THE INVASIVENESS OF *CRATAEGUS MONOGYNA* AND *PRUNUS MAHALEB*, AT ARMIDALE, NEW SOUTH WALES, AUSTRALIA

By

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ABSTRACT

Crataegus monogyna and *Prunus mahaleb* are two related fleshy fruiting shrubs that were introduced to Australia as ornamental and commercial plants in the nineteenth and twentieth centuries. *C.monogyna* is very invasive in the region, having spread rapidly and conspicuously throughout northern New South Wales and elsewhere in south eastern Australia. *P.mahaleb* is far less invasive, being restricted to a small and slowly expanding population near Armidale in northern New South Wales. Calculation of rates of spread of both species by analysis of annual growth rings indicated that *C.monogyna* is spreading at 80 m yr^{-1}, four times faster than *P.mahaleb* which is spreading at 20 m yr^{-1}.

Demographic analysis of both species using modified Leslie matrices showed that potential population growth rates of *P.mahaleb* are however more rapid than those of *C.monogyna*. *P.mahaleb* had projected population growth rates of 1.71346 and 1.49041 and *C.monogyna* 1.13804 and 1.10293 for height and basal circumference classified models respectively.

Assessment of the seed dispersal ecologies of both species showed that *C.monogyna*, an autumn-winter fruiting species, has seeds capable of dispersal by Pied Currawongs (*Strepera graculina*) over many kilometres. *P.mahaleb*, a summer fruiting species, has seeds dispersed predominantly by Noisy Friarbirds

(*Philemon corniculatus*) over distances generally less than 100 m. Both species had seeds dispersed in smaller numbers by other birds and a range of native and introduced mammals including Brush-tailed possums, macropods, foxes and rabbits.

The main factors determining the difference in invasiveness between the two species were that (1) *C.monogyna* was widely and extensively planted in hedges and gardens which provided many foci for further and accelerated spread facilitated by seed dispersal by vertebrates. (2) *P.mahaleb* was not planted widely and as a result spread relatively slowly from a single focus. (3) despite a more rapid population growth rate *P.mahaleb* only had seeds dispersed relatively short distances compared to *C.monogyna* which has seeds dispersed over many kilometres.

The results indicate that the pattern of invasion by fleshy fruited alien woody plants in the Armidale region is changing. This has implications for ongoing and future invasions by a range of species and suggests that further taxa such as *Ligustrum, Pyracantha* and *Pistacia* will become more invasive.