

Public Perceptions of Termite Control Practices in Several Ontario (Canada) Municipalities

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Residents of neighbourhoods in four urban areas of southern Ontario were surveyed with respect to awareness, information sources, and attitudes towards subterranean termite control. The survey results indicate that the degree of awareness of termites as a problem in Ontario is largely dependent upon neighbourhood experience with termite infestations. Friends and neighbours were most frequently mentioned as sources of information, followed by newspapers and television. Attitudes towards pest control practitioners, and the applicability of survey methodology in designing pest management programmes are discussed.

Keywords: termite control, pest management, pest perception.

1. Introduction

Urban pest management has been defined broadly by Frankie *et al.* (1986) as the management of pest populations at levels that are acceptable to particular urban groups. The emphasis on human constraints associated with pest infestation and control distinguishes the urban from the agricultural pest management framework, although surveys by Mumford (1977) and by Riccini and Brunt (1987) have pointed out the underlying importance of human attitudes and beliefs in agricultural pest control decision-making as well.

Successful design and implementation of an urban pest management programme requires an understanding of the needs, attitudes, and information sources of the urban audience (Lambur *et al.*, 1982; Levenson and Frankie, 1981; Byrne and Carpenter, 1986). This is equivalent to commercial marketing research, although the goal may be the transfer of information, technology, and ideas (Frankie *et al.*, 1986; Kotler and Zaltman, 1971) rather than the sale of a tangible product. To this end, a number of

public surveys have been conducted in North American urban centres. These include reports by Bennett *et al.* (1983), Byrne *et al.* (1984), Levenson and Frankie (1983), Lambur *et al.* (1982), and Decker and Gavin (1987). Since the urban public is a large and diverse entity, these reports are specific to the geographic areas surveyed, and to the particular pest-related interests of the authors.

In the southern portion of the Canadian province of Ontario, the eastern subterranean termite, *Reticulitermes flavipes* (Kollar) (Isoptera: Rhinotermitidae), is a serious structural pest. This insect was first reported in the southernmost portion of the province at Point Pelee in 1929 (Kirby, 1965), and was apparently introduced to urban Toronto from the United States between 1935 and 1938 (Urquhart, 1953). Since then, termite infestations have been reported in 29 Ontario municipalities, and *R. flavipes* has been the target of efforts by federal, provincial, and municipal governments to identify the extent of the infestation, contain its spread, and eradicate it from infested areas.

Urban southern Ontario is a cultural mosaic, with many neighbourhoods retaining the customs and language of immigrant populations. At the request of municipal buildings departments, the Ontario Ministry of the Environment has translated an English language pamphlet on termite control into Chinese, Greek, Italian, and Portuguese. However, this has been the extent of efforts to deal with the human aspects of managing this pest.

The present survey was conducted in order to obtain a better understanding of public information needs, information sources, and attitudes towards termite control practices and practitioners. In the short-term, this information can be applied to transfer information on termite control more effectively to the Ontario public. Since the majority of building inspections for termite infestation are conducted by municipal buildings departments in response to residents' inquiries, an informed public is essential to identify and contain the problem.

In the long-term, we hope to use information on public attitudes to implement effective area-wide pest management programmes, employing new and modified termite control techniques appropriate both to the biology and ecology of *R. flavipes* in Ontario, and to local psychology and sociological conditions.

2. Methods

The survey was implemented during July and August 1987, by university students employed for the summer by the Ontario Ministry of the Environment. The Ministry of the Environment is the lead provincial agency with respect to termite control, and administers a programme of grants to property owners to subsidize removal of wood in contact with the soil and treatment of the soil with a pesticide. Working in pairs, these students conducted thorough exterior and (where permitted) interior inspections of properties in selected urban areas for evidence of subterranean termite, *R. flavipes*, infestation. Property residents were asked to complete a questionnaire during the inspection. When no resident was present, the questionnaire was left in the mailbox with a handwritten request for it to be completed, and it was collected at a later date. Although the survey teams had to read the questionnaire to many residents to obtain complete responses, they avoided excessive interpretation of the questions.

The survey form was designed to be non-threatening and rapidly completed, and was a single double-sided sheet with eleven multiple choice questions addressing resident demographics, knowledge of termites in Ontario, pest control information sources, and attitudes. Respondents were given a box to tick after each choice and a line for

explanation, where necessary. The questions were as follows, with key words in bold face on the form:

1. Before this contact by the Ministry of the Environment, were you aware that termites were a potential problem in **your** neighbourhood? (Yes, No)
2. a. Were you aware that termites were a problem in **other** areas in Ontario? (Yes, No)
 - b. Were you aware that a grant programme existed? (Yes, No)
3. To your knowledge, has your home or property been **treated** with a pesticide for termites in the past? (Yes, No, Don't know)

If **yes**, with which pesticide (if known)?

How satisfied were you with the pest control company's performance? (Very, Fairly, Not satisfied)

If not satisfied, why not?
4. To your knowledge, has your home been **repaired** for termite damage in the past? (Yes, No, Don't know)

How satisfied were you with the contractor's performance (Very, Fairly, Not satisfied)

If not satisfied, why not?
5. Before this contact, where have you received **information** on termites? (please check **all** that apply)
 - Ontario Ministry of the Environment
 - Other Ontario government agency (please name)
 - Government of Canada agency (please name)
 - City buildings department
 - Other city agency
 - College or University staff
 - Lectures or courses on insects or building repair
 - Pest control company (exterminator)
 - Nursery
 - Hardware store
 - Grocery store
 - Friends and neighbours
 - Library
 - Books
 - Magazines
 - Newspapers
 - Television
 - Radio
 - Other (please name)
6. In **your opinion**, what effect does having a home treated for termites have on its real estate value? (Increases, Decreases, Probably no effect)
7. If your home were to be treated for termites, would you **prefer** that the pest control company use a: marked vehicle (such as "Acme Termite Control"), unmarked vehicle, don't care.
8. Would you be **interested** in attending a public talk on termite control? (Yes, No)
9. Are **you**: Male, Female.
10. Is your **age**: Under 25, Over (or equal to) 25.
11. Are **you**: Owner of this home, Renter of this home, Visitor in this home.

Responses were received from 303 residents in the cities of Hamilton, York, Toronto, East York, and Scarborough. Three regional categories were defined with respect to the local history of termite infestation: *Hamilton*, *York*, and *Toronto*.

Hamilton (69 respondents) represents a neighbourhood in the City of Hamilton, c. 60 km southwest of the Municipality of Metropolitan Toronto where the other survey sites were located. Subterranean termites were discovered in this neighbourhood in 1981, and an intensive public information campaign undertaken in 1982–83, including three well attended public meetings. The soil beneath and/or around c. 40 homes was treated by injection of pesticides in 1983–84, with later retreatment of one property. Since 1984, interior and exterior inspections of homes in this neighbourhood have been conducted each summer by the Ministry. In 1987, termites were found infesting a lilac tree on one property, indicating that termites are still present in the area, although to date the structures appear to be protected.

The neighbourhoods surveyed in *York* (137 respondents) represent an area of ongoing but very limited infestation, where few property owners have experienced termite problems, although c. 200 properties have been chemically treated in the City of York as a whole since the discovery of a number of active infestations in other neighbourhoods in 1979. The City of York is within the Municipality of Metropolitan Toronto.

The four neighbourhoods surveyed in central and eastern Toronto, East York, and Scarborough are also located within the boundaries of the Municipality of Metropolitan Toronto (all c. 5–10 km from the City of York), and were considered collectively under the label *Toronto* (97 respondents). These are neighbourhoods with ongoing discoveries of termite infestations, where the city buildings and planning departments have promoted public awareness of the problem and additional properties are chemically treated each year.

3. Results and Discussion

Sample demographics in each of the three regional categories are listed in Table 1. Respondents were generally over 25 years of age. Hamilton contains more recently constructed buildings than the older neighbourhoods surveyed in York and Toronto, including a large number of townhouses occupied primarily by renters. Fewer male respondents were encountered in Hamilton than in the other two regions, apparently due to a greater number of young families with a working partner who was absent during the daytime, although the questionnaire was not sensitive to this.

Responses to the survey questions addressing resident awareness and knowledge of termite problems are presented in Table 2. Awareness of termites as a problem in one's neighbourhood, in other parts of Ontario province, and of the provincial programme to subsidize pest control treatments were all related to the local history of termite infestation. The validity of these regional categories is supported by the responses to questions 3 and 4: twice the percentage of respondents in Hamilton indicated that treatments or repairs had been performed on their properties than was the case in Toronto, while very few treatments or repairs were reported in York. Greatest (72.5%) awareness of termites as a local problem was evidenced in Hamilton and least (26.3%) in the neighbourhoods of sporadic infestation in York. Even in areas where termites had been or continued to be a severe problem, awareness of termites as a local or provincial problem remained below 80%, and fewer than 50% of the respondents were aware of the provincial grants programme.

TABLE 1. Sample demographics in three regions surveyed

Region	N	Sex (%)			Age (%)			Status of property (%)			
		Male	Female	na†	25-	25+	na†	Owners	Renters	Visitors	na†
Hamilton	69	20	76	4	9	87	4	42	54	1	3
York	137	36	57	7	9	79	12	86	7	0	7
Toronto	97	47	47	6	17	79	4	80	15	2	3

†na = no answer.

TABLE 2. Percentage of interviewees in neighbourhoods in each region giving a positive response to questions concerning awareness of termite problems

	Hamilton	York	Toronto
Before this contact, were you aware that termites were a potential problem in your neighbourhood?	72.5	26.3	62.9
Were you aware that termites were a problem in other areas in Ontario?	53.0	55.5	78.4
Were you aware that a grant programme existed?	42.0	16.06	46.4
To your knowledge, has your home or property been treated with a pesticide for termites in the past?	72.5	5.1	29.9
To your knowledge, has your home been repaired for termite damage in the past?	21.7	2.9	12.4

Homeowners were generally satisfied with the performance of pest control operators and contractors making remedial corrections (Table 3). However, only four of the 86 individuals aware of pesticidal soil treatments on their properties were able to name the pesticide. In three cases this was chlordane, and in one case aldrin. This result is interesting, since aldrin has actually been used to a greater extent than chlordane to control termites in Ontario, although chlordane is referred to more frequently in the North American news media. In a survey of household pesticide usage in the United States, Savage *et al.* (1979) found that many respondents were not aware of the names of the pesticides they used, and, in the state of Indiana, Bennett *et al.* (1983) found that the term "pesticides" itself was unfamiliar to many interviewees.

Respondents were uncertain of the effect of termite treatments on property real estate values, although this question was ambiguous in that the state of repair of the treated home was not specified.

Pest control operators and others have frequently expressed the opinion to the authors that Ontario homeowners do not want neighbours to know of their misfortunes with termites and demand that unmarked pest control vehicles be used. Outside of the strictly emotional association of insect infestation with dirty and dilapidated living conditions, there may be some factual basis for this attitude in terms of avoiding liability, since *R. flavipes* appears to have spread throughout Ontario primarily by movement by man of infested wood and (possibly) topsoil. In any event, 53.6% of the respondents in our survey stated that they did not care whether pest control companies visited their property in marked or unmarked vehicles. However, of those respondents expressing a preference (36%), twice as many preferred an unmarked to a marked vehicle. Thus, pest control operators may be wise not to offend the 25% of their potential clientele with a preference for unmarked vehicles.

TABLE 3. Percentage responses of interviewees in three regions and in the total sample to questions concerning attitudes towards termite control problems

	Hamilton	York	Toronto	Total
If your property has been treated, how satisfied were you with the pest control company's performance?†				
Very satisfied	36.0	14.3	42.9	36.5
Fairly satisfied	40.0	42.9	35.7	38.8
Not satisfied	4.0	0.0	7.1	4.7
If your property has been repaired, how satisfied were you with the contractor's performance?†				
Very satisfied	21.4	0.0	33.3	22.9
Fairly satisfied	50.0	75.0	47.1	51.4
Not satisfied	14.3	0.0	5.9	8.6
In your opinion, what effect does having a home treated for termites have on its real estate value?				
Increases its value	14.5	32.8	37.6	30.1
Decreases its value	39.1	24.8	25.8	28.4
Probably no effect on its value	24.6	20.4	32.3	25.1
If your home were to be treated for termites, would you prefer that the pest control company use a:				
Marked vehicle (such as "Acme Pest Control")	8.7	10.2	14.3	11.2
Unmarked vehicle	23.2	27.1	21.5	24.7
Don't care	59.4	44.5	62.2	53.6
Would you be interested in attending a public talk on termite control?				
Yes	37.7	32.8	26.0	31.8
No	58.0	51.1	69.8	58.6

†Percentage of those interviewees indicating treatments/repairs had been performed.

In keeping with the apparent association between awareness of termites as a problem in Ontario and personal or neighbourhood experience with the problem, friends and neighbours were mentioned most frequently as sources of information on termites (Table 4). These were followed in frequency by newspapers, television, city buildings departments, and the Ministry of the Environment. In agreement with other surveys (Bennett *et al.*, 1983; Levenson and Frankie, 1983), pest control companies were rarely indicated as sources of information (14 responses).

Efforts to increase public awareness via direct methods of information transfer may be challenging, as 58.6% of the respondents indicated that they were not interested in attending a presentation on termite control. Only 31.8% of all the respondents expressed an interest in attending such a talk, and this actually decreased slightly to 29% of those respondents who indicated that they were not previously aware of termites as a potential problem in their neighbourhood. This lack of interest did not appear to be related to age, sex, or home ownership, but may reflect some fear of coercion into a time consuming academic exercise, since a government representative administered the questionnaire.

In summary, despite annual media attention in the summer months, public awareness of subterranean termites as a problem in southern Ontario remains localized and relatively low, and, in the areas we surveyed, was tied to local experience with termite problems. Information programmes directed through the passive news media (news-

TABLE 4. Sources of information on termite control most frequently mentioned by survey respondents

Information source†	Percentage response
Friends and neighbours	26.7
Newspapers	22.4
Television	20.1
City Buildings Department	15.2
Ministry of the Environment	12.2
Magazines	5.9
Radio	5.6
Pest Control Company	4.6
Books	4.0

†Other sources listed on questionnaire each received less than 4% response.

papers, television) and through local buildings departments are likely to reach the largest audience. Ideally, survey methodology will be incorporated into these programmes, and into area-wide pest management programmes, to provide for ongoing review and modification of these efforts (Frankie *et al.*, 1987). This process of information exchange (Frankie *et al.*, 1986), rather than unilateral transfer of information, is as applicable to the marketing of environmental management programmes as it is to commercial endeavours.

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