CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Joint sessions of the 33rd meeting of the Animals Committee and
the 27th meeting of the Plants Committee
Geneva (Switzerland), 12 - 13 July 2024

Regulation of trade

Exemptions and special trade provisions

REVIEW OF CITES PROVISIONS RELATED TO TRADE IN SPECIMENS OF ANIMALS AND PLANTS NOT OF WILD SOURCE

1. This document has been prepared by the co-chairs of the joint intersessional working group on the *Review of CITES provisions related to trade in specimens of animals and plants not of wild source.*[*]

2. At its 19th meeting (CoP19; Panama City, 2022), the Conference of the Parties adopted Decision 19.179 and 19.180 on the *Review of CITES provisions related to trade in specimens of animals and plants not of wild source* as follows:

Directed to the Standing Committee, in consultation with the Animals and Plants Committees

19.179 *The Standing Committee shall:*

a) in consultation with the Animals and Plants Committees, develop specific terms of reference including modus operandi and a roadmap as appropriate, to guide the continuation of the review of trade in specimens of both CITES-listed animals and plants not of wild source;

b) continue to consider amendments to Resolution Conf. 10.16 (Rev. CoP19) and Resolution Conf. 12.3 (Rev. CoP19), as well as any amendment to other Resolutions concerning provisions on trade in specimens of both CITES-listed animals and plants not of wild source, taking into account findings and suggestions in document SC74 Doc. 56 and any related comments and recommendations from the Standing Committee, Parties, the Secretariat or other stakeholders;

c) review issues and challenges in the application of the Convention for trade in non-wild specimens of both CITES-listed animal and plant species, in particular key elements that may contribute to the uneven application of Article VII, paragraphs 4 and 5, and consider the scientific advice and guidance from the Animals and Plants Committees on the need for implementing these Articles differently for either animal specimens from species bred in captivity or plant specimens that are artificially propagated; and

d) make recommendations for addressing these issues and challenges, including amendments to existing Resolutions or development of a new Resolution or Decisions to address these issues and challenges, for consideration at the 20th meeting of the Conference of the Parties.

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[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author*

Directed to the Animals and Plants Committees

19.180 *In support of the Standing Committee's implementation of Decision 19.179, the Animals and Plants Committees shall, separately and together in their joint session:*

a) consider the key elements in the current implementation of Article VII paragraphs 4 and 5 for animals and plants, respectively, in the current applicable Resolutions;

b) determine if there is a need to implement Article VII paragraphs 4 and 5 differently for either animal specimens from species bred in captivity or plant specimens that are artificially propagated than what is outlined in existing Resolutions, and provide their recommendations to the Standing Committee in time for its 78th meeting; and

c) provide any other scientific advice and guidance on CITES provisions concerning trade in non-wild specimens of CITES-listed animal and plant species to the Standing Committee upon request and as appropriate.

3. At the 26th meeting of the Plants Committee (PC26; Geneva, June 2023) and the 32nd meeting of the Animals Committee (AC32; Geneva, June 2023), the Committees considered document PC26 Doc. 23 / AC32 Doc. 25 prepared by the Chairs of the Animals and Plants Committees. Canada, as Chair of the Standing Committee's intersessional working group on trade in specimens not of wild source (SC-IWG), provided an update on the SC-IWG's activities to both PC26 and AC32 and drew the Committee's attention to information document AC32 Inf. 5 / PC26 Inf. 2 that provided a draft road map for a review of CITES provisions related to trade in specimens of animals and plants not of wild source that was being considered and discussed by the SC-IWG.

4. The Plants and Animals Committee established intersessional working groups to work separately and jointly with the mandate to (see summary record PC26 SR and AC32 SR):

   a) consider the key elements in the current implementation of Article VII paragraphs 4 and 5 for animals and plants, respectively, in the current applicable Resolutions;

   b) determine if there is a need to implement Article VII paragraphs 4 and 5 differently for either animal specimens from species bred in captivity or plant specimens that are artificially propagated than what is outlined in existing Resolutions, and provide their recommendations to the Standing Committee in time for its 78th meeting;

   c) provide any other scientific advice and guidance on CITES provisions concerning trade in non-wild specimens of CITES-listed animal and plant species to the Standing Committee upon request and as appropriate; and

   d) report on progress to the joint session of the 33rd meeting of the Animals Committee and 27th meeting of the Plants Committee.

5. The membership of the working group was agreed as follows:

   Chair for AC: representative for North America (Mr. Benítez Diaz);

   Chair for PC: representative for Oceania (Mr. Wrigley);

   AC Members: representative for Europe (Mr. Benyr);

   Parties: Australia, Brazil, Canada, China, Colombia, European Union, Germany, India, Malaysia, Mexico, Peru, Republic of Korea, Russian Federation, South Africa, United Kingdom of Great Britain and Northern Ireland, United States of America; and

   IGOs and NGOs: Food and Agriculture Organization of the United Nations, United Nations Environment Programme – World Conservation Monitoring Centre, Association of Zoos and Aquariums, Euromed, European Pet Organisation, IWMC-World Conservation Trust, Organization of Professional Aviculturists, Ornamental Fish International, Parrot Breeders Association of Southern Africa, Species Survival Network, Sustainable Users Network, TRAFFIC, Wildlife Conservation Society, World Wide Fund for Nature

6. The intersessional working group (IWG) worked through electronic means to implement the mandate. The co-chairs reminded the IWG that the Animals and Plants Committees will be supporting the SC-IWG by identifying the conservation risks associated with non-wild trade, any accompanying mitigating actions and the assumptions on which those mitigating actions are based, as well as the potential differences between animals bred in captivity and artificially propagated plants. The IWG should also provide highlight areas to improve clarity and consistency within current CITES resolutions, if appropriate.

7. The co-chairs shared a questionnaire with the IWG and requested the Secretariat to publish a Notification to the Parties to share the questionnaire with all Parties. The Secretariat published Notification to the Parties No 2024/021 on 17 January 2024 with the questionnaire included as an Annex. The deadline for submission of responses to the questionnaire was 23 February 2024. Responses were received from 12 Parties (Australia, Austria, Canada, China, Colombia, Germany, Indonesia, Mexico, South Africa, Spain, United States of America and Sweden), Food and Agriculture Organization, International Union for the Conservation of Nature (IUCN), and 9 non-governmental organisations [Animal Welfare Institute (AWI), Born Free Foundation (BFF), Defenders of Wildlife, ProWildlife, Species Survival Network (SSN), International Wildlife Management Consortium (IWMC), The Ornamental Aquatic Trade Association (OATA), TRAFFIC and World Wide Fund for Nature (WWF)].

8. The co-chairs considered the responses received and prepared the following two documents that were shared with the IWG and the co-chairs of the SC IWG:

   a) Annex 1: Consolidated summaries of the responses to the questions shared with the IWG and through the Notification.

   b) Annex 2: Scientific aspects/advice to be considered by the Standing Committee intersessional working group.

9. The consolidated responses received is contained in Annex 3 to the present document and could be of interest to the Animals and Plants Committees as well as the SC IWG as it contains detailed information including specific examples.

Recommendations

10. The Animals and Plants Committees are invited to:

    a) consider the information provided in the present document and its Annexes;

    b) provide the scientific advice contained in Annex 2 to the Standing Committee through its intersessional working group on the *Review of CITES provisions related to trade in specimens of animals and plants not of wild source*; and

    c) agree that Decision 19.180 has been implemented and recommend its deletion to the 20th meeting of the Conference of the Parties.

AC/PC INTERSESSIONAL WORKING GROUP: SPECIMENS NOT OF WILD SOURCE
CONSOLIDATED SUMMARIES

a) Is the conservation risk for the wild populations associated with trade in specimens of animals and plants not of wild source, lower, higher or similar to trade in wild specimens in your country

i) Why does conservation risk vary?

Summary

The consensus seems to lean towards a potentially lower risk when robust systems and practices are in place, but with some caution against generalizing this across all species and circumstances. While there are successful examples of reduced risks through trade in specimens from non-wild sources, challenges such as potential laundering, inadequate regulatory frameworks, and varying impacts depending on the species and local conditions make it necessary to evaluate each case individually.

Some countries and organizations indicated that the risk is **generally lower** when trade involves specimens not of wild source. Reference is made to robust regulatory systems and successful captive breeding programs that relieve pressure on wild populations. Furthermore, economic benefits could remove pressure on the harvest of wild populations that can lead to recovery of populations in the wild.

Others indicated that the risk can be **similar** or vary based on the species and the situation. Management and regulatory practices could also ensure that the trade in wild specimens carry a similar conservation risk as trade in specimens not of wild source. Depending on the species involved, including the intrinsic biology of the species and whether it's a native / indigenous species, the risk could differ. The risk may be considered low if it's a commonly bred / artificially propagated species that is native / indigenous. While the risk may increase with the difficulty to breed / cultivate the species and/ or if the species is rare in the wild.

At least one Party indicated that it can be difficult to determine the impact on the wild population if data / information is limited.

Some Parties highlighted that while there can be benefits to trading in non-wild specimens, such as reduced pressure on wild populations and support for species' recovery, the actual impact varies widely depending on the specific circumstances and management practices.

Parties also indicated that it's difficult to generalize the risk levels as they depend highly on specific conditions and regulations. They emphasize the need for case-by-case assessments.

Some organizations cautioned that in some cases, the risk can be higher, especially when captive-bred or artificially propagated specimens are used to launder wild-caught specimens or when such practices indirectly increase demand for wild specimens.

The level of the conservation risk associated with trade in specimens not of wild source is linked to the following issues:

- *Management measures, regulation and enforcement*: All Parties emphasized the importance of management measures and regulation, including in terms of establishment of founder stock, addressing genetic diversity and monitoring as well as effective enforcement of regulatory measures to reduce risk to wild populations.
- *Conservation benefits from trade*: In general, it was acknowledged by Parties that trade in captive breeding / artificial propagation can have conservation benefits, especially when linked with *in-situ* conservation initiatives in the species' range countries.
- *Traceability*: Some Parties and organizations emphasized the importance of effective traceability systems to ensure specimens are bred in captivity or artificially propagated and not of wild source,
- *Data linked to management and monitoring*: Some Parties indicated that if there is a lack of data, or if the trade is not well-regulated or monitored, it is difficult to ascertain whether the risk is higher, lower, or similar and more information is needed to make a proper assessment.
- *Non-indigenous species*: Some Parties mentioned that Parties may be cautious about trade in non-indigenous species due to risks such as pathogen transmission or invasive species issues.
- *Economic benefits and demand*: A number of Parties recognized the economic benefits of trade, but there is an understanding that demand must be managed to prevent overexploitation (understanding demand dynamics of the trade).
- *Risk of laundering*: Some organizations raised concerns about the laundering of wild-caught / wild-sourced specimens through captive breeding / artificial propagation operations, highlighting the need for effective traceability and monitoring systems.

a) Is the conservation risk for the wild populations associated with trade in specimens of animals and plants not of wild source, lower, higher or similar to trade in wild specimens in your country

i) Why does conservation risk vary?

- *Case-by-case assessment*: The complexity of conservation risks necessitates case-by-case assessments to understand the impact of trade on wild populations properly as it depends on diverse factors including the conservation status of the species as well as the species-specific life history traits and on how easy and with what effort/ at which costs the species can be bred in captivity/ artificially propagated.

Plant specific considerations:

- Large volume of trade in artificially propagated / cultivated specimens – positive implications for wild specimens (including when wild collection is prohibited).
- Challenges to determine the level of conservation risk when trade is only taking place in artificially propagated specimens.
- Risk of fraudulent activities, such as laundering wild-sourced plants as artificially propagated, particularly for species that are less common in cultivation or where cultivation is difficult and not well-established. This could lead to increased demand for wild material as traders might declare it as cultivated to bypass legal restrictions.
- The concerns include the potential for laundering wild plants through nurseries that trade in artificially propagated plants, especially those listed under Appendix II, which have less oversight compared to Appendix I species. Lack of adequate capacity and resources to monitor nurseries and growers impacts the conservation risks associated with such trade. Additionally, there's a mention of the demand for wild specimens with unique characteristics that cannot be met through artificially propagated specimens.
- Concerns about illegal collection and the need for exemptions that don't harm wild populations.

Animal specific considerations:

- Success of species recovery programs which benefited from captive breeding programs.
- The role of breeding operations in meeting trade demands, which can reduce the risk for wild populations. However, it also warns of potential risks when breeding operations rely on continuous input from wild populations or are not economically feasible, which could further drive demand for wild specimens.
- Concerns about high-value species that are expensive to raise in captivity. The effectiveness of captive breeding as a conservation tool can be compromised if it's not economically viable or if it increases demand for wild-caught specimens.
- Scrutiny applied to captive-bred animals, focusing on ensuring that these specimens meet strict criteria to prevent them from being laundered as non-wild sourced.
- Risks associated with unintentional release of captive bred specimens were highlighted, including the escape of invasive species and the spread of diseases from captive to wild populations.
- Concerns about the intentional release of captive bred specimens into the wild. Large-scale intentional release of captive bred specimens into the wild may not be beneficial to the conservation of the species due to genetic and behavioral differences from wild populations and could have an impact on other native species.

a) iii) Factors that might influence the difference in conservation risk

Summary

The factors that might influence the conservation risk include biological, regulatory, economic, and operational aspects. Key factors mentioned:

- *Species*: The conservation status of the species and the biological characteristics of the species, including fecundity, generation length, recovery, reproductive rates in captivity / artificial propagation, scarcity of the species, the ability to reproduce in captivity or to artificially propagate, overall resilience, susceptibility to diseases and external pressures/threats.
- *Type of specimens*: Trade in seeds and seedlings posing a lower risk than trade in adult plants. The ability to distinguish between captive bred/artificially propagated specimens and wild sourced specimens (traceability) is essential.
- *Potential perverse incentives*: The trade in specimens that could be sustainably harvested from wild populations but are sourced only from captive populations (in some instances outside the range State) reduce incentives for the conservation of the species in its native habitat.
- *Status of species:* If regular collection is needed to supplement production systems the risk could increase.

a) iii) Factors that might influence the difference in conservation risk

- *Production systems and methods*: Well managed production systems that meet regulatory standards can reduce the conservation risk and help mitigate risks associated with illegal introduction of wild specimens, escape and disease transmission. Specific cultivation challenges and economic impacts associated with different plant species, where production does not meet the demand, potentially increasing pressure on wild populations.
- *Regulatory compliance and monitoring*: Effective regulation and monitoring are essential. The need to distinguish between captive-bred / artificially propagated specimens and wild specimens was emphasized.
- *Economic factors*: The economic viability of breeding or growing specimens impacts conservation risk. High costs associated with captive breeding can increase pressure on wild populations if the captive specimens are too expensive for the market. Increased maintenance costs could lead to abandonment of commercial plantations, negatively impacting wild populations. If the costs to produce specimens not of wild source increase and the price for specimens do not cover expenses, it could result in collection of wild specimens.
- *Demand and market dynamics*: The demand for specific species or specimens affects conservation risk by influencing the pressure on wild populations. High demand that exceeds the supply capabilities of captive or artificially propagated sources can lead to increased wild harvesting and in some instances the demand is for wild specimens and not captive bred or artificially propagated specimens. The economic and social benefits derived from non-wild specimens can also promote conservation measures and reduce extraction from the wild.
- *Genetic and health risks*: The potential for the transfer of non-local genetic material or pathogens from captive-bred or artificially propagated specimens to wild populations was raised as a concern. Such risks necessitate strict controls on production and disposal methods.
- *Incentives for local communities*: The engagement of local communities in conservation practices is crucial. Sustainable livelihoods that rely on responsible breeding and harvesting practices can support both local economies and conservation efforts.

Plant specific considerations:

- Genetic and health risks and considerations: Concerns are raised about the potential for woods-grown production systems to transfer non-local genetic material or seed-borne pathogens into wild populations. This could alter the genetic diversity of native species and potentially introduce diseases that could affect the health of wild species and ecosystems they are part of.
- Production systems and sustainability: Challenges relating to the sustainable production of certain plant species, some species is mainly harvested from the wild to obtain the specimens for trade (e.g. derivatives such as wax), with insufficient plantation production to meet international demand.
- Propagation and cultivation challenges: In some instances, production at the commercial level focuses on species that are easy to propagate, those with a risk status and difficult propagation do not meet production demands. This leads to a need for modern biotechnology techniques such as micropropagation to produce such species (e.g. certain cacti) intensively, ensuring a constant supply and possibly alleviating pressure on wild populations.
- Economic impacts and market demand: The economic viability of plantations and their long-term maintenance costs are discussed as crucial factors. For example, cedar plantations may face abandonment due to rising maintenance costs, which can have negative repercussions on wild populations because it is difficult to differentiate between artificially propagated and wild species when they coexist in the same area.
- Risk of harvest and laundering: The type of specimens in trade influences conservation risk, with trade in seeds and seedlings posing a lower risk than trade in adult plants, which take longer to produce. The risk of harvesting and laundering wild plants as parental stock for trade is particularly high for slow-growing species.

Animal specific considerations:

- Factors listed above
- Cost of captive breeding and husbandry requirements: Higher investment, in terms of food, habitats, veterinary services, payment of personnel. If the costs rise there may be pressure to collect wild specimens. The more complex the species needs (e.g., in terms of space, climatic conditions, triggers for reproduction, social behavior etc.) are, the more difficult is it to reproduce it on a large scale.

b) Do you see a difference in conservation risk for the wild populations when you compare *in-situ* C/A (and subsequent trade) versus *ex-situ* C/A

Summary

- Some Parties indicated that clarification was required relating to what constitute *in-situ* and *ex-situ* captive breeding / artificial propagation.
- With regards to *In-situ* captive breeding / artificial propagation, the following were highlighted by some Parties and observers:
    - Conservation risks for wild populations include transfer of genetic material to wild populations from captive or artificially propagated specimens that have been genetically selected for specific traits.
    - For indigenous species, there is also a risk of laundering wild specimens in breeding facility - mitigation measures needed. Facilities may rely on regular augmentation from the wild and may be prone to wildlife laundering if not properly controlled and regulated.
    - Should be done with autochthonous propagation material to conserve local genotypes and prevent substitution and hybridization.
    - In-situ captive breeding / artificial propagation could support livelihoods and habitat conservation.
- Some Parties raised the following concerns about *ex-situ* (non-indigenous) systems: invasive species, vector of pathogen / disturbance of ecosystem could be a concern (both in terms of intentional and unintentional release into the wild).
- Ranching operations can support conservation of wild habitats and improve the conservation status of the respective species.
- Both systems could support reintroduction, re-population / population supplementation, recovery of wild populations.
- Cooperation between in-situ/ex-situ systems could strengthen benefits. Research in ex-situ systems could enhance knowledge of the species, but there may be a disconnect from conservation efforts for wild populations (especially when ex-situ system is not in the range State).
- Likely species and case specific.
- Some examples provided where there is no difference in conservation risk for the wild populations when comparing *in-situ* versus *ex-situ* artificial propagation (and subsequent trade)
- *In-situ vs. Ex-situ*: Both have their risks and benefits; in-situ C/A can support conservation by maintaining natural conditions and genetic diversity but may lead to genetic exchange or disease transfer to wild populations. Ex-situ C/A provides a controlled environment, minimizing these risks but may lack direct benefits for the range states or local communities.
- *Genetic and ecological risks*: In-situ C/A risks introducing genetically modified or selected traits into wild populations, potentially affecting genetic diversity. Ex-situ C/A could risk introducing invasive species or pathogens into new environments if escapes occur.
- *Impact on wild populations*: In-situ operations could risk laundering of wild specimens or put pressure on local ecosystems due to concentration of specimens. Ex-situ operations typically pose less direct risk to wild populations since they are isolated from natural habitats.
- *Benefits to local communities*: In-situ C/A can provide livelihoods and incentivize conservation, engaging local communities in the process. Ex-situ breeding, especially if done in non-range states, might not offer these direct benefits.
- *Conservation and research*: Ex-situ breeding can support conservation by providing backup populations for reintroduction and valuable scientific research, whereas in-situ C/A can lead to improved conservation status through well-regulated ranching or farming.
- *Specific cases*: The document also mentions specific cases like the cheetah, bighorn sheep, and plant species, where the approach (in-situ vs. ex-situ) has varied implications on conservation and potential rewilding.
- *Regulatory considerations*: Both in-situ and ex-situ C/A need to be well-regulated to prevent illegal trade and laundering and to ensure any breeding or propagation supports conservation efforts.
- *International cooperation*: Cooperation under frameworks like CITES is important, as seen with the Citizen Conservation initiative, which includes ex-situ breeding programs that contribute to species conservation.

Plant specific considerations:

- Genetic conservation: In-situ cultivation should use autochthonous (local) propagation material to preserve local genotypes and prevent hybridization with non-native genotypes, which is crucial for maintaining genetic diversity.
- Sustainability: The offtake from in-situ artificial propagation must not exceed the prior input and should ideally result in a net increase or at least maintenance of the local wild population. Non-lethal offtake, like collecting only flowers, might be preferred.

b) Do you see a difference in conservation risk for the wild populations when you compare *in-situ* C/A (and subsequent trade) versus *ex-situ* C/A

- Community involvement: Engaging local communities, especially those previously involved in wild harvesting, in in-situ cultivation could provide alternative income and promote the conservation of both the species and their habitats.
- Scale of cultivation: Small-scale, restoration-oriented cultivation is suggested to have better conservation outcomes compared to large-scale, industrial approaches.
- Ex-situ cultivation benefits: Although ex-situ cultivation of overexploited plants may reduce pressure on wild populations, it may not directly benefit conservation efforts in the native range of the species.
- Timber and non-timber species: For timber flora, there is a lack of information to compare the conservation risks of in-situ versus ex-situ propagation. For non-timber flora, like cacti, ex-situ propagation in countries outside of their natural distribution does not provide conservation incentives for the species in their natural habitat.
- Livelihoods and conservation link: Growing plants in-situ may create livelihoods for locals and is closely linked to conservation when well-regulated, demonstrating that sustainable use can be compatible with conservation objectives.

Animal specific considerations:

- As per list above

c) i) What are the factors that need to be considered to assess the risk associated with these production systems?

Summary

- The production systems on a continuum of conservation risk, with unregulated / unsustainable wild harvest having the greatest risk on population sustainability, and overall risk to wild populations decreasing as the reliance of wild specimens decreases i.e. Harvest risk W > R> Y=F > A=C=D
- The following concerns were raised by some Parties and observers relating to the different production systems:
  - R: Misuse, e.g. the removal of gravid animals from the wild with the release of the adult after birth/hatch of offspring or its application to K-selected species;
  - F: require a NDF but could rely on augmentation from the wild which could have an impact on wild populations;
  - A, C, D: the least conservation risk for wild populations as they represent production systems that have the least direct contact with the natural environment and the least use of wild breeding stock. A potential risk concerns the genetic selection that can occur in operations to improve the marketability of the product. The escape of such individuals or their propagules into the environment and subsequent interbreeding with wild populations could be a conservation concern depending on location (in-situ, ex-situ). Some risk of laundering;
- The ability to distinguish between non-wild and wild specimens were also raised as a concern by some Parties.
- With regards to plants, the view was that the vast majority of plants do not need to be supplemented from wild sources.
- Legal origin, species biology, management measures, traceability, removal of wild specimens for parental stock or to avoid inbreeding; reproductive capacity in controlled environments, possibility of utilization according to their production capacity, demand, renewable derivatives were key issues that were raised in responses.
- Production systems would be of concern if they are not capable of producing the quantities of specimens that they intend to export and laundering wild-harvested specimens to meet demand becomes a concern (regulation, monitoring).

d) Has this trade in non-wild specimens had an impact on trade in wild specimens of the same species?

Summary

- Vary by species depending on how well different production systems are managed.

- Different production systems must be correctly managed to ensure there is no impact on wild specimens.
- Concerns:
    - Market for non-wild specimens that are often produced by non-range states may impact sustainable trade in wild specimens from range states when NDFs and LAFs for the wild trade can be made.
    - Limited / no benefits to range States from productions systems established outside the native range of the species.
    - Consumer preferences (if there is a preference for wild specimens)
- Quality and quantity of specimens produced through "not wild" sources – can be positive (consistent supply of same quality and quantity)
- Benefits to local communities from both wild and / or non-wild productions systems.
- Species biology, life history considerations:
    - Long-lived and slower growing species often present challenges for the captive-breeding and/or artificial propagation of specimens that are in demand - these characteristics put such species at higher risk of wild collection to supply the demand through the laundering of desired specimens as captive-bred/ artificially propagated.
    - The impact of trade in non-wild specimens of faster growing, easy to propagate / breed species on trade in wild specimens of the same species may be limited as the demand can easily be supplied– depending on specimen preferences in trade.

Plant specific considerations:

- The impact on plant trade varies by species and specimens. Artificial propagation could potentially alleviate pressure from wild populations. However, quality and quantity of artificially propagated material versus wild-sourced can influence demand and prices. Consumer preference for wild-collected plants due to different properties such as the content of active ingredients or other characteristics can persist, and an increase in supply from cultivation could potentially drive additional demand.
- Endemic species propagated ex-situ in countries outside their range, raising concerns about the origin of their parental stock.
- Negative: wild specimens illegally harvested and laundered into legal trade. Challenges with long-lived and slow-growing species that are at higher risk of wild collection to meet the demand.
- Positive: In some cases, the trade in artificially propagated plants has replaced the international trade of wild specimens.

Animal specific considerations:

- Summary listed above.
- Specific examples provided relating to trade in captive bred specimens resulting in reduced trade in wild specimens and in instances where wild populations were not harvested in sustainable manner it has allowed wild populations to recover while also benefitting local communities.

e) Do you see conservation benefits in Production systems – source code: A / Y / D/ F / R / C

Summary

- Difficult to respond in generalized manner, but most responded that the production systems for specimens not of wild source have the potential to have conservation benefits (when properly managed, there can be conservation benefit to all production systems).
- In some Parties there is little direct competition between trade in wild or captive bred/artificially propagated commodities. Trade in not wild specimens typically replaces trade in wild specimens when the wild species is protected and/or wild harvest for trade is not sustainable.
- The ability to trade not wild specimens can provide economic benefit that may have been lost with a harvest closure, which reduces pressure on wild populations and the potential for illegal harvest.
- The sale of offspring can support operations that are providing conservation benefit for re-introduction or assurance populations. However, when wild populations are reaching habitat capacity or dispersing into unfavourable habitat, adaptively managed wild harvest can maintain healthy predator-prey dynamics and reduce human-wildlife conflict.
- Increased oversight and monitoring to ensure sustainability.
- The promotion of artificial propagation of in demand plants, not only contributes to the conservation and sustainable use of species but can also have large socio-economic benefits for country's wanting to trade responsibly in their botanical resources.

e) Do you see conservation benefits in Production systems – source code: A / Y / D/ F / R / C

- Artificially propagated plants have the potential for use in the recovery and restoration of species that may be locally depleted or extinct.
- Limited responses relating to source code R.

f) If specimens not of wild source (captive breeding, artificial propagation, etc.) were less common or discontinued is it likely that wild specimens of the same species would come under greater trade pressure? Yes/No

Summary

- The general consensus among the Parties that responded was that if specimens that are not of wild source, such as those from captive breeding or artificial propagation, were less common or discontinued, it is likely that wild specimens of the same species would come under greater trade pressure. This belief is held with some caveats related to the species involved and individual circumstances.
- Dependent on the species and individual circumstance, market demand as well as economic reliance on trade there could be greater trade pressure on wild sources in the absence of the other production systems.
- If not of wild source options didn't exist, there is a likelihood that illegal wild take would increase, potentially placing pressure on wild populations (of same species or substitute species), species sustainability and potentially creating broader ecological pressures.
- Examples of demand currently met through artificial propagation, if removed will put pressure on wild populations.
- Captive harvesting or artificial reproduction of non-wild origin allow for sustainability without affecting wildlife populations.
- There are species that present intrinsic biological, reproductive and demographic restrictions that, together with land use change and illegal extraction of wildlife specimens, compromise the permanence and viability of their wild populations.
- For some species, captive breeding can help reduce demand but for other species it can help increase demand and concerns about potential laundering of wild specimens.

Specimens not of wild source

SCIENTIFIC ASPECTS/ADVICE:
CONSERVATION RISKS AND BENEFITS AND MANAGEMENT, REGULATORY AND ENFORCEMENT ORIENTATED CONSIDERATION

General observation:

The consensus seems to lean towards a potentially lower conservation risk when robust systems and practices are in place, but with some caution against generalizing this across all species and circumstances. While there are successful examples of reduced risks through trade in specimens from non-wild sources, challenges such as legal origin of parental / breeding stock, potential laundering, unsustainable stock supplementation, inadequate regulatory frameworks, and varying impacts depending on the species and local conditions make it necessary to evaluate each case individually.

Scientific aspects/advice

Depending on the species involved, including the intrinsic biology of the species and whether it's a native / indigenous species, the risk could differ. The risk may be considered low if it's a commonly bred / artificially propagated species that is native / indigenous. While the risk may increase with the difficulty to breed / cultivate the species and/ or if the species is rare in the wild.

There can be benefits to trading in non-wild specimens, such as reduced pressure on wild populations and support for species' recovery, function as reservoir or for species reintroduction, but the actual impact varies widely depending on the specific circumstances and management practices.

Animals and Plants Committees – focus on conservation risks and benefits

- It is challenging to generalize the risk levels and benefits associated with captive breeding / artificial propagation production systems as they depend on the species, type of specimens in trade and specific conditions. Therefore case-by-case assessments of the conservation risk for the wild populations are essential if captive breeding / artificial propagation is taking place and if trade is taking place in the captive bred/artificially propagated specimens.

- In many species, there is a lack of data / or a lack of capacities to assess the impact that trade in captive bred / artificially propagated specimens has on the conservation of the species in the wild (although non-detriment findings must be made for the introduction of wild specimens as parental / breeding stock; the assessment of long term conservation impact was considered challenging). Mechanisms to collect and analyze data (including population surveys, trends in populations over time, trade analysis and monitoring) will assist to inform the risk associated with the activity (trade in captive bred/ artificially propagated specimens).

- Enhancing conservation benefits / incentives for the species concerned, including in their natural habitat, from ex-situ captive breeding / propagation, especially in countries outside of the species natural distribution range as appropriate.

- Managing / mitigating risks associated with the introduction of captive bred / artificially propagated specimens into the wild, especially risks associated with disease (pathogens), introduction of invasive species, genetic and behavioural differences.

- Strengthening the implementation of the requirements associated with production systems as it relates to sourcing wild specimens, e.g., non-detriment findings for parental / breeding stocks to determine the potential impact of the establishment and maintenance of the captive breeding / artificial propagation system on wild populations.

- The identification of specimens not of wild source to ensure it can be distinguished from wild specimens is essential to ensure wild specimens are not traded as captive bred/artificially propagated specimens.

Means to identify / distinguish these specimens will assist in this regard and can also be linked to traceability systems.

- Assessing on a case-by-case basis whether the production system is likely to produce a certain offspring under the given condition taking into account the species biology and husbandry requirements and evaluating whether this is economically feasible. In the case of plants: Assessing on a case-by case basis the biological potential and economic feasibility for artificially propagating the species, given its life-form, ecological requirements, as well as its capacity to sexually or vegetatively reproduce.

- Working on ways how benefits from production systems for specimens not of wild source can flow to range States to support conservation of wild populations as appropriate.

- Considering whether there is a need to evaluate the implementation of ranching provisions as a production system and the potential impact on wild populations.

- Considering the development of guidance on what could be considered as a conservation benefit to wild populations/ conservation benefits for the species, as this is not clear.

Other management, regulatory and enforcement orientated consideration (to be shared with the Standing Committee)

- Consider means to address and monitor the risk associated with potential laundering of wild-sourced specimens as captive bred / artificially propagated (especially plants - Appendix I and II), particularly for species where captive breeding / artificial propagation is difficult or not well-established and if specimens produced in captivity / artificially propagated are difficult to distinguish from specimens harvested from the wild.

- Strengthen management of production systems for specimens not of wild source (including measures to verify specimens were produced in captivity / artificially propagated) to reduce the impact on wild specimens / populations.

- Gather information relating to demand for specimens not of wild source and capacity of production systems for specimens not of wild source taking into consideration the species biology and consumer preferences.

- Ensure effective management, regulatory provisions are implemented and enforced to reduce the risk to wild populations.

- Consider the capacity of the production systems to support the level of utilization / demand for the specimen in trade through among others monitoring levels of trade.

- Ensure effective regulation of trade in specimens of both not of wild sources and of wild source including through traceability systems while monitoring the wild populations should be on-going to enable Parties to assess whether there is an impact on the wild population.

- Consider the factors that may influence the conservation risks associated with the systems to produce specimens not of wild source in the regulation of the production system.

- Consider how a common strategy could be developed applicable for both animals and plants, for example by looking into homogenisation of text between Conf. 12.10 (Rev. CoP15) Annex 1, par. 15 and Conf. 9.19 (Rev. CoP15): Description of the strategies used, or activities conducted by the breeding operation to contribute to the conservation of wild population(s) of the species. Furthermore, consider including information relating to the capacity of the production system to ensure the volume / number of specimens can be produced without additional supplementation of wild specimens.

- Provide clear guidance on how to verify the legal acquisition of the breeding stock.

AC/PC JOINT INTERSESSIONAL WORKING GROUP: SPECIMENS NOT OF WILD SOURCE
CONSOLIDATED RESPONSES

a) Is the conservation risk for the wild populations associated with trade in specimens of animals and plants not of wild source, lower, higher or similar to trade in wild specimens in your country
i) Why does conservation risk vary?
Australia In general terms, take of specimens from the wild presents a greater risk when compared to captive bred specimens. Australia's strong laws ensure the ongoing ecological sustainability of wild harvest, and we have strict laws to establish legal source of captive bred stock. Wild source programs can present risks to conservation if not managed properly. Australia's assessment processes, ongoing monitoring and management approaches, underpinned by science and provide for changes in environmental conditions and population dynamics. Our requirements for legal acquisition of captive source specimens are stringent and robust. We also require programs to demonstrate an ability to develop and maintain programs with minimal to no inputs from the wild before they're approved and closely monitor the success of programs. Australia's processes ensure minimal to no pressures is experienced on Australian wild populations when lawful trade occurs. **Canada** In Canada, the type of conservation risk to wild populations varies depending on whether the species is indigenous or non-indigenous to Canada. We rarely have trade in both wild and not wild of the same species in Canada. When looking at Canada's collective trade in wild source vs not wild source species, the conservation risk is about the same as our wild trade is well regulated and sustainably managed. We cannot comment about conservation risk in wild populations in other countries from our not wild trade as we do not have that type of information. For indigenous species, possession of both wild and not wild species, and therefore the ability to breed is strictly regulated. Most risk from commercial trade in Canada occurred in the past, mainly for furbearing species that were trapped for the international fur trade, ginseng that was overharvested for the medicinal trade and sport hunted species which were overhunted by settlers for food. Furbearing and game species have been regulated since 1917. Most species for this type of trade have recovered and current international trade is mostly in wild specimens. When indigenous species are listed as Endangered or Threatened under the federal Species at Risk Act or under provincial or territorial Acts, commercial trade in wild specimens is prohibited. In these cases, captive breeding or artificial propagation may be permitted to replace the historical trade. This provides an economical benefit to Canadians while removing pressure to harvest the wild species and leading to recovery of populations. When a species is listed as Special Concern, regulated commercial trade in wild specimens may still be allowed. Canada does not list non-indigenous species under these Acts. For example, peregrine falcon populations were severely depleted by the use of DDT in the 1950s and 1960s. Three subspecies were initially recognized in Canada: in 2003, *Falco peregrinus anatum* was listed as Threatened under the federal Species at Risk Act, while *F. p. tundrius* and *F. p. pealei* were listed as Special Concern. After studies found that the *anatum* and *tundrius* subspecies could not be distinguished genetically, they were listed together as Special Concern in 2012 and following an assessment of Not at Risk, were removed from the list in 2023. The recovery of the species reflected in these successive changes in listing was due, in part, to a re-introduction captive breeding program that was completed in the 1990s and is no longer active. The original breeding

operations involved in this program and their foundation breeding stock form the basis of the current Canadian CITES trade in captive bred peregrine falcons. Apart from a few breeding operations that participate in remedial activities related to environmental assessments, most falcon breeding is now for personal and commercial (pest control) falconry.

Panax quinquefolius (American ginseng) has been listed under the federal Species at Risk Act as Endangered since 2003. However, there has been propagation in Canada of both woods grown and cultivated ginseng since the late 1800s. Field grown (cultivated) ginseng now represents Canada's largest CITES trade by volume. In Quebec and Ontario, which are the two major ginseng range jurisdictions for wild ginseng within Canada, there are possession and trade restrictions on wild, wild-simulated, and woods-grown ginseng. Canada has a negative NDF in place for wild specimens and trade in wild-simulated and woods-grown ginseng is determined on a case-by-case basis upon consideration of production methods and provincial policy. While there may still be some illegal harvest in wild ginseng, Canada believes that trade in cultivated ginseng has relieved pressure on the wild species.

Non-indigenous species (imported as either wild or not wild specimens) are regulated at different levels by provinces and territories in Canada. Special attention is given to species that are known to carry pathogens or are invasive. Some provinces and territories are regulating possession or commercial use (which includes breeding) through the licensing of captive breeding operations or zoos. These licenses are issued only to facilities that meet and maintain requirements established by the provinces or the territories.

Most non-indigenous species bred in Canada are for the pet trade. While we cannot assess the conservation risk for these species within their range states, we recognize that there may be conservation risks due to escaped individuals becoming invasive or increased risk of pathogen spillover in the wild in Canada. However, this risk is low as these species tend to originate from warmer climates and would not survive the winters in most parts of Canada. There are also ways to mitigate the risk of pathogen spillover by having effective strict measures in place such as regulations and strong policy and procedures for trade. For example, Canada implemented a prohibition in our national law for import all species of the order Caudata (such as salamanders, newts, and mudpuppies) unless accompanied by a permit with the goal of protecting wild Canadian salamander species from a harmful fungus.

There can be a positive conservation benefit to the breeding of non-indigenous species when there is a direct benefit to the species in range countries i.e. cooperation between ex-situ breeding operations and in-situ conservation programs. For example, there is a breeding facility in Canada that breeds Appendix II amphibians for commercial distribution. The breeding stock is obtained directly from conservation projects in the range states, and depending on the agreement in place, the conservation benefits to the project could range from technical support to a percentage of income generated from the ex-situ operation. Breeding of non-indigenous species can also be beneficial when the species is threatened by disease in range states by the establishment of assurance populations.

China

Trade in specimens of animals and plants of or not of wild source are subject to strict regulations in China. Both types of trade are with pretty low conservation risk for the wild population.

Colombia

Timber Flora

For *Cedrela odorata* which is commercially harvested both from natural environment (wild origin) and from forest plantations, there is no documented information that would allow an analysis of the volume of timber obtained from the natural environment compared to the volume that could be harvested from plantations, as well as whether the level of risk less, greater or similar for the conservation of the species.

Non-timber Flora

Non-timber flora is only harvested through nurseries, not from the natural environment (wild origin), which is why it is not possible to determine the level of conservation risk (minor, major or similar) of the species being used.

Fauna

Taking into account that in Colombia the system of harvesting wildlife species for commercial purposes is currently only done through closed-cycle farming and not of specimens of wild origin, whether ranching or commercial hunting, it is not possible to determine the level of conservation risk (minor, major or similar) of the species subject to use.

Germany

Plants:

For species that are commonly produced in cultivation systems, such as many bulk MAP species or ornamentals, it can be considered that the supply from cultivation may decrease the risk for wild populations because, often, production and demand are well balanced and established, and sufficient quality and quantity of material from cultivation is available. It is assumed that the availability of sufficient quality and quantities of cultivated material would substitute wild-sourced material and may reduce or even prevent the demand for wild material.

Without having empirical evidence or data, this might be true for species like *Rauvolfia serpentina*, *Adonis vernalis*, many ornamental orchid and cacti species and others.

Species less common in cultivation, or where cultivation is difficult and not that established: the risk might be similar or even higher because the supply in cultivated material may be insufficient to meet the global demands, or it could be more expensive or generally less demanded compared to wild sourcing. This may bring traders/producers to fraudulent declarations of source codes (laundering of wild sourced material as artificially propagated) if trade in wild material is hampered or prohibited by law, or may cause the need for more wild material as founder stocks or for more or less regular augmentation of the artificial propagation in breeding facilities / nurseries to uphold production.

Also, when taking an overexploited wild plant species into cultivation, the effects on wild harvest and the conservation risks and status depend on the type of cultivation (e.g. small-scale in-situ cultivation linked to local communities and conservation aims vs. large scale industrial farming), on who profits from the cultivation (often it is not the former harvesters), on the biology of the species and how easy it is to propagate the plants (defines the need for wild propagation material), law enforcement and overall regulatory frameworks, land tenure, potential incentives for cultivating the species, and other factors. In general, there are mixed findings and considerations on the impacts of cultivation on wild harvest and the conservation status of affected plant species.

Examples of CITES species where taking them into cultivation has not led to significant improvements in their conservation status and where wild harvest and overexploitation continued might be some agarwood-producing taxa.

Animals:

In line with the explanations on cultivation on plant species, it can be considered that trade in animal species of not-wild source may reduce the risk for wild populations. In particular, demand for species in trade can be met by production of specimens in breeding operations and thereby decrease the demand for wild specimens.

For example, while harvest for the pet, leather, consumptive and medicinal trade may be considered a threat in reptile species, captive breeding and ranching of reptiles has been shown to be a viable, sustainable alternative in many cases. This is true for in-situ breeding operations in range states and ex-situ breeding operations in non-range states. E.g. *Stigmochelys pardalis* is commercially bred in facilities in range states such as Zambia, Tanzania and Kenya as well as in non-range states such as Germany, thereby pressure on the wild population of the species is relieved (Baker et al. 2022).

If breeding facilities are used to launder wild specimens, the conservation risk can be higher than controlled trade in wild specimens, especially as volumes traded from captive operations are usually higher.

In case of *Python regius*, the species is being frequently bred in captivity in non-range states, in numerous different colour morphs (Joseph et al. 2021; more than 7000 described here https://www.worldofballpythons.com/). Rare and exceptional morphs can be sold for extremely high prices. Similar patterns are currently observed for *Rhacodactylus*. This kind of trade appears to be somewhat detached from trade in wild specimens. In contrast, there has been concerns regarding the sustainability of ranching operations of *Python regius* in range states (D'Cruze et al. 2020, inclusion of certain species-country-combinations in Review of Significant Trade at AC32).

In *Shinisaurus crocodilurus*, overharvesting has contributed to the species critical conservation status. After its listing in CITES Appendix I, international trade is strictly controlled. Currently, the captive population worldwide is likely larger than its wild population, which is at the brink of extinction. In Vietnam, the population is estimated at less than 200 specimens (van Schingen et al. 2016) and also in China the species is assumed to be likewise depleted. In the same time the species has been bred in captivity since decades. Recent genetic studies based on captive animals revealed at least four different conservation units, one not known from the wild so far (Ngo et al. 2020), while it is unclear if they are all still existing in the wild. While any further trade in wild specimens would be clearly detrimental, trade in true captive-bred specimens may reduce the pressure from wild populations. Captive stocks may even serve as genetic reservoir and can be used to restock wild populations. In the case of *Shinisaurus crocodilurus*, restocking measures are planned in Vietnam and first trials succeeded in China.

Ranching operations in crocodilian species in range states have been proven as efficient concept for the sustainable use of species or populations of species, see for example transfer of the Argentine population of *Caiman latirostris* from CITES Appendix I to Appendix II, and populations of *Crocodylus porosus* or *Crocodylus niloticus*. The implementation of ranching operations as alternative to unregulated exploitation of wild populations considerably helped to improve the conservation status. However, the success of ranching operations depends on the biology of the species. Ranching programs are not suitable for all species and are used for species which have large clutch sizes but usually have a high mortality in early life stages (eggs, hatchlings) in the wild (Robinson et al. 2015).

Freshwater fish trade mainly relies on captive breeding of species reducing the risk of over-exploitation of species (Evers et al. 2019). While many (especially micro-endemic) species are considerably threatened by habitat loss, captive breeding not only reduces potential pressure on wild population by over-exploitation but also offers the possibility to help to maintain species that may get extinct in the wild in the future (see also case studies by Evers et al. 2019).

Falco peregrinus is native to Germany, where the species is traditionally used in the falconry and is kept and bred in large quantities in registered and non-registered breeding operations, also destined for the international export. The species was nearly extinct in Germany due to human persecution and in particular the intensive use of the pesticide DDT during the 20th century. Breeding operations are not only able to meet the demand in trade but were also able to provide animals for the re-introduction of the species in the wild in Germany, which helped the wild population to recover (White et al. 2020). Today, *Falco peregrinus* is listed as least concern in Germany. While breeding operations are able to meet the demand for the species in national and international trade, which would not be sustainably possible with wild specimens, these breeding operations may be associated with other problems (e.g. escape of captive-bred hybrid falcons) (Fleming et al. 2011).

It is possible that breeding operations in species are not self-sustaining, rely on constant augmentation from the wild, are not economically feasible and/or further increase demand for specimens, which cannot be met by breeding operations and may increase trade in wild populations and/or fuel illegal trade and wildlife laundering (e.g. Tensen 2016). However, if properly managed conservation risk associated with trade in specimens of animals not of wild source is generally assumed lower than trade in specimens of wild source.

Indonesia

The level of conservation risk varies influenced by internal and external factors. For example, internal factors: These species have very diverse biological characteristics, so the risks are also very diverse. For example, Crocodylus porosus have a long reproductive period and lifespan, while butterflies have a short reproductive period and lifespan, so captive breeding and harvesting from the wild has different risks for the two taxon groups. The external factors: breeding operations have more control over the environment in which the specimens live.
A list of species is included in the response for which the conservation risk for the wild population was considered lower with trade in the species not of wild source: *Crocodylus porosus, Pycnonotus zeylanicus, Aquilaria malaccensis, Acropora sp., Ornitopthera sp., Scleropages formosus, Cheilinus undulatus, Hippocampus spp.*

A specific example was also provided: Wild population of *Cheilinus undulatus*: The Scientific Authority of Indonesia under the National Research and Innovation Agency (BRIN/LIPI) monitored the population between 2006 and 2019, collecting density and length frequency data. The monitoring recorded 987 fish with total length (TL) ranging between 5 and 145 cm. The length frequency analysis resulted in 65% young and 35% adult fish in the populations. Other organizations, including the Technical Implementing Units (TIUs) of the Ministry of Marine Affairs and Fisheries (MMAF) and local government have done population monitoring as well. All of the results were presented in a table as part of the submission.

Mexico:

1. In principle, trade in specimens of non-wild origin implies the management of few wild specimens for production, either for the origin of parental stock or to avoid genetic problems in the captive population (genetic reinforcement). A controlled and sustainable trade in wild specimens may have a low impact on wild populations, depending on factors such as magnitude, constancy, intrinsic biology of the species and other pressures on the species or its habitat. It is all on a case-by-case basis.
2. The regulations in force in Mexico on the use of species from captivity or artificial production (plants) do not allow wild populations to be affected, since their use is subject to an approved Management Plan.
3. Likewise, trade in non-wild specimens may support harvesting of a greater constancy or magnitude than that of wild specimens, especially when measures are taken to enhance survival during certain stages of specimen development.

Particular examples:

i. Bighorn sheep (Ovis *canadensis*): in the particular case of bighorn sheep, Mexico has Management Units for the Conservation of Wildlife (UMA) for the harvesting of wild specimens and specimens bred in controlled conditions - captivity. The harvesting of individuals in both systems has a limit, determined by the size and structure of the population, since extraction is selective by age and gender. However, in captive breeding systems, a greater number of specimens can be harvested, since the dynamics of mortality and natural dispersion of wildlife are not available. In the specific case of the state of Sonora, the growth of sheep populations has been recorded in both systems, but with a greater growth of the captive population, with greater availability of specimens for hunting trophies (at a lower price) in captivity than in the wild (CONABIO, with data from SAGARHPA, 2023; Biol. Juan Manuel Segundo, personal communication). Captive populations in Sonora and other states have not incorporated additional wild specimens to reinforce the genetics of the captive population; likewise, captive specimens are released into the wild to reinforce or reintroduce the wild population. For these reasons, hunting (national and international) of captive specimens does not have a negative impact on wild populations.

ii. Totoaba (*Totoaba macdonaldi*): Fishing and trade of wild totoaba is prohibited (only trade in captive-bred specimens is allowed), with few exceptions for the collection of scientific samples or the formation or reinforcement of parental stock (for captive-breeding operations). Obtaining wild specimens for parental stock (or reinforcement of parental stock) is an extremely low impact considering the biomass and genetic variability existing in the wild (Annex 4a, Document SC71 Doc 17, CITES; Enriquez *et al*., 2023). Nationally, aquaculture production is mainly focused on obtaining meat (fillets) and protein (meals, hydrolyzed proteins), and establishments carry out population reinforcement by releasing captive-bred specimens into the wild (Enriquez et al., 2023). In this way, hatchery production does not have a negative impact on wild populations; it even favors them.

iii. Terrestrial and freshwater turtles: according to the results of the tri-national workshop on the sustainable use of freshwater turtles and tortoises colas (CCA, 2019), wild tortoises and freshwater turtles present intrinsic characteristics that make them vulnerable to wild harvesting, such as: late sexual maturation (4 years or more), low annual productivity (clutches between 4 to 10 eggs), high mortality of hatchlings and juveniles, and limited populations in most sites. Because of this, wild harvesting entails greater risks (and less harvesting) than harvesting captive-bred specimens, where establishments can contain large numbers, in controlled environments and where survival and productivity are encouraged, with individuals generated in less time. According to the CEC (2017), well-regulated captive breeding is an alternative that reduces wildlife extraction pressure.

iv. Red cedar *(Cedrela odorata): this* species is commonly planted in Mexico, which must be registered as UMA, since the species is on the list of species at national risk (NOM-059-SEMARNAT-2010) under the category of "Subject to special protection" (Pr). However, the conservation status of its wild populations is only known precisely on the properties where it is harvested *in-situ*. Romo-Lozano *et al*. (2017)note that population estimates for the species considering both plantations and the wild are: 1.397 ± 0.92 million trees in the Pacific region; 4.524 ± 1.74 million trees in the South-Southeast region; and 9.057 ± 2.84 million trees in the Gulf of Mexico region. The estimated extent of occurrence (EOO) is wide, but something that threatens this species has been the historical overexploitation. Therefore, the existence of plantations for the species is crucial to reduce pressure on wild populations.

v. Cactaceae/Ariocarpus *retusus:* There is overexploitation of the species due to its growing supply and demand because it is one of the most prized cacti by collectors. In Mexico, there are 26 intensive UMAs (nurseries that involve conservation aspects of the wild species they manage), 6 botanical gardens and 19 Predios e Instalaciones que Manejan Vida Silvestre de Forma Confinada Fuera de su Hábitat Natural (PIMVS; nurseries) authorized to harvest *A. retusus. According* to UNEP-WCMC (2024)*,* most of the demand is being met by nurseries in other countries that are not part of its range, while Mexico has no records of exports for commercial purposes for this species.

South Africa

Key reasons why the conservation risk may vary are related to:

1. Regulatory mechanisms in place – Can the captive-bred specimen be distinguished from a wild sourced specimen, how likely is it to track the specimen through the system and ensure that the specimen or derivatives thereof is indeed captive-bred. Being able to track captive-bred animals.
2. Biological characteristics (life history) of species – How easily does the species breed in captivity and number of offspring produced over a period of time. Low reproducing species that are difficult to breed in captivity are at a higher risk for collection from the wild.
3. Demand for species or derivatives of species.
4. Rarity of the species in the wild (Population status and trends).

Additional considerations – plants:

- There is more oversight of growers and nurseries trading in Appendix I listed species, for example, all exporting facilities trading in cycad species are required to be registered in accordance with CITES Resolution Conf. 9.19 (Rev. CoP15), and regularly audited to ensure continued compliance with CITES Resolution Conf. 11.11 (Rev. CoP18).
- In contrast, there is less oversight of growers and nurseries for Appendix II listed species, and this presents an opportunity for the laundering of wild plants.
- The lack of adequate capacity and resources to monitor growers and nurseries trading in CITES plant species does present challenges to the conservation risks associated with such trade.
- The commercial availability of artificially propagated plants to supply the demand for different species will also influence the conservation risk to wild plants. Some plants are easier to produce and have been made widely available through artificial propagation whilst other species, particularly many of the slower-growing plants, may present challenges in this regard leading to a higher risk of the demand being supplied from the wild. In some cases, there is also an ongoing demand for wild specimens (of certain sizes and with unique characteristics), particularly amongst specialist collectors, and this demand, albeit small, can rarely be met through artificially propagated specimens

- Levels of awareness amongst conservation officials and the general public on trade in different plants also contributes to the level of risk posed to different species, with more well-known cases receiving more attention and oversight (e.g. cycads) compared to less well-known trades (e.g. in succulents and geophytes)

Sweden

In Sweden, to our knowledge, we have few species that are native to Sweden and occur naturally in the wild in which trade of specimens not of wild source occurs. Native orchid species and *Rhodiola rosea* (rosewort) are cultivated and widely sold across the country by established retail stores and websites. Collection from the wild is prohibited by the Swedish Species Protection Ordinance. Exemptions can be granted on a case-by-case basis by the competent authority if certain criteria are met and that the collection does not have a harmful effect on the wild population. We currently do not have an overview of how many exemptions have been granted but plan to gather this information from the administrative county boards that can issue exemptions during 2024, to get an overview of the extent of harvest. Illegal collection and harvesting occur but we do not currently have data on this. Hence, we have answered “similar” risk as we currently lack the necessary information to assess whether the risk is higher or lower for species associated with trade in cultivated specimens.

The keeping of and trade in bird species native to Sweden and Europe is prohibited by the Swedish Species Protection Ordinance. The keeping of birds of wild species, regardless of origin, is prohibited by the Swedish hunting legislation, with a few exemptions. The animal welfare laws further prohibit the keeping and sale of live wild-caught birds, as well as any vertebrate species, that are to be used as pets, hobby or feed animals. We are aware that illegal keeping, breeding and trade in songbirds of wild species occur, in particular the creating of hybrids between European goldfinch (*Carduelis carduelis*) and canary birds. We see a risk that the demand for these hybrids may create incentives to illegally collect wild goldfinches for breeding purposes. Therefore, we replied that there is a “higher” risk, especially considering that this is an illegal activity in and of itself, notwithstanding any trade.

United States of America

We do not believe that it is possible to make a blanket statement of higher, lower, or similar risk for trade in specimens of animals and plants not of wild source, as the considerations are complex and varied and must be determined on a case-by-case basis. In general, the CITES framework, establishes through its terms a careful balance in the requirements for qualifying bred in captivity animal specimens and qualifying artificially propagated plant specimens under Article VII.4 (source code D [for Appendix-I animal species bred in captivity for commercial purposes and Appendix-I plant species artificially propagated for commercial purposes]) or Article VII.5 (source code C [for specimens of animal species included in Appendix I that have been bred In captivity for non-commercial purposes and specimens of animal species included in Appendices II and III, if the animals are bred in captivity in accordance with Resolution Conf. 10.16 (Rev. CoP19)] or source code A [for specimens of plant species included in Appendix I that have been artificially propagated for non-commercial purposes and specimens of plant species included in Appendices II and III, if the plants are artificially propagated in accordance with Resolution Conf. 11.11 (Rev. CoP18)], which are less than those required for W, R, F, or Y specimens regulated under Articles III, IV, and V. We carefully evaluate permit applications for captive-bred animals of U.S. native species, including endemic species, or assisted production or artificially propagated native plant species, such as cacti, *Sarracenia* spp. and *Dionaea muscipula*. For example, for U.S. native species, we want to be assured that the animals and plants to be exported as source code C or A meet the respective requirements, and are not of wild origin (e.g., wild specimens are not being laundered as specimens not of wild source). We follow the guidelines in the appropriate CITES Resolutions – for animals, Resolution Conf. 10.16 (Rev. CoP19) and for plants Resolution Conf. 11.11. (Rev. CoP18).

For several reasons, not all applications to export bred in captivity animals or artificially propagated plants are subjected to the same level of scrutiny by the U.S. Scientific Authority. Due to the degree of conservation risk to the species, some export applications are more closely reviewed than others. For example, for biological and conservation purposes, some species have higher risk factors and merit greater attention/examination, particularly native species with small populations and/or restricted or fragmented geographic ranges. Please see below in response to a. iii. for a summary of our approach to risk assessment in non-detriment findings

OBSERVERS

AWI, BFF, DoW, ProWildlife, SSN

Conservation risks to wild populations associated with non-wild trade include:

– Laundering of wild-caught specimens through captive-breeding operations, either directly (declared as captive-bred) or for use as founder stock;

– Detrimental takes of wild specimens for founder stock;

– Unsustainable and/or illegal takes of wild specimens in response to increased demand due to the presence of captive breeding operations, even legitimate ones;

– Declaring as ‘non-commercial’, trade in specimens for breeding that may not be wholly non-commercial (e.g. inappropriate application of purpose code B) in order to facilitate trade;

– Escape of potentially invasive exotic species; and

– Spread of parasites or diseases from captive to wild populations (eg open-net fish farming).

There is abundant literature on the risks and negative effects that trade in animals allegedly not “of wild source” can have. Species-specific examples provided.

IUCN

Higher

In most countries across the range of the two Houbara species, the conservation risk for wild populations associated with trade of captive-bred Houbara is greater than that of trade in wild specimens.

Note that in addition to impacts on wild Houbara, supplementation with captive-bred Houbara creates impacts on other sympatric threatened bustard and bird species.

The number of captive-bred Houbara (of both species) annually released into the range of wild Houbara in Asia and Africa is approximately equal to the entire wild population of each species, as assessed by IUCN. In a press release from December 2022, the leading breeder of Houbara communicated that their operations alone had released over 700,000 Houbara worldwide under a banner of conservation. And yet, wild populations of both species continue to decline, and are judged by IUCN to consist of fewer than 30,000 individuals of each species of Houbara.

No solid information is publicly available concerning the genetic or behavioral compatibility of captive-bred birds with the wild populations into which they are released. As we understand it, the former have originated from a limited number of founders, hatched from wild-laid eggs. This limited stock has now produced up to twenty generations of birds for release. Although we assume new wild birds have been taken into these facilities for use as breeding stock over this time, it is apparent from multiple studies of different animal species, including Houbara, that captive breeding, especially at large scale, rapidly depletes the diversity of the genome.

Captive breeding of Houbara at a large scale is only possible through artificial insemination. This requires birds to be sufficiently tame and amenable. We do not have indication that breeding centers are taking any precautions that prevent removal from the breeding pool of the genes and behaviors associated with the wildness and wariness necessary for the survival in the wild of these ground-nesting, hunted birds. The introgression of maladaptive genes associated with adaption to captivity into wild populations of Houbara, which in many areas are miniscule in size in comparison to the scale of the releases, is of major concern.

Unusual, non-traditional and non-adaptive migratory paths are anecdotally observed to be undertaken by some released birds. As migration in Houbara is genetically controlled (Burnside et al. 2020), this suggests that some captive breeding and release strategies being used may not respect migratory lineage.

IWMC

Lower - It provides a sustainable alternative to using specimens of wild sources. Examples provided.

OATA

Conservation risk to species traded by the ornamental aquarium trade is varied and nuanced, and promoting wild collection over captive breeding or vice-versa is likely to lead to negative consequences for species conservation.

Where species are still collected from the wild, this is can be sustainable and supportive of conservation of wild populations. Animals collected for the trade are done so with low impact methods to minimise stress and damage to habitats. As such, they are low in volume and high value compared to other natural resources that might be collected for income. The collection of ornamental fish therefore leads to stewardship of diverse habitats by fishers and prevents environmentally damaging forms of livelihoods taking place [1]–[3]. In these instances, switches to captive breeding for certain species would likely lead to negative impacts for species conservation due to increased habitat threats due to alternative livelihoods being sought [4]–[7]. It also can lead to continued use of species but through illegal and/or environmentally damaging ways. For example, the listing of Seahorses on the appendices lead to widespread captive breeding for the ornamental trade (often outside of range states) but the trade in wild seahorses is now dominated by illegal specimens caught with damaging benthic trawls [8]–[10].

That said, limitations on captive breeding can also have negative impacts on conservation. Where a species has been captive bred and is meeting consumer demand already with captive bred specimens, further restrictions on those operations (such as CITES listing) can reduce supply (breeders disincentivised to continue operations or sell internationally) and drive consumer demand for wild specimens of endangered species. In addition, many captive breeding operations support conservation of wild populations as part of their activities, such as funding of conservation projects or animals for reintroduction projects.

An example of this would have been if the proposal to list Zebra Pleco on appendix I had gone ahead. In this instance, captive breeding would have been stopped due to the marking requirements for App I listed specimens (the majority of ornamental fish are too small to be marked without compromising their welfare), and thus increasing demand for illegally trafficked wild specimens. In addition, captive breeding operations in Indonesia also provided regular funding to conservation initiatives that supported wild operations e.g. Ictu Xingu [11], [12]

TRAFFIC

TRAFFIC considers that in some cases the differences depend on how effective the traceability system used for the species in question is in preventing the laundering of wild specimens through captive breeding operations.

Another crucial factor is the capacity of non-wild specimen production systems to meet the demand - and to be able to adapt to possible increases in demand - for specimens of the species concerned in domestic and international markets. Whether these production systems are able to meet demand effectively and at low costs that allow them to be offered at reasonable prices (while profitable for the producers)

It also depends to a large extent on the governance and capacities of the CITES Authorities and other institutions and stakeholders involved in the countries where the production systems are established, but also in the countries importing the non-wild-sourced specimens. The former are responsible for monitoring the operations through which specimens not of wild source are produced, making regular inspections and reviewing periodic reports to verify that the quantity of specimens produced is consistent with the life cycle of the species in question and that the operation and the handling of specimens are carried out in accordance with the regulations and in a transparent manner. Importing countries and their CITES Authorities are responsible for verifying the traceability of specimens and, in the case of Appendix I specimens, for verifying, inter alia, that the specimens to be imported originate from CITES-registered captive breeding facilities

WWF

Highlight our concern relating primarily to large, high value species that are relatively expensive to raise in captivity, where the wild population is already depleted and where much of it is located in countries with weak governance, where illegal wildlife trade is prevalent. We have taken one species to illustrate this issue but it is potentially a wider issue and needs to be seen in the context of Article III.3a) of the Convention.

Similar

Currently there is no legal commercial tiger trade from captive sources. There are currently no facilities registered to breed tigers under Res. Conf. 12.10 (Rev CoP15). That Resolution states inter alia, that "(p)arties shall restrict imports for primarily commercial purposes…of captive-bred specimens of Appendix-I species to those produced by operations included in the Secretariat's Register;" Since Decision 14.69 states that "tigers should not be bred for trade in their parts and derivatives," it is not apparent that there would be any scope for granting any application.

From a conservation risk perspective, the operation and scale of many captive tiger facilities supplying the illegal trade are a significant obstacle to the protection and recovery of wild tiger populations, as it allows for two highly negative pressures on the species to persist as they:

- undermine enforcement efforts: the movement (or leakage) of tiger products (including whole tigers, parts or derivatives) from such facilities to consumer markets complicates and thus undermines enforcement efforts aimed at stopping the trade in tiger products.

- help perpetuate (and grow) demand: The availability of any tiger products from captive tiger facilities serves to legitimise and normalise demand for such items. Given consumers' preference for wild sourced tiger parts and products, even a modest expansion in the demand for tiger products could increase poaching pressures on wild populations.

TRAFFIC's 2022 report Skin and Bones: An analysis of tiger seizures from January 2000 to June 2022, estimated the specimens, parts and products of at least 3,377 tigers were confiscated mostly in the 13 Tiger Range Countries with data showing an increasing trend. Of these, at least 744 tigers were from known or suspected captive sources. Between 2018-2019 confiscated tiger volumes suspected to involve captive-bred tigers in Thailand and Viet Nam were 81% and 67% respectively. Importantly, India, home to more than half of the global wild tiger population, remained the facilities-of-concern.

1 top-ranked country with the most incidents (759 - 34% of 2,205 total incidents, 2000-2022) and number of tigers confiscated (893 - 26%), demonstrating that the poaching pressure on wild tigers, despite significant illegal supply from captive sources, has not decreased.

Totoaba is a large Appendix I fish species found in the upper gulf of California, which is also home to the vaquita porpoise, the smallest and now the rarest cetacean in the world. It is fished illegally for its swim bladder, which is highly valued in traditional Chinese medicine. The decline in vaquita is solely attributable to its being caught as bycatch in the gillnets used in totoaba fishing.

In 2018, the Government of Mexico applied to have Earth Ocean Farms S. de R.L. de C.V. included in the CITES Register of operations that breed Appendix-I animal species for commercial purposes under Res. Conf. 12.10 (Rev CoP15). Objections from Israel and the United States of America, based on similar considerations to those pertaining in respect of tigers; that a legal trade in swim bladders would stimulate demand and facilitate laundering, leading to a decline in totoaba but also the likely extinction of the vaquita.

The application came before the CITES Standing Committee at its 71st meeting in 2019. The Standing Committee deferred a decision on the matter and it only came before the Committee again at its 74th meeting in 2022, when Earth Ocean Farms undertook to trade in totoaba meat only, and not in swim bladders, as was their original intention. Only then, and only by majority vote, was the application endorsed by the Committee.

a) iii) Factors that might influence the difference in conservation risk

Australia

Type of species

Species fecundity, recovery, external pressure (e.g. habitat loss, climate change, illegal take, unlawful trade, etc.) all contribute to and influence conservation risks

Canada

Production system is probably the most important factor for conservation risk in Canada. Therefore, the management of breeding facilities should meet regulatory compliance and standards, including guidelines and codes of practices on how to dispose of sick or dead individuals. The prevention of release of individuals into the environment is probably the most important risk factor. Escaped individuals have the potential to become invasive and cause economic and environmental harm, or to carry diseases and spread pathogen into the environment. For plants, woods grown production can potentially result in transfer of non-local genetic material or seed-borne pathogens into wild populations.

China

Biological characteristics of species are generally believed to be the main factors which influence the interaction between wild population and captive-bred /artificial propagation operations.

Germany

See response to above question.

Indonesia

Type of species, type of specimen and the production method/system.

Mexico

Type of species and specimens

Production systems or methods:

Candelilla (*Euphorbia antisiphylitica*) is mainly harvested from the wild to obtain wax; to ensure its sustainability, the Scientific Authority makes the corresponding NDFs (CONABIO 2022). Although there are some known efforts to establish plantations, they do not produce enough to meet international demand.

In the case of cedar, the wood of this species is considered precious and of high commercial value due to its color, aroma and high resistance to attack by fungi and insects. Its importance as a producer of precious wood encompasses economic, ecological and social aspects (Mesén, 2006). This has led to excessive exploitation of cedar, causing the decline and fragmentation of natural populations. Due to its importance, the species is widely used in reforestation plantations in the Mexican tropics (Basave-Villalobos, et al 2016).

In the case of cacti, according to the Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias (INIFAP), the national production of ornamental cacti at the commercial level is mainly focused on species that are easy to propagate in nurseries, either by seed or vegetative propagation. For those cactus species with risk status and difficult conventional propagation, commercial production does not exceed 5% of this volume. Considering that this production is scarce, the implementation of modern biotechnology techniques such as micropropagation is required, where cacti can be produced intensively in sufficient quantities and finished plants in greenhouses or nurseries, thus allowing the programming of their production. This ensures a constant supply of high value-added plants to the market, as is done in the production scheme for other ornamental plants. Currently, specific studies or exchange of information on more efficient production systems are required to meet the high market demand of collectors from the country of origin, so that they can be the main exporters of their species and the economic and social benefits can promote conservation measures for wild populations, thus avoiding the extraction of individuals from the wild.

Other factors:

1. Demand by species/specimen: If there is a greater demand (either for the species or for a specimen or derivative) than captive breeding/production can supply (low supply), pressure on the use of wild specimens (e.g., freshwater turtles, cedar, cacti) may increase. However, if demand can be met by captive production, this could decrease the pressure for a wild product (legal or illegal); for example, projections from a study by the Bren School of Environmental Science & Management model that a legal international trade in captive-bred totoaba maw from captivity could reduce illegal maw prices by 90%, reduce illegal wild capture effort by almost 70%, and increase wild reproductive success by 40%, benefiting the conservation of the wild population.
2. Prices: in terms of fauna, captive production generally represents a higher investment, in terms of food, habitats, veterinary services, payment of personnel, etc. If costs rise, the range of people that could buy the species/specimens bred decreases, so the pressure for wild collection (where not so much investment is required) could increase, even with negative effects (examples: sale/extraction of reptiles such as *Abronia* spp. and *Ctenosaura* spp. and mature individuals of tarantulas). In the case of cedar, since the benefits are long term, many times the increase in maintenance costs generates abandonment of commercial plantations, which in turn can have negative repercussions on wild populations because it is not possible to differentiate between artificially propagated and wild species when they are found in the same area.
3. Flaws in the production system: establishments or nurseries that would like to increase their production of high demand and high price specimens, but with low reproduction (or rare specimens), could engage in illegal activities such as incorporating wild individuals and passing them off as propagated, or other misidentified species. In this way, establishments/nurseries could generate a negative impact by extracting wild specimens without sustainability criteria to meet the demand (the CEC 2017 - Action Plan for Freshwater Turtles - includes this example of bad practices as a threat to conservation, as well as the results of the draft study by Garcia-Naranjo 2022on experiences with Mexican psitacidae

South Africa

Type of species

Type of specimen

Other

- Ability to distinguish between captive and wild specimens
- Capacity to monitor and regulate captive breeding facilities
- Regulatory system in place.
- Biological characteristics (life history) of the species and adaptability to captive environment
- Demand for the species locally and internationally
- Population status and trends of species in the wild
- Ease of sourcing from the wild

If renewable resource of species, for example horn or hair are used from captive bred specimens, there is potentially a higher conservation risk due to perverse incentives. For example removing animals from the wild to captive breed for commercial purposes and thus no incentive for keeping of wild populations. Income generated does not go towards conservation of species in the wild.

Different species have different life histories, and this would influence the conservation risk posed by trade, with long-lived, slow-growing species that are in high demand faced with a higher risk to wild populations, especially in the absence of efficient, legal, and sustainable production systems. As artificial propagation in the strict sense of the term may be challenging for long-lived, slow-growing species (especially in the short term), alternate production systems such as assisted production may be a better option (where functioning monitoring systems are in place), providing a means of supplying plants in a non-detrimental manner whilst simultaneously assisting with the regeneration/conservation of the wild populations.

The types of specimens in trade also influences the conservation risk with trade in seed and seedlings for example, posing a lower risk than trade in adult plants which generally take a longer time to produce, especially for slow growing species like cycads and caudiciform succulents. In such cases, the risk of harvest and laundering of wild plants as parental stock and for direct trade is high. Other factors influencing the conservation risk includes the availability of adequate capacity, skills and measures to effectively regulate the trade and distinguish between wild-collected and artificially propagated plants.

Although the status of a species in the wild could theoretically also influence its risks to trade, we have noted severe impacts to both Least Concern and threatened species all the same when it comes to laundering of wild-collected plants as artificially propagated.

Sweden

Type of species

Type of specimen

Production method/system

Other

Not specific to Sweden, but we would like to note that the type of demand will also influence the conservation risk. Demand for some species (e.g., pythons: Lyon & Natusch, 2014) may be met with captive-bred specimens if the demand e.g., is based on ensuring high-quality products, certification methods etc. However, for other species/products consumer preference may be higher for wild-sourced products which means that captive-breeding may not be able to satisfy the demand for the product but may even increase demand and pressure on wild populations (e.g., bear bile: Crudge et al. 2020; but see also Hinsley et al. 2022). In addition, the contribution of the captive-breeding operations to support local livelihoods and create conservation incentives for the wild populations is central (e.g., Nogueira & Nogueira-Filho, 2011; Sinovas et al. 2017).

United States of America

Type of species

Type of specimen

Production method / system

Other

Risk assessment. We review the status of the species in the wild and the degree of conservation risk the proposed activity poses to the species to determine the level of scrutiny needed to make a finding. We give greater scrutiny and require more detailed information for activities that pose a greater risk to a species in the wild. We consider the cumulative risks, recognizing that each aspect of international trade has a continuum of risk (from high to low) associated with it as follows:

(1) ***Status of the species***: From Appendix I to Appendix II.

(2) ***Origin of the specimen***: From wild-collected to born or propagated in a controlled environment to bred in captivity or artificially propagated.

(3) ***Source of the propagule used to grow the plant***: From documentation that the plant was grown from a non-exempt seed or seedling to documentation that the plant was grown from an exempt seed or seedling.

(4) ***Origin of the species***: From native species to nonnative species.

(5) ***Volume of legal trade***: From high to low occurrence of legal trade.

(6) ***Volume of illegal trade***: From high to low occurrence of illegal trade.

(7) ***Type of trade***: From commercial to noncommercial.

(8) ***Genetic status of the specimen***: From a purebred species to a hybrid.

(9) ***Risk of disease transmission***: From high to limited risk of disease transmission.

(10) ***Basis for listing***: From listed under Article II(1) or II(2)(a) of the Treaty to listed under Article II(2)(b)

OBSERVERS

AWI, BFF, DoW, ProWildlife, SSN: Response above.

IUCN

Production methods / system

Other – Quantity of birds traded

The best link to indicate the magnitude of this problem is: https://www.ecwp.org/ecwp/, where the scale of the Houbara production industry is openly indicated. The facility involved is certainly the largest of its type in the world and is widely judged to have cost over $1 billion, but, as Dolman et al. (2021) show, there are around 20 (we suspect now closer to 30) houbara captive-breeding facilities in operation across the combined ranges of the two species (for another source mapping 17 centers and claiming 624,827 birds released "for conservation efforts", see https://houbarafund.gov.ae/breeding-release). These facilities are private and we cannot be sure of the practices within them, but it seems likely that the production method will be artificial insemination, using "founding stock" in the form of captive-bred birds supplied by larger facilities alongside some additions of wild-collected eggs.

With this existing approach to Houbara captive breeding, there is a trade-off between the quantity and the quality of birds to be produced. At existing facilities, the emphasis is absolutely on quantity, apparently because of an assumption (or even an assurance) that the clients want as many birds as possible to hunt. However, while dissatisfaction with the performance of the hunted birds as worthy game for falconers is generally not expressed, because of a culture of courtesy, it is known that privately many hunters favour the quality of wild Houbara and the sport they provide. We know of a single facility (not mapped on the above link) which places quality before quantity, and which takes every precaution to shield parent and young birds from exposure and accustomization to human beings.

IWMC

Other: Trade restrictions discourage land owners and communities to conserve these species as there is no economical return, despite all the risks remaining.

OATA

Type of species

Other

For aquarium fish, the habitats that species are found in can affect the sourcing methods and therefore the impacts of the trade upon conservation.

Many freshwater species have been captive bred at scale for several years, significantly reducing the demand for wild sourced specimens [13]. For those freshwater species still sourced through wild capture, these are specimens that may be difficult to breed in captivity [14], [15] and may be sustainably sourced through use of boom-and-bust rainforest fisheries [2], [3], [16]. These fisheries exploit the boom in fish populations following the wet season, collecting individuals that would otherwise die when the waters recede during the dry season. As discussed above, both these methods can be beneficial for species conservation through: promoting environmentally sustainable livelihoods; stewardship and protection of biodiverse habitats; active funding of conservation efforts and meeting demand for species with captive bred specimens instead of wild.

For marine species, the majority of animals are sourced through wild collection with a smaller but growing proportion being sourced through captive breeding. This is due to the difficulty of replicating complicated planktonic life cycles in captivity. However, that does not necessarily mean that wild collected marine species have increased conservation risk. These species are collected with environmentally low impact methods [13], [15], [17]and provide fishers with a environmentally friendly livelihood where other local livelihoods are more environmentally damaging, e.g. Coral mining, destructive food fishing, etc [18]–[20]. In addition, some fishers will engage in pro-conservation behaviours, such as reef restoration activities. Wide scale switches from wild collection to captive breeding of these species could have negative consequences for conservation by removing the incentive for local people to use reef habitats sustainably.

TRAFFIC

Type of species

Type of specimen

Other

Elaboration linked to response to conservation risk question.

WWF

Type of species and specimens

Illegally sourced processed products, such as tiger bone wine and rhino horn, are easier to launder than more readily recognisable specimens, such as (in the case of other big cats) hunting trophies or skins.

b) Do you see a difference in conservation risk for the wild populations when you compare *in-situ* C/A (and subsequent trade) versus *ex-situ* C/A

Austria

Generally speaking, there is no difference between ex-situ and in-situ captive breeding/artificial propagation. Different considerations might have to be taken into account when it comes to requirements and conditions for operating. For example, the effect of escaping specimen differs between ex-situ and in-situ. It can be lower or higher for both situation depending on the survivability, diseases, conservation status, and many other factors. For conservation breeding purposes, the native natural conditions of in-situ breeding reduces artificial selection. On the other hand, ex-situ breeding can provide a saver backup for wild population and allow reintroductions.

Canada

It would be useful for the working group to define what in-situ and ex-situ mean within the context of this question as the response may vary. In the interest of time, we are defining two possibilities.

First possibility - In the context of in-situ (i.e. breeding of a species in one of its range states, regardless of breeding in a closed or open environment) and ex-situ (i.e. breeding of a species outside of its range states, regardless of breeding in a closed or open environment) as referred to Res. Conf. 13.9. This could be summarized by breeding of indigenous species vs non-indigenous species:

For in-situ (indigenous) breeding/artificial propagation, one of the conservation risks for wild populations is transfer of genetic material to wild populations from captive or artificially propagated specimens that have been genetically selected for specific traits. In addition, for indigenous species, there is also a risk of laundering wild specimens in breeding facility. However, there are also mitigation measures that can counter these issues.

For ex-situ (non-indigenous) the primary conservation risk is release into the environment, which can result in an invasive species, as a vector of pathogen or as a disturbance of the ecosystem.

Second possibility - In the context of in-situ (i.e. breeding of a species directly in their natural habitat in a somewhat open environment regardless of the breeding occurring in a range state or not) and ex-situ breeding operations (i.e. breeding of a species in a closed environment such as a building, regardless of the breeding occurring in a range state or not):

There are different examples of in-situ captive breeding/artificial propagation that may involve various risks for wild populations, such as farming of animals or crops, aquaculture in the ocean, artificial propagation in natural habitats (source code Y), etc. If there is a concentration of specimens in a small area, the operation may impact their local surrounding/habitat by the provision of feed, the production of feces and the support capacity of the environment itself. The use of chemicals in breeding operations may also be an issue, i.e. pesticides, antibiotics, etc. The escape of individuals or propagules leading to disease transmission to, or genetic exchange with wild populations is also a risk. Any in-situ captive breeding/artificial propagation would typically lead to greater risk to any species in the wild.

Ex-situ breeding tends to have less conservation risk for wild populations as the species are housed in a controlled environment. There can also be mitigating measures to avoid escape such as a physical barrier. There is less chance that genetic exchange would occur with wild population. There is also the possibility of treating waste products before release into the environment.

China

In China, both in-situ and ex-situ captive breeding/artificial propagation pose low conservation risk.

According to China Wildlife Protection Law, captive breeding shall contribute to wild population conservation. Use of specimen mainly come from captive breeding source.

Colombia

In the case of wildlife and non-timber flora, we reiterate the previous answers in the sense that we have no way to compare because we only have one closed-cycle and artificial reproduction system.

For timber flora species, there is no documented information available to analyze the volumes of timber obtained from the natural environment with respect to the volume presented in plantations, so that a valid reference value can be obtained.

Difference in conservation risk for wild populations associated with Assisted production (source code Y)

Germany

Plants:

In order to be supportive of conservation aims and sustainability goals in-situ cultivation should be done with caution and should consider a number of aspects:

- It should be done with autochthonous propagation material to conserve local genotypes and prevent substitution and hybridization of local variants by alien genotypes. Some species or populations may be more vulnerable to genetic introgression than others.
- Offtake from in-situ art prop must not be higher than the prior output / enrichment, i.e. in-situ art prop should result in net increase or at least maintenance of the local wild population.
- In this regard, non-lethal offtake (e.g. collection of flowers only) may be in favor of in-situ art prop and might result in midterm net increases of the wild population.
- Local communities, ideally former harvesters, should be involved in in-situ cultivation to provide alternative income and to create engagement and incentives to protect the species and their habitats.
- Small-scale restoration-oriented approaches may have better effects on conservation risks, livelihoods and the quality of harvested products than profit-oriented large-scale industrial approaches.
- Nevertheless, ex-situ cultivation of plants threatened from overexploitation may also have positive effects, see responses to question a).

Animals:

In-situ captive breeding and ranching may support livelihoods of local communities. Income and engagement in such operations provide considerable benefits and give the relevant species a direct value and thereby incentivize conservation of these species in the wild.

In particular, ranching operations can support conservation of wild habitats and improve the conservation status of the respective species (see examples of crocodiles above).

On the other hand, in-situ captive breeding and ranching may still rely on regular augmentation from the wild and may be prone to wildlife laundering if not properly controlled and regulated (Robinson et al. 2015).

Ex-situ captive breeding in non-range states in reptiles is significant (for example number of exported live specimens of reptiles increased from 2001 to 2020 in Germany to more than 4,000 specimens see van Schingen-Khan et al. 2022), thereby demand for international trade and pressure on wild populations may be reduced (see also Robinson et al. 2015). The risk of potential wildlife laundering may be lower than in in-situ breeding operations.

Ex-situ captive husbandry and breeding on a global level increase the possibility for scientific research on the species and have contributed to the taxonomic understanding and increased biological knowledge of species which ultimately also benefit conservation of the relevant taxa (Pasmans et al. 2017).

An initiative called Citizen Conservation based in Germany, consisting of a network of professional (including zoos and universities) and private breeders, develops coordinated conservation breeding programs for threatened species (fish, amphibians and reptiles) to build up stable and healthy reserve populations. For each species, concrete goals (numbers of animals and breeders) are defined that are assumed necessary to maintain a self-sustaining and healthy population over a certain period. Once these goals are reached, for some species, the commercial sale of surplus offspring may be considered as one management option, while the revenue will flow back into the program.

The Endangered *Tylototriton vietnamensis* is one of the species managed by Citizen Conservation (as is *Agalychnis lemur*). In case of this species, ex-situ breeding is supported by the range state Vietnam. Offspring bred within the frame of the program in Cologne Zoo was recently repatriated to Vietnam and a captive facility was meanwhile established in Vietnam as well. Data and knowledge are shared between ex-situ and in-situ facilities. This provides an example on how captive breeding including the commercial sale may contribute to the species conservation and how range and non-range countries may collaborate in that respect.

However, in other cases, ex-situ captive breeding may lack direct benefits to range states or local communities or does not incentivize conservation in the range states.

Nevertheless, especially in cases where species are mainly threatened by other factors than trade, back-up populations in captivity may be of crucial importance once threats in the habitat will be addressed.

Indonesia

Yes, with different levels of risk:

1. Anthropogenic risk when moving specimens from their natural habitat to an ex-situ breeding operation. However, ex situ breeding has the advantage to control the food, reproductive, and environmental parameters.

2. Natural risks for in situ breeding operations such as predators, diseases, and weather, but in situ breeding has the advantage that the specimen is in their natural habitat.

Mexico

There is no difference. For example, for bighorn sheep (*Ovis canadensis mexicana*), there is use in intensive management and on farms or facilities that manage wildlife in a confined manner, outside their natural habitat (PIMVS), in addition to management in the wild, with an approved management plan, conserving the species in the wild without any impact. It is important to consider in the future to generate it at a national level and in hatcheries in other countries with Mexican species (especially endemic), for example, cooperating under the CITES Res. Conf. 13.9 13.9 (on promoting cooperation between parties and conservation programs, or bilateral agreements).

In the case of cacti species, when reproduced *in-situ under* the UMA scheme, which have the general objective of conserving natural habitat, populations and specimens of wild species and may have specific objectives of restoration, protection, maintenance, recovery, reproduction, repopulation, reintroduction, research, rescue, safeguarding, rehabilitation, exhibition, recreation, environmental education and sustainable use. They carry out activities or generate incentives for the conservation of wild populations.

However, in document SC77 Doc. 35.3, several cases were documented of Mexican endemic cacti species such as *Echinocactus grusonii and Mammillaria lau* that are artificially propagated *ex-situ* in countries outside their area of distribution and that do not provide information on the origin of their parental stock and there are discrepancies in the use of the codes at the time of exporting these specimens, It should be noted that no benefit or incentive is generated for the conservation of its wild populations in Mexico and although this

production contributes to the reduction of the harvesting pressure on wild populations, it does not favor the conservation of the species in its area of distribution, such as the exchange of information and technology that benefits the production in the country of origin.

South Africa

This is likely species and case specific. Examples:

Cheetah, in-situ captive breeding allows for better rewilding opportunities (environmental conditions the same or more similar), than ex-situ captive breeding. Allows for better linkages to conserving wild populations. However, must be well regulated to prevent laundering of wild specimens into captive breeding facilities.

There however may also be a perverse incentive to captive breed vs to conserve wild populations, when income generation is skewed towards captive breeding compared to conservation of species in the wild, likely to lead to laundering (this pertains to species with renewable resources).

For the plant species highlighted by South Africa, there is no difference in conservation risk for the wild populations when comparing *in-situ* versus *ex-situ* artificial propagation (and subsequent trade) in South Africa. The risks remain the same as wild plants (of many species) can be harvested *in-situ* and easily be moved/laundered within the country, over relatively short distances and without detection (in most cases), to nurseries both in range and out of range as has been the case for a number of succulent plant species as well as cycads in the domestic trade. Majority of the domestic cycad trade is centred around nurseries in the Gauteng province, who have collectively had the greatest negative impact on wild populations even though the province is out of range for all, except two of the 38 indigenous cycad species.

Assisted production in such cases would be a preferred option, bolstering production of artificially propagated plants and aiding in the maintenance, regeneration, and recovery (where needed) of wild populations

An important point to make here is that growing plants *in-situ* may actually have the potential to create livelihoods for locals linked closely to the conservation of the species where such activities are well-regulated.

United States of America

Yes, we see a difference in conservation risk to wild populations from in-situ breeding/propagating operations versus operations outside the species' range. In the case of Diamondback terrapin and Softshell turtles, *in-situ* captive breeding allows breeders with non-closed/ not strongly closed facilities to supplement breeding stock from the wild. Also, there may be a greater possibility of disease spread to wild populations from escaped animals for *in-situ* operations.

On the other hand, *ex-situ* operations can also provide avenues for laundering illegally traded specimens, if Parties do not adopt and enforce sufficient measures and require sufficient record keeping to ensure the legal acquisition of all parental stock / breeding stock. There have been numerous examples over the years of specimens smuggled out of country A, bred/propagated in country B, and then the offspring exported to country C without evidence of legal acquisition of parental stock from country A.

OBSERVERS:

AWI, BFF, DoW, ProWildlife, SSN

Note that captive breeding / artificial propagation is *ex-situ* by definition; it is unclear what is being referred to here.

IUCN

If the Committee considers "*in-situ* captive breeding" to refer to the location of the captive-breeding facilities within, as opposed to distant from, the historic range of the species:

- The physical location of the captive breeding does not present a meaningful difference in conservation risk for wild populations *per se*.
- However, some "*ex-situ*" facilities are known to maintain populations of Houbara representing different areas of the overall range. In the Asian Houbara in particular there are genetic differences between populations in different areas, and we imagine that facilities holding birds from different areas will have a major organisational challenge to keep these birds pure-bred. Whether this has been achieved is unknown, but the risk of mixing is obviously much greater in an "*ex-situ*" facility than an "*in-situ*" one.

If the Committee considers "*in-situ* captive breeding" to refer to the headstarting of eggs collected from the wild but raised in captivity, and subsequent release of juveniles to the wild:

- This technique is not used for Houbara beyond the collection of founders to retain within captive-breeding system.

However, headstarting has been used with other bustard species with varying degrees of success. In best-case scenarios, this has allowed for improved recruitment in wild populations which has resulted in steady growth (e.g. for Great Bustards *Otis tarda* in Germany). However, in other cases headstarting has resulted in a net drain on wild productivity through collection of eggs without successful releases into the wild (e.g. for Great Bustards in western Russia).

IWMC

Ex-situ propagation and trade could lower the value of specimens sourced from their natural habitat. Removing the economical benefits for local communities, which will as a result lower conservation incentives.

OATA

Not applicable to aquarium fish as most captive breeding is conducted ex-situ.

TRAFFIC

Yes, there are certainly differences and both *ex-situ* and *in-situ* operations can have advantages and disadvantages. For example, captive breeding/artificial propagation in-situ may facilitate the laundering of specimens from the wild (disadvantage), but these operations may have conservation programmes that include the release of specimens into the wild to reinforce wild populations (which would make the transfer and handling of releases easier), education/awareness programmes targeted at people living with the species, etc (advantages). On the other hand, if captive-bred animals in *in-situ* facilities escape into the wild, they may carry diseases acquired in captivity or, in cases where they have bred with specimens from other populations/varieties/subspecies, they may genetically contaminate the wild population (disadvantages), while captive-bred animals in *ex-situ* facilities could be a source for the potential introduction of invasive alien species.*In-situ* operations can also create employment opportunities for local people who share their space with these species and know them well, thus preventing them from being forced to seek sources of income that could include illegal harvesting and trade of these and other species in their localities (advantage). On the other hand, these operations can also cause other problems if not managed properly, such as environmental degradation from improper waste disposal at such facilities, employment opportunities for local communities may be limited, and profits may not be distributed equitably, loss of traditional harvesting systems and knowledge, displacement of those communities by these facilities, etc.

c) i) What are the factors that need to be considered to assess the risk associated with these production systems?

Australia

Australia has not undertaken a comparative assessment suitable to inform a response. However, illegal trade is a significant factor that affects species.

Austria

Wild and non-wild production systems can entail conservation risks and benefits. Which prevails depends on how the specific system and operation is set up, how risks are mitigated and benefits are utilized. This might also depend on the species, its specific conservation concerns and the market conditions.

Source codes are a good way to communicate complex information in a simplified manner between Parties, but when checking the sustainability the specific circumstances have to be checked.

Canada

Canada views the production systems on a continuum of conservation risk, with wild harvest having the greatest risk on population sustainability, and overall risk to wild populations decreasing as the reliance of wild specimens decreases i.e. Harvest risk W > R> Y=F > A=C=D.

Source code R: This is not a source code used in Canada. These represent wild specimens that are removed from the wild at an early life stage, have very little chance of survival and raised in a controlled environment. It would typically apply to r-selected species. It is a more sustainable practice then the removal of adults from the wild. It can also be used for

enhanced wild production, where wild adults are collected in a semi-closed area and their offspring are collected and raised in a closed system. However, it can be subject to misuse, for example, the removal of gravid animals from the wild with the release of the adult after birth/hatch of offspring or its application to K-selected species.

Source codes Y: This is not a source code used in Canada at the current time. This source code has the advantage of reducing harvest pressure on the wild species and for monitoring plants that are not totally wild but are not in accordance with Resolution Conf. 11.11 definition of artificial propagation. Canada would consider and assess factors that could negatively impact the integrity of wild populations, particularly for species with restricted distributions for which there are conservation concerns. Examples might be where the production system would introduce pathogens or non-local, potentially maladapted genes into wild populations.

Source code F: This source code is used for specimens that are not in accordance with Resolution Conf. 10.16. It may be used when the breeding operation relies on regular removal of adult breeding stock from the wild. When a positive NDF can be made, this has a lower conservation risk than direct harvest of wild populations for trade as fewer adults are removed from the wild. This source code is also used for breeding operations that have not yet bred to a second generation but would be considered closed operations. In this case, the conservation risk to wild populations is similar as for operations that are in accordance with Resolution 10.16. This source code has also been used for offspring of adults that were gravid when removed from the wild and raised in a controlled environment. Canada does not agree with this use of source code F and considers such offspring to be source code W.

Source codes A, C and D: Canada considers these production systems to have the least conservation risk for wild populations as they represent production systems that have the least direct contact with the natural environment and the least use of wild breeding stock. A potential risk concerns the genetic selection that can occur in operations to improve the marketability of the product. The escape of such individuals or their propagules into the environment and subsequent interbreeding with wild populations could be a conservation concern

China

Biological characteristics of species are generally believed to be the main factors which influence the interaction between wild population and captive-bred /artificial propagation operations.

Plants: The vast majority of plants do not need to be supplemented from wild sources. Depending on the biological characteristics of different species, the main channel for the expansion of breeding substrates is non-wild sources, which basically forms a closed loop, and the dependence on specimens from wild sources is very small on the whole.

Animals: In China, the artificial breeding of wild animals requires permit, and the relevant provisions of the China Wildlife Protection Law are stricter than the current CITES resolution, requiring that the parental stocks should come from artificially bred offspring, and there are extremely strict restrictions on obtaining parental stocks from the wild.

Colombia

In the case of plantations, non-validation in the field can be a risk. Identification of species when they are not flowering or are seedlings. In timber and non-timber flora, traceability systems.

Germany

Plants:

A & D:

- validity of source code
- establishment and maintenance of parental stock to be non-detrimental to wild populations
- location of cultivation site (in native range of species or not)

Y:

- type of production (e.g. mixed species plantation, agroforestry, in-situ cultivation, enrichment planting etc.)
- establishment and maintenance of parental stock or origin / source of propagation material to be non-detrimental to wild populations
- location of production site (in native range of species or not)

Animals:

C & D: plausibility of captive breeding, risk of wildlife laundering (native and non-native range), regular control of facilities by competent authorities, non-detrimental establishment of the breeding stock and potential occasional augmentation of the breeding stock from the wild

F: non-detrimental offtake of parental stock; plausibility of being born in captivity

R: suitability of species for ranching operation based on its biological characteristics, plausibility check of production levels, risk of wildlife laundering, non-detrimental offtake of juveniles/ egg.

Indonesia

Plants : Propagation methods and human resources

Animals: Breeding methods and human resources

(1) In order to ensure easy control of breeding results, offspring should be separated from their parents.

(2) Offspring separation from parents shall be conducted in order to distinguish among generations where the first generation (F1) should be able to be distinguished from subsequent generations.

(3) In order to maintain the originality of wild animal species for protected species sourced from natural habitats, captive breeding unit is forbidden to conduct crossbreeding (*hybrid*) between species or subspecies.

(4) To ensure genetic biodiversity of animal species, animal breeding is conducted with at least with two pair or for polygamous animals is minimum two.

(5) Breeding is conducted by avoiding utilizing inbreeding parents stocks.

Mexico

Plants:

1. Legal origin
2. Species biology
3. Management measures
4. Traceability
5. Removal of wild specimens for parental stock or to avoid inbreeding.
6. Reproductive capacity in controlled environments
7. Possibility of utilization according to their production capacity.

Animals

1. Legal origin
2. Species biology
3. Captive biology (modification of reproductive behavior, accelerated growth)
4. Management measures

5. Traceability (physical and documentary marking and tracking measures)
6. Removal of wild specimens for parental stock or to avoid inbreeding
7. Reproductive capacity in controlled environments
8. Possibility of utilization according to their production capacity

South Africa

Animals:

- Regulatory environment
- Capacity to monitor and regulate
- Biological characteristics of the species
- Demand
- Whether trade is in renewable derivates of a species i.e. hair, horn etc

Plants

- Life history of plant species
- Ease of production/propagation of species
- Availability and effectiveness of mechanisms for monitoring the production within these systems
- Other factors that would influence the risk associated with this system is the ability to distinguish wild-collected plants from plants that have actually been artificially propagated as per the CITES definitions

United States of America

Plants:

For native plant species, these production systems would be of concern if they are not capable of producing the quantities of specimens that they intend to export and laundering wild-harvested specimens to meet demand becomes a concern. They also need to meet the requirements of Resolution Conf. 11.11 (Rev CoP18), such as note parental stock acquired legally.

As an example, we can provide our NDFs for wild harvest and artificially propagated American ginseng (*Panax quinquefolius*).

Animals:

For native animal species, these production systems would be of concern if they are not capable of producing the quantities of specimens that they intend to export and laundering wild-harvested specimens to meet demand becomes a concern. They also need to meet the requirements of Resolution 10.16 (Rev. CoP19), such as founder stock acquired legally.

OBSERVERS:

AWI, BFF, DoW, ProWildlife, SSN

We note that the roadmap for this work requests the Animals and Plants Committee working group “to consider the conservation risks for wild populations associated with non-wild trade” rather than factors to assess risk or differences in risk among different non-wild production systems.

IUCN

We pool our answers concerning CITES source codes D & C due to inconsistencies in their application. A large number of Houbara are traded as source code C, despite being produced at a facility registered for production for commercial purposes and traded without corresponding import permits.

The implicitly or explicitly stated use for these birds is typically hunting. This is evidenced by the location of release sites and hunting areas and also sometimes in conflicting purpose codes on pairs of CITES export and import permits.

In both cases, the production of large numbers of birds via artificial insemination breeding centers presents problems of adaptation to captivity and dependence on humans, as described in section a-i.

Currently, the operations of Houbara captive-breeding facilities are opaque. No information is publicly available concerning the genetic lineages kept at these centers, nor of the birds released. Captive-bred Houbara are released across 17 recipient countries, and it is unclear whether the limited founding stock and birds released are genetically suitable for these areas, in terms of migration and breeding phenology.

To better assess the risk associated with trade of Houbara produced by artificial insemination, it would be constructive to require availability of the following data for periodic formal review. Such review would: (1) appraise genetic impacts of this trade; (2) verify purpose of release and associated impacts on wild populations; and (3) assess the effectiveness of these release programs in creating self-sustaining populations.

- Geographic origin and genetic diversity of individuals used as breeding stock
- Breeding studbooks
- Dates and sites of releases of captive-bred individuals, along with the number and sex of these birds
- Genetic lineage of birds released at a particular site
- Access to existing telemetry data, which can be used to infer survival and breeding success rates of released birds
- Information on pre-release surveys concerning the status of wild Houbara in the vicinity of the release site

Source codes F & R:

We understand that both of these codes (though predominantly F) are used for bustard eggs which are collected in the wild but hatched in captivity, with the young birds later translocated to the wild. We note that there are applications of this activity which produce real conservation benefits. In the case of other endangered bustard species for which eggs are ranched, this is usually conducted in the country of origin, with the exception of the Great Bustard in the United Kingdom (sourced from Russia and Spain), and Arabian Bustard *Ardeotis arabs* (sourced in Yemen and brought to the UAE). Whether the eggs are kept within the country, or moved internationally, organizations are understandably reticent to openly admit failure, particularly when this involves seriously threatened species for which there is open public concern. Similarly, programs are prone to inertia, and may continue to operate even when not yielding benefits, or worse, causing damage to wild populations. Thus it would also be beneficial to raise the public accountability of these programs by making information available concerning:

- Number of eggs collected
- Egg and chick survival rates
- Number of hatched birds released to the wild
- Survival outcomes for these released birds

Genetic identity of released individuals

IWMC

Animals: If these production systems are allowed to supply the market on an ongoing basis, then poaching pressure will be taken off of the wild populations

OATA

If species of aquarium fish were listed on appendix I, then this would likely have significant unintended consequences for the conservation of wild populations of those species. The current requirements for the export of captive bred specimens of appendix I effectively would prohibit many aquarium fish species from trade entirely if they were listed. For example, the majority of aquarium fish traded are small bodied and any attempt to mark these specimens would likely be significantly detrimental to animals welfare – marking requirements for appendix I [21]would therefore effectively prohibit trade in these specimens. In this instance, demand for these specimens could be driven to illegal markets of wild caught specimens, negatively impacting the conservation of wild populations.

TRAFFIC

Based on the responses above, TRAFFIC believes that the risk is not related to the production system, but rather to the traceability system in place, the cost of reproducing and rearing the specimens of the species in question, and the risk of - and penalties for - being caught illegally harvesting specimens from the wild or laundering wild specimens into legal production systems and associated markets (related to the governance in place). If there are strong traceability systems, good governance, and a strengthened law enforcement system in place, then these production systems can represent lower conservation risks. However, it is important to note that there are many cases where sustainable harvesting of specimens from the wild has proven to be an effective means of conserving species and ecosystems, as it provides incentives for IPs and LCs to conserve species/habitats that contribute to their livelihoods and well-being. Both questions, are responded by the factors already referred to regarding traceability, governance, transparency and law enforcement.

d) Has this trade in non-wild specimens had an impact on trade in wild specimens of the same species?

Australia

Positive and negative

Vary by species and specimens.

Australia has not undertaken a comparative assessment suitable to inform a full response. However, there is arguments on both sides in allowing trade in captive bred specimens and potential impacts on wild populations. Some may argue having access to captive bred and lawfully obtained specimens will reduce pressure/take on wild populations, while others may argue that this stimulates trade and therefore increases pressure on wild populations.

Austria

Vary by species

Canada

Positive, Negative or None

As noted above, there is little species overlap between trade in wild and not wild species in Canada, so we cannot comment directly based on our own experience. There should not be an impact if the different production systems are correctly managed.

Canada suggests that a greater impact on trade of wild vs not wild specimens is that there are Parties that will not accept import of wild individuals. This creates a market for not wild specimens that are often produced by non-range states. This will impact sustainable trade in wild specimens from range states when NDFs and LAFs for the wild trade can be made.

On the other hand, trade in not wild specimens can relieve harvest pressure (both legal and illegal) on wild populations so they can recover by providing alternative sources of income for local populations that have historically relied on wild trade to support their families

China

Negative and None

Species

Use of wildlife specimen mainly come from captive breeding source, which reduces pressures on wild source

Colombia

Germany

Positive

Species and specimens

Plants: We are not aware of any clear / empirical assessments of impacts of art prop on the level of wild harvest, but taking endangered species in cultivation is generally considered as one measure to alleviate pressure from wild populations, which is probably correct in most cases.

However, the impact would depend on the quality and quantity of the material from art prop vs. wild-sourced material, which influences demand and prices for certain specimens and origins and therefore may cause wild collection to resist, expand or decrease, in parallel to any development of levels of artificial propagation.

Often, certain consumer groups favor wild collected material for different properties, e.g. content of active ingredients of other characteristics. On the other hand, production on industrial scales may favor material from artificial propagation because the quality and quantity of supply may be better and more constant and predictable.

Another conceivable mechanism that could lead to unintended effect on trade levels is when new/additional (to initial wild-sourced trade levels) supply from cultivation would drive additional demand. This could happen without any changes in harvest levels of wild populations, but in the worst case might even increase demand for wild-sourced material, when cultivation cannot supply an increased overall demand or when wild material becomes more popular than before.

Rhodiola rosea might be a species where artificially propagated material may in the mid-term reach quality levels (by breeding efforts) and quantities (by rapidly growing cultivation) that could lead to a substitution of significant portions of wild-sourced specimens in global trade.

For agarwood, plantations and other forms of artificial propagation creates high volumes of supply for the international markets, but, however, has not led to significant improvements of conservation status for many species, due to the superior quality and the resulting enormously high market prices for agarwood from old wild trees. Legal and illegal harvest has continued.

Animals:

For animals, trade data suggests, that if trade increases in specimens not of wild source, trade in wild specimens will decrease. So it can be suggested that trade in one source code may substitute for the other to meet a given demand.

Studies on the analysis of trade suggest that reptiles which are traded mostly wild, lose popularity in the pet trade, while the number of bred specimens increases in trade (e.g. Herrel & van der Meijden 2014, Robinson et al. 2015, Valdez 2021).

In several species, captive-bred specimens can be better kept in captivity. An example is *Physignathus cocincinus*, where wild specimens have a significant escape behavior, compared to captive-bred specimens, that may lead to severe injuries when running against the terrarium glasses.

Indonesia

Positive impact that varies by species and type of specimens

Mexico

We do not have elements to respond. In the case of Cactaceae, in document SC77 Doc. 35.3 documented several cases of Mexican endemic cactaceae species such as *Echinocactus grusonii and Mammillaria lau* that are artificially propagated *ex-situ* in countries outside their range without providing information on the origin of their parental stock and there are discrepancies in the use of the codes, according to UNEP-WCMC, 2024 the main exporters are non-range countries, while the country of origin has very few export events for commercial purpose.

South Africa

Animals:

Acinonyx jubatus (Cheetah) - positive impact. Replaced detrimental trade in wild specimens with captive bred trade to meet international demand. See NDF for details.

Leptailurus serval (Serval) and *Galago moholi* – None. Species is easy to breed in captivity and there was no trade in wild specimens.

Crocodylus niloticus (Nile crocodile) – Positive. Well documented turnaround from sourcing completely from the wild to sourcing from captive breeding facilities. Demand for unscarred skins incentive for captive breeding. This has led to reduced to no trade from the wild, and a positive impact on the persistence of the species.

Smaug giganteus (Sungazer) – None. There is no trade from non-wild specimens. All past reported captive trade are specimens laundered from the wild.

Plants

Species specific responses:

Negative: *Avonia quinaria*

trade in specimens of this species reported as 'artificially propagated' (i.e., non-wild) have actually been of wild specimens illegally harvested and laundered into the legal trade.

Positive: *Encephalartos horridus*

The trade in artificially propagated plants from South Africa has replaced the international export of wild specimens from the country.

Negative: *Euphorbia bupleurifolia*

trade in specimens of this species reported as 'artificially propagated' (i.e., non-wild) have actually been of wild specimens illegally harvested and laundered into the legal trade.

Negative: *Pachypodium bispinosum*

trade in specimens of this species reported as 'artificially propagated' (i.e., non-wild) have actually been of wild specimens illegally harvested and laundered into the legal trade.

Type of species and specimens

This varies by both species and specimens in trade. As mentioned previously, species differ in their life history strategies with long-lived and slower growing species often presenting challenges for the artificial propagation of specimens that are in demand. These characteristics put such species at higher risk of wild collection to supply the demand through the laundering of desired specimens as artificially propagated. The removal and trade of large specimens in particular, which cannot be obtained quickly under propagation, is also highly destructive for long-lived, slow generating species that rely on adult plant persistence for regeneration. Trade in seeds and smaller plants collected/laundered from the wild may pose a lower risk but would likely still be detrimental in the long term especially if such activities occur too frequently and in large quantities.

The trade in non-wild specimens of faster growing, easy to propagate species, such as some species of Aloe and Crassula will not have an impact on trade in wild specimens of the same species as the demand can easily be supplied by both large and small plants produced through artificial propagation.

United States of America

Positive and negative

Vary by species

Yes, it can both alleviate the demand for wild-specimens or increase demand for wild-specimens depending on the species. How easily a species can be bred in captivity or artificially propagated, consumer product preferences, and the ability to meet consumer demand (demand can exceed the ability to produce specimens, which then puts increased pressure on wild origin specimens to meet demand).

For slow-growing, late maturing native plant species such as *Carnegiea gigantea* (Saguaro cactus), there is demand for larger wild-collected plants. However, we are also seeing commercial growers successfully artificially propagate saguaro cacti for export.

Artificial propagation of *Dionaea muscipula* (Venus flytrap) produces millions of plants, which are better suited for plant hobbyists, thus generally reducing the incentive to harvest from wild populations to meet the export demand.

For the non-native palm *Ravenea rivularis*, several U.S. commercial growers annually collect seeds from mature landscape palms (local-sourced seeds), and no longer rely on seeds harvested from wild palms in Madagascar.

OBSERVERS:

AWI, BFF, DoW, ProWildlife, SSN

-

IUCN

Negative

- Illicit trade in wild specimens is understood to be conducted to provide new genetic materials for captive-breeding centers

Ongoing hunting of Houbara continues with the justification that supplementation with translocated captive-bred birds compensates for this hunting. However, releases and hunting often occur on the territories of remnant wild populations, and this hunting affects both wild and captive-bred released birds

IWMC

Positive

Species

Not all species with specimens sourced from non-wild sources are freely traded, which makes it a pointless exercise. When South Africa was exporting lion bone from captive sources, lion poaching was reduced in South African National Parks as the bone market was being satisfied. It also promoted the breeding of lions in captivity, which new science has shown can be used for rewilding

OATA
Positive

Species

Yes, captive breeding of Zebra pleco effectively meets demand for specimens, reducing demand for illegally caught wild specimens.

Trade in live seahorses has shifted almost entirely to captive bred, leading to the majority of trade in wild specimens to be in dead dried specimens.

Links provided in submission

TRAFFIC

Positive

Species and specimens

As mentioned above, TRAFFIC believes that this is highly dependent on the species, the specimens, their value, existing governance, traceability systems, etc. Our response above is inspired by the crocodile case. Crocodile skin production systems have proven to be effective in many cases, especially when the above conditions are met. Captive breeding has been successful in meeting the demand for skins in the international trade, allowing wild populations to recover successfully. Similarly, ranching programmes have generally been successful,

as they avoid the removal of adults from the wild, result in high quality skins that fetch higher prices in the marketplace, and the benefits to local communities involved in the ranching activities provide an incentive for them to conserve the species' habitat, as well as the rest of the ecosystem and associated species.

e) Do you see conservation benefits in Production systems – source code: A / Y / D/ F / R / C

Australia

Yes – all sources except Ranched that had no response.

Australia generally considers not of wild source production systems to have a conservation benefit for their wild counterparts as they may provide a legal avenue to access species/specimens

Austria

Yes – all sources except Ranched that had no response

It is very difficult to respond to this question in a generalized fashion. It depends on the one hand on what is seen as a conservation benefit, which is not as clear as it might seem – as seen by the request at the last SC that the Secretariat should develop guidance on that. On the other hand, the source code contains very little information in itself regarding conservation benefit. If a facility is built by destroying the habitat of the species bred/propagated, this has a very negative conservation impact. If the breeding facility contributes to the conservation or expansion of habitats, the effect will be beneficial. All source codes can have a positive or negative impact, depending on the circumstances

Canada

Yes to all source codes

While Canada views the different production systems on a continuum of conservation risk, (see out response to question c)), with wild harvest having the greatest risk to population/ harvest sustainability and overall risk to wild populations decreasing as the reliance of wild specimens decreases i.e. Harvest risk W > R> Y=F > A=C=D, we also consider that when properly managed, there can be conservation benefit to all production systems, depending on the circumstances. This includes wild specimens (source code W).

As noted previously, in Canada there is little direct competition between trade in wild or captive bred/artificially propagated commodities. Trade in not wild specimens typically replaces trade in wild specimens when the wild species is protected and/or wild harvest for trade is not sustainable. The ability to trade not wild specimens can provide economic benefit that may have been lost with a harvest closure, which reduces pressure on wild populations and the potential for illegal harvest. The sale of offspring can support operations that are providing conservation benefit for re-introduction or assurance populations. However, when wild populations are reaching habitat capacity or dispersing into unfavourable habitat, adaptively managed wild harvest can maintain healthy predator-prey dynamics and reduce human-wildlife conflict.

In Canada, captive breeding of indigenous Appendix I species is limited to the peregrine falcon, gyrfalcon, and sturgeon. The conservation benefits we see between captive bred (source code C) and CITES registered (source code D) is negligible.

Trade in source code F specimens can provide some conservation benefit to wild populations as they provide an alternative to direct wild harvest while facilities that are in accordance with Resolution Conf. 10.16 are being established. This is particularly important for species with longer generation times.

Canada does not have a lot of experience with Source code R as we do not tend to have species with a life history that is best adapted to the take of an early life stage from the wild. There is the occasional take of bird eggs, but this is rare and is considered source code W in Canada.

Canada has not yet implemented source code Y and cannot comment on the conservation benefit of this source code except that it is potentially useful to monitor both wild trade and trade that is not in accordance with Resolution Conf. 11.11 separately.

China

Yes to all sources

Use of wildlife specimen mainly come from captive breeding source, which reduces pressures on wild source

Germany

Yes to all sources

In case of species whose wild populations are threatened from over-exploitation and trade, supply from artificial propagation and captive breeding, if the supply is qualitatively and quantitatively on sufficient levels, can lower pressures as the supply may cover at least parts of the overall demand.

Indonesia

Yes – all production systems

Captive breeding of wild plants and animal species is intended to:

a. Obtain wild plants and animal species ensuring the amount, quality, species purity and genetic biodiversity for utilization purposes in order to decrease direct pressure to population in natural habitat;

b. Get certainty administratively and physically that specimen utilization of wild plants and animals from captive breeding activities is really sourced from captive breeding.

The obligation to restock the wild populations by business actors is expected to increase the population

(1) Each captive breeders require to conduct restocking at least 10 % of the specimen of protected plants and animals as a result from captive management that has been meet the prerequisite of the standard qualification of captive management.

(2) Restocking as referred in verse (1) shall be conducted when fulfill the requirements as follows:

a. Possess high value of genetic, very much close to its parent stock, germ or seed;

b. Wild population are low, then with restocking activity will help recovery population;

c. Free from disease;

d. Physically fitness;

e. Predicted survive in the wild;

f. Releasing habitat once was naturally distribution areas or historically that this species was existed in this habitat;

g. Technically, releasing habitat should accommodate livelihood of the releasing animals;

h. Consider animals behavior.

Mexico

Yes

Trade in artificially propagated plants does not exert pressure on wild populations. In addition, conservation activities are carried out with some species (e.g. *Beucarnea recurvata* - Elephant's foot, *Kroenlenia gusonii* = *Echinocactus grousonii* – Biznaga

South Africa

Animals:

Yes for Source codes: D, F, R and C

Commercial purposes (source code D)

- There is a requirement to show a conservation benefit to species in the wild.
- Increased oversight and monitoring to ensure sustainability.
- Meet the demand internationally for the species or its derivatives and reduces the risks of illegal trade in the species and its derivates that is more difficult to monitor and/or regulate.

Born in Captivity (Source code F)

- It appears possible that it could have a conservation benefit, if a trade in source code F specimens incentivizes those people living with and utilising the species to monitor and conserve the source population of the species. South Africa however has not yet attempted to do this.

Ranched specimens (Source code R)

It appears possible that it could have a conservation benefit, if a trade in source code R specimens incentivizes those people living with and utilising the species to monitor and conserve the source population of the species. South Africa however has not yet attempted to do this.

Captive breeding (source code C)

- Captive breeding of species or their derivates can meet international and local demand without negatively impacting on wild populations.
- Captive bred specimens often more adaptable and welfare impacts lower on specimens than trading wild specimens.
- Generally closed systems that reduces negative impacts on wild populations if well regulated and monitored.

Source for re-introductions to supplement wild populations

Plants

Yes for source code A, Y and D

Source code A:

For the example case studies highlighted here, source code A has presented risks to the wild populations but the value of artificial propagation to supply demand for these species should not be undermined. Just as for fast-growing species where demand can be met through AP, propagation of long-lived, slow-growing species, albeit a longer process, is still possible and has a huge role to play in alleviating the pressures on wild populations under good management and oversight controls. Cycads are a good example of this, where domestic and international trade has increasingly been supplied by small and large (in the case of domestic) artificially propagated plants. The promotion of artificial propagation of in demand plants, not only contributes to the conservation and sustainable use of species but can also have large socio-economic benefits for country's wanting to trade responsibly in their botanical resources. Additionally, artificially propagated plants have the potential for use in the recovery and restoration of species that may be locally depleted or extinct.

Source code Y:

his form of production can be very beneficial for meeting the demand for longer-lived, less easy to propagate and threatened species in a sustainable manner where it is well managed. Benefits include aiding directly in an increased supply of in-demand plants; improved monitoring and better management of wild populations; ensuring the regeneration and recovery of threatened wild populations; and incentives for communities to better conserve the resource base.

Source code D:

By allowing trade in artificially propagated specimens of App I species, this production system promotes good practices/disincentivises non-compliance within the supply chain so that the production does not have any impact on the wild populations. Source code D allows for the commercial demand for Appendix I species to be met without impacting on the wild populations, where well regulated. The provisions set out in paragraph 4 of CITES Resolution 11.11 (Rev. CoP18) - which makes allowance for plants grown from wild-collected propagules of Appendix I listed species to be considered as artificially propagated specimens, under certain conditions - are important and valuable to retain and explore, particularly

for slow-growing, slow-reproducing, and long-lived species such as cycads. Such a provision could boost the availability of artificially propagated specimens of rare species in a manner that does not impact the long-term conservation of such species.

It is important to note a possible oversight in the provisions of trading commercially in App I listed plants, where unlike for animal species, there is no requirement to show any conservation benefit from trade of App I plant species. This is inconsistent and unfortunate as such a requirement has the potential to further bolster the conservation of valuable and rare plant species through sustainable trade.

United States of America

Yes for all sources except:

Yes and No for App I specimens bred in captivity or artificially propagated (source code D).

OBSERVERS:

AWI, BFF, DoW, ProWildlife, SSN

We are concerned that this question only seeks information on benefits of these individual propagation systems instead of the risks. The associated roadmap clearly requests that "the Animals and Plants Committee working group is asked to consider the conservation risks for wild populations associated with non-wild trade".

IUCN

As regards bustards specifically:

High-volume captive breeding of bustards can only be achieved through artificial insemination, which requires taming. This removes from the breeding pool the individuals most wary of threats (i.e. hunting and predation). The massive trade currently conducted in both Africa and Asia represents threats to the small remaining wild populations through genetic swamping with maladaptive traits related to adaptation to captivity and competition for resources.

Specimens hatched from eggs collected from wild parents and "head-started" in captivity, which for Houbara are typically coded as "F" but occasionally also "R", have potential to retain greater adaptations beneficial for survival in the wild than bustards captive-bred through artificial insemination. Care must be taken to ensure accountability in these programs to ensure a net positive impact on the wild population.

IWMC

Yes – all

If it is sustainable and practiced responsibly, there can only be positive benefits for both the species, and the people involved.

OATA
Yes for source code D, R and C

TRAFFIC

Yes to all sources

Again, we could see benefits in all of these production systems, provided that the factors mentioned above are met (strong traceability, governance, transparency, monitoring, law enforcement, proportionate supply and demand, cost-effective production systems, etc.)

f) If specimens not of wild source (captive breeding, artificial propagation, etc.) were less common or discontinued is it likely that wild specimens of the same species would come under greater trade pressure? Yes/No
Australia Yes Australia believes this would be dependent on the species and individual circumstance to provide a robust answer. However, we are generally of the view that if not of wild source options didn't exist, there is a likelihood that illegal wild take would increase, potentially placing pressure on wild populations, species sustainability and potentially creating broader ecological pressures. Example: crocodile farming **Austria** Yes Probably one of the most striking example in which discontinuation might have large effects on wild populations are carnivorous plants. For example the Venus Flytrap (Dionaea muscipula), since 1992 exporter reported 10.8 million specimen with source "A" in the CITES trade database, clearly showing strong demand in this species. At the same time, exporter only reported 17.000 specimen with source "W". Even if just a fraction of the demand for "A" specimen would be diverted to "W" specimen, the species would be put under enormous pressure. There is a demand for carnivorous plants and it can only be satisfied in a sustainable manner due to trade in artificially propagated plants. The same is true for many other species as well, but obviously, circumstances differ for different species. **Canada** Yes Again, Canada does not have direct experience of this. However, we believe that this will be dependent on the market demand and the economic reliance of local people on the discontinued trade. It is our experience in Canada that when an economically valuable trade is discontinued due to either unsustainability or market closure, that people will seek alternative sources of revenue. In some cases, this will impact wild populations of the same species, in other cases, this could impact other wild species that can be traded as substitutes. **China** Yes The Use of non-wild specimens can reduce the use of wild specimens **Colombia** Yes. Depends on demand and conservation strategies. **Germany** Yes See responses above, and especially consider examples of crocodile ranching which took pressure of wild populations and led to improved conservation status of the respective species **Indonesia** Yes However, MA imposes controls for wild harvest such as quotas thus, to prevent the wild specimens of the same species be under trade pressure. **Mexico**

Yes

Specimens from captive harvesting or artificial reproduction of non-wild origin allow for sustainability without affecting wildlife populations. For example, in the harvesting activities for the production of handicrafts in the communities, specimens of non-wild origin are used. The suspension of the existence of these specimens would imply a risk of pressure for harvesting specimens of wild origin.

On a case-by-case basis, depending on the species and demand.

Fauna:

Totoaba. Although the capture of wildlife is not permitted, there are commercial alternatives for obtaining fillets through captive breeding, without generating greater pressure on wild specimens.

Global trade in reptiles has increased as in the case of *Abronia* spp. or tortoises and freshwater turtles, the lack of supply of captive-bred specimens may generate increased pressure towards wild specimens (according to the considerations of the CEC 2017 y CEC 2019), especially because of the high prices that specimens can fetch (CITES proposals for the inclusion of turtles in the appendices of CITES). CoP19 Prop. 28 Rev. 1, CoP19 Prop. 29; CoP19 Prop. 30).

Flora, there are species that present intrinsic biological, reproductive and demographic restrictions that, together with land use change and illegal extraction of wildlife specimens, compromise the permanence and viability of their wild populations, as is the case of many cacti, for example *Ariocarpus retusus* (PC25 Doc. 39.2), if these species were not artificially reproduced in nurseries, harvesting pressure would significantly affect their wild populations. Similarly, there are tree species with high market demand for their timber characteristics that, if they were not artificially propagated, the pressure on wildlife populations would increase to meet market demand, as in *Cedrella spp.* species, where 47% of the timber trade in this genus comes from trees that are artificially propagated (CoP18 Prop. 57).

South Africa

Animals:

Yes.

As long as demand persists, it will be met. If there are no captive bred specimens, the animals will be sourced from wild populations this is unlikely to be sustainable in many cases

Plants

The trade in artificially propagated plants, notwithstanding the current challenges highlighted above for some species, provides an important alternative supply to wild-collected plants of in demand species. In the absence of such supplies, and especially where oversight is lacking, demand has and will continue to be met from wild populations as outlined in the case studies presented here. There are many more such as examples of South African plant species in high demand from emerging horticultural and ornamental plant markets that have not yet been sufficiently supplied through artificial propagation. Species at greater risk are those that are rare or threatened and slow-growing in nature as well as those for which the wild-characteristics are desired. Nevertheless, the pressures will remain more urgent and more severe in the absence of artificially propagated specimens and alternative supplies.

United States of America

Yes and No

That is a complex issue that is not the same for all species. For some species, captive breeding can help reduce demand but for other species it can help increase demand. The latter has been seen in bear bile, rhinoceros horn, tiger specimens, and snake venom. Wild source is somehow seen as better or more potent or a sign of economic prosperity (status – can afford to buy wild) and in such cases, exposure to/availability of captive specimens may stimulate demand for wild.

Also potential issue of laundering in range countries - farms often also trade in wild-caught animals.

OBSERVERS:

AWI, BFF, DoW, ProWildlife, SSN

A related question might ask if trade in color varieties, cultivars, etc. has an effect on demand for wild-type specimens.

IUCN

Captive-breeding may have reduced the trade in wild-caught Houbara for the purpose of training falcons. At the same time, a new but likely smaller purpose of trade in wild Houbara has emerged, as fresh breeding stock is collected from the wild in attempts to address congenital issues which have emerged over successive generations in captive-breeding facilities.

IWMC

Yes

The demand will not go away. It is important to work towards long-term sustainable supply chains for all natural resources- not to end trade in “endangered” species.

OATA
Yes

Based on responses to previous questions

TRAFFIC

Again, it is all relative. This could be the case for some species in some circumstances. If crocodilian skins were no longer produced by these production systems and demand exceeded the potential supply of sustainably harvested wild-sourced skins, wild populations could be at risk of overexploitation. However, if demand were lower than the potential supply from the wild, well-managed, legal and sustainable wild-sourced skins could supply the market while generating benefits for the various actors in the supply chain and supporting the livelihoods of IPs and LCs.