

Relationship between *ex situ* production and *in situ* conservation

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The relationship between *ex situ* production and *in situ* conservation of animals

1. For animals the forms of production recognised by CITES, are captive breeding, production of F1 offspring, ranching and wild collection. Wild collection, by default includes any specimens other than those obtained through captive breeding, production of F1 offspring, or ranching. The CITES definitions of bred in captivity, first generation offspring and ranching of species transferred from Appendix I to Appendix II, require that such production be conducted in a controlled environment (see respectively Resolution Conf. 10.16 (Rev) and Resolution Conf. 11.16). A feature of the controlled environment is that it should have boundaries to prevent animals or gametes entering or leaving the controlled environment and consequently, production in such circumstances may be considered *ex situ* production. In the case of ranching whilst the ranching facility is generally considered to be *ex situ*, the production is dependant on repeated inputs of wild specimens.
2. In theory, neither *ex situ* nor *in situ* production for international trade, if effectively managed with appropriate non-detriment findings being made, should adversely affect population survival in the wild (this is the condition on which non-detriment findings are made). Although wild harvest may reduce population size to a planned level, this reduction should not be irreversible provided that the correct management assumptions are made and that trade and management controls are properly implemented.
3. In practice, management and trade regulation may not always be able to maintain collection from the wild for trade purposes at non-detrimental levels due to a lack of information on status and biology, illegal trade and unpredicted stochastic events. To complicate matters further, certain forms of trade will be more difficult to regulate than others due to both the nature of market demands driving the trade and the resources available to develop management and to regulate that trade. For example individual consumers often prefer medicinal products collected from the wild to those produced synthetically or through captive breeding, as wild products are believed to be more effective, and so the demand for wild products remains high even though products from *ex situ* sources may be more readily available. In contrast, for other commodities such as collectable items (Lepidoptera) the physical quality of the specimen is important. Specimens produced through captive breeding or ranching will be in better condition than wild collected specimens and so demand by collectors for *ex situ* produced specimens is likely to be greater than for specimens produced *in situ*.
4. In terms of providing direct economic incentives to conserve species and their habitats, many conservationists would argue that trade from wild collection is potentially more likely to provide such economic incentives than *ex situ* production, providing that a benefit sharing infrastructure is in place. In general *ex situ* production facilities, particularly closed-cycle operations, no longer require input of wild stock and may be far from the natural areas where the species that they propagate originate. In such cases, opportunities to directly link *ex situ* production with local conservation efforts are likely to be limited. However, the dependence of ranching on inputs of eggs from the wild is thought to ensure that the economic incentives for conservation from ranching are more akin to those accruing from *in situ* production such as wild harvest.
5. Captive breeding operations for CITES species are often established in non-range States and supply exotic specimens for a domestic trade as well as for the international trade. In order to contribute to conservation such distant *ex situ* operations could make indirect contributions to species conservation by: paying conservation levies; making donations to support *in situ* conservation

projects; and donating specimens or genetic material to support recovery projects. However, the practicality of and incentive for doing so is uncertain.

6. Whilst *ex situ* production may not provide direct economic incentives for local conservation, it is often argued that *ex situ* production benefits species conservation by reducing pressure on wild stocks. So for example the large trade in captive bred birds for the pet and falconry trades is often considered to reduce the incentives for collection from wild populations. But it has also been argued that *ex situ* production can stimulate increased demand for wild products particularly when such products are more desirable than *ex situ* produced specimens or when they are produced more cheaply or simply mislabelled. For example, despite increasing production of captive bred reptiles in Europe and America, it is still cheaper to procure certain species from the wild where harvest management controls may be less robust. Similarly wild collected medicinal products, may have an added value over the captive product, as evidenced by the price premium commanded by non-CITES listed wild salmon as a food. The balance point of these opposite forces will depend on the level of demand for the product, the availability/ conservation status of the product and the resources available to regulate trade.
7. It has been argued that *ex situ* production, by competing for market share with products from wild sources may reduce the opportunities for trade in wild products to provide economic incentives to encourage *in situ* conservation. In the case of *Geochelone sulcata*, trade appears to have shifted over the last decade from mostly wild caught specimens to a trade in captive-bred specimens produced outside the range States. Whilst this trend may reduce direct trade pressure on wild stocks, it apparently provides no positive incentives to encourage *in situ* conservation. In addition, competition for market share can also drive down prices for wild collected specimens (particularly where there is no premium on wild collected specimens), again reducing possible economic incentives for *in situ* conservation.
8. Recently it has been argued that the exemptions in Article VII paragraph 4 and 5, may make it easier to trade in captive bred specimens than in specimens produced from the wild, these so called “perverse incentives” raise further questions about the relative conservation benefits of such production approaches. According to Article VII, specimens of Appendix-I species that are captive bred or artificially propagated for commercial purposes shall be deemed to be specimens of species included in Appendix-II. In effect this means that once a captive breeding operation is registered with the Secretariat (see Resolution Conf 12.10), trade in products from that operation do not require the prior issuance of an import permit but can be traded on the issuance of an Appendix-II export permit. Furthermore according to Article VII, specimens of Appendix-I species captive bred for non-commercial purposes and captive-bred specimens of Appendix-II and Appendix-III species may be traded under a captive breeding certificate rather than the relevant export and import permits normally required under the provisions of Article III, IV and V. The Management Authority of the country of export has responsibility for regulating and monitoring all captive breeding establishments producing CITES-listed specimens and additionally in the case of Appendix-I listed specimens captive-bred for commercial purposes, should ensure operations are registered with the CITES Secretariat.
9. When commercial trade from the wild is prohibited, as is the case for many Appendix-I taxa, there are fewer opportunities for wild collection for international trade to contribute economic incentives for conservation, as trade is allowed only in exceptional circumstances. Consequently, the relationship between *ex situ* production and *in situ* conservation is likely to differ depending on which Appendix the species is listed in.
10. For many Appendix-I animal species, there will be less danger of commercial *ex situ* production competing with *in situ* production for market share (as there should be no *in situ* commercial production of Appendix-I specimens) and thus reducing the opportunities for wild harvest to provide economic incentives to encourage conservation. For Appendix-I listed taxa, the conservation impacts of the commercial *ex situ* production on *in situ* conservation are more likely to depend on whether or not the trade in captive bred specimens stimulates or reduces pressures for illegal trade.

11. Notably, when exceptional trade in wild caught Appendix-I specimens is allowed, it is generally on condition that there should be a demonstrable conservation benefit. So for example trophy hunts of wild Appendix-I listed species can provide considerable economic benefits for *in situ* conservation, as could limited exports for breeding, for exhibitions and for other purposes where funds can be channelled to *in situ* conservation. Arguably such trade for conservation purposes might be jeopardised by *ex situ* captive breeding for so called "canned" trophy hunts and domestic trade in captive-bred specimens for exhibitions etc. However, according to Resolution Conf 12.10 (Guidelines for a procedure to register and monitor operations that breed Appendix-I Animal species for commercial purposes) registration of an Appendix-I captive breeding operation, requires the application to describe the conservation benefits associated with the operation.
12. Clearly the impacts of *ex situ* production on *in situ* conservation will vary on a case by case basis depending on a number of factors, such as:
- The Appendix that the species is listed in.
 - The level of demand for specimens.
 - The conservation status of the species and the extent to which wild populations can support the demand for products.
 - The likelihood that trade can be regulated and illegal trade prevented.
 - The price differential between wild and *ex situ* produced specimens.
 - The likelihood of disease or alien species introductions.
 - The infrastructure in place for benefit sharing and generating local conservation incentives.
 - The feasibility of implementing a conservation levy on international trade and of ensuring that it reaches the appropriate target.
 - The level of dependence of *ex situ* production units on the wild population for additional genetic stock.
 - The extent to which *ex situ* production supplies an internal domestic market and competes with CITES imports to that market.
 - The CITES exemptions for trade in captive bred specimens that are sometimes characterised as perverse incentives that might favour *ex situ* production over *in situ* production.
13. In general, current conservation thinking suggests that production *in situ* will be more likely than *ex situ* production to generate economic incentives for local conservation. Provided that the trade can be adequately managed, that a benefit sharing infrastructure is in place, and that the wild population can sustain a given level of harvest. In contrast, *ex situ* production is often effectively de-linked from the wild population and rarely provides any direct economic incentives for conservation of the species in the wild because it takes place in non-natural, controlled conditions, often outside the range State, although it may arguably reduce pressure on wild stocks. A certain amount of wild collection for international trade still takes place under an open access system, in such cases there may be no opportunities for economic incentives to support species or habitat conservation and the conservation benefits of such trade are questionable.
14. Clearly the conservation impacts of *ex situ* and *in situ* production are still poorly understood and vary on a case-by-case basis. As many closed-cycle production operations are now established outside range States, the potential for competition for market share between *ex situ* and *in situ* production, particularly of Appendix-II listed taxa merits investigation. By examining a series of case studies that considers the conservation impacts of *ex situ* and *in situ* production for a variety of Appendix I and II species under different conditions, the Animals Committee may be able to develop more specific advice on the relative merits of *in situ* and *ex situ* production under different circumstances.