

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



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ENFORCEMENT MATTERS

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Scaling up pangolin protection in China

Peer-reviewed letter

In September 2013, the Clinton Global Initiative announced an \$80 million donation to stem ivory poaching, stressing not just welfare and conservation implications but also that such trade funds terrorist groups and organized crime (Goldenberg 2013; note: all monetary values in this letter, unless noted otherwise, are expressed in US dollars). Against the backdrop of the 35 000 elephants and 810 rhinoceroses slaughtered for their ivory and horns, respectively, in 2012, what of the world's most heavily trafficked CITES-protected (CITES 2013) mammal contraband – the pangolin?

Similar to elephants and rhinos, pangolins are “EDGE” (Evolutionarily Distinct and Globally Endangered) species, classified as Endangered (E A2d+3d+4d; Malayan pangolin [*Manis javanica*] and Chinese pangolin [*Manis pentadactyla*] or Near Threatened by the IUCN. When sensing danger they roll into a ball, which can then be conveniently bundled into a sack; thus pangolin contraband is tractable and easily goes unnoticed. Nevertheless, annual seizures currently amount to about 10 000 animals globally (Conniff 2013), but these likely represent only a fraction of the number that reaches the marketplace (Challender 2012); notebooks apprehended in 2009 from one trafficking syndicate revealed 22 000 pangolins killed in a 21-month period in the Bornean state of Sabah (Conniff 2013). In response to this emerging threat, the IUCN Species Survival Commission Pangolin Specialist Group (IUCN-SSC PangolinSG 2013) was relaunched in 2012 after an 8-year hiatus.

Used for millennia in Chinese medicinal pharmacopoeia (Challender 2012), roasted pangolin scale is believed to detoxify and drain pus, relieve palsy, and stimulate lactation (Li 1982; Qiu 1985; Gao 2012). Importantly, consumers of pangolin



Figure 1. The first author (Z-MZ, at right) and a taxonomist shown examining pangolin corpses seized by PSBF.

scales are not intrinsically corrupt: they are ordinary citizens – albeit misinformed, often sick or elderly – searching for a traditional remedy (Li 1982; Qiu 1985; Gao 2012). Demand for pangolin products is soaring in Asia, fuelled by rapid economic growth (Challender 2012); current harvesting pressure on pangolins, which typically produce only one offspring per year, appears to be unsustainable (Burton 2009).

These problems are evident in China's Yunnan Province, where, in collaboration with the Public Security Bureau for Forests (PSBF), we report the seizure of (1) 2592 kg of scales, representing ~4870 pangolins (0.5 kg of scales per pangolin; Zhou *et al.* 2012) since 2010 and (2) 259 intact pangolins, 39 of which were dead. In the resulting 43 enforcement cases, perpetrators were sentenced with up to 11 years in prison. This followed a crackdown on pangolin trafficking in Yunnan, instigated in 2007 when the PSBF apprehended a criminal gang that had smuggled over 20 metric tons of scales during the preceding 7 years; the principal criminal was sentenced to life imprisonment.

Despite difficulties in determining pangolin origin from seized scales, clearly international trade is involved. Of the aforementioned 43 cases, 26 involved *M. javanica* (not only scales

but also 210 intact individuals) and one involved Indian pangolin (*Manis crassicaudata*) scales. Likewise, two prosecutions in 2013 exposed intercontinental trade from Africa to China (BE-EIQB 2013; SE-EIQB 2013), which risks introducing a non-endemic tick species, *Amblyomma compressum*.

Moreover, recent evidence suggests that pangolin scales are now being sent through postal services. Beijing customs officials apprehended five parcels containing 70 kg of scales in November 2013, subsequently discovering 1030 kg of scales that had been mailed since April. In addition, frequently entire (and often living) pangolins are shipped whole, raising another dilemma – what to do with any intercepted live pangolins. Many pangolins impounded outside of China are released into inappropriate local habitats or are euthanized. Of 326 pangolins placed in the Yunnan Wildlife Sanctuary since 2008, only 98 survived; a further 20 Chinese pangolins were released to supplement increasingly rare wild populations, but with the attendant risk of transmitting disease contracted during captivity.

With demand exceeding supply, market forces have driven prices in Kunming (Yunnan's provincial capital) from \$80 per kilogram for a live pangolin in 2008 to more than \$200 today, with scale prices increasing

from \$300 to \$600 per kilogram. Also, scales with a value of \$300 on arrival at Yunnan's borders are subsequently sold for \$700 by criminal cartels controlling trade, although retail markup in Chinese traditional medicine (CTM) markets is minimal.

Effective policing requires cooperation between international law enforcement agencies, but what else can be done? Regulated pangolin farming seems unpromising, partly because of the species' low reproductive rate but also because similar attempts aimed at relieving pressures on wildlife in China have failed the consumer substitutability test (Burton 2009; Dutton *et al.* 2011). Education is paramount; while government campaigns have informed the Chinese public on the flagship issues of ivory and rhino horn, many consumers of pangolin scale are simply unaware of the issues involved. Where scale is consumed for CTM, switching to modern medicine safeguards not only pangolins but also human health.

Although no level of illegal exploitation is acceptable, the extent to which this affects wild pangolins is unknown in the absence of baseline population estimates, making further research essential to better inform conservation policy (Goss and Cumming 2013; Lindenmayer *et al.* 2013). Meanwhile, despite the PSBF's concerted efforts, there are indications of catastrophic declines in pangolin abundance.

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Plea from another symposium goer

One of the best talks I ever saw at a professional meeting was by Susan Smith, a behavioral ecologist. Her presentation consisted of just two slides: the first a full-screen close-up of a black-capped chickadee, whose natural history she briefly described, the second a simple table consisting of four pairs of integers corresponding to the body size of four mated pairs of chickadees. The numbers came to life as she developed a theoretical model of the evolution of mating systems and described how females paired with low-ranking males can improve their fitness by abandoning their mates when they see an opportunity to move up in the flock's dominance hierarchy. Halfway into her scheduled 15 minutes, she flipped on the lights and asked the audience, "What do you think?" The packed room erupted into a collective brainstorming session, she received expert feedback, and the conversations and arguments continued into the hallway and into the evening.

I also remember Steve Hubbell's presentation at the ESA annual meeting in Grand Forks, where he warmed up the crowd with a few jokes ("You know how the Inuit have 26 words for 'snow'? Well, here in North Dakota they have 26 words for 'flat'!") before getting down to business ("We identified, measured, and mapped 250 000 trees on Barro Colorado Island in Panama..."). And Dan Janzen's departmental seminar at Cornell, where he scrawled the number "1254" on an acetate sheet, projected it on the wall for 5 minutes, and then mused about the number of moth species in Tompkins County, New York, and the latitudinal gradient in species richness.

Recently, I returned from a 4-day