

COMPARISON OF PEOPLE WHO REQUEST MOSQUITO CONTROL SERVICES AND THEIR NON-REQUESTING NEIGHBORS¹

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ABSTRACT. The personal profiles of people who called to request mosquito control services were compared with their neighbors who did not call. Demographically, callers were generally representative of their neighbors. Callers considered the mosquito problem to be greater than did their non-calling neighbors, tended to do more things outdoors, tended to be home more, and considered themselves more attractive to mosquitoes and more allergic to mosquito bites than non-callers. There were also more newer (<1 year) residents among the callers than non-callers. Callers were almost exclusively from year-round-resident homeowners in long-term-resident neighborhoods.

INTRODUCTION

The relationships between mosquito control and the public have recently become an area of research interest. Service requests are an important part of Florida mosquito control programs (Morris and Clanton 1991) and presumably of programs elsewhere. It is known that the number of requests received are correlated with the density of certain species of mosquitoes (Morris and Clanton 1989), and that call-ins are influenced by human population numbers, race and income (Morris and Clanton, unpublished data). Container breeding mosquito production in a neighborhood is correlated positively also with income of the residents (Chambers et al. 1986) and residents' rating of mosquito problems with area of residence (rural, suburban, urban) (Kun et al. 1987).

This study was conducted to determine if people who call to request mosquito control services (requesters) have demographics similar to those that do not call in (non-requesters) and are, therefore, representative of their neighborhood. If they are not similar, what is it about them that may influence why they call in and their neighbors do not?

MATERIALS AND METHODS

Between July 27, 1986 and July 30, 1987 a survey form concerning mosquitoes and mosquito control was sent to each person, for whom a mailing address was obtained, who called either Polk County or Sarasota County, Florida mosquito control programs to request mosquito control service. In Polk County, similar surveys were also distributed by hand to neighbors within 0.2 km of the residents who called. The call-in history of the neighbors was unknown,

other than they had not called during the year prior to receiving the survey. In Sarasota County, surveys were distributed to non-callers in an arbitrary fashion as opportunity allowed.

The survey contained 26 questions: seven asked them to characterize the mosquito problem at their home and 7 asked about their mosquito control needs, methods, expenses and opinions about the local control program. The other 12 questions collectively provided a personal profile of the respondent. Only the results of the personal profile questions and the overall evaluation of the mosquito problem around the home are reported here.

RESULTS AND DISCUSSION

In Polk County, 1,095 surveys were distributed: 703 to people requesting service and 392 to neighbors who did not request service. We received completed surveys from 495 (70.4%) requesters and 187 (47.7%) non-requester residents. In Sarasota County, 157 requesters and 118 non-requesters returned surveys from an unknown number distributed. Not all questions were answered in all surveys; consequently, the number of surveys used in each analysis varied.

The answers to the question on the types of outdoor activities in which the respondent engaged were converted to an Outdoor Index (range 0-0.99) that was based on the number of the 9 outdoor activities checked (each activity counted as 0.11). The Outdoor Index was used as an additional personal profile variable.

Evaluation of the mosquito problem: Requesters in both counties considered the overall mosquito problem around their homes to be greater than their respective non-requesting neighbors (Table 1). While one expects a high percentage of requesters to consider the problem bad to very bad, even the majority of non-requesters in both counties considered the problem to be bad or very bad. These figures do not reflect favor-

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Table 1. Survey responses to the question: Overall, how would you rate the mosquito problem around your home?

Mosquito problem	Service requesters		Non-requesters	
	n	%	n	%
Polk County	493		186	
None-slight		1.8		15.6
Moderate		15.5		30.7
Bad-very bad		82.7		53.7
Sarasota County	157		118	
None-slight		5.8		16.1
Moderate		19.1		22.0
Bad-very bad		75.1		61.9

ably on the respective mosquito control programs.

Personal profiles: The sex ratios of Polk and Sarasota requesters were similar to their respective 1980 census figures (Table 2, Percent females). On the other hand, there was a much higher proportion of males among the non-requesters in both counties (χ^2 , $P < 0.0001$). Since over 70% of the Polk County callers returned the survey and the requesters' sex-ratio was similar to census data for both counties, we conclude that males and females call-in about equal frequency. Male domination among the non-requesters suggests that surveys left at the door of neighbors were filled out primarily by the man, the traditional "head-of-the-household."

The age distribution of requesters and non-requesters were not significantly different ($\chi^2 = 10.2$, $df = 2$, $P = 0.12$); the median age was 50-59 years for both. The number of people per household of requesters and non-requesters was similar to the general populations in both counties (Table 2). Polk County requesters tended to have children under 12 years old and non-requesters did not, whereas there was no difference between Sarasota requesters and non-requesters (Table 2).

In both Polk and Sarasota counties, over 88% of requesters and non-requesters were homeowners, substantially higher percentages than among the general populations (Table 2). Because of this it was not surprising that over 97% of all requesters and non-requesters spend at least some part of each of the 4 seasons at their Florida home (Table 2).

In Polk County there was a notable difference between the frequency distributions of requesters and non-requesters for their length of residency in their current neighborhood (Table 3). New residents (<1 year) constituted over 4 times the percentage of requesters than non-requesters. There was a similar but less pronounced

trend in Sarasota County. Apparently, after people live in their new homes over one year, they either tend to adjust to the new-to-them mosquito problems or find no satisfaction in calling their mosquito control program. This slow acceptance hypothesis probably applies to all aspects of the new-home experience. People are more sensitive to negative aspects of a new environment and try to correct as many as they can until, eventually, they accept what their neighbors learned to accept before them.

There were significant differences between requesters and non-requesters in the amount of time spent at home during the day for both counties, but not for time at home during dawn/dusk and at night. Requesters tended to be at home more than non-requesters (Table 4).

Polk County Requesters considered themselves somewhat more attractive to mosquitoes (53.9%) than did non-requesters (43.8%). Only 16.8 and 18.5%, respectively, considered themselves not attractive. The corresponding figures for Sarasota County were: 52.9, 53.6, 13.0 and 15.5%. In both counties, however, there were significant differences, albeit marginally significant at the 0.05 level, (χ^2 , $P < 0.05$), between degree of allergy as estimated by requesters and non-requesters. More requesters considered themselves allergic (37.2% in Polk, 41.1% in Sarasota) than did non-requesters (27.1% in Polk, 33.4% in Sarasota). In all cases the curves were bimodal (allergic or not allergic) with only about 25% of any group in the moderate category.

The majority of both Polk requesters and non-requesters were raised in suburban environments (43.6 and 46.4%, respectively). There were more rural-raised people (27.0 of requesters, 23.8% of non-requesters) than urban-raised (15.4 and 18.2%, respectively). Slightly over half the Sarasota respondents were suburban-raised. There were similar numbers of rural- and urban-raised people although there were slightly more rural-raised requesters and urban-raised non-requesters.

There was a slight difference between the distributions of Outdoor Index for Polk County requesters and non-requesters. The index peaked at 0.44 for requesters and 0.33 for non-requesters. Thus, people who called tended to have more outdoor activities.

More requesters made comments on the surveys than did non-requesters (Table 2). The nature of the comments were similar for both groups. The most frequent comments by both groups were that mosquitoes caused them to alter their outdoor behavior, the control program should spray more often and the control program should check for mosquito breeding

Table 2. Profiles of mosquito control service requesters and their non-requesting neighbors in Polk and Sarasota counties.

	Service requesters		Non-requesters		1980 census	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Percent females						
Polk County	480	52.9	178	34.3	—	50.8
Sarasota County	155	51.0	117	33.3	—	53.7
People in household (mean, not percentage)						
Polk County	482	2.7	184	2.6	—	2.7
Sarasota County	153	2.8	114	2.8	—	2.3
Households with children less than 12 years old						
Polk County	479	29.0	183	20.2	—	—
Sarasota County	154	27.3	115	27.0	—	—
Homeowners						
Polk County	485	88.7	184	92.9	—	70.4
Sarasota County	154	91.6	116	88.8	—	77.4
Residents in each of the 4 seasons						
Polk County	495	97.7	187	97.0	—	—
Sarasota County	157	100.0	118	97.3	—	—
Respondents that made comments						
Polk County	493	65.7	186	33.3	—	—
Sarasota County	157	58.0	118	45.8	—	—

Table 3. Survey responses to the question: How long have you lived in this neighborhood?

Years of residency	Service requesters		Non-requesters	
	<i>n</i>	%	<i>n</i>	%
Polk County	487		183	
<1		15.8		3.8
1-5		28.7		33.9
6-15		32.9		29.5
16-25		10.9		18.0
>25		11.7		14.8
Sarasota County	156		116	
<1		13.5		10.3
1-5		37.2		38.8
6-15		35.2		31.0
16-25		10.3		12.9
>25		3.8		6.9

nearby. Disease was a much larger concern for requesters than for non-requesters.

Contrasting views as to the effectiveness of adulticiding (ground ULV) were expressed by approximately equal numbers in both groups. Over 9% of non-requesters and 7.4% of requesters think ULV trucks go too fast, and a similar percentage of requesters were dissatisfied with the response of the mosquito control program to their call.

Our study indicates that the mosquito problem in a neighborhood is considered to be greater by requesters than non-requesters. Possible reasons for this differing evaluation is that requesters had a higher percentage of people who lived in the area less than one year, tended to be home

more during the day, tended to do more outdoor activities and considered themselves more attractive and allergic to mosquito bites.

There was also a disproportionately high percentage of males in the non-requester data for both counties, compared with requesters and the general population. This raised a concern that the data may be sex-biased. Since the sex-ratios of the county populations were known, (50.8% females for Polk, 53.7% for Sarasota) analyses were redone using sex-weighted data (females at 1; males and males at 0.512). Cross-tabulation analyses with sex-weighted data still showed highly significant differences between requesters and non-requesters for length of residency ($P < 0.001$), Outdoor index ($P < 0.001$) and, to a lesser degree, frequency at home during the day ($P = 0.5$). The low-level significant difference seen earlier for allergy was not significant using sex-weighted data. This confirms that differences in responses between requesters and non-requesters are not due to sex of the respondent.

Requesters came disproportionately from certain socioeconomic groups. Neighborhoods that generated most service requests were characterized as long-term (>5 years) year-round residents who own their homes.

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Table 4. Survey responses to the question: For each time of day, how often are you at this address?

Diel period	Respondent	n	Frequency of response (%)		
			Almost never	Sometimes	Often/always
Polk County					
Dawn/dusk	Requesters	468	0.4	1.9	97.7
	Non-requesters	171	0.0	4.1	95.9
Day	Requesters	467	3.0	15.6	81.3
	Non-requesters	174	6.9	22.4	70.7
Night	Requesters	469	0.4	1.1	98.5
	Non-requesters	172	0.6	1.2	98.3
Sarasota County					
Dawn/dusk	Requesters	154	0.6	0.0	99.4
	Non-requesters	111	1.8	1.8	96.4
Day	Requesters	153	2.6	12.4	85.0
	Non-requesters	113	5.3	23.0	71.7
Night	Requesters	155	0.6	1.3	98.1
	Non-requesters	112	1.8	3.6	94.6

County and for providing additional information required in the analysis of the data.

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