Spectrum

Naming our gum trees

Ranging from the stunted mallees of the desert fringe to the giant mountain ash and karri of the moist south-eastern and south-western corners of the continent, Australia's eucalypts come in many forms. As they dominate 95% of our forest area and spread out over much of the remainder of the country, it's hardly surprising that new species are still being found.

Since 1972, Mr Ian Brooker of the CSIRO Division of Forest Research has found, and published descriptions of, 21 new species and subspecies, and he has more descriptions awaiting publication. Other botanists are also describing new eucalpyts, notably Dr Lawrie Johnson and Mr Don Blaxell, of the National Herbarium of New South Wales, who have published descriptions and new names of about 20 species and subspecies in the past 5 years.

Last year, the number of recorded species totalled 445. This is considerably fewer than the 605 species listed in 1934 by Mr W. F. Blakely in his notable work *A Key to the Eucalypts*, still the only book to attempt a full scientific description of the genus. The reason for the reduction in numbers is the lumping together of types no longer regarded as separate species. All nomenclature now is according to the rules of an International Code of Botanical Nomenclature, which is revised about every 4 years.

How do you identify new species? Often related eucalypts, and sometimes ones that are not related, are virtually impossible to distinguish by bark type, the shape and colour of leaves, and other obvious features. The question that decides whether a tree belongs to a new species is: does it have at least one 'character' that differs from those of all related species?

The main characters that set species apart are features of the buds and fruits. For example, the shape and arrangement of anthers, the pollen-bearing parts of the bud, vary widely and can distinguish species. So can the shapes of seeds and the markings on them; many species can be identified on the basis of seed characters alone.

Accurate identification is important for both conservation and commercial forestry. Preservation of the existing genetic diversity among eucalypts requires a detailed knowledge of that diversity. And accurate records matching tree characters with species names are of obvious value in the development of productive plantations.

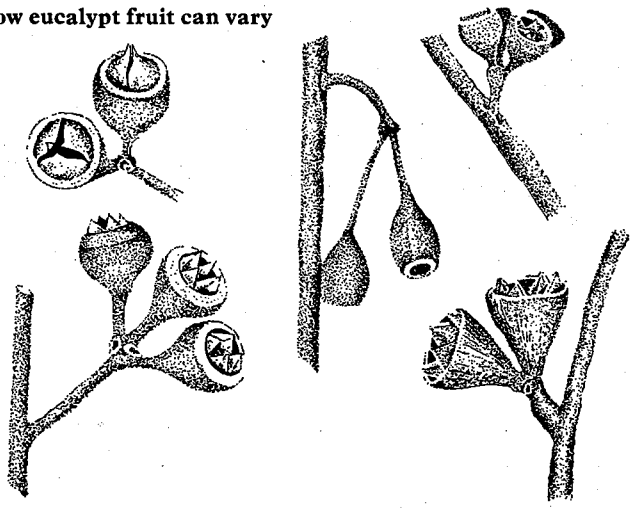
A eucalypt from Timor, widely used in plantations in Brazil, was for a long time an outstanding case of a species in need of separate identification. Although given various names by foresters who recognized it as a distinct species, it was officially just a variety of *Eucalyptus alba*, the white gum of northern Australia, Papua New Guinea, and Timor. Now science is catching up: the late Dr Stan Blake of the Queensland herbarium described the species and gave it a botanical name of its own, which is being published posthumously.

Some eucalypt species form hybrids: the taxonomic records described 115 of these last year. Occasionally species are broken down into subspecies and varieties, and last year there were 24 of both.

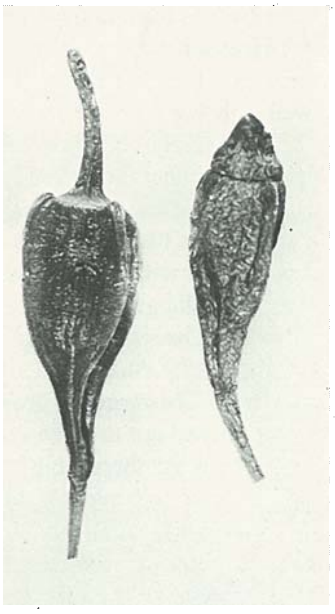
Subspecies are distinguished by smaller character differences than species. For example, Mr Brooker has distinguished two subspecies of the Western Australian *E. forrestiana* on the basis of the bud differences shown in the photos. Subspecies usually grow in separate but adjoining areas or in different habitats within one area, such as at different altitudes.

Within themselves, eucalypt species and subspecies inevitably contain a range of genetic forms with different characters. Some forms are more valuable than others for forestry purposes, growing faster or straighter, and it is obviously important to be able to distinguish between them. But the number of forms and the room for doubt about where one ends and the next begins are so great that attempting to name them all would pose unmanageable problems.

How eucalypt fruit can vary



The fruit of five new Western Australian eucalypt species described by Mr Brooker.



The bud of one subspecies of *Eucalyptus forrestiana*, but not the other, has an elongated beak, 1-3 cm long.

The International Code of Botanical Nomenclature does not provide for such problems. However, because of the need foresters have to identify forms of some eucalypt species, Mr George Chippendale and colleagues at the Division of Forest Research are looking into the possibility of giving names to some of the most valuable ones.

Eucalyptus nomenclature. G. M. Chippendale. *Australian Forest Research,* 1976, **7**, 69–107.

Eucalyptus saxatilis, a new species from eastern Victoria. J. B. Kirkpatrick and M. I. H. Brooker. *Australian Forest Research*, 1977, **7**, 209–13.

Eucalyptus forrestiana subsp. *dolichorhyncha*, a new taxon from Western Australia. M. I. H. Brooker. *Journal of the Royal Society of Western Australia*, 1973, **56**, 74–5.

Eucalyptus cyanophylla, a new species from South Australia and Victoria. M. I. H. Brooker. *Transactions of the Royal Society of South Australia*, 1977, **101**, 15–18.

'A Key to the Eucalypts.' W. F. Blakely. (The Worker Trustees: Sydney 1934.)