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In their study of the population structure of the dioecious palm *Lodoicea maldivica,* the double coconut in the Vallée de Mai on the island of Praslin in the Seychelles, Savage and Ashton (1983) found a difference in height between males and females: males grew to 28 m tall, females only to 18 m tall. This difference in adult size was interpreted as a difference in age and survival between the sexes on the basis of a size-age correlation derived from unsexed (prereproductive) juveniles. Though a significantly skewed sex ratio (36:64, female : male) supports this conclusion, two other interpretations suggest that sexual dimorphism occurs in this species.

1. Female growth rates may be slower than male growth rates after the onset of reproduction.

Because Savage and Ashton established their size-age correlation on the basis of the growth rate of juveniles, most of which were too small to flower (their Fig. 5c), it was not possible to determine whether reproductive males and females have different growth rates. *Lodoicea* produces the biggest known fruits of any plant (20 kg each), and a female may carry from 250–500 kg of fruit and inflorescences in her crown (Savage and Ashton 1983). Unless male reproductive effort is as prodigious as this, it seems unlikely that trees of the two sexes would have the same vegetative growth rate.

A field estimate of male reproductive effort is not available, but herbarium material and field notes on *Lodoicea* which I have examined in the Bailey Hortorium, Cornell University, Ithaca, New York, are some guide. A single, dry male inflorescence, 0.83 m long, weighed 0.92 kg with its stalk and spathe. The longest male inflorescences recorded are about 4 ft (1.22 m) (Labillardière 1807, Hooker 1827, Vesey-Fitzgerald 1938), and I estimate these to weigh 1.5 kg when dry, or no more than 15 kg when living (assuming 90% water content). Similarly roundabout methods are necessary to ascertain the number of inflorescences typically found in the crown of a male tree: photographs deposited in the Bailey Hortorium, taken in the Seychelles and in botanic gardens elsewhere, suggest that more than 3 or 4 per tree at any one time is rare. On this (admittedly uncertain) basis, I estimate that male trees can have no more than 60 kg reproductive structures in their crown at any one time. Even if there is a significant difference between the sexes in the annual turnover of inflorescences, or if biomass is not an accurate measure of reproductive cost, it is still probable that male reproductive effort is very much less than female.

Convincing evidence that reproductive effort and vegetative growth are inversely related and different between the sexes in dioecious species does exist for many trees (Willson & Burley 1983, Linhart & Mitton 1985) (Lloyd & Webb 1977, Hoffman & Alliende 1984), though no reports exist for dioecious palms. In general, when a difference between the sexes exists, males have higher vegetative growth rates, may attain larger size, and may live longer than females (Lloyd & Webb 1977). The difference in height between the sexes in *Lodoicea* may, therefore, reflect a difference in their growth rates as well as in their ages.

2. Higher female mortality may select for smaller stature.

Savage and Ashton suggest that large adult females lose their crowns in hurricanes more often than large males because of their greater weight. This would certainly account for the male-biased sex ratio (which, according to notes in the Bailey Hortorium collection, was present in at least one population on Praslin in the 1930s), but it need not account entirely for the size dimorphism. Independent of any difference in growth rate between males and females arising from the different physiological costs of reproduction, a greater risk of decapitation in females should select for lower stature in that sex. Such selection would reinforce any trend toward slower trunk growth caused by the cost of heavy investment in reproduction. The two processes acting together might lead to females beginning reproduction at smaller size (though equivalent age) than males. Perhaps it is indicative that of 21 palms in the smallest size class ($\leq$ 4m) recorded by Savage and Ashton (their Fig. 7), the only two flowering individuals were females. I suggest that the available evidence is consistent with the idea that *Lodoicea maldivica* is a hitherto unrecognized case of sexual dimorphism.

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1988 International Conference on Tropical Apiculture

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Papers are invited on the following topics: bee management techniques and problems; Africanized bees; appropriate beekeeping equipment; improving the quality and standards of honey and wax; marketing honey and wax; bee products for the benefit of human health; crop pollination techniques and problems; pests and diseases of bees; pest control safe for bees; integration of beekeeping in farming systems; education and training; and encouraging women as beekeepers. Deadlines are 1 March 1988 for titles and abstracts (200–300 words) and 1 September 1988 for accepted manuscripts.

Further details are available from the Conference Steering Committee, International Bee Research Association, 18 North Road, Cardiff, CF1 3DY, UK. Egyptian participants should contact the Conference Secretariat, Plant Protection Research Institute, Ministry of Agriculture, Dokki Giza, Egypt.