

Accepted Manuscript

Title: Miocene ‘fin-winged’ fruits and Pliocene drift fruits – the first record of Combretaceae (*Terminalia*) from New Zealand

Author: Daniel Jurd Mike Pole



PII: S0016-6995(17)30116-X
DOI: <https://doi.org/doi:10.1016/j.geobios.2017.10.002>
Reference: GEOBIO 799

To appear in: *Geobios*

Received date: 11-7-2017
Accepted date: 4-10-2017

Please cite this article as: Jurd, D., Pole, M., Miocene ‘fin-winged’ fruits and Pliocene drift fruits – the first record of Combretaceae (*Terminalia*) from New Zealand**** *Geobios* (2017), <https://doi.org/10.1016/j.geobios.2017.10.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Miocene ‘fin-winged’ fruits and Pliocene drift fruits – the first record of Combretaceae (*Terminalia*) from New Zealand *

Daniel Jurd^a, Mike Pole^{b*} murihiku@yahoo.com

^a 8 Philip St, Ashburton, 7700, New Zealand

^b Queensland Herbarium, Brisbane Botanic Gardens Mt Coot-tha, Mt Coot-tha Rd, Toowong, Australia

* Corresponding author.

* Corresponding editor: Marc Philippe.

Abstract

Two types of fossil *Terminalia* (Combretaceae) fruits are described from warmer periods in New Zealand’s past. One is represented by large ‘fin-winged’ fruit (samara) from the Early Miocene Manuherikia Group sediments of Bannockburn and the Nevis Valley. The form and size of the fruits are entirely unknown in New Zealand today, but strongly resemble those of the genus *Terminalia* with which they are identified. The second are numerous fruits from the Late Pliocene drift deposit of Weymouth, Manukau Harbour. These are identified with the common drift-fruit, *Terminalia catappa*, the ‘sea almond’. The presence of *Terminalia* in the Miocene and Pliocene of New Zealand is consistent with warmer conditions at those times. The later extinction of the genus meant the loss of the Combretaceae from New Zealand, which is not in the current flora. Based on the current climatic range of other *Terminalia* around the world, and most Combretaceae, the extinction and continuing absence are probably linked to cold climate conditions.

Keywords: *Terminalia*; Fruit; Miocene; Pliocene; New Zealand; Extinction

1. Introduction

New Zealand has a relatively low-diversity forest flora today, but the fossil record has shown that diversity was much higher in the mid-Cenozoic. The existence of several families now extinct in New Zealand has been indicated by palynology (Aquifoliaceae, Bombacaceae, Mimosaceae, Myricaceae; Mildenhall, 1980), fossil fruits (e.g., Casuarinaceae; Campbell and Holden, 1984), and leaf remains (Argophyllaceae, Menispermaceae, Paracryphiaceae; Pole, 2008, 2009).

The Manuherikia Group is a fluvial-lacustrine unit, spread over at least 5,600 km² of the interior of southern New Zealand (Douglas, 1986). One of the most accessible fossil leaf localities within the Manuherikia Group is at the roadside near the village of Bannockburn, Central Otago (Fig. 1). The facies at this locality are regarded as part of the Cromwell Submember, Kawarau Member of the Dunstan Fm., and as having been deposited in a poorly-drained interdistributary bay on the perimeter of a lake (Douglas, 1986). On palynological evidence, the Dunstan Fm. is regarded as Altonian-Clifdenian (early to earliest middle Miocene: Mildenhall, 1989; Mildenhall and Pocknall, 1989; 19-15.1 Ma, roughly Burdigalian-Langhian: Cooper, 2004) and therefore probably coeval with the Middle Miocene Climate Optimum. Tilted muddy shale spoils on to the road, and leaf and sometimes fruit fossils are common. Although easy to collect, this habit means they are normally poorly preserved: water finds its way in via the cleavage, so the fossils are typically weathered and

Download English Version:

<https://daneshyari.com/en/article/8916471>

Download Persian Version:

<https://daneshyari.com/article/8916471>

[Daneshyari.com](https://daneshyari.com)