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THE RURAL-URBAN CONTINUUM AND ENVIRONMENTAL CONCERNS

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Abstract. *Studies have generally found rural residents to be less concerned about environmental problems than urbanites. This difference has been attributed primarily to a nature-exploitative attitude of farmers. The present study finds little support for this proposition, but an alternative explanation, derived from rational choice and exchange theory, is supported. Owner-operator farmers are different from tenants and absentee owners in their level of environmental concern and shift positions across the range of environmental issues, as do rural nonfarm and small town residents. Furthermore, urban respondents are not consistently more likely than all rural categories to show the greatest environmental concern.*

A preponderance of research indicates that urban dwellers tend to be more concerned than their rural counterparts about environmental issues (e.g. Tremblay and Dunlap 1978; Van Liere and Dunlap 1980; Lowe and Pinhey 1982). Van Liere and Dunlap (1980, pp. 190-91) however, have observed that "there are a number of contradictions to this pattern . . . [and] the coefficients vary considerably in magnitude, both within and across studies."

A statewide study of Nebraska adults was designed to examine and clarify the relationship between residence and environmental concerns. We distinguished among different categories of residence across the rural-urban continuum, and examined attitudes toward both agricultural and nonagricultural environmental issues. Our conclusions stress the importance of recognizing the multidimensional nature of environmental concerns.

The Farm Variable as Explanation

One promising lead toward unraveling the contradictory evidence regarding rural-urban differences came from the work of Buttel and Flinn (1974) in Wisconsin. They found farmers were less concerned than

nonfarm rural residents about pollution. They suggested that, "To have validity, a designation of 'rural' unconcern for pollution problems has to specify it as a 'farm' category" (Buttel and Flinn 1974, p. 65). Subsequent studies have continued to find farmers less environmentally concerned than others (Buttel 1975; Kronus and Van Es 1976; Tremblay and Dunlap 1978; Lowe and Pinhey 1982).

There is growing awareness of the critical role played by agriculture in maintaining environmental quality (Dunlap and Martin 1983; Moberg 1988; Schwab 1989). Since farmers are directly involved with problems such as soil erosion, loss of wetlands, and pollution from pesticides, it is especially important to determine if they are as unconcerned about these issues as is suggested by the research literature. And, if they are unconcerned, it is important to learn why.

Hendee (1969) and Harry (1971) posited that working in occupations that exploit natural resources engenders a nature-exploitative view; "nature is to be used, not just appreciated" (Hendee 1969, p. 337). The introduction of a farming category, which Tremblay and Dunlap (1978) have referred to as a "joint residential-occupational variable," to explain the relationship between residence and environmental concern is consistent with that theory. Additionally, Malkis and Grasmick (1977) have suggested that an occupational dependency on a polluting technology leads to environmental unconcern. To the extent that farm technology includes the use of large amounts of inorganic nitrogen fertilizers, pesticides, excessive irrigation (leading to salinization and depletion of the water supply), and the like, farming may be said to be a polluting technology.

One difficulty with defining farming as a nature-exploitative occupation, however, is the apparently large variation in environmental attitudes and behavior among farmers. The difference is not due to variations in social and demographic variables such as age, income, and education (Buttel et al. 1981). Buttel et al. (1981) discussed several reasons why persons operating large farms may engage in more environmentally destructive activities than those with smaller farms. Large farms tend to be highly mechanized and large-scale machinery does not lend itself to such environmentally sound practices as shelter belts and terraces. Furthermore, large-scale farming and government policy have combined to encourage monoculture leading to greater reliance on petrochemicals. Buttel et al. (1981) reasoned that engaging in these practices could produce less environmental concern among farmers. Their data from Michigan and New York showed farm size to be negatively related to concern about pollution from agricultural chemicals, but not to concern about soil erosion. Heffernan and Green (1986) examined the actual amount of soil erosion on a sample of Missouri farms and concluded that small farms were more likely than large ones to suffer soil erosion.

Neither Buttel et al. (1981) nor Heffernan and Green (1986) compared farmers who owned and operated their own farms with those who rented their land. There are good theoretical and empirical reasons to believe that ownership may be a more important dimension than size (Williams 1981; Belden 1986; Moberg 1988). Absentee owners and persons farming rented land may emphasize short-run economic profits at the expense of environmental consequences, whereas those working their own farms may be more likely to think about the long-run environmental effects of their farming practices. Consequently, owner-operators might be more concerned than absentee owners and tenants about the environmental quality of life on the farm and about preserving it for future generations. Exploitation or use of resources from the perspective of the long-run could mean that the consequences of degrading the land and water will be perceived by owner-operators as counterproductive. Baron (1981) and Ervin (1982) both reported significantly less soil erosion for owner-operators than for tenants. If farmers do in fact represent divergent views along this dimension, combining both groups into one category would mask the differences and possibly distort the research results.

The Diffusion Hypothesis

Within the framework of nature-exploitative theory, Tremblay and Dunlap (1978) suggested that a diffusion of beliefs, values, and norms occurs so that a shared rural culture is developed. Persons living in rural villages, for example, tend to be economically dependent upon farmers. Tremblay and Dunlap (1978) hypothesized that rural, nonfarm residents were less environmentally concerned than urbanites, but not to the extent that farmers were.

The few studies that provide data necessary to test the diffusion hypothesis by comparing rural, nonfarm residents with urbanites have produced mixed results. In two Wisconsin studies reported by Buttel and Flinn (1974) rural, nonfarm people were more environmentally concerned than urban residents in the 1968 sample and no different from urbanites in 1970. Buttel (1975) found rural, nonfarm Wisconsinites once again more concerned that those in the city in 1972. Tremblay and Dunlap (1978) reported that urban respondents in Oregon were more likely to express concern about local water and air pollution than were their rural, nonfarm counterparts. Lowe et al. (1980) did not separate rural residence into farm and nonfarm categories, but dichotomized urban into metropolitan and other urban. They found a curvilinear relationship with respondents living in urban, nonmetropolitan areas giving lower priority to environmental problems than either those residing in rural or metropolitan areas.

The Multidimensionality of Environmental Concern

The inconsistent role of residence in research findings regarding differences in the level of environmental concern impugns the validity of both the theory of nature-exploitative occupations and the diffusion hypothesis. Therefore, the utility of the farm variable as an explanation of rural-urban differences is dubious. In fact, this point also applies to other theories that purport to explain the relationship between residence and environmental concern, but which do not deal directly with the farm category. Lowe and Pinhey (1982) called these theories environmental deprivation, pro-growth, and socialization in man-modified environments. On the other hand, if these theories are inadequate, how do we account for the differences that have been observed among residence categories? One possible clue may be derived from the proposition that environmental concern may be multidimensional. Divergent research findings may not really be inconsistent, but may result from use of different measures of environmental attitudes that tapped different environmental concerns. Dissimilar patterns of relationship between residence and concern would be expected if environmental concern embraces a number of different issues and if these issues have different publics. Van Liere and Dunlap (1980 p. 193), for example, suggested that, "researchers should reconsider the practice of dumping such diverse issues as air and water pollution, population control, and wildlife protection together into global measures of environmental concern. . . . It is unclear whether persons concerned about one of these issues will be equally concerned about the others."

The nature-exploitative theory proposes that individuals who benefit economically from exploitation of natural resources become less concerned than others about environmental protection or preservation. This proposition is a derivative of more inclusive rational choice (Hogarth and Reder 1987) or exchange (Thibaut and Kelley 1959; Homans 1974) theories. However, the nature-exploitative theory argues that environmental attitudes arise primarily from economic considerations and that for farmers this occupationally-engendered orientation becomes generalized to all environmental issues, not just those specifically related to agriculture. Some choice theorists, on the other hand, have taken the position that factors other than the strictly economic may shape or influence attitudes and thus determine decisions when individuals encounter various tradeoffs (cf. Randall 1988). Furthermore, some theorists have proposed that choices will not necessarily be evaluated in terms of personal economic gain, but may take other factors, such as future generations and non-humans, into consideration (Lenski 1966; Nash 1989).

It also should be pointed out that norm-activation theory appears to

be the most widely used theory in environmental sociology to explain attitudes and behavior related to environmental issues (Buttel 1987). This theory posits that environmental concerns reflect the activation of moral norms against harming innocent people (Heberlein 1972; Heberlein and Black 1981; Stern et al. 1985-86). Stern et al. (1985-86, p. 207) noted, "when a person can smell the fumes issuing from the grounds of a local chemical plant...and is aware of negative effects on health, tourism, aesthetic values, property values, and so forth..., the essential elements are present for the activation of normative pressure for a cleanup." We find it difficult, however, to apply norm-activation theory to the environmental issues examined in this study. Respondents are presented with tradeoffs and both alternatives may be perceived as having positive and negative consequences. For example, farmers are bombarded with conflicting information about pesticides; pesticides may harm innocent people yet, some argue, the application of pesticides is necessary to maintain the country's level of food production, thereby preventing innocent people from starving (McDermott 1990). However, we believe norm-activation theory may be subsumed within exchange or other more inclusive choice theories in that individuals presumably find following moral norms rewarding and breaking them costly. Norms become part of the considerations that must be taken into account when weighing the various rewards and costs that constitute the overall perception of outcome.

Environmental attitudes may develop and choices may be made in a broader context. Attitudes and choices are not necessarily generalized from one situation to another, limited to personal gain, or formed solely on the basis of economic outcomes. The explanation of any relationship between residence and environmental concern would therefore be found in relation to particular groups, occupational or otherwise, that have concerns or interests with respect to specific environmental issues. If environmental concerns have somewhat different publics, then residential categories should differ from one another whenever, but only when, an issue has particular saliency for the individuals (or a large proportion of individuals) in a particular residence category. We shall refer to this as the multidimensional proposition.

Research Hypotheses

This study posed questions about eight environmental issues common to rural areas. Respondents were asked to make a choice or tradeoff between preservation of natural habitat and a designated nature-exploitative use (Table 1). The first five of the issues pertained strictly to farming while the other three did not. The theory of nature-exploitative occupations

TABLE 1[a]

QUESTIONS USED TO MEASURE DEPENDENT VARIABLES

1. *Protecting Wildlife Versus Using Pesticides*
"If pesticides are necessary to maintain the country's food production at present levels, we must use them even if they are harmful to wildlife."

2. *Protecting Highly Erodible Soil Versus Freedom to Use Land Without a Conservation Plan*
"Landowners converting highly erodible native grassland to cropland after a certain date should be required to implement a conservation plan."

3. *Protecting Riverine Habitat Versus Irrigation*
"Would you agree to protect the endangered species of birds and other wildlife and preserve the remaining rivers and natural areas along their shores, even if it meant limiting the additional amount of water that could be diverted from the rivers for agricultural use?"

4. *Protecting Wetlands Versus Agricultural Expansion*
"Would you agree to preserve the remaining wetlands and protect the endangered species of birds and other wildlife, even if it meant limiting the amount of lands that could be used for further agricultural expansion?"

5. *Protecting Plants Versus Allowing Grazing on Public Lands*
"Cattle and sheep grazing should be limited on publicly owned lands if it destroys plants needed by wildlife, even though this may result in higher meat costs."

6. *Protecting Wilderness Versus Using Natural Resources*
"Natural resources must be taken from existing wilderness areas even when the loss results in much smaller wildlife populations."

7. *Protecting Marshes Versus Building a Housing Development*
"I approve of building on marshes that ducks and other nonendangered wildlife use if the marshes are needed for housing development."

8. *Protecting Nesting Areas Versus Using Off-Road Vehicles*
"Restrictions should be placed on the use of off-road vehicles such as snowmobiles or trail bikes, if they harm wild animals or disturb nesting areas."

[a]Items 5 and 7 are taken verbatim and items 1 and 6 are modifications of items used by Kellert (1979).

predicts that farmers would tend to favor environmental exploitation on all of the issues. The diffusion hypothesis, as linked to the theory of nature-exploitation, would suggest that rural, nonfarm people will be less likely to take an exploitative stand than farmers, but more likely to take this position than urbanites.

Both the nature-exploitative and multidimensional propositions lead to the hypothesis that farmers will have a greater personal stake than others in the outcomes of the tradeoffs regarding agriculture. With respect to the issues examined in this study, farmers would be expected to favor the use of pesticides, unregulated freedom to convert grassland to cropland, more irrigation, further draining of wetlands for agricultural expansion, and grazing livestock on public lands. However, if owner-operators tend more than tenants and absentee owners to take into account the long-term consequences of their farming practices (e.g., maintaining the farm for their children), then they would be expected to be more environmentally concerned.

The last three issues certainly have salience for one or more publics, including housing developers, duck hunters, and owners of off-road vehicles. However, the proposition of multidimensionality suggests they would have no unique relevance for farmers, urban dwellers, or any of the other residence groupings. Hence there should be no significant attitudinal differences among categories. Of course, there may be variation among residence categories with respect to attitudes toward wildlife (Kellert and Berry 1980). However, with the exception of the pesticide issue, all of the preservation options used in this study refer to protection of wildlife and, thus, issue variations deal with different forms of nature exploitation. Furthermore, if differences are found between farmers and other residence categories for the agricultural issues, but not for nonagricultural issues, this will indicate that differential attitudes toward wildlife do not explain the variations.

The diffusion hypothesis states that since many rural persons other than farmers are themselves somewhat dependent upon agriculture, they will tend to favor utilitarian or exploitative uses of natural resources. However, this effect does not apply equally to all rural residents. "Rural nonfarm" is a somewhat mixed category including persons in small farming communities and those who work in and live near urban areas. The latter group may perceive the benefits or costs of farming practices as less relevant to their lives than farmers or small town residents. Accordingly, the nonfarm residence category was further divided into small town and rural nonfarm.

Methods

Sample

Data are from a 1987 sample of 507 adults (18 years of age or older) residing in Nebraska. Respondents were selected through random digit dialing and interviewed by telephone, with 75% of those contacted providing a usable interview. Weights were applied to adjust for sex and age differences from census population figures so that the total sample would correspond to population estimates (Table 2).

Dependent Variable: Preservation of Natural Habitat

In this study measurement of environmental concern contrasted the preservation of natural habitat on the one hand with a variety of nature-exploitative uses on the other. Before presenting the eight environmental issues to the respondents, they were told, "I am going to read several statements that deal with alternative uses of natural resources. For each statement, I would like you to tell me whether you strongly agree, agree, disagree, or strongly disagree."

Independent Variables

Residence, the major focus of the study, was first categorized as rural farm, open country but not on a farm, small town (towns under 2,500 population), and urban. Our interest in ownership centered around the theoretically important distinction between farmers who own, manage, and live on their own land and those who do not. Consequently, the category "owner-operator" includes those respondents who had an occupation coded as farmer, whose family owned their own land, and some household member actively farmed during the study year. Some of these families also rented land, but as long as they owned some of the farm property they were considered owner-operators. The other farm category includes absentee owners of farms (typically larger, corporate-type farms) being farmed by an employee or tenant and persons farming rented land.

In addition to residence, the demographic and social variables of age, sex, education, and family income were included; previous studies reported these to be associated with environmental concerns. These variables were included in the analysis to avoid a possible spurious relationship between residence and attitudes toward environmental issues. (All possible first-order interactions were examined, but none were found to be significant.) Age was treated as a continuous variable. Education was categorized as less than high school, high school diploma, some college, and bachelor's degree or higher. Annual family income was measured in categories ranging from $5,000 or less to $60,000 or more.

TABLE 2

REPRESENTATIVENESS OF THE 1987 SURVEY RESPONDENTS

	1980 CENSUS[a]	SURVEY	WEIGHTED SURVEY
State Regions			
Panhandle	6.0	6.4	6.1
Southwest	9.0	7.3	8.9
North	13.0	12.6	12.8
South Central	14.0	12.6	14.2
Omaha Area	34.0	32.1	33.7
Southeast	24.0	29.0	24.3
Age			
Under 35	38.0	36.2	38.3
35 - 49	22.0	27.0	22.2
50 - 64	20.0	26.0	20.0
65+	19.0	16.7	19.2
Sex			
Males	48.0	43.3	47.7
Females	52.0	56.7	52.3

[a] Bureau of the Census 1980.

Method of Analysis

Discriminant analysis (Klecka 1980) was used to examine the relationship between residence and attitudes toward the protection of natural habitat. We selected discriminant techniques to accomplish two goals.

First, as in ordinary least squares regression, we could analyze the independent effects of various residence factors, while controlling for effects of age, education, income, and sex on respondents' environmental attitudes. Second, we also could examine variation in the dependent categories of environmental attitudes (their exploitative or preservationist dimensions) which traditional regression analysis omits. Support levels vary across the environmental issues, and the residence factors that distinguish a strong preservationist stance on one issue may contribute to moderate support on another issue. Discriminant analysis tracks these patterns of shifting environmental attitudes among respondents. Discriminant analysis creates one or more linear combinations of the independent variables that best predict the category of the dependent variables in which each case (response) appears. Moreover, this procedure treats dependent measures as categorical, analyzing the distance of those categories from each other. It does not assume a linear, ordinal or interval distance between responses.

In this study, responses to each of the eight attitudinal questions were collapsed into three categories. We refer to a strong position in support of preserving natural habitat (i.e., responded "strongly agree" or "strongly disagree" depending upon the way a question was worded) as "strong preservation." Favoring protecting habitat, but not taking a strong position is referred to as "moderate preservation." Relatively few persons took a strong nature-exploitative stance. Thus, to obtain enough cases for analysis, the third category, referred to as "nature exploitative," represents all those who took a nonpreservationist position, whether strong or moderate.

Although the original questions were worded such that agreement represented a nature-exploitative position for some items and a preservationist stance for others, signs for the coefficients have been placed for consistency so that the larger the number, the greater the preservationist stance. The coefficients for the urban category have been set at zero. Therefore, if the score of a given residence category is negative, respondents tend to have a more nature-exploitative attitude than urbanites; if the score is positive, respondents tend to lean more to the preservationist side than those in the urban group. Given the size of the sample, a coefficient of ± 0.20 or greater indicates a substantive contribution to the discriminant function. Additionally, for each of the issues a stepwise discriminant analysis identified the significance of the contribution of the residence categories to the explained variance. The group centroids indicate the relative location of each category of the dependent variable on a continuum of attitudes. The direction of the centroid sign and the magnitude of the centroid identify the divergence or homogeneity of each dependent category, suggesting how far apart preservationists and nature-exploitative respondents actually are in their attitudes.

Before conducting the analyses of the individual dependent variables,

we considered the possibility that these might reflect one general dimension of environmental concerns. Varimax factor analysis of the eight questions yielded three factors, two of which shared considerable variance. Cronbach's alpha of reliability ranged from .64 to .62. This result supports the idea that these issues represent different environmental concerns rather than representing a unidimensional construct that might be referred to as "degree of concern about the environment." Some respondents might have this coherent orientation (e.g., "core environmentalists") but, as Morrison (1986, p. 193) has suggested, we believe "the core is a very small proportion of the population at large." We suspect "environmentalism" is an emergent orientation in Western society, but a discussion of this point is beyond the scope of this paper. See Dunlap and Van Liere (1984) for an especially useful examination of this issue. For our purposes, we will analyze the attitude items as distinct dependent variables.

Findings

Large majorities of the respondents took either a strong- or moderate-preservationist stance on all eight issues (Table 3). The degree of support varied somewhat from 93.2% agreeing or strongly agreeing that nesting areas should be protected from off-road vehicles to 68.2% stating that grazing should be limited on publicly owned lands.

Four of the five agricultural issues resulted in statistically significant functions, while none of the other items reached significance (Table 4). The one nonsignificant agricultural item asked about cattle and sheep grazing on public lands. This item would be of particular concern to ranchers. However, the sample included very few livestock producers and thus this issue may be of no more personal concern to the farmers in this study than to anyone else. These results suggest that farmers and rural people in general are no more likely to hold a nature-exploitative attitude than residents of urban areas with respect to environmental issues that do not involve an interest or concern specific to persons living in a given type of residential area. On the other hand, the existence of significant differences among residence categories for four of the five agricultural issues suggests that the multidimensional proposition may be correct and that the findings are interpretable within the broader theoretical context of rational choice or exchange theory. This interpretation can be examined in some detail by considering the differences among residence categories for each of the issues with statistically significant functions.

Farmers, as hypothesized, are more likely to favor pesticide use than others. The nature-exploitative theory suggested that owner-operators would not be any less exploitative in their view of nature than other

TABLE 3

DISTRIBUTION OF ATTITUDES TOWARDS THE PROTECTION OF NATURAL HABITAT, BY VALID PERCENT

	Strongly Agree	Agree	Disagree	Strongly Disagree	Number
Issues					
Use pesticides despite harm to wildlife	1.0%	17.1%	56.9%	25.0%	474
Conservation plan should be required to prevent soil erosion	31.2	54.6	12.5	1.7	504
Limit further irrigation to protect habitat	20.3	64.4	13.8	1.6	474
Limit further agricultural expansion to protect wet-lands	21.4	68.5	9.7	0.4	482
Limit grazing on public land to protect habitat	10.5	57.7	28.5	3.4	471
Take resources from wilderness despite loss of wildlife habitat	1.8	21.9	55.6	20.7	473
Build housing on marshes despite loss of wildlife habitat	0.5	15.2	58.9	25.5	494
Restrict use of off-road vehi-cles to protect nesting areas	33.0	60.2	6.0	0.8	500

farmers; as groups, both make a living through using the natural environment. The multidimensional proposition, however, suggested that the interests of owner-operators would be greater with respect to protection of natural resources. This notion is clearly supported in that absentee owners and tenants (b = -.785) are more than twice as likely as owner-operators (b = -.373) to advocate using pesticides to maintain current levels of agricultural production, even when harmful to wildlife. As suggested by the diffusion hypothesis, rural nonfarm people (b = -.208) also are significantly more likely to favor using pesticides than are small town residents and urbanites.

While not central to the present study, the findings regarding the sociodemographic variables are interesting and deserve mention. Respondents with higher levels of education (b = .338) are less likely to support using pesticides whereas those with higher income are somewhat more likely to support its use. A test for interaction effects yielded no significant increase to the explained variance in the equation, and we are left with no apparent explanation for these divergent effects of income and education. Among equally educated Nebraskans, higher family income levels produce more nature exploitative attitudes toward pesticide use. The group centroids demonstrate that nature exploitative (-.387) and preservationist (.317) respondents are at opposing ends of this issue, after controlling for all other variables.

Farm owner-operators (b = .423), along with persons living in small towns (b = .473), are significantly more likely than others to believe that a conservation plan should be required for those who wish to use highly erodible grassland for crop production. This result is contrary to the theory that farmers and other rural people hold a generally nature-exploitative orientation toward the environment. Farm tenants and absentee owners and rural nonfarm people, on the other hand, are not significantly different from urbanites in their lower degree of environmental concern about soil erosion. Among the other independent variables only education is related with statistical significance (b = .955). Those with higher levels of education are clearly more supportive of protecting erodible soil through requiring a conservation plan. The group centroids indicate the largest divergence of all issues between the nature exploitative (-.551) and strong preservationist respondents (.389).

Although the canonical correlation for the irrigation issue is significant, there is relatively little variation among the residence categories. None of them made a significant contribution to the explained variance. Reconsideration of the original hypothesis suggests that farmers may not be the only persons with a predominant interest in irrigation. In fact, water and water rights are among the more important concerns of persons across the rural-urban continuum in the semiarid Great Plains

TABLE 4

ATTITUDES TOWARD THE PROTECTION OF NATURAL HABITAT USING DISCRIMINANT ANALYSIS

	Protect Wildlife v. Use Pesticides	Protect Erodible Soil v. Use Land Without Plan	Protect Riverine Habitat v. Irrigation	Protect Wetlands v. Agricultural Expansion
	Standardized Discriminant Function Coefficients			
Urban (n=175)	set to zero, other coefficients may be seen as varying more or less from urbanites.			
Family Farm (n=33)	-.373*a	.423**	-.281	-.249**
Nonfamily Farm (n=23)	-.785	.106	-.123	-.544**
Rural Nonfarm (n=35)	-.208	.167	-.309	-.598**
Small Town (n=221)	-.019	.473*	.281	-.452**
	Other Independent Variables			
Age	.338	.235	.827	.389
Education	.273	.955	.334	.388
Income	-.163	.014	-.192	-.659
Sex	.202	-.406	-.069	-.203
Canonical Correlations	.220*	.278***	.211**	.208**
	Group Centroids			
Nature Exploitative	-.387	-.551	-.311	-.111
Moderate Habitat Preservation	-.003	-.130	-.037	-.111
Strong Habitat Preservation	.317	.389	.384	.403

TABLE 4: Continued

	Protect Plants v. Grazing	Protect Wilderness v. Use Natural Resources	Protect Marshes v. Housing Development	Protect Nesting v. Off-Road Vehicles
	Standardized Discriminant Function Coefficients			
Urban (n=175)	set to zero, other coefficients may be seen as varying more or less from urbanites.			
Family Farm (n=33)	.786	-.080	-.129	-.403
Nonfamily Farm (n=23)	.292	.498	.072	-.010
Rural Nonfarm (n=35)	.385	.485	.445	-.085
Small Town (n=221)	.233	.148	.370	-.307
	Other Independent Variables			
Age	-.527	-.407	-.587	.479
Education	.034	-.595	-.219	.232
Income	-.577	.274	-.343	-.479
Sex	-.015	-.212	-.577	-.582
Canonical Correlations	.181	.178	.113	.162
	Group Centroids			
Nature Exploitative	-.001	.232	-.064	-.584
Moderate Habitat Preservation	.098	.005	.081	.004
Strong Habitat Preservation	-.528	-.317	-.177	.108

[a] Using stepwise analysis, * P < .05; ** P < .01; *** P < .001.

region (Reisner 1986). All of the sociodemographic control variables are significantly related to attitudes toward protecting riverine habitat. Age has an especially prominent role (b = .827); older people are more likely to take a preservationist position. Persons with higher education (b = .334), and the less affluent (b = -.192) also tend to be preservationists with respect to this issue.

The fourth question concerned preservation of wetlands to protect endangered species of birds and other wildlife, or drainage for further agricultural expansion. The first discriminant function is significant, but nonlinear according to the group centroids. The analysis indicated no significant difference between those with a nature-exploitative view (-.111) and moderate preservationists (-.111); these groups were combined into a single response category to clarify the direction of effects from strong preservationists (.403). All of the residence categories now make a significant contribution to the explained variation for the wetlands issue. As both theories suggest, urban people are more likely to be preservationists than any other residence category. However, supporting the hypothesis that farm owner-operators will take a more preservationist position than others involved in agriculture, this category ranks second (b = -.249). Persons in all of the other residence categories are more likely to oppose the preservationist view. Age and education are associated with a preservation stance. Men are more likely than women to want to preserve wetlands (b = -.203). Family income (b = -.659) makes a substantial contribution to this issue with higher-income respondents being more likely to resist preservation of wetlands.

Conclusions

The predominant finding in previous studies of rural-urban differences in environmental concern has been that urban people tend to be more concerned about environmental issues than are rural residents. Several theories have been advanced to explain this relationship. However, past studies yielded contradictory results, suggesting that a residence-concern relationship may be spurious. We divided the rural category into more precise subgroupings, and our findings strongly suggest that observed associations between residence and environmental attitudes are indeed spurious. The differences that have been found do not arise from residence *per se*, but from some other factor or factors associated with both. More specifically, examination of residence differences for eight environmental issues found only four to be significantly related to residence, each of which was agriculturally related, and each of these presents a somewhat different pattern of relationship to residence categories.

Given that the residence-concern relationship is spurious, the next research question was how to account for the significant, but contradictory, differences that do appear among residence categories. At least implicitly, the proposition that "rural unconcern" for environmental protection arises from a lack of concern by farmers recognizes the possible spuriousness of a residence-concern association. The occupation of farming is a joint residential-occupational variable only in the sense that farms are generally located in rural areas. Furthermore, the explanation of why farmers might have less concern is said to be based in their work, which is nature exploitative. The idea that the attitudes of farmers diffuse throughout rural areas links environmental attitudes of rural nonfarmers to their interdependence with agriculture, not to anything specifically related to living in open country or a small town.

To test these propositions, the residence variable specified farmers and other rural groups as separate categories. However, the findings indicate that nature-exploitation and diffusion theories provide little help in explaining the observed differences. According to these theories farmers should show less concern than all other categories on all environmental issues that involve exploitation of natural resources and other rural residents should have less concern than urban people. However, farmers are not significantly different from other residence categories on five of the eight issues nor are other rural people significantly different from urbanites.

An alternative, and equally promising explanation for residential differences in environmental concern is the suggestion that there are population-specific environmental concerns. Referring to more inclusive rational choice and exchange theories, we suggested that individuals will be more or less concerned about a specific environmental issue based on their understanding of the tradeoffs being made and their perceptions of the possible "goodness" of outcomes. Accordingly, farmers might be expected to respond differently from others only to issues that have particular salience for them as farmers. (Of course farmers also might differ from a group they are being compared with if the particular concern has salience for that group, such as air pollution for city residents.) Furthermore, if there are differences in perceptions among farmers, such as between owner-operated farmers and those working on absentee-owned farms, then they would be expected to respond differently. To the extent that persons in small towns are dependent upon agriculture, they would be expected to respond to agriculturally-related environmental issues in much the same way as farmers.

Consistent with the multidimensional proposition based on these more inclusive theories, all of the items found to be significant involve agriculturally-related tradeoffs. Farmers, especially those on absentee-

owned farms, were more likely than others to choose the use of pesticides over habitat protection, perhaps reflecting a perception that pesticides are necessary for a maximum crop yield in an unstable farm economy (Belden 1986). Farm owner-operators were somewhat more concerned about protecting wetlands, and in concert with small town dwellers, were significantly more desirous of protecting highly erodible soil than were other rural residents. The failure of the residence variable to differentiate among attitudes regarding irrigation suggests that this may be an issue of equal concern to all across urban and rural settings, albeit, for different reasons.

We believe that future research should treat residence as a complex continuum and give close attention to the multidimensionality of attitudes toward environmental issues. A promising approach lies in discovering the perceptions of consequences individuals hold with respect to tradeoffs between the use of natural resources and their preservation, and the factors which contribute to those perceptions.

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