than those in Britain, resulting in relative absence of rare species.

We agree that species diversity should not be the sole criterion for identifying areas for conservation, but our evidence suggests that the relationship between diversity and rarity is dependent on both the fragmentation of the landscape and the scale under consideration. Discovering the exact nature of this relationship is of considerable interest for conservation purposes. Targeting areas of high diversity may be the best way to protect rare species only if very large areas are available for conservation.

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Tool use by wild chimpanzees

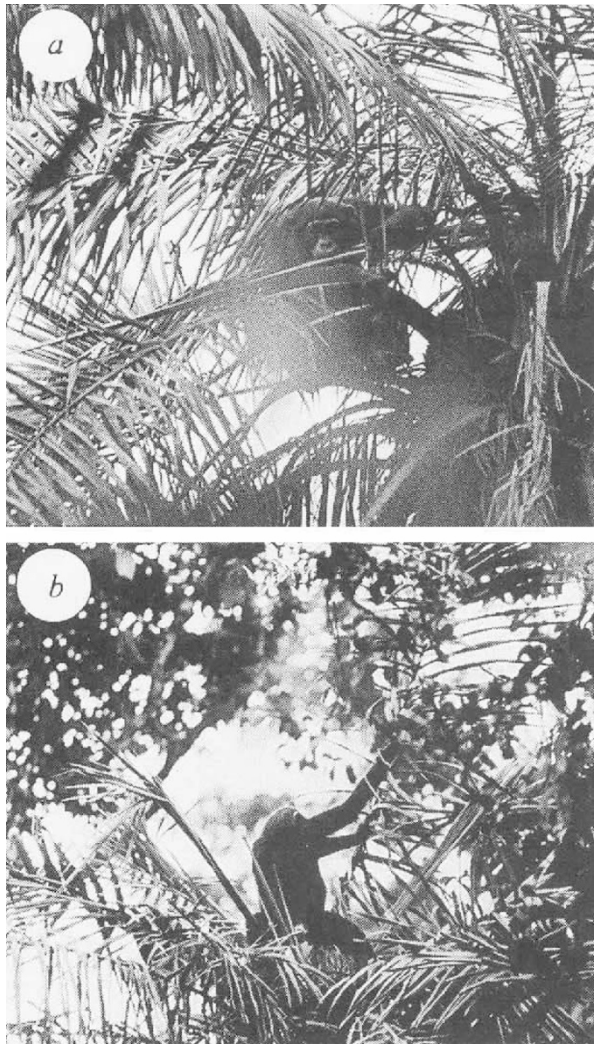
SIR — Wild chimpanzees at Bossou, in the Republic of Guinea, West Africa, extract sap from oil-palm trees with a "pestle", and then drink it using a "fibre-sponge". This behaviour includes the use of techniques similiar to those used when wild chimpanzees use other tools, such as the stone hammer-and-anvil[1,2], the digging-stick[3,4], and the leaf-sponge[5]. However, both squeezing the sap and the use of the pestle have not, to my knowledge, been reported previously (see ref. 6).

In the periphery of the core-area of a wild chimpanzee group at Bossou Oil-palm trees (*Elaeis guineensis*) are frequently found. A mature tree is more than 20 m in height and its top is covered with 20–40 large pinnate compound leaves. A hard leaf-stalk (petiole) reaches 5 m in length and 5–10 cm in breadth. All resident members of the chimpanzee group have been identified since 1976; the group consisted of about 20 chimpanzees throughout the study period.

Chimpanzees come to feed on oil-palm nuts using hammer-and-anvil stones. Some of them climb on the top of the tree, stand on two legs, grasp an upright young leaf-stalk in the centre of the crown with both hands and pull it out from the tree with great force. Even for an adult chimpanzee it takes more than a minute to detach it. After taking off a leaf-stalk from the tree he or she bites its white base and sucks sap from it (*a* in the figure).

On 7 January 1990, in the driest season, after taking and throwing away more than 5 young stalks, an old female of about 40 years bit off thorns of a stalk with her incisors, stood up on two legs at the edge of the tree-top and pounded its centre vertically with the stalk, as if she were pounding grain with a mortar and pestle. After 10 poundings with both hands and with much force, a hole appeared in the centre of the tree-top. The chimpanzee put her left hand in the hole and picked up a handful of drenched fibre which she had made by the repeated poundings. She sucked it as she would a sponge. She dropped it into the hole, brought it up and sucked again. She also licked her drenched hand. After she climbed down the tree an adolescent male climbed up. He took off a leaf-stalk from the tree and did the same as the old female (*b* in the figure). He pounded 10 times with both hands and 6 times with his right hand. He squatted and put his left hand into the deep hole which must have been more than 30 cm in depth as his elbow was completely in the hole. He repeatedly brought up a lump of fibre from the bottom of the hole and sucked sap from it.

Many adult and adolescent chimpanzees at Bossou were seen every dry season to pull out palm leaf-stalks; however, the combined work of the "pestle pounding" and "fibre-sponge sucking" was confirmed for only four episodes in two adult females (estimated 30 and 40 years old) and two adolescents (9-years old male and 8-years-old female).



a, Adolescent chimpanzee biting and sucking sap from the base of a young leaf-stalk. *b*, Adolescent chimpanzee pounding the hole at the top of a palm tree with a leaf-stalk as the "pestle".

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Sex-ratio and inheritance

SIR — The theoretical implications of the reported inheritance of acquired characters in Mongolian gerbils[1] are so important that the evidence should be assessed most critically.

Clark *et al.* report[1] that adult female gerbils who gestated between two male fetuses (2M females) produce litters with a significantly greater proportion of sons than those (2F) mothers who gestated between females. Gestation of females adjacent to males causes their androgenization. If the report is valid, female offspring of 2M mothers have an enhanced chance of also being 2M, and the masculinized phenotype will tend to be perpetuated.

But Clark *et al.* do not report the significance of departure of the sex ratio from 50% in litters born to 2M mothers; the excess of males in these litters (57.1%) was similar to their deficit in those of 2F (43.7%). The androgization theory they proposed provides no explanation for the latter figure.

Clark *et al.* have elsewhere shown[2] that prepartum gerbil litters overall contain equal numbers of the sexes, irrespective of litter size, but that litter size correlates with sex-biased perinatal losses. They suggest that mothers of small litters selectively cannibalize their own new-born