

Daggers drawn on rhinos again

Conservationists are worried that reports of a large increase in the amount of African rhino horn imported into Yemen – one of the main consumers of the product – may signal a renewed increase in poaching of an animal that has already been hunted almost to extinction. There are now thought to be only 3,500 black rhinos in the wild, down from a population in the early 1970s of 65,000.

Every year in the 1970s, Yemen was importing some three tonnes of horn, which is used exclusively for making dagger handles. But a slump in the economy, a wider use of both water-buffalo horn and plastic, and a decline in the rhino-horn supply resulted in the mid-1980s in a decline in imports to about 250kg a year. Now it seems that, between August 1990

and March 1992, just one Yemeni dagger producer was able to buy 750kg – accounting for the deaths of at least 260 black rhinos.

This dealer – who is based in Yemen's capital, San'a, and is the country's main producer of daggers with rhino-horn handles – accounts for more than 80 per cent of Yemen's rhino-horn imports. According to him, almost all of the horn was supplied by Tanzanians of Yemeni origin and by Koreans. It is bought in the Tanzanian capital, Dar es Salaam, from unknown sources, and taken to the United Arab Emirates or Saudi Arabia. Traders in Sharjah and Jeddah pack the horn in among other goods, load it into trucks and smuggle it south into Yemen.

Large consignments used to go by air to San'a, despite a 1982 law banning rhino-horn imports. But a few years ago, the government tightened up the customs control at the airport, and only small quantities of horn now slip through, mainly in the personal luggage of Sudanese businessmen and teachers working in Yemen. They have bought it for about \$250 per kg from traders in Omdurman, Sudan, who themselves bought it from soldiers operating in southern Sudan. In San'a, dagger-makers pay importers \$1,000 per kg for all but the big horns, the ones that weigh more than 5kg. This is about the same price, in real terms, that was being paid seven years ago.

The traders say the rise in the supply since 1990 is a result of economic desperation in eastern Africa. Certainly, the collapse of Ethiopia, the severity of the conflict in Somalia, Djibouti's internal strife and Mozambique's generally dire straits have led people to take huge risks in order to survive. But few of these people have access to rhinos, and certainly not the 260 individuals needed to supply the horn to the San'a dagger-maker in the past 20 months.

So where is it coming from? Some may be from old stocks still held in Burundi or elsewhere, but the craftsmen carving the handles are not complaining that the horns are riddled with insect holes, which is what happens when they have been stored for some time. It is more likely that some shipments are originating from Tanzanian rhinos, and probably also from a few animals killed in northern Mozambique and Kenya. But much of it may be coming from



Zimbabwe, where the worst poaching in Africa has been taking place – more than 250 rhinos were killed between late 1990 and March 1992.

From 1988 until at least 1990, Zimbabwean rhino horn was being taken to Lusaka, Zambia, and shipped either by air to Swaziland or by road to South Africa, where Taiwanese businessmen were buying it for re-export to Taiwan. Now, though, the South African authorities have clamped down on this trade, and Taiwanese dealers have become more interested in Asian rhino horn, which they prefer for both medicinal and investment purposes.

It is possible that Zimbabwean horn which used to move south now reaches Dar es Salaam by train or road from Lusaka. Though traders would not make as much money from it, there is a ready market for its re-export to Yemen, and little likelihood of official confiscation.

Whatever the sources and trade routes, possession of rhino horn once it has arrived in Yemen is not illegal, which is why Yemen's foreign minister Dr Abdul Karim al-Iryani has said he will ban the *internal* trade in raw rhino horn – in effect, to ban its use. The workshops of dagger producers will be inspected regularly, and if any craftsman is caught carving raw rhino horn, he will be fined.

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▲ The knives are out. Desperation in Africa results in the revival of an old tradition in Yemen.



GORILLA LEADER SHOT
The civil war in northern Rwanda has seen its first killing of a gorilla by gunfire. Mriti (above), the silverback leader of Group 13 – one of the four groups habituated to the tourists – was killed at the end of May. Without his leadership, his family will split up, resulting in the probable death of young infants. Ironically, his death comes at a time when the guerrilla war seems to be drawing to a close, and hopes are high that tourism – once the third highest earner of foreign exchange – will soon resume. For an update on the situation in Rwanda, send an sae to: Digit Fund UK, 110 Gloucester Avenue, London NW1 8JA; tel: 071 483 0577.



Probable pathways of smuggled rhino horn.

Spud-u-thene

Though cynics claim that today's potatoes taste like plastic, few ever expected that the humble spud would one day contain plastic granules. But that could be the outcome of genetic-engineering research in the United States.

The plastic in question is polyhydroxybutyrate (PHB), the biodegradable polymer developed by ICI and marketed under the trade name 'Biopol'. This is one of the few truly biodegradable plastics, breaking down into carbon dioxide and water, and is already used to make bottles.

Biopol is currently made naturally by the bacterium *Alcaligenes eutrophus*, which synthesises PHB granules when cultured in factory fermenters. It is much more expensive than conventional oil-based plastics, and so scientists have been looking at ways of making PHB competitive

with less environment-friendly materials.

Now, Chris Somerville of the US Department of Energy's Plant Research Laboratory at Michigan State University may have solved the problem (*Science*, vol. 256, pp520-23). He and his team have used genetic-engineering techniques to transfer the genes for PHB production from the bacterium to thale cress, the genetic engineers' favourite experimental plant. The next stage is to transfer the genes to a crop, such as potatoes or beet, which would make vast quantities of the polymer cheaply.

It sounds like a model strategy for producing a biodegradable alternative to long-life plastic. Plants would use sunlight, water and carbon dioxide to produce a material that eventually degrades to air and water. But will it be that simple?

The plastic potatoes would be just one of a new spectrum of non-food, industrial crops that may soon begin to appear in the European landscape. Together with annual energy crops such as elephant grass and

sorghum, which are currently being tested here as potential fuel for power stations, the PHB producers would be grown under conditions that would maximise yield. Experience with industrial crops elsewhere (cotton in the US, for example) has shown that they are prime targets for the agrochemicals industry, demanding very high agrochemical inputs; such industrial crops could bring a new meaning to the term 'factory farming'.

In recent years, there has been a trend towards reducing synthetic fertiliser and pesticide inputs for food crops, partly driven by concerns over human health. Since the new industrial crops will not be eaten, this imperative might not apply. So bearing in mind the real test of environment friendliness – the environmental impact assessment of every stage of the production process of a commodity – it may be best to reserve judgement on these new plastic crops until their full impact becomes clear.

PHIL GATES