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views and reviews



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SUPERSTITION

Bad Medicine for Wildlife

Colin Groves

Why the rugged Russian Bear, the arm'd Rhinoceros and the Hyrcan Tiger have become Banquo's Ghost: the threat that paranormal beliefs are posing to the world's wildlife.

Twenty years ago, there were 60-70,000 Black Rhinoceroses in Africa. Today, there are about 3,000.

Ten years ago the American Black Bear and the Grizzly Bear were so numerous in some National Parks that there was serious debate whether some would have to be shot as they were becoming a nuisance, a very real threat to campers and hikers. Today they have to be closely guarded against poaching.

Two years ago, the Indian environment movement was planning a celebration of the twentieth anniversary of one of the world's most successful conservation programs, Project Tiger. This year there are fears that it may have to be turned into a wake.

What has gone wrong? Chinese medicine, that's what.

For hundreds of years rhinoceroses have been killed and their horns have been sent to China and Korea to be used for curing fevers and general aches and pains. The pressures began to build up in the last century, with the increase in the Chinese population and, especially, the establishment of overseas Chinese communities, and already by the Second World War the populations of the Indian, Javan and Sumatran species had been reduced to pathetic remnants. But somehow it was not until the 1970s that someone realised that there was a commercial potential in this; entrepreneurs organised African poaching gangs and armed them with Kalashnikovs, and the slaughter of African rhinos began. The Northern White Rhinos in Garamba National Park, Zaire, were reduced from a couple of thousand to fourteen. The Black Rhinoceros was wiped out in Cameroon, Chad, Sudan, Ethiopia, and Somalia; in Kenya a few remain only because they are guarded day and night behind electrified or barbed wire fences. For a long while Zimbabwe held the line, but the pressures have finally become too great there, the defences have crumbled, and rangers are frantically capturing the last rhinos and cutting their horns off to make them unattractive to poachers. Only Namibia and South Africa, which has both Black and Southern White rhinos, are still unbreached.

Of the eight different subspecies - local races, slightly different in their stripe patterns and other features - of tigers, three have gone for good: the Caspian (Macbeth's "Hyrcan tiger"), Javan and Bali tigers. The Sumatran and Indochinese tigers are just hanging on, the South China tiger is reduced to about 40 (half in the wild, half in zoos). There are still about 800 North China (or Siberian) tigers, but four-fifths of them are in zoos. Only the Indian tiger still numbers in the thousands - for the time being. Chinese medicine is catching up with them too, though.

There is not so much information about bears, just that every one of the seven species is under threat. From Chinese medicine. And the list goes on: the Musk Deer, the Snow Leopard, the Saiga Antelope, the famous Giant Panda itself...

Alright, so Chinese medicine is responsible for the depletion of much wildlife. But is it paranormal? Does it appeal to processes unknown to science?

Listen to the *Chinese Materia Medica* (Read, 1982): Hu Ku. Tiger Bones. The yellow ones from the males are best.... Acrid, slightly warming, nonpoisonous. For removing all kinds of evil influences and calming fright. For curing bad ulcers, and rat-bite sores. For rheumatic pain in the joints and muscles, and muscle cramps. For abdominal pain, typhoid fever, malaria and hydrophobia. Placed on the roof it can keep devils away and so cure nightmare... New born children should be bathed in it to prevent infection, convulsions, devil possession, scabies and boils... It strengthens the bones, cures chronic dysentery, prolapse of the anus... Jou. Tiger Flesh. For nausea, improves the vitality, and stops excessive salivation. For malaria. A talisman against 36 kinds of demons. A tonic to the stomach and spleen. Kao. Tiger Fat. For all kinds of vomiting. For dog bite wounds. Applied in the rectum for bleeding haemorrhoids. Melted and applied to scabby and bald headed conditions in children. Hsüeh. Tiger Blood. It builds up the constitution and strengthens the willpower.

And so it goes on: tiger's stomach, testes, bile, eyeball, nose, teeth, claws, skin, whiskers, faeces, and even the bone remnants in the faeces.

According to Jackson (1991), in the 1985-90 period

South Korea imported 1,700kg of tiger bones. As long ago as 1979 a brewery in Taiwan was importing 2,000 kg of tiger bones every year, from which are manufactured 100,000 bottles of tiger bone wine. When you realise that a tiger's skeleton weighs between 8 and 20 kg, you can calculate approximately how many tigers that represents.

In the case of bears the *Materia Medica* recommends the grease, meat, paw, spinal cord, blood and bones, but chiefly the gall, which is said to treat:

"epidemic fevers, jaundice... angina pectoris, ear and nose ulcers, and all evil sores. Antihelminthic. Infantile convulsions. Antipyretic. It clears the mind, quietens the liver, and clears the sight... For conjunctivitis, blindness in the newborn and various eye troubles. For caries".

And so to the rhino. Most of the readers of *the Skeptic* will be of European origin, and if there's one thing Westerners think they know about rhino horn is that the Chinese use it as an aphrodisiac. Well, they don't. They use it as medicine. Esmond Bradley Martin travelled throughout East and Southeast Asia, visiting pharmacies and talking to traditional practitioners as well as ordinary citizens; people were perfectly open and unembarrassed about their aphrodisiacs - they use tea infused with dried geckos or centipedes, antler velvet, seals' penis and testicles, serow horns, soup made from poisonous snakes, musk, and of course ginseng. In Burma and northern Thailand, rhino blood and, especially, urine. But not rhino horn.

The misunderstanding may have arisen, Martin thinks, because in parts of India, especially Gujarat, rhino horn is an aphrodisiac (though not an important one). Over the centuries, most of the traders in rhino horn encountered by Europeans would have been Gujaratis, who would probably have assumed that the Chinese and Koreans had the same use for it as they themselves did.

Martin found that the main value placed on rhino horn in Chinese medicine is as a fever-reducing drug. Any rhino horn will do, but the horns of Asian rhinos are smaller than those of African ones so their properties are thought to be more concentrated, "hotter". Pharmacists would explain to him how the Indian rhino lives in a seasonally dry, monsoonal climate, so its horn is good for dry fevers, whereas the Sumatran rhino lives in rain forest, so its horn treats wet fevers. Rhino hoofs would do at a pinch, but are weaker (Martin, 1980). Modern Chinese medical tracts say that rhino horn dispels heat, cools the blood, relieves convulsion and counteracts toxins; it is used to treat "fevers, influenza, poisoning, convulsion, epilepsy, restlessness, delirium, macular eruptions, erysipelas, malignant swelling,

abscess etc." (But et al., 1990).

Chinese medicine, though much beloved of New Age adherents who claim to have been validated by centuries of usage, rests on a totally nonscientific basis, indeed a paranormal basis, depending as it does on balancing eight "cardinals": yin, yang, outside, inside, empty, full, cold, hot. Rhino horn is a "cold" drug, hence suitable for "hot" diseases, especially when the heat is trapped in the two innermost components of the body, xue (blood) and ying (maintenance) (see But et al., 1990).

In Johor, a drug company makes "Three Legs brand Rhinoceros Horn Anti-fever Water", which, the label explains, is good for "malaria, high temperature fever affecting the heart and fore limbs, against climate giddiness, insanity, toothache etc.". In Korea, rhino horn is combined with other ingredients and made up into Chung Sim Hwan balls, which treat many ailments; they are readily available in South Korea, but not in the North, where people resent their unavailability. Even in Japan, home of the bullet train and the microchip, rhino horn is used to lower fever, cure measles, stop nosebleeds and alleviate blood poisoning (Martin & Ryan, 1990).

All this has been going on for very long time. In the *Shennong Bencao Jing* (literally the *Divine Plowman's Herbal*), written between 200 BC and 200 AD, rhino horn was recommended as a drug for intoxication and delirium (But et al., 1990).

Don't laugh, you long-nosed foreign devils. It was not so long ago that your own ancestors believed in this sort of thing. From ancient Greek times, rhino horn (mostly under the name unicorn horn) was sought after to make cups which would detect poison: poison poured into such a cup would froth and bubble and overflow. It was not until the late 18th century that the Swedish naturalist Carl Thunberg tested that one, and showed it to be utter rubbish. There's more. Thunberg noted that rhino horn shavings had been used in diseases too (especially, to cure convulsions in children). In 1590, Pope Gregory XIV lay dying; the tip of a rhino horn was cut off, ground down and administered to him in water. It didn't revive him. In 1846, one PW Hofland cited rhino horn's effectiveness against snakebite; you soak it in vinegar for 2 to 3 minutes and apply it to the wound. As late as 1911 Frau J Kloppenburg-Versteegh recommended pulverised rhino horn in cold water, heated and filtered, made and drunk fresh daily until the patient is well. These two little titbits are cited by Sody (1959).

Well, the amount of rhino horn coming onto the market has fallen in recent years. Of course, there are many fewer rhinos. Martin and Ryan (1990) did a rough calculation. Since 1970, an average of 3 Javan, 93 Sumatran and 43 Indian rhinos' horns have come onto

the market each year (recall that there are only about 60 Javan rhinos alive in the whole world. There are a maximum of 1,000 surviving Sumatran rhinos; there are nearly 2,000 Indian rhinos, but they are better guarded than the Sumatrans). In the 1970s, an average of 8 tonnes of rhino horn left Africa each year; this fell to 3 tonnes per year in the 1980s. Martin and Ryan calculate that this represents 4,350 White rhinos and between 74,240 and 93,800 Black rhinos. Asian rhinos' horns were, of course, still more expensive than Africans': in Chengdu, African rhino horn was on sale at US\$3,927 per kg, and Asian horn at \$24,200!

There is something else, too. Throughout the centuries there has been a craft of rhino horn carving in China: the horn is carved into vessels with intricate designs, and when polished its translucency gives it a particular beauty. Martin (1991) reports that antique rhino horn carvings are now being used to make up for the decline in the fresh item. In the Tong Ren Tang pharmaceutical factory in Beijing, which nowadays makes rhino horn medicines almost exclusively for the overseas Chinese market, the storerooms contain not only fresh rhino horn but bags full of antique carvings - a profusion of plates, cups, bowls, figurines, stolen or purchased from museums or private collectors, dating from the Ming and Ching periods.

Against the law? Of course it is; China and most of the other countries involved are signatories to the Convention on International Trade in Endangered Species (CITES), but still they come, the traders, to the factory to buy the medicines and export them...

To my knowledge, no-one has ever tested the properties ascribed to tiger bone wine or to bears' gall bladders. The claim that a substance keeps demons at bay might be a little hard to test, at that. But rhino horn has been tested. Hoffmann-La Roche, for example, administered rhino horn to rabbits whose temperature had been raised by *E.coli*; there was no effect. But et al. (1990) objected that a fever caused by *E.coli* is too transient, so they injected rats with turpentine oil, then administered aqueous extract of rhino, cattle, buffalo and saiga antelope horn to different groups. At 5g/ml and 2.5g/ml, rhino horn induced a reduction of 0.8° in body temperature within 30 minutes; the reduction lasted an hour and a half, and was then boosted by a second injection; the reduction was less at 1g/ml, and absent at 0.5g/ml. Cattle and buffalo horn showed a lesser effect, but saiga horn gave a greater effect, and more quickly. Before we gasp, "so it *does* work, and award Dr But and his colleagues the A\$30,000 reward for demonstration of a paranormal phenomenon, let us recall that, as they admit, 5g/ml would be equivalent to more than one

hundred times the normal oral dose given to human patients.

In a follow-up study, But et al. (1991) used the Qingying Decoction (first mentioned in a 1798 herbal), which combines rhino horn with herbal products, and found that the horn plus herbs, *or the herbs alone*, gave a bigger reduction than the horn alone. A combination in which domestic buffalo horn was substituted for rhino horn worked just as well. From all this, the authors suggest that saiga or buffalo horn could be used instead of rhino horn; preferably buffalo, as these animals are domestic in their millions throughout eastern and southern Asia, whereas saiga is itself a rather vulnerable species. Maybe; but I am not convinced.

Rhino horn, like other horns, and indeed like hoofs and even fingernails, consists of keratin fibres containing amino acids, guanidine derivatives, sterols, ethanolamine, acidic peptide, sugar and phosphorus compounds, and trace elements. It differs somewhat from cattle horn, especially in its higher concentration of calcium, but buffalo and saiga horn have almost identical composition. Given this chemistry, it seems very unlikely that the very slight effect on rats, at fantastically high dosage, was due to any more than an effect of calcium or perhaps protein, and it cannot be ruled out, either, that some peculiarity of rats' biochemistry, or the means of its administration (by injection rather than orally), is involved. It seems high time to perform the test on human subjects. Take forty fever patients, all of them believers in the rhino horn cure. Give ten a rhino horn decoction, ten buffalo horn, ten aspirin in water, ten a placebo. **Do It Double-Blind.**

Of course, by the time such a test can be organised, rhinos may be extinct.

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