



Saving the wild tiger: Enforcement, tiger trade and free market folly – an EIA discussion document. Written by Alasdair Cameron with the help of Debbie Banks and Justin Gosling.

Executive summary

Having reviewed a number of recent studies on tiger farming, **EIA believes that proponents of tiger farming have based their support on flawed assumptions and on studies which do not fully grasp or reflect the realities of the illegal wildlife trade.**

In light of these uncertainties and errors, EIA is concerned that any attempts to legalise tiger trade to allow the trade in parts from captive bred tigers will have disastrous consequences for the wild tiger.

In particular, EIA has concluded:

- The authors of several papers on tiger farming have based their conclusions on over simplified models, and a poor understanding of tiger biology
- Several studies supporting tiger farming have failed to understand the fundamentals of the illegal tiger trade
- Captive bred tigers will not 'undercut' wild caught tigers, but will instead provide an expanding market into which to launder wild caught products.
- Incomplete competition in criminal trades renders simple supply and demand models inaccurate.
- Enforcement agencies will struggle to enforce a legalised trade, and there is no reason to expect that the tiger farmers will have the ability or incentive to help.
- In the event that there was a legalised trade in 'farmed', it is likely that a parallel market in 'premium' wild tiger products would emerge, as has been seen with other species
- Enforcement of the ban has not totally failed and has had some success, but enforcement efforts remain patchy and out-dated in many areas, with an over-emphasis on border interceptions. EIA has demonstrated that intelligence-led enforcement would achieve much better results with fewer resources.
- Evidence that species comparable to the tiger have been helped by farming remains sparse.

In light of these findings, EIA **recommends:**

- Supply side solutions to protect the tiger focus on reducing demand for tiger parts and derivatives and not on reigniting a declining trade.
- Economic studies are not used as the sole means for developing conservation policy.
- Countries with intensive captive breeding facilities comply with existing CITES Decisions and close down their tiger farms, and consolidate, declare and destroy stockpiles of tiger parts.
- Range states and consuming nations invest in targeted, intelligence-led enforcement to the illegal tiger trade and other forms of environmental crime.
- Increased efforts are made to fully recognise the value of wild tigers and the forests in which they live, taking account of the irreplaceable ecosystem services which they provide.

Introduction

The wild tiger (*Panthera tigris*) is an iconic creature. The largest member of the cat family, it is found from the Russian Far East to the South of India and from Northern Burma to the forests of Sumatra. Sadly, the tiger has seen a dramatic decline over the last 100 years. It is estimated that it occupies only 7% of its former habitat and the worldwide population is likely to be around 3000 breeding individuals. Already two subspecies of tiger, the Caspian and the Balinese, have gone extinct and the remaining populations are under intense pressure from further habitat loss, poaching and conflict with local human populations. Classified as 'endangered' by the IUCN, the species attracts a great deal of attention and numerous efforts are underway to enable the stabilization and recovery of the tiger.

However the tiger is not just the 'worlds' favourite animal' (Animal Planet poll 2007) – it plays a crucial role in protecting the biodiversity and habitats of Asia and is an important barometer of our ability to deal with a whole range of environmental problems. As a charismatic animal the tiger provides an umbrella under which a host of other species can be protected. In order for the tiger to survive, it needs healthy, well protected forests and prey species. These in turn support the whole ecology of the region. Meanwhile the forests, swamps and mangroves provide essential ecosystem services such as water purification and retention, soil creation, flood prevention, climate regulation, forest products and climate change mitigation. Tigers provide a visible symbol of the health of the forests, while in many areas they also provide the incentive to protect the forests.

Numerous programmes have been developed to conserve tiger populations with varying degrees of investment, ranging from habitat protection, community relations, anti-poaching and anti-trafficking; to demand side solutions such as education and awareness to reduce demand for parts and derivatives, anti-corruption measures to discourage trafficking.

Free market folly?

EIA has serious concerns with theoretically idealised free-market solutions currently being proposed for tiger conservation – principally the idea of commercial tiger farming to satisfy demand for tiger products (Mitra 2006, LaPointe et al 2007, Moyle 2007, Leech 2008).

The basic logic of the supporters of a legal trade in captive-bred tigers is that they can be farmed at a rate and cost that will undermine the illegal trade, satisfy the demand and thus reduce poaching of wild tigers for the sale of their bones, skin and other body parts. They argue that trade bans and enforcement have failed, that a legal trade could be effectively policed, and that consumer attitudes cannot be changed (LaPointe *et al* 2007).

Proponents have put their faith in the conclusions of a handful of economists whose academic analysis suggest that tiger farming is a solution **if a number of critical assumptions hold**, including the following:

1. Farming tigers is more economical than poaching wild tigers.
2. The biology and population dynamics of tigers are properly understood and accounted for.
3. Demand dynamics are understood and regulated.
4. Tiger farmers and product manufacturers will be willing and able to help prevent wildlife crime and enforce a legal trade.
5. The nature and scale of the illegal trade is simple, understood and can be addressed through the legalisation of trade.
6. The most effective and efficient enforcement initiatives have already been tried, tested and failed.
7. That farming of other wildlife species has relieved pressure on wild populations.

Having reviewed a number of the pro-farming economic papers in circulation, **it is apparent that that these critical assumptions do not hold**, fuelled as they are by counterfactuals and an absence of data in relation to illegal trade dynamics. This means that tiger farming will not provide support for the wild populations.

Proceeding with a legalised trade in farmed tigers is an extremely high risk approach with a huge and irreversible down side – extinction of the species. Further, it would devalue the tiger, treating it in isolation as nothing more than a commodity. Proponents of farming fail to recognise that the wild tiger has a much greater cultural and ecological value than a farmed one. It has a far greater economic value too, reflecting as it does the value of the ecosystems in which it survives.

Finally, EIA disputes the wisdom of using economic models that are based on hypothetical scenarios as the sole basis for conservation policy. Economic models are, by their very nature, inexact and are based on the idea that a “representative agent” adequately mirrors the immense complexity and nuance of the real world, with often unpredictable results. There is tremendous risk in placing too much reliance on economic models as predictors of human behaviour. Furthermore, economics, although a valuable tool, has proven itself inexact in the ‘real world’ and is prone to be overtaken (or ignored!) by a combination of human and market failures (Derman 2009).

Flawed assumptions

Free-market, supply-side initiatives, which aim to simultaneously reduce demand for wild tiger, *while at the same time satisfy the perceived demand for tiger products* have recently been revived with the idea of legalising trade in farmed tiger parts.

The loudest calls for the relaxation of trade bans on tiger products have come from business and government interests in China, which has traditionally been, and appears to remain, the largest consumer of tiger parts.

Following the introduction of China’s 1993 domestic ban on the trade in tiger products, tiger farmers continued with rapid breeding programmes and are now calling for the ban to be lifted so that they can sell tiger bone wine and other tiger products. Some are so eager they have already indulged in illegal trade with TRAFFIC, IFAW and EIA uncovering evidence of tiger bone wine being marketed as a general tonic and a prestigious gift. (EIA 2007, Nowell and Ling 2007, IFAW 2007)

Supporters of tiger farming argue that since tigers breed well in captivity it would be possible to breed them at a rate at which market demand could be satisfied by cheap, legal products, thereby removing the impetus to poach the wild tiger, while at the same time supporting a deep seated cultural desire for tiger products.

To explore this theory, a number of commentators and economists have conducted research into the area, with a wide variety of conclusions. From a conservation point of view, the outcome of economic papers, while interesting, are far removed from ground realities. The conservation community is concerned that any relaxation of the trade ban will work against the wild tiger, and point to examples of other species, which are still under poaching pressure despite farming and legalised trade.

Although EIA is not in a position to offer a criticism of the actual economic models used in these studies, it is in a position to comment on certain assumptions and situations relating to trade and enforcement. If one or more of these assumptions is overlooked or inaccurate it would have grave consequences for the wild tiger in the event of a legalised captive tiger trade. As will be seen, the majority of these assumptions are flawed or untestable.

1. Is farming tigers more economical than poaching wild tigers?

One of the basic arguments made in favour of tiger farming is that farmed tigers can be bred quickly and cheaply, enabling parts from farmed animals to ‘undercut’ those from wild animals brought to the market by criminal networks, and so reduce incentive for poaching. This was initially supported by certain studies and commentators (Holland 1993). Such studies however are based on flawed assumptions with little relevance to the real world (including a misunderstanding of competition, population dynamics, economic realities and the nature of the illegal trade). Indeed critics of tiger farming have often said that far from undercutting the illegal market, farmed tigers will stimulate demand and provide a perfect opportunity to ‘launder’ illegal product onto a legal system (Bulte and Damania, 2001 and 2005).

Will farmers undercut criminals?

There are many estimates as to the cost of poaching versus farming, but one which has been frequently repeated suggests that it costs as much as \$4000 to farm a tiger (LaPointe *et al* 2007), compared with as little as \$20 to poach a tiger (Damania *et al* 2003).¹ This means that farming a tiger will still be more expensive than poaching one, even allowing for transporting illegal product and losses from interception. Standard models have

¹ Recently these figures have come under attack, with poaching costs in particular being criticised for not including the cost of time spent, or the costs of evasion, bribery or loss of product during the trafficking. While some of these criticisms result from a misunderstanding of the poacher/smuggler dynamics and realities, it seems possible that there is a wide variation in this figure. Nonetheless, even if this were out by a factor of 10, the point would appear to stand.

struggled to accommodate this fact, *assuming* that the farms will undercut the poached product. They have also misunderstood the poaching dynamic, failing to realise that poachers can subsidise the cost of tiger hunting by hunting other species or forest products. This is only part of the point however. It is not simply the cost of 'producing' a wild tiger or a farmed tiger which is relevant, but also the profit which could be obtained by selling it. Thus, even if it cost \$1000 to procure a wild tiger, and only \$1000 to farm one, assuming that they can both find a ready market for their products, and can sell at a good profit, there will be an incentive to poach, particularly in a country where wages are low and poachers and traffickers can accept reduced profits; or where multiple markets are available. It is only when the value of a wild tiger falls below the cost of obtaining one and the associated risk that it would be pointless to hunt one. Given the cost of raising tigers in captivity, this seems unlikely.

As an illustration of this, hunting for bushmeat is still common in the forests of tiger range states, particularly gaur and deer hunting. There is clearly no shortage of farmed cattle or deer, yet these poachers are willing to 'risk' prosecution for a very small financial gain, or to avoid any level of expenditure on commercial meat. Thus it seems likely that given the economic realities on the ground, and the profits which would still accrue to traffickers in a low-risk environment, poached tiger parts would find a ready buyer in a legalised market.

Monopolies not the answer

Since tiger farming will not undercut criminal poaching in conditions of incomplete competition or oligopoly, it has been suggested (Abbott and Van Kooten 2009) that by offering a trading monopoly to a company this would have greater benefits for preserving tigers, eliminating competition between farmers and allowing the market to be fixed to the detriment of the illegal market through over-production. The question arises, if over-production reduces prices then either a large number of tiger products must remain unsold (uneconomic in long term) or efforts will be made through advertising and incentive to increase the demand, which will lead to greater number of tigers in breeding. It seems naïve to assume a stable trade indefinitely. This fluctuation in supply and demand would provide perfect opportunities for laundering wild tiger products into a legal system.

2. Are the biological dynamics of the tiger accounted for by economic models?

Certain economic models (incl. Abbott and Van Kooten 2009) rely on the growth rate of wild tiger populations to fill the role of production rate. Unfortunately, the use of a standardised growth rate for tigers is wildly inaccurate and unhelpful. Tigers are subdivided into several subspecies and populations, spread across a huge geographic area. Also, since the growth and robustness of tiger populations depends in part of prey availability, this is an additional factor which needs to be considered. Finally, thinking of tigers as a single large population is to simplify the process to the point of absurdity.

3. Are demand dynamics for tiger parts well understood and predictable?

Supporters of tiger farming, and researchers in this area, often make important assumptions about the nature and dynamics of the tiger trade, many of which are flawed or incomplete. In truth the market is complex and multi-directional, rendering simple predictions fraught with danger. Some of the possibilities are seemingly contradictory, but given the multiple layers of markets, and the geographic scale of the range states and consuming nations, there is likely to be more than one outcome. The bottom line however remains the risk that a legalised trade could spark massive demand for more tiger products from new customers, overwhelming the capacity of any farms to keep up. There is also a possibility of an emerging parallel market for 'premium' wild tiger products.

Demand primarily from bones?

Studies by Moyle, Abbott and Van Kooten, and Damania *et al.* focus on the trade in bones for Traditional Chinese Medicine as the primary source of demand for tiger products. There is little data on this at present and conclusions may not necessarily hold for the skin trade.

Some recent papers (Moyle 2009), take more account of the skin trade, and indeed Moyle recognizes that the situation in the Tibetan areas may be unique and separate from the rest of China (Tibetan demand for skins has until recently been a major driver behind poaching). However, since his conclusions are based on Chinese arrest data comprised of 22 events, this is hardly a complete picture. In addition, Moyle fails to take into account the dramatic decline in that market since 2006 and how the traders have responded by

targeting new markets for home décor / taxidermy (EIA 2008). Thus this is not just a demand in search of a supplier, but a supplier in search of a demand.

If trade was legalized, it seems likely that all parts of the animal would be utilized. Skin, bone and meat would likely all become highly desirable whereby at the moment the derivatives cater for different markets. As new products are developed for new markets it seems reasonable that overall demand would increase, potentially increasing the absolute value of wild tigers (more parts to sell to more people!).

Stigma effect and market size

Of crucial importance is the so-called 'stigma' effect. This is a mechanism whereby the removal of a trade ban reduces the social stigma on purchasing a product, increasing demand for the product. To this, EIA would add the obvious marketing of tiger products which would go along with a legal trade, something which has so far been ignored. Given the Chinese population of 1.3 billion, this could increase demand dramatically, enabling a ready market into which to launder illegal wild-caught products.

The stigma effect is recognized by proponents of tiger farming, including Abbott and Van Kooten, yet a look at their models (Abbott and Van Kooten 2009) shows that its level seems to have been determined arbitrarily. Since this is of critical importance to their model it deserves clarification. In his 2009 study Moyle makes a similar inference, using the pre-1993 demand of 4 tonnes of tiger bone (330-400 tigers) as a benchmark for demand, but fails to mention the possibility of a vastly expanded legal market.

On a related note, the recent polling by independent marketing group Horizon suggested that the use of medicinal products supposedly containing tiger was most prevalent among the poorer sections of Chinese society, while tiger bone wine consumption was higher amongst the wealthy (Gratwicke *et al* 2008). In the absence of any social stigma attached to tiger products and tiger bone wine, the expansion of the Chinese economy will lead to an increasing ability to purchase products, driving up prices for farmed or wild tigers; again allowing wild tigers to easily feed into any system and pick up the slack. In particular it is worth noting that the emergence of tiger bone wine is a new market targeted at the wealthy which did not exist historically. It is not considered a Traditional Chinese Medicine and has no specific medicinal basis (Ma 2008). This shows the risks of a legalized trade sparking new outlets for products to increase consumption.

Premium versus farmed

The discussion above assumes that wild products would be laundered anonymously into the captive bred market, taking advantage of the ability to make substantial profits even if these are reduced by over-production of captive bred animals. Another, somewhat parallel possibility is that consumers of farmed products will seek wild products as they are thought to be more 'potent', as is currently the case with bear bile (WSPA 2007). In this instance wild products would still be able to be sold as a 'premium' product, with the potential for captive tigers to act as a gateway to new customers. A similar situation has been observed with turtles in China. Despite a huge (albeit largely unregulated) turtle farming industry in China, illegal hunting continues to decimate turtle populations both within China and as far a field as North America as turtles are collected to re-stock turtle farms or sold as high quality wild specimens (Shi Haitao *et al* 2007). Furthermore, the farmed turtles have provided cover for other species which do not breed well in captivity to be 'laundered' into the legal system. Farmed products may also act as a gateway, interesting new consumers in tiger products, and then stimulating a desire to obtain the higher quality wild specimens.

Finally, while products could be portrayed as wild to the customer, it seems likely that enforcement would have difficulty in proving this, reducing the risk to criminal smugglers.

4. Are relationships and nature of criminal networks well understood by those supporting tiger farming?

A solid understanding of the nature and structure of the criminal networks behind the illegal trade in tiger parts is essential to predicting the effects which market changes may have on these parties. Unfortunately, some of the pro-farming commentators in this field have used overly simplified or inaccurate models to describe these complex dynamics. In addition many attempt to draw far-reaching conclusions from incomplete data sets (in his 2009 *Global Crime* paper, Moyle uses a Chinese data set comprising just 22 incidents).

An illustration of the importance of understanding the nature of criminal networks is the nature of competition experienced by illegal traders. Initial simplistic models which showed that increased tiger product from farmed animals would reduce poaching were critiqued by economists (Damania and Bulte in 2001 and 2005) who observed that since criminal trades do not function in terms of open competition, straightforward supply and demand does not hold (i.e. increased supply will not automatically make it uneconomic to poach). They concluded that the circumstances required to fulfil the simple models were unrealistic, and that to proceed would risk further devastation upon wild tigers.

Poacher as main beneficiary

There is an assumption by some proponents of tiger farms that the majority of economic benefits from illegal trade accrue to the poachers, who are then most susceptible to market pressures. Research by EIA and WPSI has suggested this is unlikely to be the case. It seems that the majority of the profits are held by traffickers and traders at the point of sale.

Due to the complicated nature of criminal networks, and the varying number of potential outlets, the poacher will be less susceptible to the changes in the market which might be brought about by farming. They will still be commissioned or compelled to procure wild tigers, leopards, clouded leopards, Asiatic lions so long as there is a demand for big cat parts. In addition, since poachers will usually target many species, procuring a tiger will not entail the opportunity costs which might be expected if the poacher was otherwise in gainful employment.

International trade

More than once, proponents of tiger farms seem to have overlooked the fact that while the major consuming nation for tiger products is China and the Chinese diaspora, the majority of tigers are to be found outside of these regions, and particularly in India. Indeed, some researchers when calculating the economic returns accrued from poaching have used the average Chinese wage rate, instead of the Indian one, rendering their models meaningless!

Links with other forms of organised crime

Some commentators have inaccurately asserted that there are no links between the wildlife trade and other illegal activities (Moyle 2009). In fact there are a number of examples of traffickers dealing in other contraband, such as narcotics, held by NGO's and official enforcement agencies. The skill sets and knowledge necessary to traffic goods across regional and national borders do not necessarily differ because of the nature of the commodity being smuggled. Moyle's failure to acknowledge this, may stem in part, from an over-reliance on Chinese data. Information held by the Wildlife Protection Society of India would enable light to be shed on this, and a whole range of other issues, had it been accessed.

5. Will tiger farmers engage in policing a legal trade?

It has been proposed that in the event of a legalised trade, tiger farmers would have an interest in policing this trade to reduce competition and so help to protect the wild tiger and stamp out wildlife crime. An interesting comparison has been drawn with the Hudson Bay Fur Company (Abbott and Van Kooten 2009), a Canadian fur trapping company which was given a monopoly on the trade in furs east of the Rocky mountains in the 19th century. It has been suggested that this monopoly is responsible for the good state of beaver populations in Eastern Canada, compared to the situation in Western Canada where fur species have been decimated by competing hunters. While this is certainly plausible, a key difference is that the HBC was using its monopoly to preserve a wild species which it hunted. This is quite different from a situation where the farmers of a captive species are asked to help enforce the survival of a wild species. Unless there is a strong and credible sanction in place against the farms to encourage them to help police the trade, EIA can see little reason for them to stop the illegal trade, and also little reason why they would find themselves in direct competition with the wild market.

In addition, there is no evidence that tiger farmers are capable of having any impact on the control of illegal trade of wild tigers. If both now and in the future, they are solely concerned with the trade in farmed tigers, and are located outside of the major tiger range states, then there is nothing to say that they have any capacity to police the industry, let alone the will to do so. Indeed, given the evidence of an illegal trade already operating

from such facilities, what reason would there be to have any confidence in such efforts in any case?

More realistically it seems there would be no benefit to the farmers of tigers to help preserve the wild species, and indeed it would be in their long and medium term benefit to hasten the extinction of the tiger to remove alternative supplies, and also to lessen the burden of regulation which would come from trading such an endangered animal (i.e. once the wild tiger was functionally extinct, there would be little opposition to their farming practices).

6. Have the best enforcement measures have been properly tried and failed?

A key piece of evidence used to promote tiger farming is the twin suggestion that the current ban has failed, and that enforcement can never be high enough to save the wild tiger.

The first aspect of this argument relates to the second. While it is certainly true that the current situation has not worked, in as far as tiger numbers are still declining, it is also true that the current situation falls far short of a working ban. A mixture of poor enforcement, lack of education, and institutional weakness has rendered efforts to protect the wild tiger and stamp out the illegal trade in tiger parts patchy at best (reports by EIA 2004-2009, IFAW 2007, Nowells and Ling 2007). Thus it cannot be said that the ban has not worked, because the ban has never been properly implemented. Despite its flaws the 'ban' has achieved some results, with fewer than 3% of Chinese Medicine Shops claiming to stock tiger products, down from 18% in 1994.

On the second point, certain models suggest that detection rates for poaching/trafficking will need to be unreasonably high in order to prevent this industry. In Abbott and Van Kooten 2009, the current detection rate is estimated to be 3%, based on the number of seizures and the previous size of the market. This may not be reliable since there is considerably more data available than apparently accessed by Van Kooten. Given the collapse of the Tibetan market, and the reported decline in the availability of tiger bone medicines (Nowell and Ling 2007), it does seem that trade dynamics have shifted to favour a more diffuse market demand in China with good reason to speculate on high value stockpiling by well connected individuals; more difficult to detect but not impossible. It is also likely that overall demand (based on market availability studies) may have fallen in the last few years. It does however seem fair to say that the current detection rate is very low.

There is however tremendous hope for improvement. EIA's investigations in Western China suggest that in many instances enforcement is virtually zero, despite the apparently harsh penalties faced in China. In India, enforcement seems a little better, but the penalties and judicial process are weak and ineffectual. Intelligence sharing and international cooperation are almost nil amongst enforcement agencies, whereas they are high amongst criminal networks. Even modest improvements in these areas could have a huge impact on the dynamic of the trade (EIA reports 2005-2008).

Part of the reason for the pessimistic view of enforcement taken by some pro-tiger farmers in these documents is that their understanding of law enforcement is simplistic and outdated. Instead of attempting to intercept all contraband at borders, or through anti-poaching operations, intelligence-led enforcement can be conducted against the key individuals behind the trade. Convict 3% of poachers and you make a slight and temporary dent. Convict 3% of the 'big fish' and you make a more significant and longer lasting impact. Of course, if you increase both of these to a more acceptable 30% detection rate, thereby reducing the number of significant key traffickers by a third, and you start to make a tangible, and potentially devastating impact on the networks, massively increasing their operating costs. This of course does not ignore the fact that enforcement needs to be holistic, and ongoing.

Judicial reform would also be helpful. Even in areas where seizures are high, convictions do not necessarily follow, and without any deterrent, there is likely to be a high rate of recidivism and in turn an exhausting repetition of effort.

It is also important to point out that even were the tiger trade to be legalized, enforcement would still be essential. The trade in DVD's is a great example where the legal trade is swamped by a sophisticated and poorly enforced illegal market. **Therefore there is no excuse not to improve frankly poor enforcement on the assumption that the trade will soon be legalized!**

7. Has wildlife farming relieved the pressure on other comparable species?

To date there is inconclusive data on whether farming or domestication of wildlife has helped to protect wild populations from illegal trade, particularly with large solitary animals. Early indications from one ongoing study (WCS 2009) indicates that across a broad range of species, farming of wildlife has been largely detrimental to the wild populations, by sourcing wild animals as starter populations and by allowing exotic species to escape into environments outside their natural range. This is again supported by the information on turtle farming mentioned above (Shi Haitao *et al* 2007).

Conclusion

While there have been a number of influential comment and opinion pieces in favour of farming tigers as a means for profit and conservation, the scientific basis of these seems weak at best. All of the studies currently suggesting that tiger farming may be a useful conservation tool use simplified and naïve models, unrelated to the real world. In addition, many used flawed or unrealistic assumptions when trying to describe what will happen under a legalised trade. It is important that the international community looks at these studies in their proper context when developing conservation policy, and ensure they are not the principle basis on which decisions are made. Finally it falls on the conservation community to more clearly articulate its concerns surrounding the support for tiger farming, and also to more clearly demonstrate the successes it has achieved.

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List of resources

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Abbot B and Van Kooten G.C. (2009) 'Can domestication of wildlife lead to conservation? The economics of tiger farming in China' *Working paper published in Resource Economics and Policy Analysis Research Group (REPA)*

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Damania R and Bulte E.H (2005) 'An economic assessment of wildlife farming and conservation' *Conservation Biology Vol.19 Vol.4 pp. 1222–1233*

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Shi Haitao, James F. Parham, Michael Lau and Chen Tien-His (2007) 'Farming endangered turtles to extinction in China' *Published as a letter in Conservation Biology* Vol. 21 Issue 1 pp 5-6

World Conservation Society (2009) Press release entitled '*WCS Finds Vietnam's Commercial Wildlife Farms Hurting, Not Helping Wildlife*', part of an ongoing study.