

DIFFICULTIES AND REWARDS IN TAXONOMIC
STUDIES ON WEEDS

P.W. Michael

Department of Agronomy and Horticultural Science,
University of Sydney, New South Wales

Most important Australian weeds are alien plants which have become thoroughly naturalized. No matter what kind of study we are concerned with, problems of identity come first. We must know and, even if we are unable to find the correct name of the plants we are working with, we must be able to describe them adequately.

Taxonomic studies in Australian herbaria are mainly concerned with our native flora and we are often forced to do our own. At best we can hope for collaboration with specialists in particular groups. Collections in Australian herbaria are often inadequate and we are in the best position to make up the deficiencies. Sometimes it may be necessary to grow plants and we usually have suitable facilities. Collection of propagules for growing should always be combined with adequate voucher specimens.

After collection, taxonomic work requires the sorting of plants into different 'forms' or taxa and then the fitting of these to descriptions in floras or monographs or specimens housed in herbaria throughout the world. Often the inspection of types is important. Visits to overseas herbaria may be necessary. Often types are inadequate and one needs to see a big range of material. This may not be readily accessible and it may be necessary to arrange for collections in the supposed country of origin, often in obscure or wild places. We must be able to make a satisfying assessment of the range of variation allowable in a particular species. One has to take a compromising stand somewhere between the extreme 'lumpers' and 'splitters'. We need to take into consideration all aspects of traditional taxonomy as well as cytotaxonomic and chemotaxonomic studies.

Nomenclatural problems are often exasperating and guidance from experienced taxonomists is necessary.

I have encountered one or other of these problems in studies in the genera *Amaranthus*, *Oxalis*, *Erigeron* (*Conyza*), *Gnaphalium*, *Xanthium*, *Avena* and *Echinochloa*.

For our purposes the work of Professor J.D. Sauer on the grain amaranths and their relations may be taken as a rare and fine example. His thorough appreciation of variation in and history of the group led to the development of a key which