

CONSERVATION

Legal Trade of Africa's Rhino Horns

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Africa's western black rhino *Diceros bicornis longipes* was declared extinct by the International Union for the Conservation of Nature (IUCN) in 2011. Africa's other rhino populations are also under siege. South Africa is home to more than 90% of the world's 20,000 white rhino *Ceratotherium simum*, and 40% (more than 80% together with its neighbor Namibia), of the 5000 remaining black rhino (1–3). Yet, poaching in South Africa has, on average, more than doubled each year over the past 5 years (see the chart). If poaching continues to accelerate, Africa's remaining rhino populations may become extinct in the wild within 20 years (4, 5).

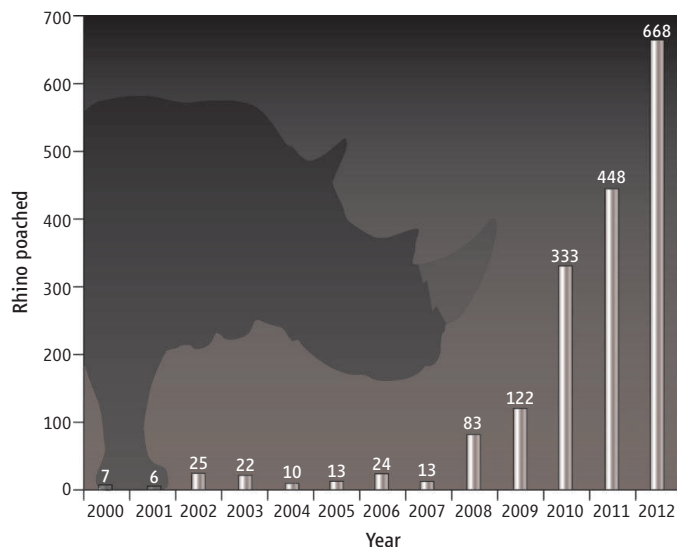
Because of the CITES (Convention on the Trade of Endangered Species) ban on the trade of rhino horn, in place since 1977, demand can only be met through the illegal market, which primarily relies on the killing of rhinos by poachers for their horns (6). The ban is failing because it artificially restricts supply in the face of persistent and growing demand (4, 7). The only remaining option is a carefully regulated legal trade based on the humane and renewable harvesting of horn from live white rhinos. Provincial conservation agencies in South Africa and southern African rhino management groups have asked the South African government to put forward a proposal for regulated international trade in rhino horn at the 16th CITES Conference of the Parties (COP-16), held 3 to 14 March 2013.

Why the Trade Ban Has Failed

Skyrocketing poaching levels are driven by tremendous growth in the retail price of rhino horn, from around \$4,700 per kilogram in 1993 (8) to around \$65,000 per kilogram in 2012 (9). Rhino horn is now worth more, per unit weight, than gold, dia-

monds, or cocaine. Robberies of horns from museum specimens across Europe have taken place (10). Even dehorning rhinos to reduce the incentive to poach has proven ineffective without the provision of additional security, because of the value of the remaining horn stubs (11).

Rhino horn is used for dagger handles in Yemen and has been used in Chinese traditional medicine for millennia as a presumed cure for a wide range of ailments (10). Rapid economic growth in east and southeast Asia is assumed to be the primary factor driving the increased demand for horn (12). The tremendous financial rewards have led poachers to use increasingly sophisticated technologies, including helicopters and immobilization darts. The protection of rhinos has therefore become increasingly expensive not only in financial terms but in human lives (13). The increased militarization of rhino protection



Annual rhino poaching in South Africa since 2000. Data from (2, 3).

has resulted in a reallocation of conservation resources and is adversely affecting other conservation actions (14, 15).

Moreover, higher levels of militarized enforcement of a trade ban with harsher penalties may only serve to drive up prices further because supply is restricted in the face of inelastic and growing demand (4). This will create more profitable opportunities for crime syndicates and increase the incentives for poachers, as has been demonstrated in attempts to ban or control alcohol, illicit drugs, and other wildlife products (16–18).

A trade ban limits supply, therefore raising prices and driving black market poaching.

Stronger enforcement efforts will be further hampered by the cooption of corruptible government officials by crime syndicates in a very lucrative illegal trade (17, 19). Furthermore, as wildlife products, such as rhino horn, become rarer, their prices soar, which pushes them ever further into an economic supply-and-demand extinction vortex (10, 17, 20).

Humane, Renewable Harvest and Legal Trade

Rhino horn is composed entirely of keratin and regrows when cut. Sedating a rhino to shave its horn can be done for as little as \$20. The annual horn production of one white rhino averages 0.9 kg per year (11). The current speculative estimates of the demand for horn based on the illegal supply (21) could therefore be met by the 5000 white rhinos on private conservation land in South Africa alone. The natural death rate of rhinos of 2.6% would also provide hundreds of horns annually. The

income generated for conservation through a legal trade in rhino horn, accounting for the costs of dehorning and management, is substantial (4). In addition, with current technology, the risks to rhinos from dehorning are minimal, and there is limited evidence of significant behavioral change following dehorning (11). A legal trade could simultaneously supply horns, fund rhino protection, and provide an incentive for their sustainable use and long-term survival. The trade in crocodile skin is an example of how a legal market has reduced poaching pressure on wild populations (22).

Evidence from studies of other wildlife products [e.g., (23–28)] suggests that a legal trade can

reduce the incentive for poaching if: (i) regulators can prevent the laundering of a threatening level of illegal supply under the cover of a legal trade; (ii) the legal supply can deliver the product (horn) more easily, reliably, and cost-effectively than the illegal trade; (iii) the demand does not escalate to dangerous levels as the stigma associated with the illegality of the product is removed; and (iv) legally harvested horns from live animals can substitute for horns obtained from wild, poached animals.

A highly regulated legal trade based on the renewable cropping of horns from rhinos is

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likely to succeed if these conditions are met (7, 21, 23, 29). First, the technology exists to track the legality of individual horns through the selling chain to the end consumer to minimize laundering and the illegal trade (4). Each legal rhino horn traded can carry a small traceable transponder and have a recorded DNA signature (for less than \$200 per horn), which remains identifiable through the market chain to the buyer. (4). Second, accounting for land, management, and horn-harvesting costs, the cost-effectiveness, reduced risk, and lower transaction costs associated with a legal trade are likely to attract buyers away from the illegal market (4, 30). Third, an increase in demand for horn once it is legalized (23) would imply a success of the market. This demand could be met by an increase of the supply through a growing rhino population. White rhino populations increase at 8% per annum if provided with appropriate savannah habitat (31). Therefore, as a financially valuable umbrella species, an increase in land managed for white rhino will enable the conservation of accompanying biodiversity and will generate revenue for rural communities (4, 7).

Central Selling Organization

One option for the implementation of a highly regulated trading system is through a Central Selling Organization (CSO). A CSO would negotiate and manage the selling of horns so that it is more attractive, reliable, and cost-effective for buyers to obtain the product legally than through illegal means (28). A CSO would be supported by and accountable to the white rhino range states, and the CITES COP (which includes governments of demand countries) for its performance. CITES is already in the process of evaluating a CSO for the management of ivory sales (28). It could be funded by a percentage from each horn sold and could ensure that the proceeds from rhino horn are channeled toward enforcement of the legal trade, that horn harvesting is humane and renewable, and that financial benefits are returned to landholders and communities where rhino occur.

A CSO can be structured to manage the uncertainties and risks that may emerge from a legal trade in four ways (4, 28). First, the CSO should be the only authority that can legally sell horns to registered buyers. Buyer's stockpiles should be subject to regular audits, and they should commit to processing all horn themselves. As proposed for the ivory CSO, a short and closely monitored market chain can be more effectively controlled, so as to limit the incentives for speculation and hoarding and to reduce the risk of corruption, because it will

be difficult to circumvent the controls (28). Second, at the onset of a legal market, sales of the 15 to 20 tons of stockpiled horns held in South Africa (13) could be used to attract buyers to the legal trade and away from the black market. Later sales can be used to dampen the price of horn should it escalate dangerously.

Third, the CSO should work in partnership with the governments of demand countries to ensure that strong penalties are enforced for any buyers who operate outside of the legal market. Fourth, a monitoring system, funded by the CSO, is required to develop an understanding of the market for horn. This will enable the adaptive management of the CSO and the trade. There is currently limited data on the market for horn because of the trade ban, and through monitoring and studying a legal trade, an understanding of the market characteristics will emerge (4). If a legal trade in horn leads to an unexpected and dangerous upsurge in poaching, the legal trade can be restructured or closed down. With these safeguards, a carefully regulated, adaptively managed legal trade is more likely to lead to the successful conservation of Africa's rhino than the current trade ban.

Opponents of a legal trade in rhino horn argue that the bulk sales of ivory by countries in southern Africa lead to increased poaching elsewhere on the continent (32). Yet, there is no conclusive empirical evidence that supports this (28, 33). Moreover, the ivory sales take place too infrequently and unpredictably to attract buyers away from the illegal market and to reduce poaching pressure (28).

Attempts to suppress the supply of horns through the CITES trade ban are failing in Africa (7). A legal trade in rhino horn was first proposed two decades ago but rejected at COP-8 as premature on the grounds that the problem lay with insatiable demand from importing countries (33–35). Yet, education, enforcement, protection, and awareness efforts aimed at reducing the use of horn have all demonstrably failed to turn the tide of this rising demand (4, 10). Legitimizing the market for horn may be morally repugnant to some, but it is probably the only way to prevent extinction of Africa's remaining rhino, as demonstrated by the successful legal trade in crocodile skin (21). As primary custodian of Africa's rhino, the South African and Namibian governments should take leadership to enable serious consideration of a highly regulated legal trade as soon as possible.

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