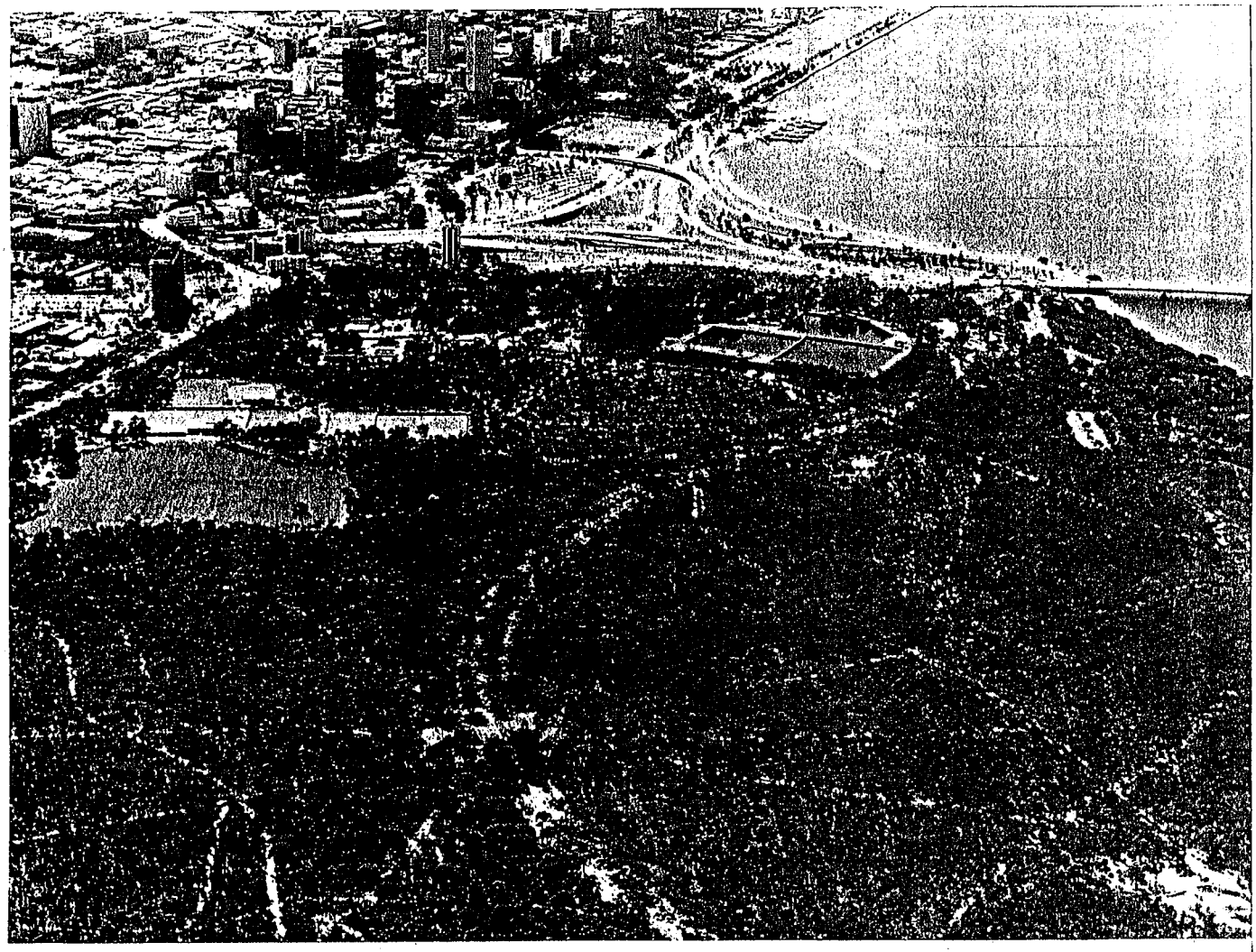
VELD GRASS CONTROL IN KINGS PARK

An Outline of Measures to Eradicate and Control Veld Grass



Kings Park Board - Western Australia January 1989

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EXECUTIVE SUMMARY

Veld grass *(Ehrharta calycina)* is the most detrimental introduced weed occurring throughout the 300 ha of bushland in Kings Park. It heavily infests road and path verges, where it chokes out and competes with the native flora, despoils the aesthetics of the bushland and creates a fire hazard.

Since the 1930's Kings Park has researched methods for controlling veld grass. In 1985 a new herbicide fusilade® was tested and showed promise for the selective eradication of veld grass.

In 1988 allocation of a special grant enabled the first large scale trial application of fusilade in Kings Park resulting in:

- selective kill of veld grass along 42 km of road and accessways in the zone upto 12 m deep penetrated by the herbicide
- enhanced regrowth of many native species after veld grass control
- improved bushland aesthetics

Fusilade provides the best means discovered so far to control veld grass in Kings Park. An eradication program should be adequately financed to enable treatment of the whole of the vulnerable area during at least two successive winter seasons, so that a good kill is obtained and veld grass regeneration from seed or underground stocks is prevented.

INTRODUCTION

Veld grass is a highly invasive alien species in the bushland and unirrigated areas of Kings Park. Nearly all the bushland is affected to some degree by veld grass with intense infestations along roads, pathways and firebreaks. Veld grass competes with herbaceous species including lilies, orchids, kangaroo paws and following bushfires, tree seedlings and resprouts of shrubs. The aggressive perennial nature and prolific seeding of veld grass ensures its continued presence on a site. Some areas in Kings Park have up to 90% of the ground cover consisting of veld grass. Although there is no definite proof that any native species has become extinct in Kings Park due to veld grass competition or the associated increased frequency and intensity of bushfires, there is strong circumstantial evidence that many attractive species such as orchids are much reduced in number and are no longer a conspicuous element in the flora.

Mr Jack Watson the then Superintendent of Kings Park surveys a heavy infestation of veld grass in Kings Park in September 1957

The Arrival of Veld Grass

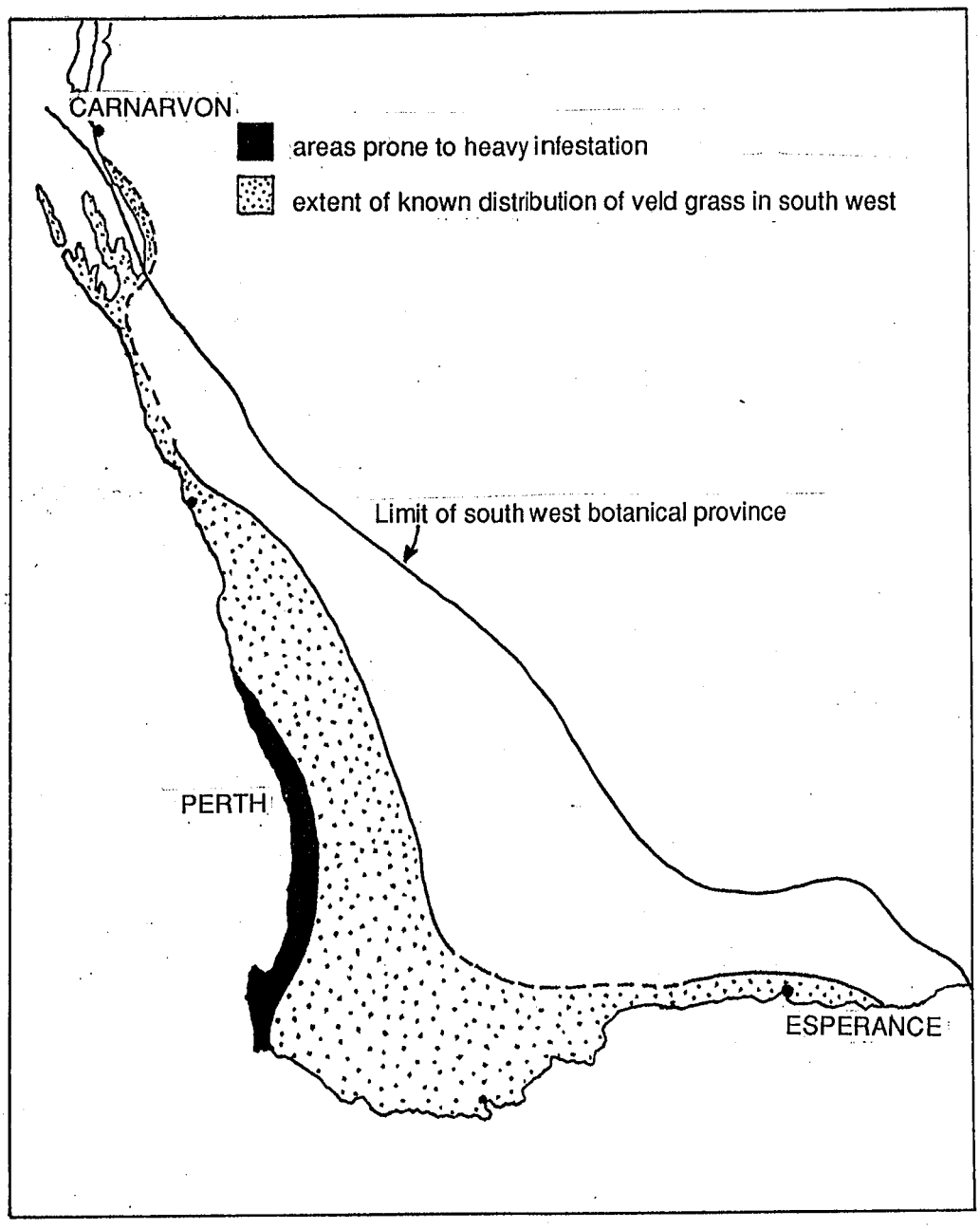
Veld grass may have been first introduced around 1900 into Western Australia from packing material or fodder bales delivered to South Guildford from South Africa.

It is uncertain when and how veld grass got its first foothold in Kings Park. By 1925 a one tenth hectare of veld grass infested bushland was observed by one Mr Grasby on a visit to Crawley. An editorial in The West Australian of July 5, 1927 comments "Accidentally, and at a date which can only be a matter for conjecture, some seed of the perennial veld grass of South Africa was deposited at the Crawley end of Kings Park." The article further comments:

"*The progress it has made without cultivation or fertiliser ..... demonstrates its amazing vitality ....*".

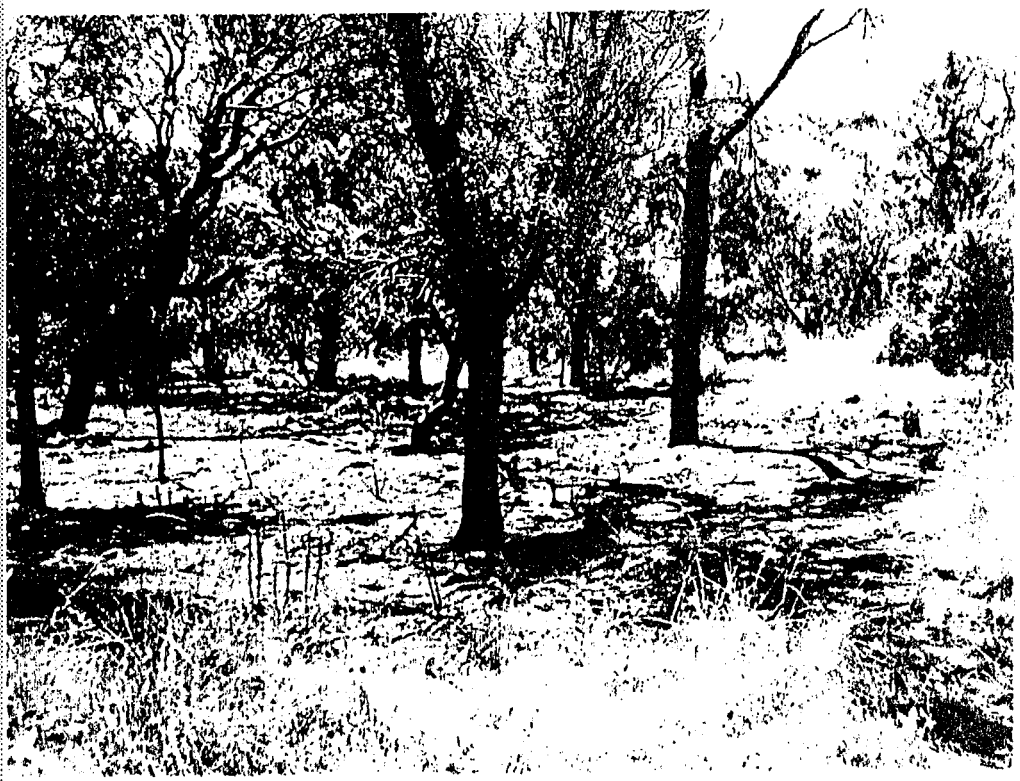
The then Superintendent of Kings Park, Mr. J. Heath actually promoted veld grass as a pasture species and sold bags of seed heads from Kings Park. In one season alone Mr Heath earned £170 in revenue from such sales to supplement the Government grant allocation. However by 1936 the tables had turned on veld grass and the Kings Park Board noted the 'alarming extent' to which it was spreading through the Park. Veld grass was both suppressing wildflowers and posing a fire risk. A policy of eradication by hand weeding of the tillers was implemented, but with little impact on the spread of the by then well established veld grass; an experience repeated as recently as the RED Scheme of the 1970's.

It is now accepted that mechanical or any other soil disturbance stimulates the growth of veld grass as



Distribution of veld grass in south west Western Australia. Veld grass prefers sandy soils and its distribution through the wheatbelt and southern agricultural areas is confined mainly to sand lenses.

does fire, the latter locking into a vicious spiral of one promoting the other.



Site at which fire was deliberately lit on 4th January 1989 showing exteme accumulation of combustible material associated with untreated veld grass.

History of Control of Veld Grass

Attempts to control veld grass by whole plant removal, mowing, grazing and applications of the herbicides available prior to 1985 such as dalapon, paraquat, aminotriozol or glyphosphate were not sufficiently selective because they damaged or destroyed native species at rates of application which controlled veld grass.

In 1985 it was suggested to the Horticultural Advisor (Kings Park Board) that fusilade, a new herbicide containing fluazifop which was used to control tropical grasses infesting a wide range of crops, might be successful against veld grass.

Part of the 1988 fusilade treated areas showing the diminished straw and other combustible material associated with veld grass. As a result, a 'breakout' fire from the devastating fire of January 4, 1989 was quickly and easily controlled.

FUSILADE EXPERIMENTS

Since 1985 Kings Park has investigated the use of fusilade and similar formulations to control veld grass. The 1985 trials were of factorial design on a small scale.

Fusilade selectively kills actively growing veld grass. The most effective control of veld grass infestations follows repeated applications of fusilade.

The only deleterious effect of fusilade observed on native species has occurred with a native grass *(Microlaena stipoides)*. This species showed temporary symptoms of chlorosis and tip scorch but quickly recovered without further growth retardation.

Fusilade was most effective when applied during winter, the period of most active veld grass growth. All growth stages of veld grass from seedlings to adult plants are susceptible to treatment with 2 to 4 litres of fusilade concentrate per hectare diluted 1:100 applied as mist or spray.

Top Infested area of veld grass being experimentally sprayed in 1985.

Bottom Same area 12 weeks later with death and self-mulching of clumps.

Veld grass three weeks after application of fusilade showing reddening of leaves prior to clump senescence.

TRIAL IMPLEMENTATION

In 1986 1 ha of veld grass infested bushland was successfully treated with a single hand sprayed application of fusilade.

Native species responded very positively in growth and flowering after death of the competing veld grass. Since then most of the 1 ha has remained free of veld grass with only a few scattered, surviving clumps of veld grass, which in practice would be killed in a mopping up round if this was not a trial to see what could regenerate in time.

The optimum rates and methods of application in particular situations have become clearer as trials have proceded.

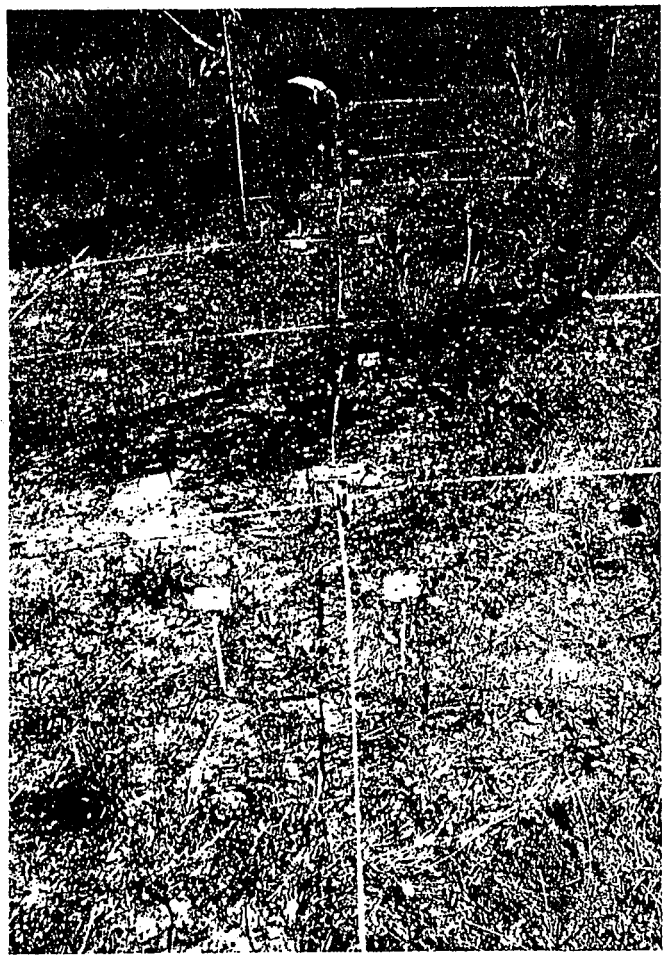
Sprayed (left hand side) and unsprayed (right hand side) 5 months after application of fusilade in the 1 ha trial in 1986. Note sporadic surviving veld grass in sprayed area and vigorous regrowth of native species.

Further trials were undertaken in 1987 using tractor mounted equipment.

A special Government grant allocation in 1988 of $30 000, of which one third was spent on capital equipment (as recommended by ICI and the W.A. Department of Agriculture), enabled about 40 ha

In 1988 following receipt of a special government grant to control veld grass special equipment and fusilade was purchased and over 42 km of roads and paths were treated.

adjacent to 42 km of roads and paths to be treated by mist application of fusilade penetrating 7 to 12 metres. Monitoring of treated areas indicated some veld grass survivors (often a result of herbicide avoidance due to wind gusts or mist shadow behind shrubs) and opportunistic post spray germinants. Although few in number the surviving plants will require follow up treatment.



Accurate scientific monitoring of past and future spray treatments used for the control of veld grass will assist in the reinstatment of veld grass free bushland in Kings Park.

FUTURE DIRECTIONS

Assuming adequate funding:

- to extend the control of veld grass to the whole of Kings Park bushland and unirrigated areas
- carry out follow up operations probably at least one more "whole park" application and thereafter localised treatments as necessary
- develop methods of bushland enrichment and enhancement following veld grass removal
- monitor results of veld grass control and bushland enrichment procedures