

THE SYNONYMY, DISTRIBUTION, AND BIOLOGY OF *COPTOTERMES ELISAE* (DESNEUX)

By F. J. Gay

DIVISION OF ENTOMOLOGY, C. S. I. R. O., BLACK MOUNTAIN, CANBERRA

Abstract: *Coptotermes elisae* (Desneux) and *Coptotermes hyaloapex* Holmgren are shown to be synonymous, with the former name having priority.

C. elisae is widely distributed throughout the New Guinea mainland, and is responsible for serious damage to living trees and shrubs, as well as to timber in service.

INTRODUCTION

In his monograph of the termites from the Australian region, Hill (1942) records the following species of *Coptotermes* from the mainland of New Guinea: *C. elisae* (Desneux) known only from the alate caste; and *C. hyaloapex* Holmgr. and *C. obiratus* Hill, both of which are known only from the soldier and worker castes. He makes the following comments on *C. elisae*: "It is possible that the soldier has been described under the name *C. hyaloapex* or *C. obiratus*, but this cannot be decided until complete series have been examined."

Collections made since the publication of this monograph have yielded information on the biology and distribution of the species in question, but it was not until late in 1961 that a full nest series collected from a large colony in a living *Araucaria klinkii* resolved the problem of their relationship. This colony was discovered during a visit to the felling area near Bulolo, from which logs of klinki pine were being extracted for conversion into plywood. The affected tree was so severely damaged by the termites, which had extended their galleries for more than 40 feet up the inside of the bole, that it was valueless for plywood.

Measurements of the various castes collected from this colony and comparison with named material in the Australian National Insect Collection (at present in the custody of the Div. of Entomology, C. S. I. R. O., Canberra, Australia) indicated that the alates agreed with those described as *Coptotermes elisae* (Desneux), while the soldiers matched those of *Coptotermes hyaloapex* Holmgren. This opinion was subsequently confirmed by Dr. K. Krishna, of the Department of Zoology, University of Chicago, who very kindly compared specimens from Bulolo with authentic named material in the collection of Professor A. E. Emerson.

Coptotermes elisae was described by Desneux in 1905, but the description of *Coptotermes hyaloapex* by Holmgren was not published until 1911. As there is no doubt now that the 2 species are conspecific, and as the name *elisae* has clear priority, the name *hyaloapex* passes into synonymy.

The full synonymy of this species is as follows:

Coptotermes elisae (Desneux)

Termes (Coptotermes) elisae Dsnx., 1905, Ann. Mus. Nat. Hung. **3** (1): 368 (winged adult; New Guinea).

Coptotermes elisae: Holmgren, 1911, Mitt. Zool. Mus. Berlin **5** (3): 456.—Hill, 1942, Termites (Isoptera) from the Australian Region, Melbourne, 147–49.—Snyder, 1949, Smithsonian Misc. Coll. **112**: 77.

Coptotermes hyaloapex Holmgren, 1911, Mitt. Zool. Mus. Berlin **5** (3): 457 (soldier; New Guinea).—Hill, 1927, Mem. Nat. Mus. Melbourne **7**: 16; 1942, Termites (Isoptera) from the Australian Region, Melbourne, 155–56.—Snyder, 1949, Smithsonian Misc. Coll. **112**: 79.

DISTRIBUTION: New Guinea (NE, SE).

COMPLETE SERIES: Bulolo, NE New Guinea, 22. IX. 1961.

ALATES ONLY: Lae, NE New Guinea, X. 1944, H. F. C. Davis; Bulolo, NE New Guinea, XII. 1944, R. Halpin.

SOLDIERS & WORKERS: Lae, NE New Guinea, 7 & 15. VIII. 1944, M. Alexander; *id.*, 1951, G. W. Tack; *id.*, 6. VI. 1961 & VI. 1962, J. S. Womersley; *id.*, 26. VI. 1961, D. H. Munro; *id.*, 4, 18, 29. VIII. 1961 & 5. IX. 1961, J. H. Ardley; *id.*, 20. IX. 1961, Gay; Bulolo, NE New Guinea, 20. VII. 1958, R. Evans; *id.*, 11 & 15. V. 1959, 30. XII. 1960, Halpin; *id.*, 27. VII. 1961, B. J. O'Hagan; Madang, NE New Guinea, VIII. 1958, D. Clements; Popondetta (Papua) Dept. of Forests, SE New Guinea, 20. VII. 1956; Brown River, nr. Port Moresby, SE New Guinea (Papua), XII. 1958, F. Coppock; Brisbane, intercepted in logs from New Guinea, I. 1948, J. H. Barrett.

This species has also been found in West New Guinea at Hollandia and near Sarmi (Simon Thomas, 1962).

The measurements of alates in the accompanying table will serve for comparison with those quoted by Hill from Desneux and Holmgren.

Measurement	Kokoda*	Bulolo (Halpin)	Lae (Davis)	Bulolo (Gay)
Length, with wings	16.75 mm	16.00 mm	16.25–16.75 mm	17.00–17.50 mm
Length, without wings	7.00 " "	6.80 " "	8.20–8.70 " "	8.00–9.20 " "
Head, width	1.87 " "	1.83 " "	1.79–1.83 " "	1.79–1.90 " "
Eyes, max. diameter	.59 " "	.55–.59 " "	.59 " "	.57–.62 " "
Pronotum, width	1.63 " "	1.58–1.60 " "	1.59–1.65 " "	1.61–1.65 " "
" length	.88 " "	.88–.92 " "	.90–.92 " "	.90–.95 " "
Forewing, length	—	13.40 " "	13.50 " "	13.50–13.80 " "
" width	—	4.20 " "	4.30 " "	4.20–4.30 " "

* A single specimen from the series listed by Hill in his distribution records. Collected by L. E. Cheesman, Aug. 1933.

In Desneux's description the number of antennal segments of the alate is given as 21. The Bulolo specimens collected by Halpin have 22 segments; those from Lae have 21 or 22; those collected by me at Bulolo have mostly 21 or 22, with 1 specimen having only

20 segments.

The measurements of soldiers from the full nest series collected at Bulolo are compared with those given by Holmgren (for *hyaloapex*) in the following table.

Measurement	hyaloapex	Bulolo series
Body, length	5.50 mm	4.80-5.80 mm
Head, with mandibles, length	2.62 " "	2.37-2.49 " "
Head, without mandibles, length	1.59 " "	1.57-1.68 " "
Head, width	1.44 " "	1.43-1.47 " "
Pronotum, width	.99 " "	.99-1.06 " "
Pronotum, length	.57 " "	.55-.60 " "

Biology: Hill mentions that the Papuan specimens referred to under *hyaloapex* were taken from a house pier. It is evident from recent collection records, however, that this species has similar potentialities to the Australian species *C. acinaciformis* in its ability to attack both structural timber and living trees and shrubs.

There are several records of serious attack on living trees of *Araucaria klinkii* in prime forest areas near Bulolo, and on young trees of *Araucaria cunninghamii*, either in plantations or in ornamental gardens. Other trees known to have been attacked are *Pometia pinnata* (Szent-Ivany, 1959), paw paw, mango and *Hopea* sp. Simon Thomas (*loc. cit.*) lists 7 species of trees or shrubs attacked and killed by this termite.

Damage to timber in service includes attacks on klinki pine boards and floor joists in houses, shelves and stored boxes in a warehouse, piles of sawn timber, and stacked ammunition boxes. There is also 1 record of attack on polythene sheathed underground cable at Madang.

REFERENCES

- Hill, G. F. 1942. Termites (Isoptera) from the Australian Region. C. S. I. R. O. Melbourne, 479 pp.
- Simon Thomas, R. T. 1962. Enkele aantekeningen over het verkoomen van *Coptotermes hyaloapex* Holmgr. (Rhinotermitidae) in Nederlands Nieuw Guinea. Ent. Ber. Amst. **22** (3) : 57-58.
- Szent-Ivany, J. J. H. 1959. Host plant and distribution records of some insects in New Guinea. Pacific Ins. **1** (4) : 423-29.