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**Thelymitra "Ahipara" AN
ENDANGERED ORCHID TRANSFERRED,
NOTES ON ITS TAXONOMIC STATUS,
DISTRIBUTION AND ECOLOGY**

by

P.J. de Lange, G.M. Crowcroft and L.J. Forester

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***Thelymitra* "Ahipara" AN
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WITH NOTES ON ITS TAXONOMIC STATUS,
DISTRIBUTION, AND ECOLOGY**

Report to the Regional Conservator, Northland

by

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ABSTRACT

Thelymitra "Ahipara" is an undescribed sun-orchid, one of the two New Zealand members of the genus which display significantly unusual characteristics and which are taxonomically quite different from other New Zealand *Thelymitra* species. Its wetland habitat in the Aupouri Ecological District came under immediate threat in 1987, and the plant was listed as endangered by the IUCN. Plants were transferred to wetlands at Lake Ohia and the Ahipara gumfields. Continued survival of the transferred population is dependent on regular monitoring. An immediate search for possible additional populations is essential. This report discusses the taxonomic status, distribution, and appropriate conservation status of *Thelymitra* "Ahipara" and suggests what field work is required now.

1 INTRODUCTION

Thelymitra "Ahipara" is a distinct undescribed sun-orchid presently considered endemic to the Aupouri Ecological District (Simpson, 1982) of the Far North (Fig. 1). It was discovered near Ahipara by Brian Molloy (DSIR Land Resources) and Doug McCrae (New Zealand Orchid Group, Conservation Officer) in November 1987, and appeared confined to a 3.75 ha swamp, amongst dunes, on private land. For this reason it was given an IUCN ranking of "endangered" and listed accordingly by Given (1990).

In October 1990 a visit to the Ahipara site was made by the authors and Doug McCrae. We were disturbed to find that the swamp was being cleared prior to drainage. The landowners¹ advised that the conversion of the swamp to pasture would be completed within the following three months. At that time we believed that this action could possibly lead to the extinction of *Thelymitra* "Ahipara", especially since previous searches of similar wetlands had failed to find any further populations of it (D.P. McCrae pers. comm. 1990).

¹ Throughout our negotiations with the landowners they required that their anonymity be preserved.

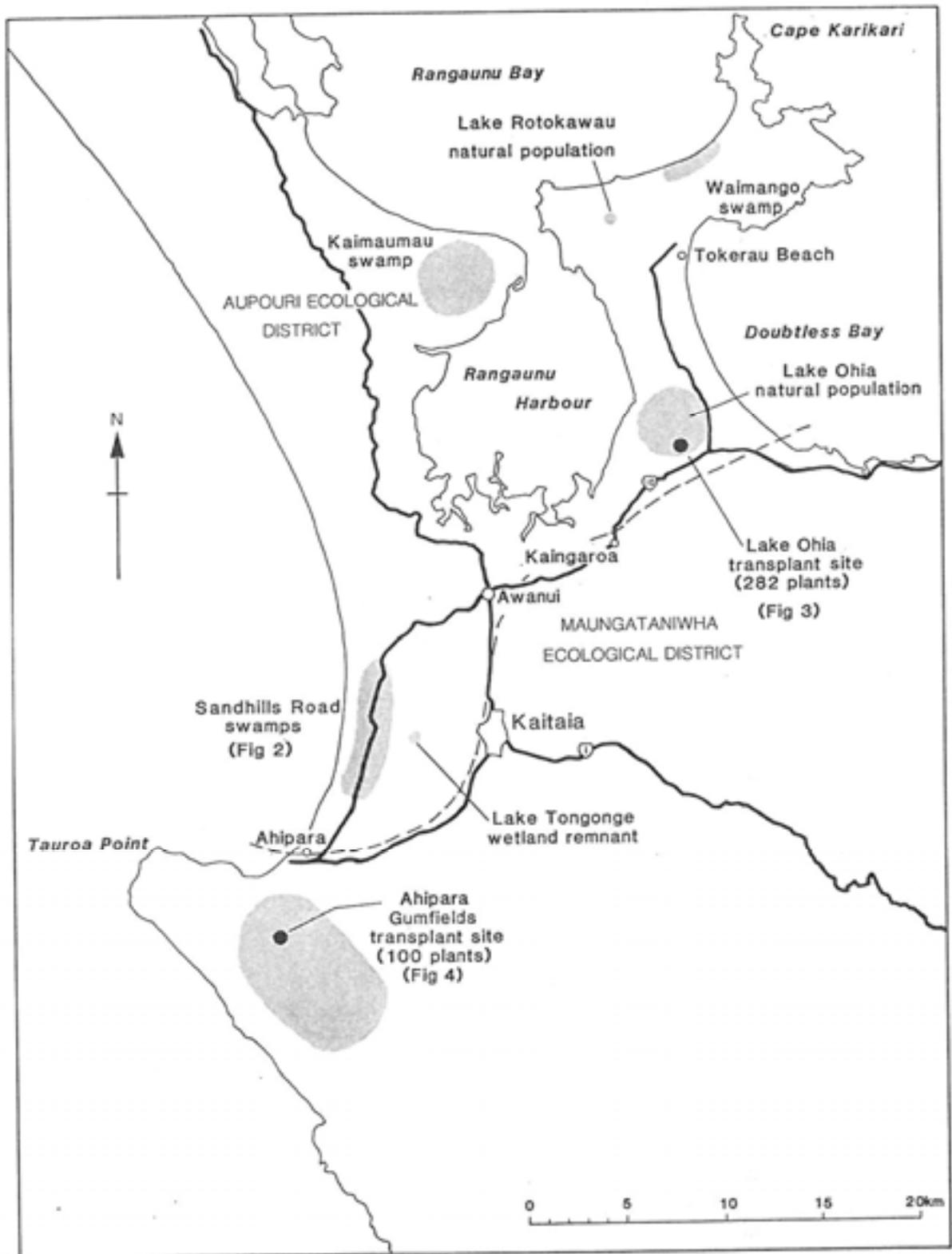


Fig. 1. The major wetlands of the Aupouri and Maungataniwha Ecological Districts.

As the plant is one of the most threatened within the Northland Conservancy, immediate action was required to ensure the orchid's survival. It was decided that the transfer of plants from the Ahipara site to areas of suitable wetland was necessary. In total, 382 plants were uplifted and transferred to the DOC reserves at Lake Ohia (282 plants) and the Ahipara Gumfields (100 plants) (see Fig. 1).

Other wetlands on the DOC estate were surveyed to see if other natural populations of *T. "Ahipara"* were present. Two such populations were discovered, one at Lake Ohia and the other near Lake Rotokawau. The Ohia population of c. 50 plants constitutes the only known formally protected population of this taxon. As a further precaution, plants from Ahipara are now held at the Botany Department, University of Auckland, and Percys Reserve, Petone (administered by the Lower Hutt City Council).

This report discusses the taxonomic status, distribution, ecology, transfers undertaken, and appropriate conservation status of *Thelymitra "Ahipara"*. It is recommended that a more comprehensive survey of Lake Ohia and the Waimango Swamp (Karikari Peninsula) be carried out for this orchid and that regular monitoring of the transfer site undertaken by the Conservancy.

2 TAXONOMIC STATUS, DISTRIBUTION, AND ECOLOGY

2.1 Taxonomic status

Thelymitra is essentially an Australasian genus with some species extending to the Philippines (Moore & Edgar 1970). At present the Australasian taxa are undergoing systematic revision; consequently the relationship of *Thelymitra "Ahipara"* to Australian members of the genus is still uncertain. In the interim, it seems wise to treat the taxon as a possible New Zealand endemic (B.P. Molloy pers. comm. 1991), a course which has been adopted here.

Thelymitra "Ahipara" is related to another undescribed sun orchid known as *Thelymitra "darkie"*. Both taxa are distinct from other New Zealand members of *Thelymitra* and while they share some features in common such as the same chromosome number and a similar breeding system, they differ significantly in morphology, time of flowering and habitat (B.P. Molloy pers. comm. 1991).

2.2 Distribution

Prior to our survey, *Thelymitra "Ahipara"* was recognised only from the Sandhills Road Swamp (see Fig. 2), a 3.75 ha wetland formed between a series of north-south aligned dunes. The swamp is a remnant of a once extensive series of wetlands associated with Lake Tongongoe (Carse 1926).

Within this wetland *Thelymitra "Ahipara"* was common, dominating c.75-80% of the wetland. Other significant orchids recorded from this wetland were the endangered *Thelymitra malvina* (Given 1990), and the undescribed *Thelymitra "darkie"*.

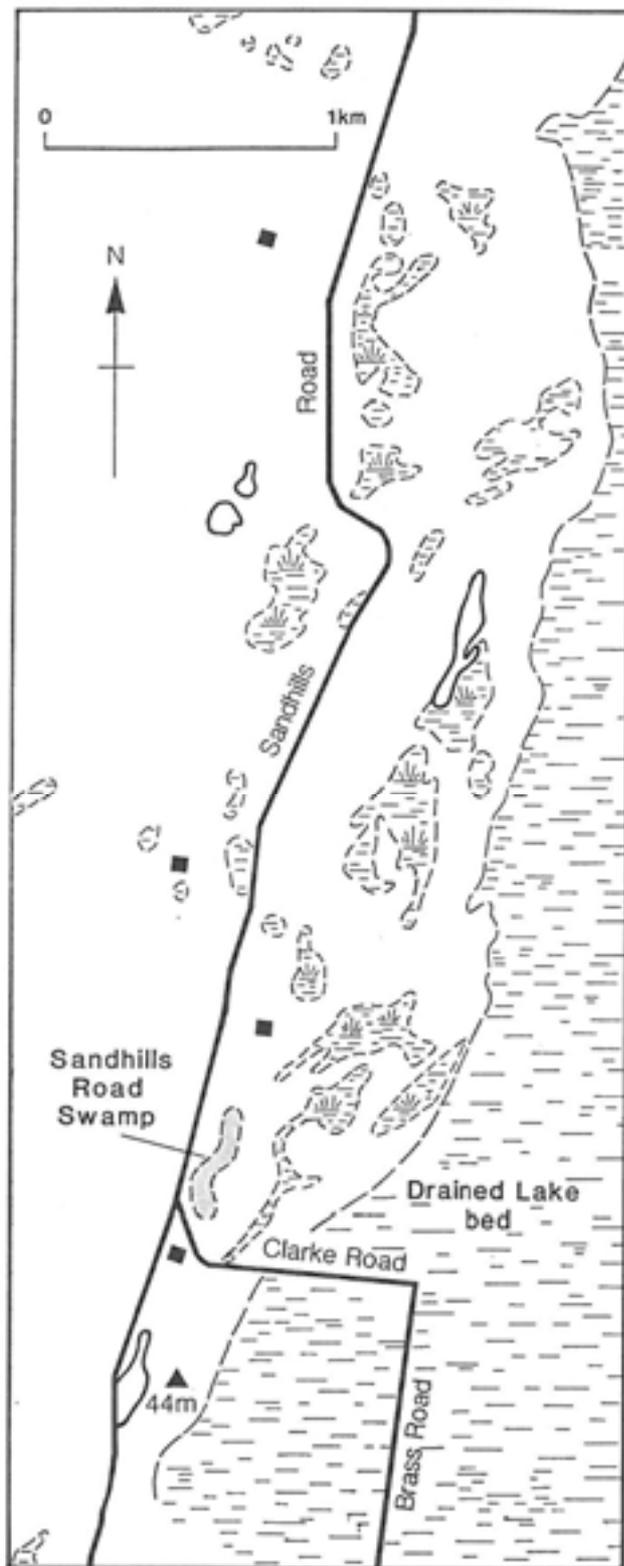


Fig. 2. The Sandhills Road Swamp and associated wetlands surveyed for *Thelymitra* "Ahipara".

Subsequent to the survey, two further populations of *Thelymitra* "Ahipara" were discovered on the Karikari Peninsula: at Lake Ohia, and within a swampy paddock adjacent to Lake Rotokawau (Fig. 1). The occurrence of *Thelymitra* "Ahipara" at Lake Ohia, while suspected by McCrae (pers. comm. 1990), was only confirmed when juvenile specimens of a *Thelymitra* gathered from there by McCrae in December flowered and were positively identified as *T.* "Ahipara" in November 1990.

At Ohia, plants occupy a number of sites and are probably quite widespread. However, as the lake was flooded during our visit we were unable to conduct a thorough investigation of the area McCrae had surveyed in 1988. Nevertheless, we were able to identify c. 50 plants in a small area to the north of the Ohia drain (see Fig. 1 and 3). Lake Rotokawau we found 10 plants associated with *Thelymitra pauciflora* in a reverting, cattle pugged paddock near the Puheke Beach road (Fig. 1).

2.3 Ecology

Ecologically, *Thelymitra* "Ahipara" is distinguished from most other New Zealand swamp-dwelling sun orchids by its ability to inhabit wetlands with a seasonal flooding regime and a mesic or oligotrophic nutrient status. Plants are able to tolerate total immersion, with extreme examples observed flowering as emergents from pools of water at Lake Ohia. This feature of *Thelymitra* "Ahipara" is useful in distinguishing the plant from the closely related *Thelymitra* "darkie" which will tolerate drier ground.

Thelymitra "Ahipara" otherwise, seems to have no immediately obvious habitat requirements, with plants found in a number of different vegetation types and densities. For example, the Sandhills Road Swamp, prior to the 1990 development, was vegetated with a dense 0.8-1 m tall manuka (*Leptospermum scoparium*) scrubland (McCrae pers. comm. 1990). In contrast, specimens at Ohia were found in a number of sites ranging from fully exposed situations amongst rotting kauri (*Agathis australis*) stumps, to shaded soak-holes amongst manuka and sedges.

Plants are usually found in colonies varying from between 4 and 30 plants. This is because the taxon, although self-fertile and producing abundant seed, also reproduces asexually by tuber offsets from the parent plant. In cultivation, plants appear to have a brief dormancy of one to two months before vegetative growth commences. The inflorescences first appear in early October and develop rapidly, reaching maturity by mid-November. As the taxon is predominantly bud-pollinated, open flowers were rarely found and of the few examples seen, none were fully expanded.

3 *Thelymitra* "Ahipara" TRANSFER SITES

Our decision to transfer the *Thelymitra* "Ahipara" was governed by our obligation to protect it from extinction. When it became evident that development of the swamp would result in the orchid's extirpation from that site, it was felt that its transfer to other suitable localities was a justifiable action.

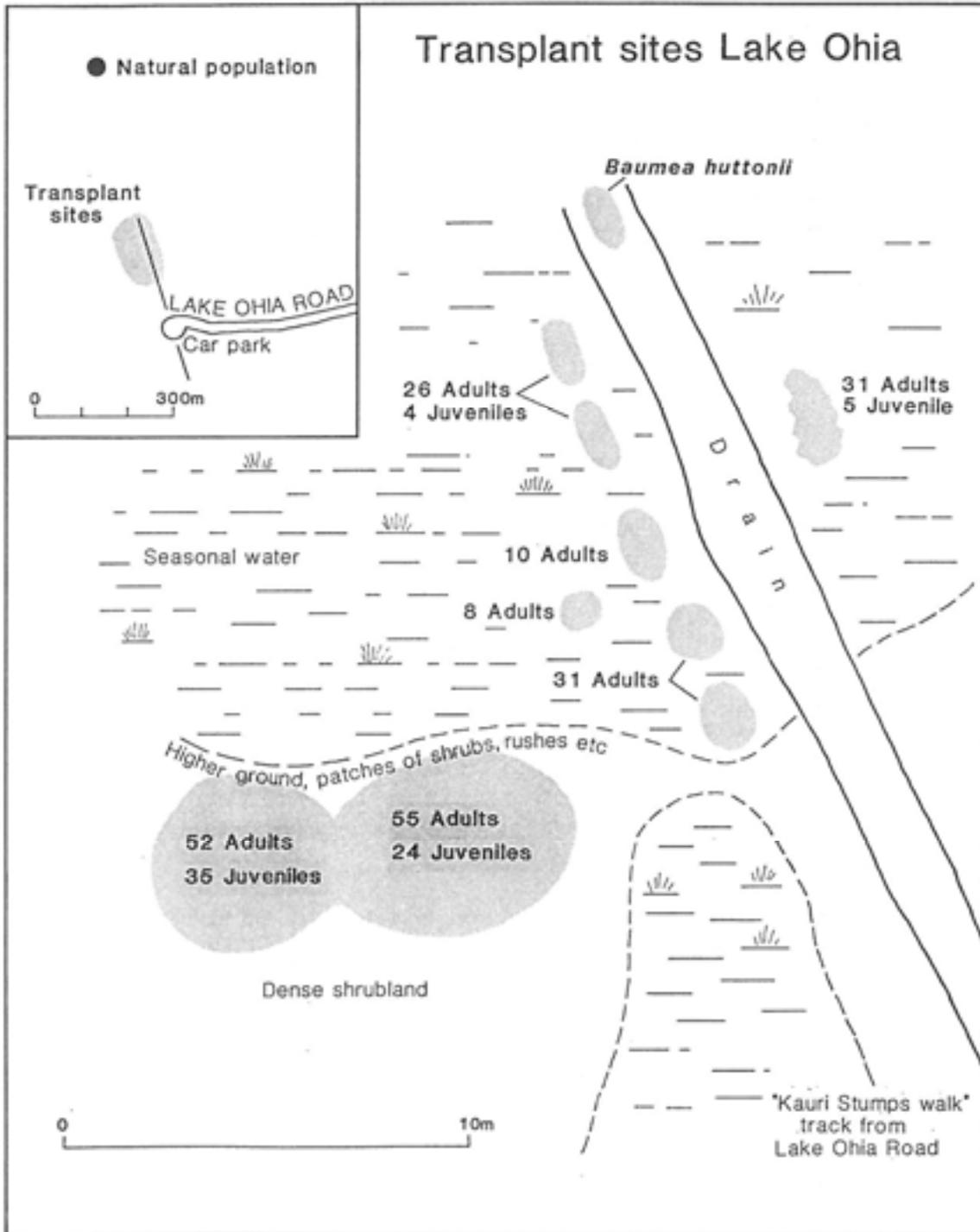


Fig. 3. Plan of the Lake Ohia transplant site.

3.1 Background considerations

While transfers of New Zealand fauna are relatively common place (Bell 1989; Atkinson 1990: appendix 2 p.89), specific transfers involving our flora are not. One reason for this is that there have been few situations in which transfers of threatened plants have been required. Moreover, there is a strong feeling that transfers should be strictly controlled on the basis of ecological, genetic and ethical grounds (see Godley 1972; Timmins & Wassilieff 1984).

It could be argued that transfers may disrupt existing plant communities and alter the natural distribution of *T. "Ahipara"*. From our survey it seemed that we were already dealing with a fragmented population implying that the orchid was once widespread in wetlands of the southern Aupouri Ecological District. Therefore, any transfers undertaken would have little impact on what is already an artificial distribution. Furthermore, it is quite probable that in time the taxon will be found elsewhere in suitable habitats. Nevertheless, it was agreed that any transfers undertaken should, as near as possible, reflect our present understanding of the orchid's distribution.

Ecologically *Thelymitra "Ahipara"* occupies a niche poorly utilised by other *Thelymitra*. Therefore any transfer undertaken would be unlikely to significantly alter any existing orchid flora or plant community.

New Zealand species of *Thelymitra* rarely hybridise, primarily because the majority are predominantly self-pollinating and self-fertilised (Molloy 1990). Furthermore, as an autogamous species, seeds are produced by self-fertilisation, and there is little if any variation among individuals of a population (Molloy 1990).

On both ecological and genetic grounds the intended transfer of *T. "Ahipara"* was considered as having a low impact on the natural vegetation and orchid flora of the selected sites.

3.2 Selection of transfer sites

The main factor governing the selection of a transfer site(s) was the availability of suitable habitat within the Aupouri Ecological District. Obviously, if we were to avoid a repeat of the current situation, we felt it was imperative that the transfer site(s) should be based on wetlands administered by the Crown. Unfortunately, the southern end of the Aupouri Ecological District has undergone a significant level of development with few wetlands retaining their indigenous flora. Of those wetlands controlled by DOC, few were of comparable trophic status to the Sandhills Road Swamp.

In addition, our choices were severely constrained by time. The owners of the Road Swamp were only prepared to delay further development for a maximum of two days. We were, therefore, forced to conduct a survey and also prepare for a transfer should we fail to find any further *Thelymitra "Ahipara"* populations.

3.3 The survey

Our survey initially concentrated on the Western Ahipara Coastline, in the vicinity of Sandhills Road site (see Fig. 2) and extended southward to the Ahipara Gumfields (Maungataniwha Ecological District), on the recommendation of McCrae (pers. comm. 1990). These Gumfields are known for the diverse orchid flora and therefore seemed an appropriate area to search for *Thelymitra* "Ahipara". These areas, although in separate Ecological Districts (Simpson 1982), have strong floristic affinities.

It became apparent that the orchid's restriction to the Sandhills Road Swamp was not natural but a consequence of farming practices. *Thelymitra* orchids are eaten by sheep (*Ovis aries*) and rarely by cattle (*Bos taurus*). While the farms adjacent to the Sandhills Road Swamp ran sheep; the owners of the Sandhills Road Swamp had always run cattle. As a result of this discovery and the news from McCrae of the possibility of a population at Ohia, we widened our survey areas to include the Karikari Peninsula (see Fig. 1). Unfortunately, by this stage time had run out and we found ourselves forced to undertake the transfer.

3.4 Lake Ohia Reserve

This area reserves an extensive wetland recognised as an important refuge for a large number of threatened plants, most notably it is the New Zealand stronghold of the endangered sun-orchid *Thelymitra malvina*.

Although known as "Lake Ohia", the lake is, in effect, an ephemeral phenomenon appearing briefly after periods of heavy rain. For much of the year the lake has little standing water, leaving exposed areas of dark black, resiniferous peat and kauri stumps, with large areas of sedgeland dominated by *Schoenus tendo*. The wetland vegetation supports a diverse orchid assemblage which, together with the wetlands of the Ahipara Gumfields and Kaimaumu, are the most significant in the Aupouri Ecological District.

As a wetland with similar habitat conditions to those of the Sandhills Road Swamp, Ohia was considered the most suitable of the DOC administered wetlands surveyed, a view supported by recent findings.

With the approval of John Beachman (Protection Manager, DOC, Northland) specimens (213 adults² and 69 juveniles) of *Thelymitra* "Ahipara" were planted c. 1 km southeast of the natural "Ahipara" population in a variety of vegetation associations ranging from open peat to shaded soak holes (Fig. 3). Attempts were also made to establish plants within the partially rotted kauri stumps, as this was one of the habitats occupied by "Ahipara" elsewhere at Ohia (see under Distribution). All plantings were made in sites where the mean water table was at or near the ground surface, in an attempt to duplicate as near as possible the growing conditions of the Sandhills Road Swamp.

² An "adult" was defined as any plant bearing an inflorescence.

As the majority of plants were in flower, the inflorescences were removed to reduce stress on most of the transferred plants; however, some were left in the hope that these may produce seed. Many of the excised inflorescences were retained as vouchers and lodged in the following herbaria, AK, WELT and CHR (acronyms follow Wright 1984).

3.5 Ahipara Gumfields Historic Reserve

This extensive area of gumland vegetation has never been thoroughly surveyed by botanists. The enormity of surveying this area under the time constraints given was recognised as being unrealistic. It therefore was decided to consult McCrae, as the recognised orchid authority of the area, before any transfers or further surveys were undertaken. As a result, one hundred plants of *Thelymitra* "Ahipara" were transferred to the Ahipara Gumfields by L.J. Forester and McCrae toward the end of November (Fig. 4). Two sites were selected by McCrae within a small, relatively open area of sedgeland. Specimens were planted in the same manner as prescribed for Ohia.

3.6 Other sites surveyed

At the suggestion of Bruce Waddell (DOC Northland, Kaitia Field Centre) a visit was made to the Lake Tongongone wetland remnant (see Fig. 1). This wetland is in a eutrophic condition supporting a diverse assemblage of mainly adventive species, and is clearly not a suitable site for *Thelymitra* "Ahipara".

4 CONSERVATION STATUS OF *Thelymitra* "Ahipara"

It is possible that further populations of *Thelymitra* "Ahipara" will be discovered, and it is not known how successful the transfers will be. However, if one assumes destruction of the Sandhills Road Swamp will result in the extirpation of that population of the orchid and that our transfers failed, then current knowledge would register *T.* "Ahipara" from only two localities, comprising a total population of c. 60 individuals. Only one of these sites, Ohia, with a population of c. 50 plants is administered by DOC.

Thirty-three specimens are known in cultivation from collections³ held at the University of Auckland (6); Percy Reserve, Petone (16); DSIR Land Resources, Botany Institute Experimental Gardens (6); and McCrae's residence in Avondale, Auckland (5).

We consider that the current IUCN ranking of "endangered" is still appropriate.

³ Numbers of plants held are given in parentheses after each collection name.

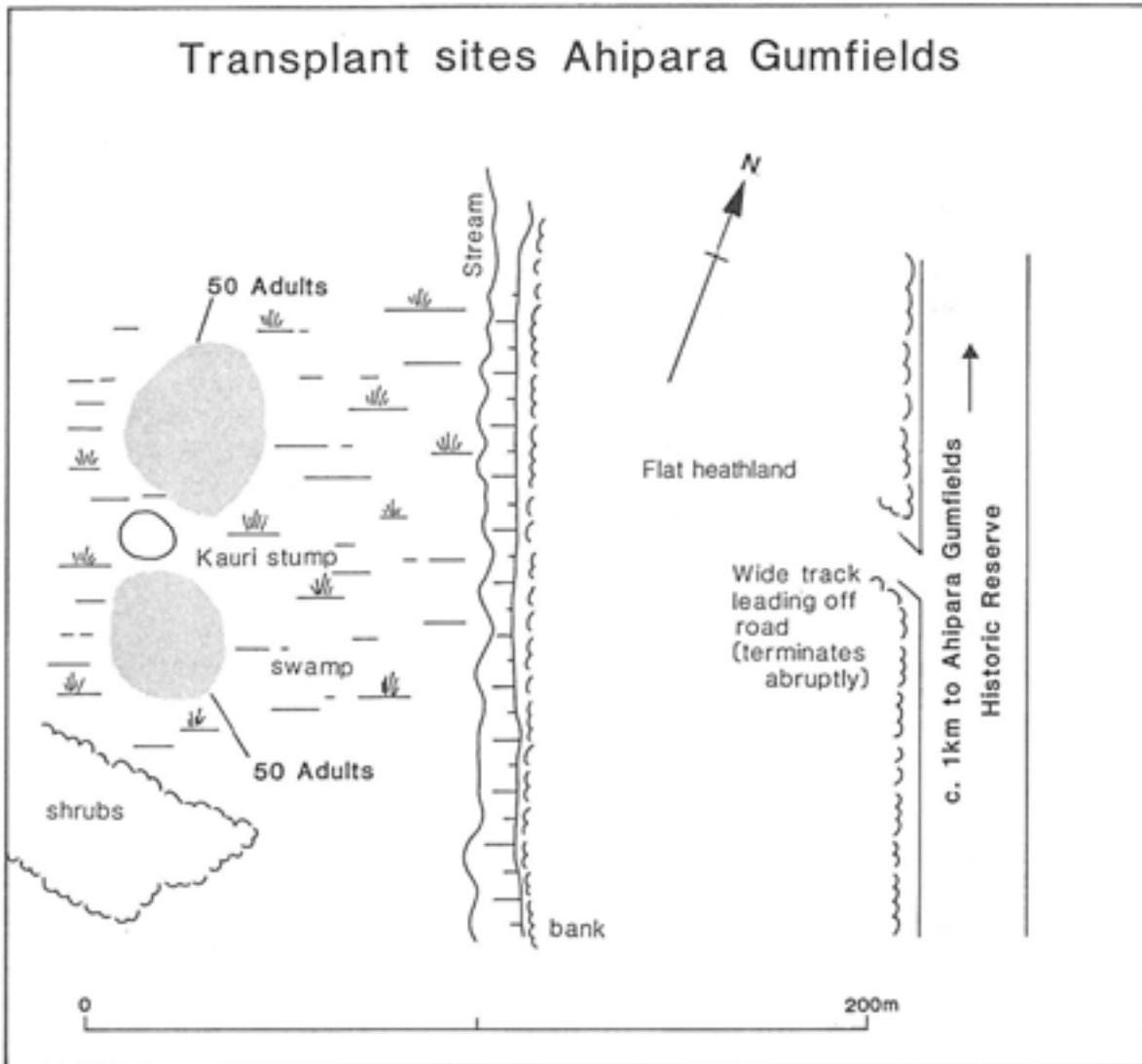


Fig. 4. Plan of the Ahipara transplant sites.

5 RECOMMENDATIONS

We believe that a programme of regular monitoring and survey is required, as a follow-on from the transfers and surveys conducted during November 1990. Monitoring of the transfer sites should be carried out in November 1991 when the species is flowering and therefore, most conspicuous. This would involve about two days field time. Depending on the results of these transfers, monitoring of both sites should be continued on an annual basis for at least the first three years to obtain data on the success or failure rate of the transplants.

The discovery of *Thelymitra* "Ahipara" populations at Ohia and Rotokawau strongly suggests the species will be found in similar wetland habitat elsewhere in the district. In particular, the Waimango Swamp (Fig. 1) should be surveyed for *Thelymitra* "Ahipara".

This wetland is the second largest unmodified wetland on the Karikari Peninsula, and furthermore, is part of the DOC estate.

A comprehensive orchid survey of Lake Ohia and the swamp adjoining Rotokawau is also needed. We believe that the total population at Ohia is much larger and confirmation of this is needed urgently to help accurately define the species' conservation status. Less urgent, but also advisable, is the completion of the orchid surveys initiated by McCrae at Kaimaumau and the Ahipara Gumfields.

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