOU) with the government which could result in undue government influence on reporting. The role of the oversight party is not to collect data from the facility or have direct involvement in the process but to ensure the inspection is undertaken as designed and note challenges to the inspection process. Such independent observations can be used as supportive evidence when inspection reports are disseminated, adding weight to the results. Additionally, incorporating multiple agencies in inspections, including relevant environmental authorities and police, can further increase transparency and accountability and ensure a credible inspection process.

Pre-inspection meeting(s) and preparation:

- Identify ownership (including beneficial ownership information), terms of license (including whether breeding is allowed by that particular facility), annual financial/business accounts (if not being kept as "pets") and other information relating to Section 7 that can and should be collated prior to inspection so that appropriate questions may be directed to owners and staff;
- Establish goals and objectives;
- Assign individual duties and responsibilities, noting that the inspection team should include individuals with a lawful access mandate and, where possible, relevant veterinary expertise supporting assessment of the animals' welfare, health and condition. Try where possible to split the inspection team in two where one team, accompanied by staff, undertakes the facility inspection, and the other team works with the owner / manager to review documentations etc.
- Review records from previous inspections to the facility, including records of individual tigers, their sex, age and breeding status, management practices, and where previously recorded as being available, information on unique identifiers e.g. stripe pattern images, DNA profiles and microchip make and models to ensure the inspection team carry the correct scanners, or where that is unknown, ensuring all possible scanner types are available;
- Identify previous site issues or concerns, or new information;
- Identify health and safety considerations;
- Identify biosafety considerations for the animals and the inspection team, and risk of prolonged tiger disturbance;
- Design the inspection survey, adjusting the example inspection survey template in Section 9 according to the specific facility and country (which includes consideration of laws pertaining to the keeping of captive tigers, including on welfare standards).

Site inspection:

- Establish communications and exit strategy plans in case of health and safety risks.
- Facility staff briefing and agreement of inspection process;
- Cross-reference records from previous inspections of individual tigers' unique identifiers (i.e. microchips, which must be associated with the unique identifiers of stripe pattern photos, and where feasible DNA profiles) against all tigers present;
- Collect records of unique identifiers of any new tigers present, and evidence of transfer or disposal of individuals not accounted for;
- Ensure that all areas of the facility are accessed by inspectors in a methodical manner and include freezer storage and animal disposal areas;
- Record both observations from the inspection team and responses to questions from facility staff and owners, as they may counter each other. The inspectors' observations should be used to qualify the validity of responses from facility staff and owners;

3. The tiger

A tiger (*Panthera tigris*) is a large carnivorous mammal, belonging to the Felidae family and the *Panthera* genus. It is one of the most recognizable and iconic big cats in the world. Tigers have reddish-orange coats with prominent black stripes, white bellies and white spots on their ears (see fig. 1). Like a human fingerprint, no two tigers have the exact same markings, which means their stripe patterns can be used to identify individuals. Traditionally six living subspecies of tiger have been identified: Bengal, Siberian, Indochinese, Malayan, South China and Sumatran and all interbreed to produce viable offspring. However, more recent classifications suggest just two living subspecies: the continental tiger (*Panthera tigris tigris*) and the Sunda tiger (*Panthera tigris sondaica*). Adult male continental tigers can weigh up to 300 kilograms (660 pounds) and head to tail measure up to 3.3 meters (10.9 feet). Adult male Sunda tigers may weigh up to 120 kilograms (265 pounds) and measure about 2.4 meters (8 feet) in length from head to tail. Female tigers tend to be smaller than their male counterparts (see further details below in the ‘determining sex’ section).

dditionally, there are two color morphs sometimes observed in captivity but only rarely in the wild. A **white tiger** is a rare color variation of the continental tiger (*Panthera tigris tigris*). Unlike their typical, orange-coated counterparts, white tigers possess a distinctive pale white to cream-colored fur with black stripes (see fig. 2). The white coloration is caused by a genetic mutation that affects the production of pigments in their fur. Despite their white appearance, white tigers still retain their characteristic black stripes, which are more visible against the pale background. White tigers often have striking blue eyes, although they can also have green or amber eyes. The blue eye color is a result of the same gene that causes white coat color.

Figure 1: Adult female continental tiger (*Panthera tigris tigris*), © naturepl.com / Andy Rouse / WWF

Figure 2: Captive white tiger © Dr Sanjay K Shukla / WWF-International

A golden tiger, also known as a strawberry tiger or a golden tabby tiger, is another color variation of the continental tiger (*Panthera tigris tigris*). Like the white tiger, the golden tiger's unique coloration is a result of a genetic mutation that affects the production of pigments in their fur. Golden tigers have a coat color that ranges from a light, almost cream-like golden hue to a deep, rich gold (see fig. 3). Their fur is often characterized by distinct reddish or strawberry-colored patches. Similar to other tiger color variations, golden tigers retain the characteristic black stripes commonly associated with tigers. However, the stripes on golden tigers may appear less prominent due to the lighter background color of their fur. Golden tigers typically have blue or green eyes, similar to white tigers. The unusual eye color is also a result of the same gene that affects their fur coloration. Importantly, color morphs in tigers are a sign of inbreeding, typically between close family members, and should not be encouraged due to associated poor health effects of close relative breeding.

Lions (*Panthera leo*) are a different species to tigers within the *Panthera* genus. The lion's coat is short and varies in color from buff yellow, orange-brown, or silvery gray to dark brown, with a tuft on the tail tip that is usually darker than the rest of the coat (see fig. 4). Male lions can measure up to 3 meters long (10 feet) from head to tail, with females growing up to 2.7 meters (9 feet). Young lions have rosettes and spots on their sandy coats, but these generally disappear as they mature. Lions have row

number to cream-colored eyes. Male lions' manes are a sandy, yellowish color initially, and get darker as the lion gets older (see fig. 5).

Figure 3: Adult golden tiger. Photo by Mehmet Turgut Kirkgoz.

Figure 4: Adult female lion (*Panthera leo*) © Marcus Westberg / WWF-US

Figure 5: Adult male lion (*Panthera leo*) © Harm Vriend / WWF

While tigers and lions are closely related and share similarities as big cats, interbreeding between these species does not occur in the wild. However, in captivity, there have been recorded instances of tigers and lions interbreeding, resulting in hybrid offspring known as "**ligers**" or "**tigons**," depending on the species of the respective parents. Ligers are the offspring of a male lion and a female tiger. They are generally larger than either parent species and can exhibit traits from both, such as a lion-like mane and tiger-like stripes (see fig. 6). Tigons, on the other hand, are the offspring of a male tiger and a female lion. They tend to be smaller than ligers and may exhibit features from both parent species. Hybridization between different species, especially large cats like tigers and lions, is not a natural occurrence and is restricted to captivity under human-controlled conditions. In the wild, tigers and lions (including in India), occupy different geographic ranges and have evolved to adapt to different habitats and ecological niches, leading to limited opportunities for interaction and interbreeding. The practice of breeding ligers or tigons raises concerns about the welfare of the animals involved and the negative impact on conservation efforts for wild lions and tigers. Responsible breeding practices and conservation efforts focus on preserving the genetic diversity and natural behaviors of individual species and specimens, in the event the species moves closer to extinction in the wild and it is necessary to release specimens into their respective habitats to ensure their long-term survival in the wild.

Figure 6: Adult liger. Photo by g33kgrrl under creative commons.

4. Identifying individual tigers

In captivity, various methods are used to **identify individual animals**, including tigers, to keep track of their health, behavior, and other specific characteristics. Some common methods used to identify individual tigers in captivity include:

- **Tiger Stripe Patterns**: Tigers have individual stripe patterns that can be used to distinguish one tiger from another. Tiger stripe patterns are unique to each individual, much like human fingerprints, and they can be used to identify tigers. The stripe patterns are formed by variations in the distribution and arrangement of dark stripes (black or dark brown) and lighter background fur color (orange or yellow). These patterns are distinctive and remain constant throughout the tiger's life, allowing for reliable identification. Photographs are taken of tigers, capturing their unique stripe patterns. These photos are used as reference records for identification over time. Manual identification is feasible for smaller numbers of tigers, as there are always some distinctive head and / or flank stripe patterns with the presence of unusual stripes, breaks in the pattern or different arrangement of rosettes. For larger numbers of tigers, ExtractCompare is a free, automated identification tool, which can be downloaded here (https://conservationresearch.org.uk/Home/ExtractCompare/Tigers.html).
- **Microchips**: Microchipping involves the insertion of a tiny radio-frequency identification (RFID) microchip under the skin of the animal. The microchip contains a unique identification number that can be scanned using a handheld RFID reader to identify the individual. The location of the implanted microchip is important for future scanning. It is advised that a vet with experience of working with tigers implant the microchips, particularly as anesthesia will be required. Cubs can be microchipped from eight weeks old. Where possible, someone with expertise in tigers and microchipping should accompany the inspection team to determine whether the tigers' microchips match the records at the facility.
- **DNA Profiling**: DNA profiling is a robust method of identifying individuals or their body parts. It involves collecting a small sample of tissue, blood, or other biological material to analyze the individual's unique DNA profile. Standard operating procedures (SOP) should be carefully followed for tiger biopsy sampling, collection and transfer, such as the one used in TigerBase, a standardized wildlife forensic DNA profiling system for captive tigers, which was designed and reviewed by an international panel of recognized experts to minimize stress, discomfort and risk to the tiger being sampled[1].

While it is easier, and useful, to estimate the number of tigers by estimating the number of individuals in an enclosure and multiplying by the number of enclosures, this counting strategy has limited utility and is rarely accurate. It is far better for an inspection to develop a slower and comprehensive counting regime to ensure all tigers are counted and the tigers can be further subdivided into age, sex and reproductive status groups.

[1] Ewart et al (2024) TigerBase: A DNA Registration System to Enhance Enforcement and Compliance Testing of Captive Tiger Facilities. https://ssrn.com/abstract=4825380 or contact TRACE Wildlife Forensics Network to request access to the SOP.

5. Estimating tiger age, sex and reproductive condition

Whilst guidance is provided here on estimating the age, sex and reproductive condition of the captive tigers, the inspection team could include a veterinary expert, where possible, with experience of captive tigers, to help make an informed assessment.

Estimating age[2]

Cubs (<12 months) - In small cubs, the color of the iris is blue-gray (see fig. 7) and begins to turn amber by 3-4-month age. Cubs are born toothless and develop their milk dentition by one to one and half month age. They start to eat some meat by two-month age but largely depend on their mother's milk, which changes to a more meat diet by 4-5 months. By 5-6 months cubs can reach a length of about 85–95 centimeters (33-37 inches) and weigh about 7–11 kilograms (15-24 pounds) and reach the belly of their mother. The scrotum of the male cub is visible from early on, and there is a distinct size difference between male and female cubs by the age of 6-8 months.

Figure 7: Two-month-old cub © WWF-Sweden / Ola Jennersten

Juveniles (1 -2 years) - Tigers at this stage are roughly half the size of their mothers (50-120 kilograms / 110-264 pounds). Male tigers show faster growth than females and are seen to be substantially larger. Face proportions are cub-like, with a shorter snout and smaller face and has developed or partly developed permanent dentition (which begins at the age of about 9-10 months and is completed by 12-14 months.

[2] Jhala and Sadhu (2017) Field Guide for Aging Tigers, BMC Zoology 2(16) or https://www.project-tiger.in/data-stories/field-guide-for-aging-tigers/

Adult (>2 to 10 years) - At the adult stage, the males are substantially larger than the females. Males can weigh up to 300 kilograms (660 pounds). The face loses its juvenile proportions as the snout elongates. In aging to adulthood, the belly gets rounder, often with a slight sag which increases with age, and often a skin fold on the belly shows. Teeth turn a cream to yellowish color by three to four years, and by the age of five years turn brownish-yellow and the canines are rounded through wear.

Old adults (>10 years) - Belly and belly skin fold are sagging; nose shows pigmentation. Canines and incisors are worn down, often broken, or missing and with dark brown stains. Jaw and lips are often sagging, the lips show a fold. Close observation with binoculars/telephoto-photographs shows receded gum-line on worn canines (if any). Body condition of tigers is usually not a good parameter to use for aging. Often very old tigers that have lost their canines can be in poor condition but can regain condition with just a couple of good meals.

Determining sex

Male and female tigers typically exhibit certain physical differences (see figs. 8 and 9). Males tend to be larger and heavier than females. Additionally, males have wider heads, thicker necks, and a more prominent ruff of fur around their necks. However, a close examination of the animal's genitalia is required for definitive sex determination.

Adult male continental tigers (*Panthera tigris tigris*) may weigh up to 300 kilograms (660 pounds) and measure about 3.3 meters (10.9 feet) in length from head to tail. Females are smaller, weighing between 100 to 167 kilograms (200 to 370 pounds) and measure about 2.6 meters (8.5 feet) in length. Adult male Sunda tigers (*Panthera tigris sondaica*) may weigh up to 120 kilograms (265 pounds) and measure about 2.4 meters (8 feet) in length from head to tail. Females are slightly smaller, weighing about 90 kilograms (198 pounds) and measure about 2.2 meters (7 feet) in length.

Figure 8: Adult female tiger. © Dr Ross McEwing

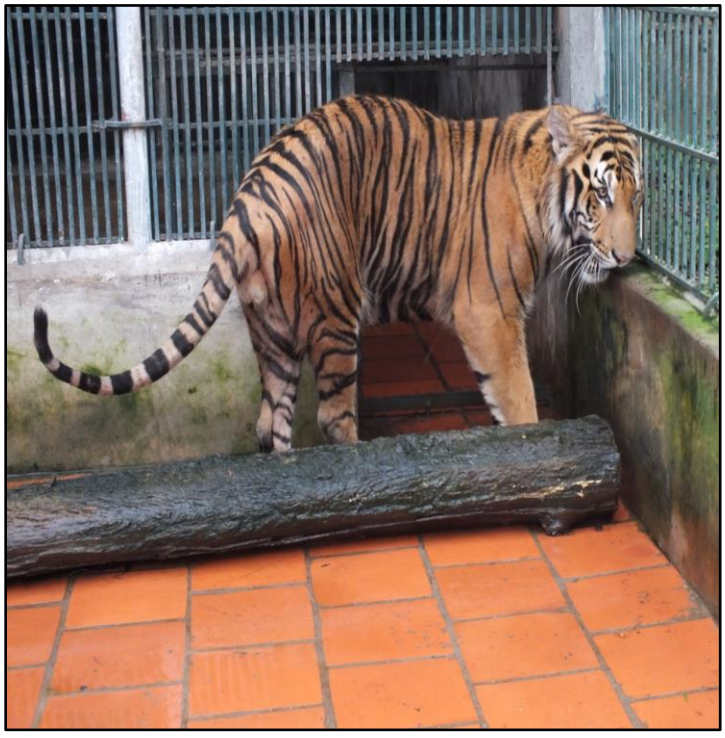

Figure 9: Adult male tiger. © Dr Ross McEwing

Determining reproductive condition

Females start breeding around 3-4 years of age, males around 4-5 years. Determining if a tiger is pregnant can be challenging, especially in the early stages of pregnancy. A heavily pregnant tigress can be distinguished from a fully fed tigress by the visibility of prominent teats and udders (see figures 10 and 11). Captive tigers can have between two and six cubs per breeding cycle, although two to three cubs is the average after a gestation period of between 93 and 112 days. Female tigers can return to oestrus a few months after giving birth and therefore, particularly in captivity, multiple reproductive cycles per female are possible in a single year if the cubs are removed and hand-reared, a clear indication of commercial, non-conservation breeding.

Determining if a tiger is lactating (producing milk) after birth can be challenging without close observation. In both captive and wild tigers, lactation can lead to the swelling and enlargement of the nipples. Close observation of the mammary glands may reveal changes in size, appearance, and sensitivity. After birth, the belly is normal with full udders where nipples show signs of intense suckling. For un-bred females and early days following first births, the nipples are pink in color and become pigmented, darkened grey and keratinized after cubs suckle intensely. Nipples subsequently retain this grey coloration throughout life.

Figures 10 & 11. Pregnant female tigers © Zoo Wroclaw

6. Tiger health and condition

Whilst guidance is provided here on the health and condition of the captive tigers, the inspection team could include a veterinary expert, where possible, with experience of captive tigers, to help make an informed assessment. A healthy tiger exhibits several physical and behavioral characteristics that indicate its well-being.

The **condition of a healthy tiger**:

- Will have a smooth and glossy coat. The fur should be clean, free from bald patches, and have a consistent coloration and pattern, with distinct stripes. A dull or rough coat could be a sign of health issues or malnutrition. The perineal area (between the anus and the vulva in females, and between the anus and the scrotum in males) should be clean, without presence of feces on the surrounding fur;
- Should have a well-proportioned and muscular body. It should not be excessively skinny or emaciated, nor should it appear overly obese. Proper body condition ensures the tiger has enough energy and reserves for its daily activities and metabolic needs. The left and right sides of the body should be symmetrical in terms of muscle mass (particular focus on the limbs);
- Eyes should be bright, clear, and free from discharge or inflammation. The ears should be erect and responsive to surrounding sounds;
- Is generally active and alert. They should be observed moving with ease and engaging in natural behaviors, such as exploring their territory, or grooming themselves. Gait should be regular, symmetrical and without lameness;
- Will have a good appetite and consume an appropriate diet for its species and age. Regular eating habits are indicators of good health, and any significant changes in appetite may suggest health issues;
- Display typical behaviors for their species. They should be curious, confident, and display appropriate social behaviors if in the presence of other tigers;
- Will have clean and well-maintained teeth. Dental issues can affect their ability to eat and lead to health problems;
- Feces should be well-formed and free from blood or other abnormal substances. Monitoring the quality of feces can provide insights into digestive health;
- Breathing should be regular and smooth. Labored or irregular breathing could be indicative of respiratory problems;
- There should be no obvious signs of injuries, wounds, or visible illnesses.

Captive tigers can experience a range of behavioral problems due to the stress and challenges associated with living in captivity. These issues can vary depending on the individual tiger, the conditions of their enclosure, and the management practices in the facility. Some **common behavioral problems** with captive tigers include:

- Stereotypic Behaviors: Tigers in captivity may develop stereotypic behaviors, also known as stereotypies or repetitive behaviors. These are abnormal, repetitive actions that serve no apparent purpose and can include pacing, rocking, bar-biting, or self-mutilation. Stereotypic behaviors are often seen in animals that are confined to small enclosures or lack sensory stimulation.
- Aggression: Captive tigers may exhibit aggressive behavior, especially if they are kept in close proximity to other tigers or are exposed to stressors that trigger defensive responses. Aggression can lead to injuries to the tigers themselves or to their handlers.
- Inactivity and Apathy: Some captive tigers may become inactive and disinterested in their surroundings due to the limited space and lack of enrichment. This behavior can indicate boredom and depression.

- Fear and Stress: Tigers kept in captivity may experience fear and stress, particularly if they are exposed to loud noises, unfamiliar environments, frequent disturbances or housed in close proximity to other tigers.
- Abnormal Reproductive Behavior: Female tigers in captivity may display abnormal reproductive behavior, such as persistent oestrus, infanticide or lack of maternal instincts, due to the unnatural conditions and lack of appropriate social cues.
- Over-Grooming or Self-Harming: In some cases, captive tigers may engage in excessive grooming or self-harm, which can be a response to stress or boredom.
- Social Isolation or Social Stress: Tigers are generally solitary animals, but social interactions can be crucial for their well-being. Inadequate socialization or forced cohabitation with incompatible individuals can lead to social stress and behavioral problems.
- Lack of Natural Behaviors: Captive tigers may be deprived of opportunities to express their natural behaviors, such as climbing and swimming, which can result in frustration and behavioral issues.

Further detailed guidance on what is required for the care of captive tigers is available in the *Tiger (Panthera tigris) Care Manual* (2016) produced by the Association of Zoos and Aquariums (AZA) and the *Standards for Felid Sanctuaries* (2018) produced by the Global Federation of Animal Sanctuaries.

Risk factors

The following attributes may illustrate a captive tiger facility is of concern:

- The facility has captive tigers or other species in very poor health;
- The facility has inadequate welfare standards;
- Tigers exhibit unnatural behaviors;
- Tigers are habituated to, or unduly fearful of, people;
- Healthy claws and teeth are removed from tigers.

7. Business practices of the captive tiger facilities.

The business practices of the facility should be well understood to identify whether the stated purpose and operations of the facility align with observations and are practically and economically feasible. For example, if the funding model provides enough income to support expenditure for appropriate environmental, husbandry and security requirements, without involvement in illegal trade. Considerations of the opportunities for trade and risk indicators should include examination of:

- What the stated primary purpose of the facility is, or what it is registered as;
- Cases of retrospective issuance of licenses;
- Whether it is open to the public or private;
- The economic and financial feasibility of the stated purpose (standard operating procedures, location of facility (e.g. close to tourist areas or trafficking routes), ticket sales, infrastructure to cater for visitors);
- Onsite sale of products which may be produced using captive Asian big cats (i.e. "special bone wine", "tiger bone glue", teeth, claws, skins);
- Affiliated businesses (other facilities keeping tigers / Asian big cats, wineries, taxidermists, bone glue processing, restaurants, supply of tiger / Asian big cat parts and products to retail / wholesale /hospitals etc.); including those affiliated through beneficial ownership (individuals benefiting financially from the captive tiger facility in question);
- Other species kept, bred and sold;
- Other financial accounting;
- Whether the facility is a *bona fide* sanctuary (prohibiting breeding, buying, selling and handling of tigers by visitors).

Risk factors

Any facility involved in the legal or illegal commercial trade of tigers or their parts and products should be considered a facility of concern.

The following attributes may illustrate a captive tiger facility is of concern:

- There is no clear articulation of the primary purpose of the facility (i.e. whether it is conservation or education oriented);
- Licenses are issued retrospectively;
- The facility is not open to the public (illegal tiger trade has been connected to privately owned facilities that are not accessible to the public, and to facilities that are located in close proximity to the owner's home or even on same property);
- The facility's operations are not financially feasible, for example if the facility claims it is a zoo, it should be evident that the ticket prices and ticket sales volumes are sufficient to cover costs;
- The facility claims to be open to the public for educational reasons, but has insufficient or inaccurate information for visitors;
- The facility is located far away from any notable populated areas and tourist attractions.
- The facility has affiliated businesses such as other facilities keeping tigers, wineries, taxidermy, bone glue processing, restaurants, supply of big cat parts and products for retail or wholesale purposes or to hospitals, etc.;
- The facility reports tigers have been loaned to another site, which may be a cover story for a missing tiger(s) entering trade, or may suggest unauthorized breeding;

- The facility keeps, breeds or sells other wild faunal species for commercial purposes;
- The facility stockpiles tiger parts and derivatives.
- The facility is owned by individual(s) who own other facilities. An increased risk factor is if there have been transfers of tigers between facilities owned by the same individual.

8. Environment, and husbandry and security practices

The management practices of the facility should be assessed including the environment, and husbandry and security practices. This should include:

- Record keeping of tiger inventory, care and movements, data management and reporting to central government;
- The photographic, microchipping, DNA profiling and other identification systems used to monitor individual specimens during their lifetime (birth, death, transfer, sale, disposal);
- Security and processes in place in terms of transport, storage and disposal of tigers and their parts and products and effectiveness where this is implemented;
- Whether the tigers are part of a regional / international scientific accredited studbook breeding program for conservation (maintaining genetic diversity, protecting natural behavior traits);
- Breeding strategy, including measures to minimize inbreeding;
- Contraception strategies used (e.g. are sexes separated, or chemically or surgically sterilized) (see Appendix 2 for more details);
- Are tigers managed in such a way as to indicate they are not being kept or bred for conservation purposes (e.g. kept in unnatural groups that are either large or mixed species, exhibiting unnatural behaviors, habituated to people, handled by visitors, handled unnecessarily by staff, drugged unnecessarily, given inadequate veterinary care and welfare standards, or healthy claws or teeth are removed);
- How many cubbing dens present;
- Diet provided (see Appendix 2 for more details);
- Veterinary care and intervention (see Appendix 2 for more details);
- Design suitability of the facility and its enclosures (e.g. are fences of an adequate height and structure and access suitably secure to prevent animal escapes; are enrichment practices utilized);
- Health and safety considerations;
- Biosecurity.

As mentioned above, further detailed guidance on what is required for the care of captive tigers is available in the *Tiger (Panthera tigris) Care Manual* produced by the Association of Zoos and Aquariums (AZA) and the *Standards for Felid Sanctuaries* produced by the Global Federation of Animal Sanctuaries.

Risk factors

The following attributes may illustrate a captive tiger facility is of concern:

- The facility has a larger number of captive tigers than required for its stated purpose;
- The facility does not have a reliable system for record keeping, data management or reporting;
- There is insufficient security in terms of transport of live animals, and storage and disposal of deceased specimens;
- There is no reliable marking and individual identification system (e.g. DNA, stripe pattern) in place to monitor individual specimens during their lifetime (birth, death, transfer, sale, disposal);
- There are multiple cubbing dens present;
- There are significantly more female than male tigers, which, counter to the naturally occurring equal ratio, may indicate that males are being traded as one male can service many females;
- The facility has inadequate veterinary care;
- There is unexpectedly high adult and/or cub mortality;

- Male and female tigers are not separated or sterilized when not part of an established, science-based population management program;
- Tigers are kept in unnatural groups, for example many tigers or mixed with other species;
- Tigers are handled or drugged unnecessarily by staff;
- Direct contact is allowed between tigers and visitors, including for photos;
- The facility is located in a remote area or close to known trafficking routes and hotspots, e.g. by national borders.

9. Template for inspection of a captive tiger facility

A. General Information

Facility Name:		
Facility Location:		
Date of inspection:		
Reason for inspection: e.g. routine inspection / ad hoc inspection / access with a warrant to investigate criminal activity / etc.		
Inspection team members (multiple agencies are encouraged)	Names:	Job title & authority/organization:
Independent oversight	Name:	Job title & authority/organization:

B. Planning - prior to visit

Must access to the facility be requested in advance? If so, provide as little notice as possible.	Yes/No

Goals	
Objectives	

TEAM A: Undertakes facility inspection (accompanied by staff)	
ROLES: (include individuals with a lawful access mandate and, where possible, relevant veterinary expertise)	**NAMES**:
Role A [insert description of role]	
Role B [insert description of role]	
[And continue…. add additional rows as needed for all roles]	
TEAM B: Review facility documentation (with owner / manager)	
ROLES:	**NAMES**:
Role A [insert description of role]	
Role B [insert description of role]	
[And continue…. add additional rows as needed for all roles]	
Dates of previous inspection visits to this facility	

Are copies of the detailed reports from previous inspections available for this site visit? Have they been transposed to a format allowing easy cross-referencing during the inspection visit? This should include records of individual tigers' unique identifiers, their sex, age and breeding status, and the facility's management practices etc. Review the records to identify any additional relevant questions that should be included in the interviews/inspection.	
What type of microchip scanner is required?	
Are there any previous site issues or concerns?	
Is there any new information relevant to the inspection?	
If tigers are not being kept as pets, what annual accounts and other information relating to Section 7 has been gathered? Review these to add other relevant questions to this template	
What health and safety considerations are needed for the inspection visit?	
What biosafety considerations from the inspection are there for the facility's animals?	
What biosafety considerations are there for the inspection team? (e.g. in areas with recent avian flu outbreaks, sufficient	

protective equipment should be provided to all team members. In the event of confirmed cause of death by avian flu, the site-inspection should be postponed)	
What are the risks of prolonged tiger disturbance from the inspection?	

C. Site inspection – when on site

Ensure the following have been completed	**Tick upon completion**
Plan a communications and response/exit strategy in case of health and safety risks	
Brief the facility staff and/or owners, and agree the inspection process with them	
Cross-reference records from previous inspections of individual tigers' unique identifiers (i.e. microchips and stripe pattern photos, and where feasible DNA profiles) against ALL tigers present. Include details of each tiger's sex, age, reproductive status and health condition.	
Collect records of unique identifiers of any new tigers present, and evidence of transfer or disposal of individuals not accounted for.	
Access by inspectors of all areas of the facility in a methodical manner, including freezer storage and animal disposal areas	
What is the name and position of the facility representative(s) that was interviewed?	

D. Inspection questions to be answered

Example questions to include in the inspection survey are provided here, which can be adjusted according to the specific circumstances. It is encouraged that all of the questions are answered, where feasible, so as to provide an accurate and comprehensive assessment of the facility and any risks. Space for answers should also be adjusted accordingly, if printing the form for completion.

These questions should be answered in the report of the inspection team using their own observations during the visit and/or responses from the facility owners and staff. The inspectors' observations should be used to qualify the validity of responses from facility owners and staff.

Where possible a photographic record should also be made, especially of any issues of concern. Include a reference number for the photograph against the corresponding question(s) below. Assigning an inspection team member to this specific task can be advantageous.

1. Tiger Stocks				
	Question	**Facility Staff /Owner Response**	**Inspection Team Observations**	**Photo reference (where needed)**
1.1	What is the current total number of tigers at this facility?			
1.2	Are any tigers on loan to other facilities, or at offsite locations? If yes, how many, which individuals, for how long, to which facility / location?			
1.3	How many tigers have been born in the last 12 months? Have they been microchipped with a corresponding stripe			

	pattern image and DNA sample taken?			
1.4	How many tigers died in the last 12 months? For each tiger record: Age at death Cause of death How were individual specimens disposed of?			
1.5	What is the carrying capacity of adult tigers in the current facility? Carrying capacity would need to be defined in terms of how many tigers can be safely maintained in conditions per GFAS / AZA / other high standards of care			
1.6	Are there plans to increase the adult carrying capacity? For what purpose?			
1.7	What is the ratio of male to female tigers?			

2. Business practices

If the animals are not being kept as pets, or in a sanctuary, the facility is presumably claiming to be a zoo / safari park / other business. In these cases, the tax / annual accounts should be accessible and used as an important source of information regarding the business practices.

2.1	Who is the licensed owner of the facility? Is there a company name? (Please include all individuals benefiting)			
2.2	How many captive tiger facilities does that individual/company own?			
2.3	What is the stated purpose of the tiger facility?			
2.4	Have the required licenses been issued? License for possession? License for breeding? License to retain specimens / parts / derivatives of deceased animals? License to sell specimens / parts / derivatives of deceased animals?			
2.5	Have any licenses been issued retrospectively? Why?			
2.6	Is the facility open to the public or is it private?			

2.7	If open to the public, who are the typical clientele?			
2.8	Is the facility close to a tourist area? Include details			
2.9	Does the facility have infrastructure to cater for visitors? If so, what?			
2.10	Is the facility near a national border or area of concern for wildlife trafficking (routes or markets)? Include details			
2.11	Do ticket sales provide sufficient income to support expenditure including tiger care, staffing costs, etc.?			
2.12	Is there another form of income? Include details			
2.13	Is there onsite sale of products which may be produced using captive tigers (i.e. “special bone wine”, “tiger bone glue”, teeth, claws, skins)?			

2.14	Are there any other businesses which are owned by or benefit the owners and could be linked to the business of the captive tiger facility and/or wildlife trade (e.g. other facilities keeping tigers / Asian big cats, wineries, taxidermists, bone glue processing, restaurants, supply of tiger / Asian big cat parts and products to retail / wholesale / hospitals etc.)?			
2.15	Are other species of wildlife kept, bred and/or sold at the facility?			
2.16	Are there any financial accounting issues which raise concern?			
2.17	Is the facility a *bona fide* sanctuary, which prohibits the breeding, buying, selling and handling of tigers by visitors?			
3. Environment, husbandry and security practices				

3.1	How are tigers individually identifiable?			
3.2	Do data records kept by the facility include individual tiger numbers associated with their microchip numbers, stripe patterns and/or DNA profiles?			
3.3	Do they record management, breeding, movement and disposal of tigers? How are records maintained (paper / digital)?			
3.4	Does the facility provide the required reports to the central government on tiger care and movement?			
3.5	Are tigers breeding?			
3.6	Are breeding licenses obtained and sufficient for the breeding which is occurring at the facility?			
3.7	Are the tigers part of a regional / international scientific accredited studbook breeding program for conservation (maintaining genetic			

	diversity and protecting natural behavior traits)? How are breeding pairs selected?			
3.8	Are tigers interbred with other species (lions etc.), and if so, why?			
3.9	How many female tigers are being bred?			
3.10	How many male tigers are breeding?			
3.11	Are male and female tigers separated or mixed in an enclosure other than for breeding?			
3.12	Are there any contraception / sterilization / castration policies implemented to prevent breeding? Provide details			
3.13	Are post reproductive adults euthanized?			
3.14	Are pregnant female tigers separated from males?			

3.15	At what age are cubs separated from their mothers?			
3.16	How many cubbing dens are present?			
3.17	How long are females rested before breeding again?			
3.18	Are established pairs bred repetitively?			
3.19	On average how many cubs are born per breeding cycle?			
3.20	On average what percentage of cubs survive to be a juvenile?			
3.21	Is there any brother/sister or parent/offspring breeding?			
3.22	Is there a breeding plan to minimize inbreeding?			
3.23	Are any software tools used to monitor breeding or minimize diversity loss / inbreeding?			

3.24	Where required to register births and deaths, at what age are new births registered and how long after death, are deaths registered?			
3.25	Are tigers loaned or donated to other tiger facilities for breeding purposes? Which individuals, for how long, to which facilities?			
3.26	How many tigers are normally in an enclosure together?			
3.27	Are tigers kept in unnatural groups, for example many tigers or mixed with other species?			
3.28	Are the tigers exhibiting common behavioral problems? See examples listed in section 6.			
3.29	Are the tigers habituated to people?			
3.30	Are the tigers handled by visitors?			
3.31	Are the tigers handled unnecessarily by staff?			

3.32	Are the tigers drugged unnecessarily?			
3.33	Are welfare standards sufficiently met? Include details on: - Habitat design and containment (e.g. shelter, water drainage, perimeter boundaries, etc.) - Ambient environment (e.g. lighting, temperature, humidity, water and air quality, etc.) - Nutrition (e.g. water, diet, feeding techniques, etc.) - Behavioral management (e.g. environmental enrichment, tiger-caregiver interactions, etc.) AZA's *Tiger (Panthera tigris) Care Manual* and GFAS's *Standards for Felid Sanctuaries* provide more details			
3.34	Are healthy teeth or claws removed?			
3.35	What is the most common cause of mortality?			

3.36	How are dead tigers or their parts disposed of? How is this evidenced?			
3.37	Is there sufficient veterinary care for the tigers? Include details - e.g. infrastructure for access for medical examination, onsite presence, veterinary staff experience of caring for large felids? (see also Appendix 2) AZA's *Tiger (Panthera tigris) Care Manual* and GFAS's *Standards for Felid Sanctuaries* provide more details			
3.38	Is the diet provided to the tigers sufficient?			
3.39	Are there any health and safety or biosecurity considerations which raise concern?			

10. Assessment after facility inspection and interviews

The inspection team should meet after the site inspection to review and discuss all of the responses. Remember, the inspectors' observations should be used to qualify the validity of responses from facility owners and staff.

Aspects to highlight in the inspection report in addition to the findings from the template used from Section 9:

- Have any of the risk factors listed in sections 6, 7 and 8 been met that may indicate a captive tiger facility is of concern?
- What recommendations and follow up actions are needed? Include timescales for delivery, implementers, and a process for evaluation.
- When should the next inspection be scheduled?

Information from these reports should be submitted to CITES in line with their requirements.

Appendix 1: Definition and evaluation of conservation breeding of captive tigers

Conservation breeding of captive tigers can be defined as: Ex-situ management of individuals that aims to minimize the degradation of behaviors, physical attributes and genetic diversity of the species (or subspecies) over at least 100 years, which benefits the conservation of in-situ populations by preparing for the introduction of acclimated, viable individuals into the wild where they are extinct, at an unviable density, or require genetic rescue, and where the preferred option of wild to wild translocations is not viable. Breeding is managed and coordinated regionally (i.e. at the scale of more than one country, not an administrative region or province within a single country) or globally, not at the facility level, through recognized associations.

Breeding is based on relatedness and aimed at minimizing the inevitable loss of genetic diversity or maximizing individual heterozygosity dependent upon the restoration requirements.

Ex-situ is defined as per the IUCN Guidelines on the Use of Ex Situ Management for Species Conservation. i.e., "ex-situ" is defined as conditions under which individuals are spatially restricted with respect to their natural spatial patterns or those of their progeny, are removed from many of their natural ecological processes, and are managed on some level by humans.

To determine if existing facilities are engaged in conservation breeding of tigers the following checklist in the table below can be used (adapted from Sarah Christie, ZSL (2013) Preliminary Study of the Feasibility of a Tiger Restoration Programme in Cambodia's Eastern Plains (Appendix II).

Tigers in conservation breeding programs	
Desired product	Gene pool – long term maintenance of maximum possible wild gene diversity Note: populations of high allelic diversity and without adaptation to captive conditions would be preferable as it would contain more capability to adapt to wild conditions.
Aim	Maintain a behaviorally, physically and genetically healthy population over at least 100 years.
Coordination of breeding	Regionally (more than one country, not a region within a single country) or globally managed by zoo associations typically involving a number of cooperating zoos. Breeding recommendations based on genetic analysis, issued centrally and followed, after discussion, by all holders. Breeding outside recommendations actively avoided.
Genetic management strategy	Equalize and maximize the founder base. Avoid inbreeding.
Effect on wild gene pool	Maintained. Maximum possible wild gene diversity.

Approach to natural behaviors	Preserve natural behaviors. House only in facilities which preserve natural behaviors - avoid hand-rearing or unnatural social groups, for example, large single-sex adult groups as tigers are naturally territorial.
Demographic management strategy	Based on demographic analysis. Breed only as many animals as can be appropriately housed within the program for their lifetimes and as appropriate to the studbook requirements, i.e. conservation breeding is not about maximizing the number of the ex-situ population and there is no need to have high numbers. Lengthen afterbirth interval (breed slowly) to minimize genetic drift.
Founder stock and breeding pool	Stock clearly tracing back to known wild caught founder stock and geographic origin (labeled using sub-specific designations) and therefore contain discrete sets of genetic adaptations to a particular habitat and climate type. Each regional population is managed to conserve a gene pool as broadly representative of the original wild population as possible.
Record keeping	All tigers can be traced through institutional records, with ancestry fully known and recorded.

Appendix 2: Additional background details on management practices that should be assessed in relation to section 8

Contraception strategies for captive tigers are essential for managing tiger populations in captivity, especially to prevent uncontrolled breeding and maintain genetic diversity. The most commonly used contraception methods for captive tigers include:

- Hormonal Contraception: Hormonal contraception involves administering hormones to prevent the female tiger from coming into oestrus (heat) and ovulating. Various hormonal methods can be used, such as:
    - Medicated Implants: Slow-release hormone implants can be placed under the tiger's skin, providing a controlled release of hormones over an extended period.
    - Injectable Hormones: Hormonal injections can be administered at regular intervals to suppress oestrus.
- Oral Contraceptives: Some zoos use oral contraceptives for female tigers, but this method may require frequent administration.
- Surgical Sterilization: Surgical sterilization involves the removal of reproductive organs, such as ovaries or testes, to permanently prevent reproduction. This is a more permanent and irreversible contraception method. Another surgical sterilization method involves the interruption of the gamete pathway by transecting the vas deferens (vasectomy) or oviduct (tubectomy or tubal ligation). These procedures are generally less invasive, prevent reproduction without affecting hormone production and have the theoretical potential of being reversed.
- Contraceptive Vaccines: Researchers are also exploring the use of contraceptive vaccines that target reproductive hormones, preventing fertility in both male and female tigers.

- Breeding Management: Effective breeding management involves carefully planning and controlling the pairing of tigers to prevent unwanted or uncontrolled breeding. This method is often combined with other contraception strategies to optimize reproductive control.
- Behavioral Control: Behavioral control methods aim to prevent or limit mating opportunities. This can be achieved through separating males and females during their respective breeding seasons or using behavior-based training to prevent mating behaviors.

Inbreeding among tigers, or any species, refers to mating between related individuals, such as siblings or parent-offspring pairs. Inbreeding can have several negative consequences for the population, leading to a phenomenon known as inbreeding depression. Here are some of the consequences of inbreeding in tigers:

- Reduced Genetic Diversity: Inbreeding reduces the genetic diversity within a population. Tigers with reduced genetic diversity are more susceptible to the effects of harmful mutations, diseases, and environmental changes. A genetically diverse population has a better chance of adapting to changing conditions and surviving threats.
- Increased Expression of Harmful Traits: Inbreeding can lead to the expression of harmful recessive traits that are normally masked by dominant genes in the genetic makeup. These harmful traits can manifest as various health issues or physical deformities, negatively impacting the overall fitness and survival of the tigers.
- Lower Reproductive Success: Inbreeding can result in reduced reproductive success, including lower fertility rates, smaller litter sizes, and increased cub mortality.
- Weakened Immune System: Inbred tigers may have weakened immune systems, making them more susceptible to infections and diseases. As a result, the population may be more vulnerable to disease outbreaks that could have devastating consequences for the species.
- Loss of Adaptability: Reduced genetic diversity limits the ability of a population to adapt to changing environmental conditions. Tigers facing new challenges, such as habitat loss or climate change, may struggle to cope and survive if their genetic diversity is already compromised.
- Reproductive and Behavioral Issues: Inbreeding can lead to abnormalities in reproductive organs and behavior. In some cases, inbred tigers may have difficulty mating or exhibit abnormal mating behaviors.
- Extinction Risk: As the negative effects of inbreeding accumulate over generations, the risk of local populations or even entire subspecies facing extinction increases. In small and isolated populations, inbreeding can lead to a population bottleneck, where the gene pool becomes so limited that the population becomes vulnerable to extinction.

To mitigate the consequences of inbreeding in tigers, conservation efforts focus on maintaining and promoting genetic diversity and individual tiger heterozygosity in both captive and wild populations. This includes carefully managing breeding programs, establishing gene pools across different populations, and preventing the mating of closely related individuals. Ensuring healthy and genetically diverse tiger populations is crucial for the long-term survival and conservation of tigers.

The best **diet** for captive tigers should closely mimic their natural diet in the wild to ensure they receive the necessary nutrients for optimal health and well-being. Tigers are obligate carnivores, meaning they primarily consume meat, and their diet consists mainly of large herbivores. A balanced and appropriate diet for captive tigers typically includes the following components:

- Raw Meat: The primary component of a tiger's diet should be raw meat, preferably from large herbivores like cattle, horse, or deer. Feeding whole carcasses or large chunks of meat helps simulate natural feeding behaviors and provides essential nutrients.
- Bones: Tigers need bones in their diet to provide calcium and other minerals. Whole carcasses or meaty bones, such as beef ribs or leg bones, can help meet this dietary requirement.
- Organ Meat: Organ meats like liver, kidney, and heart are crucial for providing essential vitamins and minerals. They should be included in the diet regularly.
- Variety: Offering a variety of meats and cuts helps ensure that tigers receive a well-rounded and balanced diet. Different sources of meat can provide a broader spectrum of nutrients.
- Supplements: In some cases, depending on the specific diet provided, it may be necessary to add vitamin and mineral supplements to ensure the tigers are getting all the nutrients they need.
- Feeding Schedule: Captive tigers should be fed on a regular schedule to promote healthy digestion and reduce stress. Typically, they are fed daily or every other day.
- Hydration: Tigers should have access to clean, fresh water at all times to stay hydrated.

The frequency of **veterinary check-ups** for captive tigers depends on several factors, including the tiger's age, health status, and any specific medical conditions they may have. In general, regular veterinary examinations are essential to monitor the health and well-being of captive tigers and to detect and address any health issues promptly. The facility should have a designated on-call or staff veterinarian or veterinary team with qualifications equivalent to a Doctor of Veterinary Medicine (DVM).

As a guideline, here are some recommendations for veterinary check-ups for captive tigers:

- Annual Health Check-ups: For adult, healthy tigers, an annual health check-up is typically recommended. This allows the veterinarian to perform a comprehensive examination, review the tiger's medical history, update vaccinations, and assess overall health.
- Young Tigers and Geriatric Tigers: Young tigers and geriatric tigers may require more frequent veterinary check-ups. For young tigers, more frequent visits during their growth and development stages can ensure they are thriving. For geriatric tigers, check-ups may be more frequent to monitor age-related health concerns.
- Sick or Injured Tigers: Tigers showing signs of illness or injury should receive immediate medical attention, regardless of their routine check-up schedule.
- Breeding or Pregnancy: If tigers are being managed for breeding purposes, additional veterinary care may be necessary during breeding season or during pregnancy to monitor the health of the animals and assess the progress of the reproductive process.
- Special Health Conditions: Tigers with specific health conditions, such as chronic medical issues, dental problems, or other concerns, may require more frequent check-ups and specialized care.