

widest distribution. It occurs from the Cape Peninsula in the south and extends northwards through Natal to the eastern and northern Transvaal escarpment, and probably beyond. Some specimens seen collected from Mt Lulanje in Malawi belong to this taxon. It is probable that it also occurs in the Chimanimani mountains of Zimbabwe.

The distribution is almost entirely Afromontane and it frequently occurs with other Afromontane forest species such as *Podocarpus latifolius*. In the forests of the Knysna enclave it has become the dominant species in many communities, probably as a result of overexploitation of other timber species. In the north it never attains such dominance.

6.3 *O. capensis* subsp. *hochstetteri* (Bak.) Friis & Green (East African olive)

This is a small tree of 6 to 17 m high occurring only in mountainous areas. The distribution of *O. hochstetteri* follows the Afromontane forests across Africa from east to west and extends from the Ethiopian highlands in the north to the montane forests of Malawi. On the mountains of the eastern side of tropical Africa it occurs mostly above 1800 m and ascends to 2775 m. In West Africa it ascends to 2000 m or more and is characteristically associated with several Afromontane forest species including *Podocarpus latifolius*. Between the mountains of east and west Africa there are scattered distant satellite populations along the northern and southern margins of the Guinea-Congolian rain forest region, but this species has not been recorded from the rain forests. It also occurs in distant satellite populations further south on or near the Zambezi-Zaire watershed, both in riparian forest and in small patches of dry evergreen forest. In Angola it is a member of the coffee forests on the escarpment of the interior plateau.

REPRODUCTIVE BIOLOGY

The flower structure of all *Olea* species in Africa is similar, consisting of a basic tetrameric (four parts) flower with the number of stamens reduced to two. The inflorescences are all paniculate and the size and number of flowers varies within and between species. The position of

the inflorescences is consistently terminal for most species, the exceptions being *O. europaea* subsp. *africana* with axillary inflorescences, and *O. woodiana* with both axillary and terminal inflorescences.

The structure and colour of the flowers of all species of *Olea* suggest that the flowers with similar characteristics are pollinated by generalist insects, mainly flies and bees. However, it was found that several different species of insects visit the flowers. Pollen is also distributed by the wind. Wind pollination is probably the more important mechanism responsible for effective pollination in savanna habitats due to greater distances between individuals. In forest species, the distance between the crowns of trees is closer and insect pollination is more probable. Both pollination mechanisms have been shown to be operating in the Knysna forests.

The breeding system is largely unknown for most species and self-incompatibility has only been reported in a few cultivars of *O. europaea*. Experiments on some of the species have shown that the other species are also self-incompatible. Flowering within a species is fairly synchronous over the whole population and the flowering period may extend over several weeks. Since pollen from diverse pollen genotypes land on the stigma, it is assumed that the mechanism enforcing self-incompatibility is located at the stigma surface. The exact mechanisms enforcing self-incompatibility remain unknown and deserve attention in future studies.

It has been reported that many outcrossed, hermaphroditic, flowering plants have relatively low fruit to flower ratios. This is a waste of resources since the resources expended on the production of these excess flowers could be allocated to increase total fruit production. In some of the species examined fruit to flower ratios are low, 0.33 in *O. europaea* subsp. *africana* and 0.25 in *O. capensis* subsp. *enervis*. This amounts to an overproduction of flowers in both species. It has been reported that in *O. capensis* subsp. *macrocarpa* up to 75% of the fruit crop of each tree falls prematurely due to a number of biotic