

First Infestation by *Incisitermes minor* of a Canadian Building (Isoptera: Kalotermitidae)

by

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ABSTRACT

An extensive infestation of *Incisitermes minor* (Hagen) (Kalotermitidae) was discovered in the interior wood framing of a home in Toronto, Ontario, Canada, in the fall of 1989. Alate flights had occurred in October 1989, and probably the preceding year, indicating that the termites had been active in the structure for several years. This is the first known infestation by *I. minor* of a building in Canada, and the first established drywood termite infestation reported in eastern Canada.

INTRODUCTION

Wood-inhabiting beetles and termites are easily transported in infested wood products. In a mobile society, introductions of such exotic species are difficult to prevent. Between 1935 and 1938, the eastern subterranean termite, *Reticulitermes flavipes* (Kollar) (Isoptera: Rhinotermitidae) was introduced by ship to Toronto (Urquhart 1953) and has since become well established throughout southern Ontario. In a dramatic extension of its range, a well established *R. flavipes* infestation was discovered in Winnipeg in 1987 (Anonymous 1987a, 1987b, 1989; Grace 1989, Kevan 1990). Although climatic constraints may limit the natural distribution of such species, the domiciliary environment is conducive to their survival, once introduced.

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We give a full report here on the discovery of an extensive infestation of the western drywood termite, *Incisitermes minor* (Hagen) (Kalotermitidae) in the structural framing of a building in Toronto, Ontario. This species is native to the western United States (Weesner 1970), where it is a severe structural pest (Ebeling 1975; Rust *et al.* 1988). Because *I. minor* lives within dry wood, it is easily transported by man, and isolated introductions have occurred in other regions of the United States (Gay 1967; Mallis 1982; Weesner 1970). This is the first infestation by this species of a building in Canada. Preliminary notification was given by Grace (1990a) and Kevan (1990).

COLLECTION METHODS

In mid-October, 1989, termite alates were noted by the tenant of a basement apartment in a semi-detached (duplex) residence on the east side of Toronto (43° 42' N, 79° 25' W). The owner-occupant contacted R. Murphy of Aetna Pest Control Ltd., who noticed that the alates differed from *R. flavipes* and noted some faecal pellets characteristic of a drywood termite (Kalotermitidae) infestation. Specimens collected by Mr. Murphy on 19 October were brought to the Ontario Ministry of the Environment, and identified by Krishna's (1961) and Weesner's (1965) keys as *Incisitermes* sp.

Inspection of the property on 23 October revealed an extensive drywood termite infestation in the rear portion of the basement and first floor areas. Piles of faecal pellets, and some damage, were found in a basement window frame, corner moulding, wall panelling, sheathing, studs and upper and lower plates, first-floor joists and subflooring, and the first-floor kitchen cabinets. Numerous termite wings and dead alates and dealates were found near the basement furnace. In addition, sealed royal cells (Harvey 1934) and borings, or frass, from initial wood excavations by paired termite reproductives were found at several locations in the basement. The basement tenant stated that he had also observed alate flights the previous fall (1988). Several dead alates were also found in the basement of the adjoining home in the semidetached structure. However, inspection of nearby buildings, fences, and trees did not reveal any evidence of termite infestation outside of this single building.

On 6 February 1990, several sections of the basement wall studs, panelling, and plywood sheathing were removed. These were dissected in the laboratory and termite nymphs (immatures) and a single soldier recovered. On the basis of the alates and soldier, the species was determined as *Incisitermes minor* (Hagen), and confirmed by comparison with reference collections. Voucher specimens are deposited in the Lyman Entomological Museum, Macdonald College of McGill University, Ste-Anne-de-Bellevue, Quebec.

DISCUSSION

Insects living in wood products are readily transported by commerce. In this manner, the Formosan subterranean termite, *Coptotermes formosanus* Shiraki, and the West Indian drywood (or powderpost) termite, *Cryptotermes brevis* (Walker), have spread throughout much of the world (Gay 1967; Su and Tamashiro 1987), and *R. flavipes*, has become established in urban areas such as Toronto (Urquhart 1953; Kirby 1965; Grace 1990b) and Hamburg, Germany (Weidner 1937; Sellenschlo 1988). In spring 1990, one of us (GMC) collected *Neotermes castaneus* (Burmeister) from a potted plant brought from Florida ca. 15 years ago, and growing in an atrium in North York, Ontario. The same species was also introduced from Florida, probably about 1973, into the African pavilion of the Toronto Zoo, where it is considered to be established "in culture" (Kevan 1990). Vickery and Scudder (1988) and Kevan (1990) record introductions without establishment of *Incisitermes snyderi* (Light) in Quebec and *C. brevis* in Ontario, and list *C. brevis* as an established alien species in British Columbia (Scudder and Kevan 1984). The alleged occurrence of the latter species in Manitoba (Vickery and Scudder was an error of transposition (Kevan 1990). Recently, in September 1990, an active infestation of *C. brevis* was discovered in a home in the community of Malton, Ontario (Myles 1990).

Although *I. minor* is not as apt to infest furniture and other finished wood as *C. brevis* (Ebeling 1975), introductions of the former species are not uncommon in the central and eastern United States (Gay 1967), especially Florida (Scheffrahn et al. 1988). Although anecdotal reports in Mallis (1982) might suggest otherwise, ours is apparently the first infestation by *I. minor*

in Canada (see Vickery and Kevan 1983, 1986; Scudder and Vickery 1985; Vickery and Scudder 1987). Mention of introductions "as far north as Ontario" by T.E. Snyder in Mallis (1982) may refer to Niagara Falls, New York (Vickery and Kevan 1983, 1986; Kevan 1990). In addition, one must distinguish "introduction" from "establishment," as indicated by Kevan (1990).

We were unable to trace the source of the original *I. minor* introduction to this structure because, like much Toronto real estate, the property has changed ownership several times in the past few years. However, drywood termite colonies develop slowly (Harvey 1934), and, from the extent of the detected infestation and reports of at least two annual alate flights, the original introduction probably occurred at least six years before its discovery. As with subterranean termites in the northern spring (Esenther 1969), dissemination of drywood termite infestations via alate flights in the fall is likely to be quite limited. Closed windows and doors and weather-tight construction would tend to confine alates within the structure, and the cool October weather in Toronto would be likely to limit alate survival outdoors. Unlike *R. flavipes* (Grace *et al.* 1989), drywood termite colonies are confined within wood, and cannot breach non-adjacent wood members or forage through the soil to feed on unconnected buildings.

With the co-operation of the home owner, the City of Toronto, and federal and provincial regulatory officials, a special permit for fumigation with methyl bromide was granted and fumigation of the Toronto building completed by Abell Waco Ltd. in the late summer of 1990 to eradicate the *I. minor* infestation. However small the probability of founding new colonies, continued annual alate flights posed unacceptable risks to nearby structures. Alates or young colonies could also be transported between buildings in household effects. An even greater risk is represented by the possibility that infested wood from this building may have been transported to other sites during building renovations or repairs. Largely as a result of such transport, *R. flavipes* is now distributed throughout southern Ontario. It is hoped that *I. minor* and other drywood termite species will not follow suit.

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