NATIVE VEGETATION DISEASE SURVEY OF PART OF THE NEERABUP NATIONAL PARK AND YANCHEP NATIONAL PARK.

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NATIVE VEGETATION DISEASE SURVEY OF PART OF THE NEERABUP NATIONAL PARK

Background

The survey area is a segment of native vegetation adjacent to, and west of Wanneroo Road, north of the Ocean View Tavern and south of Nowergup Road. The survey was initiated to determine whether recent deaths in *Banksia attenuata* and *Banksia menziesii* adjacent to Wanneroo Road were due to *Phytophthora cinnamomi* infestation, and if so, whether the recent road works may have been a pathogen vector.

A field assessment was conducted on 21 March 2001. This consisted of traversing the survey area and observing susceptible native species for secondary symptoms of infestation and chronological disease expansion. Two soil and root tissue samples were recovered from susceptible species displaying secondary symptoms and processed by the Conservation and Land Management Vegetation Health Services laboratory.

Results

Sample 1 was recovered from *B. attenuata, B. menziesii* and *Dryandra sessilis* directly west of the Ocean View Tavern and adjacent to the 132KV power line easement at AMG coordinates 379 800E 6 497 546N. The sample returned a positive result for *Phytophthora nicotianae*. There was some evidence of *Armillaria luteobubalina* mycelium in the root and stem cambium of one *B. menziesii*, although identification was not conclusive.

Sample 2 was recovered from several *B. attenuata* and *B. menziesii* adjacent to Wanneroo Road and the power line easement approximately in the centre of the survey area at AMG coordinates 379 700E and 6 497 750N. The sample returned a negative result. There was some evidence of *Armillaria luteobubalina* mycelium in the root and stem cambium of three Banksias.

Discussion

The majority of the deaths at sample site one were attributed to drought during the field survey, as the site is within a vegetation transition zone between Banksia woodland and low heath on shallow soils over limestone. It is probable that the majority of secondary symptoms are due primarily to drought, with only one small area (five metres in diameter) displaying evidence of chronological disease expansion. It is highly improbable that the pathogen was vectored during the recent road works as the sample site is more than 30 metres from the road. Possible pathogen vectors include past road works (including the initial construction), the establishment and

continued access on the power line easement, and the apparent illegal dumping of soils and vegetative matter.

There was no evidence of chronological disease expansion at sample site two (adjacent to the power line easement) consistent with *P. cinnamomi* infestation. As there was no recovery of *P. cinnamomi*, it is probable that the symptoms are due to *A. luteobubalina*. Possible pathogen vectors include the establishment and continued access on the power line easement and the apparent illegal dumping of soils and vegetative matter.

There were several recent deaths in *B. attenuata* and *B. menziesii* adjacent to the recent road works that were attributed to mechanical damage and root disturbance from drainage works. It was considered that it would take several years for any vectored Phytophthora inoculum to express.

Conclusion

There was no conclusive evidence for the presence of *P. cinnamomi*, which was supported by negative sample returns. There was conclusive evidence for *P. nicotianae* at Sample Site 1, which appeared to be having a negative impact on vegetative health. The majority of susceptible species deaths were attributed to drought, root disturbance, or possible *A. luteobubalina* infestation (or a combination of these factors).

There was no evidence to indicate that recent road works on Wanneroo Road have introduce *Phytophthora* inoculum, and it is probable that inoculum vectoring has been caused in the past by either road works (including the initial construction), the establishment and continued access on the 132KV power line easement, or the apparent illegal dumping of soils and vegetative matter.

It is probable that any vectored inoculum from the recent road works will take many years to express secondary symptoms and observable chronological disease expansion.

NATIVE VEGETATION DISEASE SURVEY OF PART OF THE YANCHEP NATIONAL PARK

Background

The survey area is approximately two hectares of native vegetation west of Private Property Location 55 and south of Old Yanchep Road. The survey was initiated to determine whether deaths in Phytophthora susceptible species were caused *Phytophthora cinnamomi* infestation.

A field assessment was conducted on 21 March 2001. This consisted of traversing the survey area and observing susceptible native species for secondary symptoms of infestation and chronological disease expansion. One soil and root tissue samples was recovered from susceptible species displaying secondary symptoms and processed by the Conservation and Land Management Vegetation Health Services laboratory.

Results

Sample 3 (Samples 1 and 2 at previous site) was recovered from *Banksia grandis* and *Banksia menziesii* displaying secondary symptoms of infection, at AMG coordinates 376 424E 6 507 138N. The sample returned a negative result for Phytophthora. There was some evidence of chronological disease expansion at the sample site, indicative of an infestation approximately five metres in diameter. Assessment was partially impeded due to relatively recent fire.

Discussion

There are many deaths in *Eucalyptus marginata* (Jarrah), *B. grandis* and *B. menziesii* that were not attributed to Phytophthora due to lack of chronological disease expansion, and predominantly sequential decline in individual Banksia crowns (Phytophthora infection results in complete, simultaneous individual crown deaths). The chronological order of deaths over the survey area has been mature Jarrah and large mature Banksias, followed by younger/smaller Banksia.

It was considered that the pattern of species deaths may be indicative of drought caused by a falling water table, resulting in high impact in larger, deep rooted trees that are dependant on this water, and the low impact of trees more dependant on soil moisture in the upper soil profile. It may be possible that the extraction of ground water for adjacent market gardens has resulted caused this decline.

Conclusion

There was no conclusive evidence for the presence of *P. cinnamomi*, which was supported by negative sample return. There are some secondary symptoms consistent with a small Phytophthora infestation (less than five metres in diameter) at the sample site, and resampling could be considered once the effects of recent fire have passed (spring 2002).

The majority of deaths within the survey appear to be due to drought, possibly caused by a falling water table. It is beyond the scope of this survey to determine whether this is the case, and confirmation or negation will require further investigation.