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RECORDS OF TERMITES ATTACKING POWER POLES IN SOUTH-EASTERN QUEENSLAND

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SUMMARY

The incidence and distribution of termites in wooden power transmission poles in south-eastern Queensland have been recorded. During a 2-year survey of an estimated 70 000 poles, 11 species—*Bifiditermes condonensis* (Hill), *Neotermes insularis* (Walker), *Cryptotermes primus* Hill, *Coptotermes acinaciformis* (Froggatt), *Coptotermes frenchi* Hill, *Schedorhinotermes intermedius seclusus* (Hill), *Nasutitermes exitiosus* (Hill), *Nasutitermes walkeri* (Hill), *Nasutitermes magnus* (Froggatt), *Amitermes lativentris* (Mjoberg) and *Microcerotermes turneri* (Froggatt)—were identified from 91 untreated poles of high durability timber species. *C. acinaciformis* was the most destructive termite.

I. INTRODUCTION

Termite attack is a major hazard to the wooden poles used to support electric power transmission lines in Queensland, and preventive measures form a part of normal maintenance. Between August 1963 and February 1965 poles in service in south-eastern Queensland were examined during routine maintenance inspections. When poles were found to be affected by termites samples were taken for identification of the species responsible. The survey reported in this paper was timed to coincide with a change from pole timbers of high natural durability to less durable timbers having the sapwood zone impregnated with non-leachable copper-chrome-arsenate salts as a preservative. Treated poles were identified by the residual green colour and these were omitted from this survey.

II. LOCALITY RECORDS FOR TERMITE SPECIES

Kalotermitidae: *Bifiditermes condonensis* (Hill)—Victoria Pt. 25 Mar 64. *Neotermes insularis* (Walker)—Samsonvale, 19 Aug 63; Umbiram, 11 Jan 64; Peak Crossing, 6 Nov 64. *Cryptotermes primus* (Hill)—Killarney, 25 Nov 64.

Rhinotermitidae: *Coptotermes acinaciformis* (Froggatt)—Mt. Walker, 7 Aug 63; Gatton, 1 Aug 63; Lake Clarendon, 31 Jul 63; Stanthorpe, 8 Aug 63; Ravensbourne, 3 Sep 63; Withcott, 6 Sep 63; Tarome, 25 Sep 63; Mt. Alford, 16 Oct 63; Mutdapilly, 22 Oct 63; Nambour, 26 Jul 63, 29 Jul 63; Mapleton, 23 Jul 63; Hunchy, 26 Jul 63; Paynter's Ck, 19 Jul 63; Southport, 13 Nov 63; Coleyville, 6 Nov 63; Victoria Pt, 6 Feb 64; Toorbul Pt, 11 Sep 63; Caboolture, 11 Sep 63; Warwick, 17 Feb 64, 3 Jun 63; Bromelton, 18 Aug 64;

Harrisville, 26 Oct 64; Kalbar, 22 Jan 65; Radford, 8 Aug 65; Dugandan, 26 Feb 65; Currumbin, 18 Mar 65. *Coptotermes frenchi* (Hill)—Yarranlea, 23 Sep 63; Capalaba, 11 May 64. *Coptotermes* sp.—Bilinga, 17 Mar 64; Tannymorel, 12 Nov 64; Reesville, 18 Jan 65; Tarome, 4 Mar 66. (Almost certainly *C. acinaciformis* but samples contained only worker caste specimens). *Schedorhinotermes intermedius seclusus* (Hill)—Mapleton, 23 Jul 63; Nambour, 29 Jul 63; Bilinga, 3 Mar 64, 16 Mar 64; Kirra, 7 Apr 64; Chillingham, 5 Apr 64; Murwillumbah, 26 Mar 65.

Termitidae: *Nasutitermes exitiosus* (Hill)—Biddeston, 19 Sep 63; Melrose Crossing (Condamine R.), 5 Dec 63; Umbiram, 17 Jan 64; Greenmount (Darling Downs), 22 Feb 64. *Nasutitermes walkeri* (Hill)—Goombungee, 2 Aug 63; Closeburn, 7 Aug 63; Mt. Walker, 8 Aug 63; Woodhill, 8 Mar 63; Nambour, 19 Jul 63; Cleveland, 28 Aug 63; Coleyville, 23 Sep 63; Kent's Lagoon, 27 Sep 63; Thornlands, 7 Oct 63; Tarome, 22 Oct 63; Mutdapilly, 22 Oct 63; Toowoomba, 30 Oct 63; Rosalie Plains, 1 Nov 63; Peak Crossing, 2 Dec 63; Bundamba, 2 Dec 63; Waraperta, 17 Dec 63; Wilson Plains, 14 Jan 64; Redland Bay, 13 Apr 64; Caloundra, May 64, 18 May 64; Tweed Heads, 26 May 64; Mt. Sturt, 7 Sep 64; Rochton, 10 Nov 64; Killarney, 25 Nov 64; French's Ck, 4 Jan 65; Bunjergen, 22 Jan 65; Tugun, 24 Feb 66; Tweed Heads, N.S.W., 2 Apr 65; Cobaki, N.S.W., 31 May 65; Condong Range, N.S.W., 14 Oct 65; Kingscliff, N.S.W., 28 Feb 66; Currumbin, 20 Apr 66; Mt. Carmel, 22 Apr 66. *Nasutitermes magnus* (Froggatt)—Tarome, 21 Aug 63. *Amitermes lativentris* (Mjoberg)—Harrisville, 29 Oct 64. *Microcerotermes turneri* (Froggatt)—French's Ck, 22 Jan 65. *Microcerotermes* sp.—Thornlands, 28 Oct 63; Redland Bay, 11 May 64; North Arm., N.S.W., 26 Mar 65. (Either *M. turneri* or *M. serratus* (Froggatt); samples contained only worker caste specimens).

III. TIMBER SPECIES

Identification of timber samples from 28 infested poles showed white ironbark *Eucalyptus drepanophylla* (19) to be the most common species. Others were *E. siderophloia* (1), *E. crebra* (1), *E. microcorys* (1), *E. trachyphloia* (2), *E. gummifera* (3), *E. major* (1). This sample reflects the normal proportions of timber species used for poles in the area.

IV. DAMAGE

At the time of sampling, the occurrence of damage was recorded for both heartwood and sapwood. Results are summarized in Table 1.

V. DISCUSSION

The 91 samples examined came from infested poles reported by maintenance gangs during the period of the survey. The number is surprisingly low despite rigorous attention to prophylactic procedures including the liberal use of creosote and the high natural durability of the timber species. It represents an annual rate of attack of only 0·13% of the total number of poles in service at the time.

TABLE 1

OCCURRENCE AND NATURE OF DAMAGE BY TERMITES TO WOODEN POLES OF ELECTRIC POWER TRANSMISSION LINES, SAMPLED BETWEEN AUGUST 1963 AND FEBRUARY 1966 IN SOUTH-EASTERN QUEENSLAND

Termite Family	Termite	Number Poles	Surface Damage	Sapwood Galleried	Heartwood Galleried	Remarks
Kalotermitidae	*Bifiditermes condonensis* (Hill)	1	..	1	..	
	Neotermes insularis (Walker)	3	..	3	3	
	Cryptotermes primus Hill	1	..	1	..	
Rhinotermitidae	*Coptotermes acinaciformis* (Froggatt) ..	28	5	23	22	4 poles required replacement
	Coptotermes frenchi Hill	2	2	..	..	
	Coptotermes sp. ..	4	1	2	3	
	Schedorhinotermes intermedius seclusus (Hill)	7	2	5	2	1 pole required replacement
Termitidae ..	*Nasutitermes exitiosus* (Hill)	4	4	..	..	
	Nasutitermes magnus (Froggatt) ..	1	1	..	..	
	Nasutitermes walkeri (Hill)	35	25	4	6	
	Amitermes lativentris (Mjoberg) ..	1	1	..	..	
	Microcerotermes turneri (Froggatt)	1	1	..	..	
	Microcerotermes sp.	3	1	2	2	
	TOTALS	91	43	41	38	

The most destructive and widespread termite species in the area was *Coptotermes acinaciformis* and, together with the other less common *Coptotermes,* it was responsible for 34 of the 91 instances of attack. An additional seven poles were attacked by another Rhinotermitid, *Schedorhinotermes intermedius seclusus,* but this species was restricted to coastal areas. Damage by *C. acinaciformis* necessitated the replacement of four poles while *S. intermedius seclusus* caused another pole to be replaced during the survey period.

Other species caused damage of lesser importance. *Nasutitermes walkeri* was restricted to coastal areas and the Dividing Range, and damage by this species was mainly superficial, never severe, and was invariably associated with decay and weathering. Despite this, the species was collected more frequently than any other. Damage by the corresponding species in inland areas, *N. exitiosus,* was also of little significance.

Until about 1960, poles used to support power transmission lines were restricted to species of high natural durability but with diminishing supply of suitable trees an alternative became necessary. The use of species of lower natural durability, having the sapwood zone impregnated with non-leachable salts of copper-chrome-arsenate as a preservative, began about 1960 and became

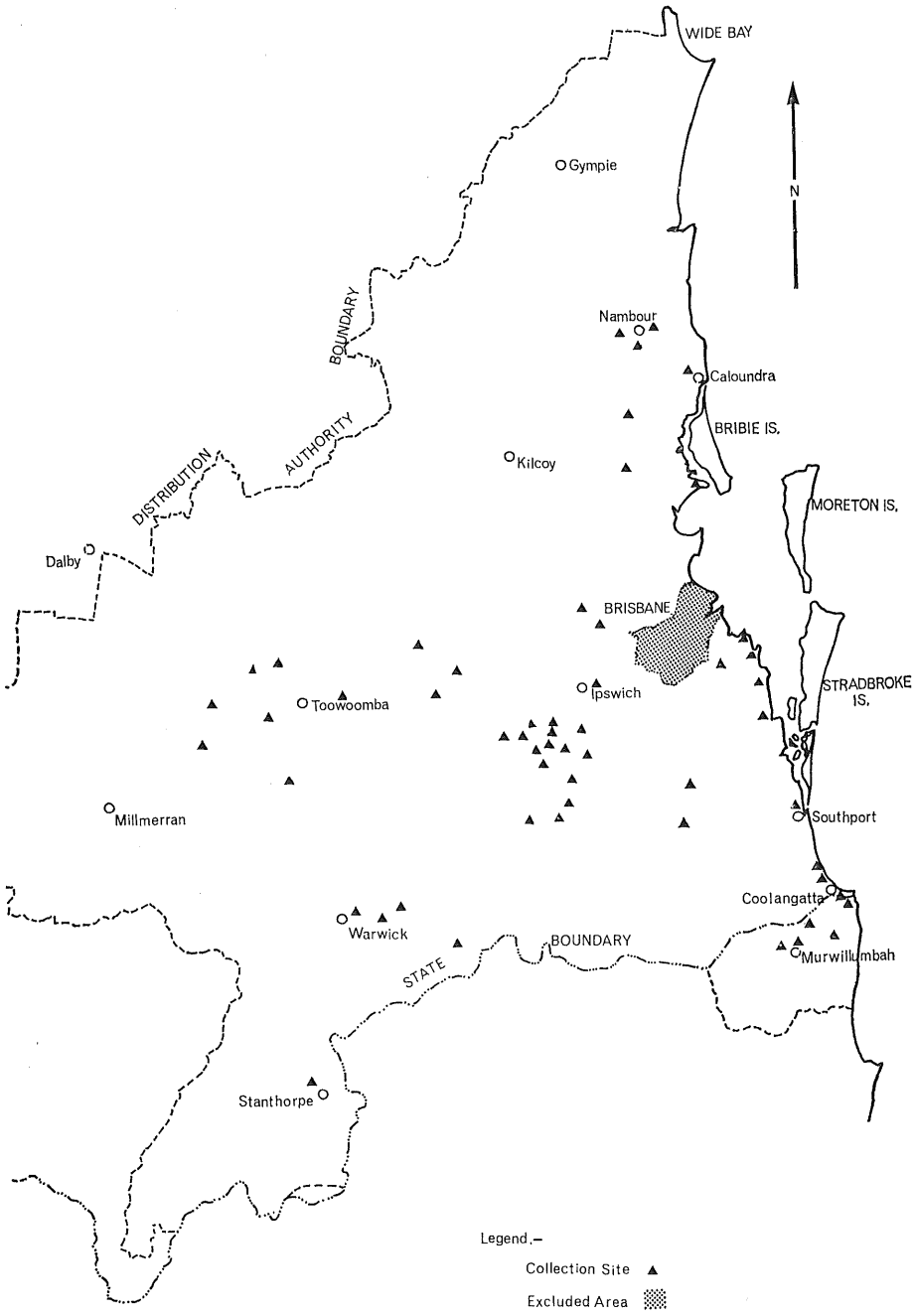

Figure 1. South-eastern Queensland showing location of collection sites.

universal practice during the next decade. Data on the present levels of infestation would therefore form a suitable basis for comparing the future resistance of treated poles to attack by these termite species.

The findings indicate that, although most damage was caused by *C. acinaciformis,* evidenced by a high proportion of attack on heartwood and overall severity of damage, the general incidence of attack was low. In this south-eastern Queensland region similar levels of attack might be expected on any timber poles partially in the ground such as fences, stockyards or structural members of buildings, provided that standards of maintenance are comparable.

VI. ACKNOWLEDGEMENTS

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