

## LETTER TO THE EDITOR

### **Effective and sustainable farming of green pythons requires a sound chain of custody and conservation taxation of end consumers**

The recent article by Lyons and Natusch (2011) provided much needed evidence of the illegal harvest and subsequent laundering of green pythons by commercial breeding farms in Indonesia. In addition, the paper details results highlighting the unique morphology of green python eggshells, in comparison to four sympatrically occurring python species. The authors conclude that this difference can allow eggshells retained by commercial farming operations to be used as provenance of their captive bred origins for subsequently traded pythons and rather worryingly, argue it be trialled as a method to regulate exports of green pythons.

Whilst it is encouraging to see researchers suggesting novel forensic methods to attempt to monitor and regulate the trade in green pythons I believe that eggshells as a sole tool will not prevent further unsustainable harvest of wild snakes. Of particular concern is the fact that the authors fail to highlight one major loophole that might be exploited by breeding farms – selective harvesting of gravid females from wild populations. Even with a proposed improvement in monitoring regimes for breeding facilities it is not inconceivable that farm owners could pass off incubating eggs taken from wild caught females, as being produced by “breeding stock” registered to the premises. Shifting illegal harvest from the current indiscriminate collection of encountered snakes, to focused extraction of mature reproducing females could result in drastic declines in population recruitment and male biased sex ratios in wild populations, as has been seen in selectively harvested shovelnose sturgeon populations (Tripp et al., 2009). Further sustained removal of reproductive females of the more desirable colour variants located on the smaller islands mentioned in their article could lead to localised extinction events.

As Lyons and Natusch (2011) state, effective long-term management of green python trade requires effective enforcement of Indonesia’s pre-existing wildlife conservation laws. I would argue that in order for this to occur we require a focused approach to establishing a comprehensively monitored and internationally certified chain of custody for traded snakes. Green pythons do represent a good opportunity to establish such a scheme, as a result of the relatively small number of individuals traded internationally on an annual basis when compared with other globally traded snakes and the fact that they are able to command high market prices from end buyers in European and North American markets. Through an international certification scheme end consumers could be charged a conservation tax as a percentage of the purchase price, which could be directed towards improving monitoring and regulation of commercial farming operations.

Part of such a monitoring scheme could then include the use of microsatellite genotyping and parentage assignment techniques as a comprehensive forensic technique to reduce the risks of wild caught snakes entering the trade. Given the fact that a library of polymorphic markers is already known for *Morelia viridis* (Jordan et al., 2002) and the accuracy of parentage assignment techniques is well understood this approach could be put

in place with immediate effect, through collaborations between Indonesian authorities and national or international laboratories with relevant expertise. Employing genotyping approaches would provide a foolproof method to prevent further laundering wild caught animals, with definitive results unlike the use of eggshells and would provide end consumers with confidence that they were not contributing to further declines in wild populations.

Given all we know about the consequences of overexploitation and the need for new approaches to prevent future declines in species, radical approaches are needed in regulating the future wildlife trade (Pernetta, 2009). As a result, I believe that while the approaches suggested by Lyons and Natusch (2011) are laudable in their intentions, the goals they purport will not be achieved without creating consumer driven demand for ethically and sustainably sourced animals, backed by a certified chain of custody, even if it means the costs of certification are passed on to end buyers. For sustainable exploitation of wildlife to be achieved the conservation community needs to rethink its approach to change consumer attitudes from being price-based to conservation focussed.

## References

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