THE DISTRIBUTION AND CONSERVATION STATUS OF A RARE CONIFER, *MICROSTROBOS FITZGERALDII* (PODOCARPACEAE)

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(Accepted for publication 9.12.1980)

ABSTRACT

Smith, Jim (School of Biological Sciences, Sydney Technical College, Ultimo, New South Wales, Australia 2007) 1981. *The distribution and conservation status of a rare conifer,* Microstrobos fitzgeraldii *(Podocarpaceae). Cunninghamia* 1 (1): 125–128. Eighteen localities in the Blue Mountains were surveyed to provide information on the distribution and present status of *Microstrobos fitzgeraldii.* A total of 203 plants were found confined to 6 localities. The observed habitat requirements of the species are described.

INTRODUCTION

With the exception of *Callitris* and *Actinostrobus* most of the eleven Australian conifer genera are today restricted to small, wet refuge areas along the east coast. One of these, the genus *Microstrobos,* is endemic to Australia and contains only two species, one (*M. niphophilus* Garden & Johnson), restricted to alpine areas of Tasmania, and the other, *M. fitzgeraldii* (F. Muell.) Garden & Johnson, a small shrub with weak straggling branches up to 2 m long, to waterfalls in the Blue Mountains of New South Wales. This latter habitat is being gradually altered by increasing urban development in the catchments of the waterfalls.

Mueller (1880) made the first record of the distribution of *Microstrobos fitzgeraldii:* "In silvis densissimis madidis tractus altioris "Blue Mountains" dicti rarissimum ad cataractam Katoomba". (In very thick and wet forests of the elevated tract called the Blue Mountains, very rare at Katoomba Falls). Baker & Smith (1910) noted "In New South Wales this species is found at the base of most of the chief falls on the Blue Mountains. The material upon which this investigation was based was obtained at Lower Falls at Leura . . .". Moore & Betche (1893) and Dallimore & Jackson (1966) merely repeated the distribution information from the earlier publications. Thompson (1961) gives the collection localities of all National Herbarium of New South Wales specimens. All were from Wentworth Falls with a single specimen being recorded as found at "bottom of Leura Falls and Wentworth Falls". All collections since 1961 and prior to the present survey have been made at Wentworth Falls.

Following the discovery of this plant at Bonnie Doon Falls (Grid ref. 281346, Katoomba 1:31 680 sheet) a survey was undertaken of all likely waterfall localities in the upper Blue Mountains. Counts were made of the number of plants present at the various localities (Figure 1) which could be readily visited, and inaccessible ledges were surveyed with binoculars.

RESULTS AND DISCUSSION

Results of survey

Table 1 details the numbers of plants found at 6 of the 18 localities studied. No plants were found at the other localities on the south facing side of the main Blue Mountains ridge, namely Den Fenella (Grid ref. 358326, Katoomba 1:31680), waterfalls of 'The Valley of Waters' as far as Vera Falls (351333 to 355322), Gordon Falls (325326), Linda Falls (311330), waterfalls near the Devils Hole (280328), Mermaids Cave (266425), Porters Pass (261446) and Rienits Pass (Mt Wilson 1:31 680 sheet, grid ref. 242482) nor associated with localities on the north facing side: Minne-Ha-Ha Falls (Katoomba sheet, grid ref. 318386), Govetts Leap Falls

TABLE 1

Distribution of *Microstrobos fitzgeraldii*

Locality*	Grid reference Katoomba 1:31 680 sheet	No. of plants	Aspect	Drainage to
1 Wentworth Falls (i.e. the waterfall formed by the upper part of Jamison Creek).	366325	92	South	Kedumba River, Jamison Valley
2 The small unnamed waterfall 150 m west of Wentworth Falls.	366325	31	South	Kedumba River, Jamison Valley
3 The small unnamed waterfall 100 m west of Gordon Falls.	325326	7	South	Kedumba River, Jamison Valley
4 Leura Falls	314332	41	South	Kedumba River, Jamison Valley
5 Katoomba Falls	295325	12	South	Kedumba River, Jamison Valley
6 Bonnie Doon Falls..	281345	20	South	Megalong Creek, Megalong Valley

* There are no permanent waterfalls with significant vertical drops east of Wentworth Falls.

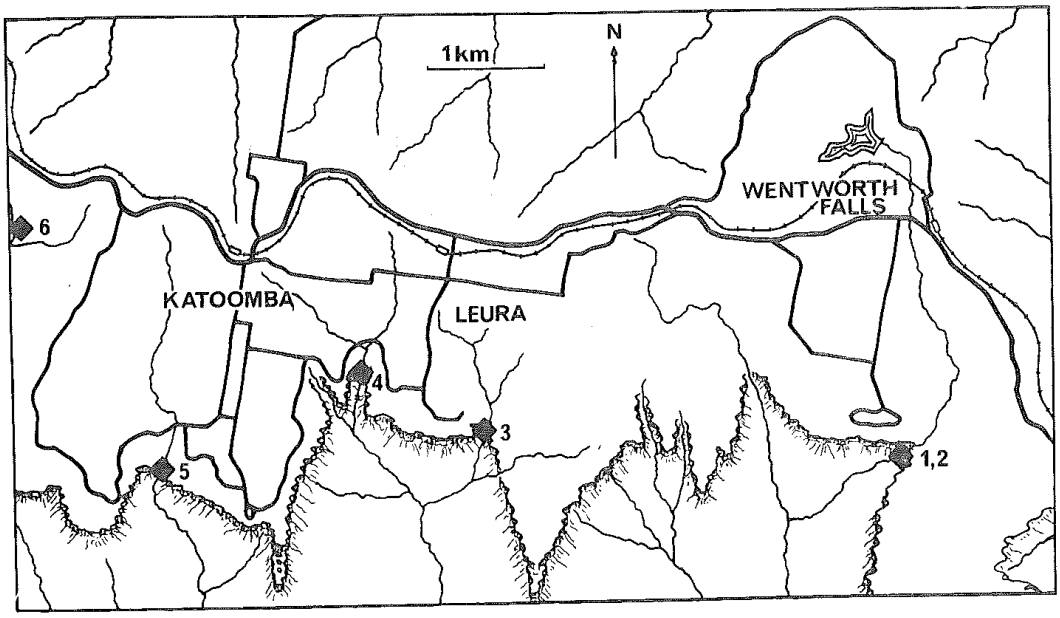

Figure 1. Locality: 1. Wentworth Falls; 2. Unnamed waterfall 150 m W of 1; 3. Unnamed waterfall 100 m W of Gordon Falls; 4. Leura Falls; 5. Katoomba Falls; 6. Bonnie Doon Falls.

(305443), Horseshoe Falls (302450) and Victoria Falls (Mt Wilson sheet, grid ref. 290512). The total number of plants known to exist in all localities is 203. The extreme limits of its distribution lie only 8 km apart. The range in altitude is from 600 m (bottom of Wentworth Falls) to 900 m (top of Bonnie Doon Falls).

Habitat requirements

Thompson (1961) summarized the situations in which specimens had been found: "on wet rocks located within the range of the spray of waterfalls". Most plants are found on the eastern side of waterfalls and receive spray carried from the waterfall by the prevailing westerly winds in this area. They are never found drenched by the main flow of the larger waterfalls (localities 1, 4, 5 and 6 in table 1) but are on either side where the spray is lighter in intensity. However, they do occur directly below the very small waterfalls (2 and 3).

Plants also colonize ledges behind vertically falling water, and ledges which receive spray caused by deflection of falling water. As well, they have been recorded from inside caves beside waterfalls; these plants do not receive spray from the waterfall but depend on seepage through permeable strata inside the cave. They can occur also on ledges receiving similar seepage but not associated with caves e.g. a row of plants extends 30 m westward of site 2.

No plants have been found in caves which are not close to waterfalls, even if they have similar seepage lines. The wet rocks and ledges colonized by *Microstrobos* are always of sandstone; it is never found growing on the shale exposed at the lower levels of some of the waterfalls.

Ecological condition

At all sites some dead branchlets are found on the shrubs and this is considered normal. Many of the plants in the main concentration at the base of the Wentworth Falls (National Pass level), however, carry extensive areas of dead leaves, and those closest to the falls have branches covered in slime and particulates. This may reflect the gradual drying up of this area and pollution of the creek by raw sewage and septic tank drainage. Some plants here have extensive areas of exposed roots,

a condition not seen in other areas; soil erosion due to excessive run-off from cleared areas in the Jamison creek catchment is occurring. By comparison plants at locality 2, on a nearby but undisturbed drainage system, do not show these symptoms.

At all locations small healthy plants are found, indicating that the species is continuing to establish itself.

All plants found are in Blue Mountains City Council reserves. It is recommended that control of all sites where *Microstrobos fitzgeraldii* is found be transferred to the National Parks and Wildlife Service to ensure survival of this rare plant.

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