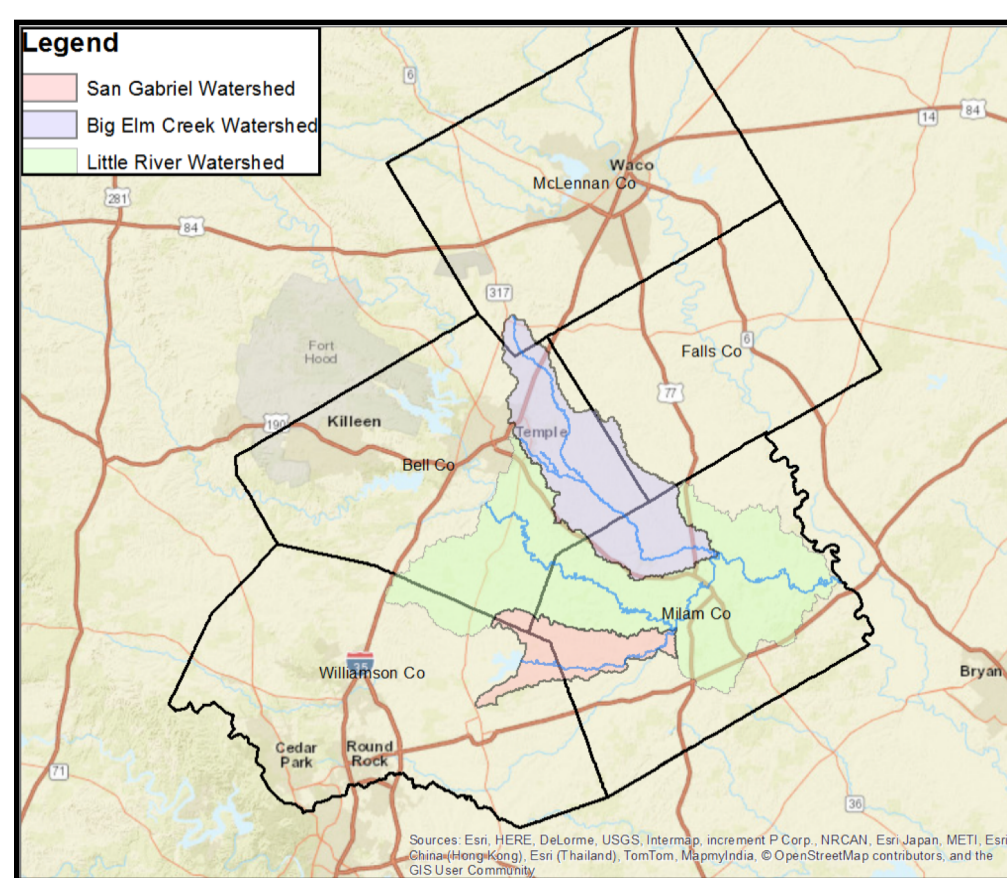


Identifying landowners' motivations for and barriers to adopting best management practices related to watershed based plans: Economic, intrinsic, and knowledge factors

Stacey Dewald, Dr. Theresa Pesl Murphrey, Dr. Holli Leggette, Dr. Allen Berthold, & Dr. Kevin Wagner

Introduction

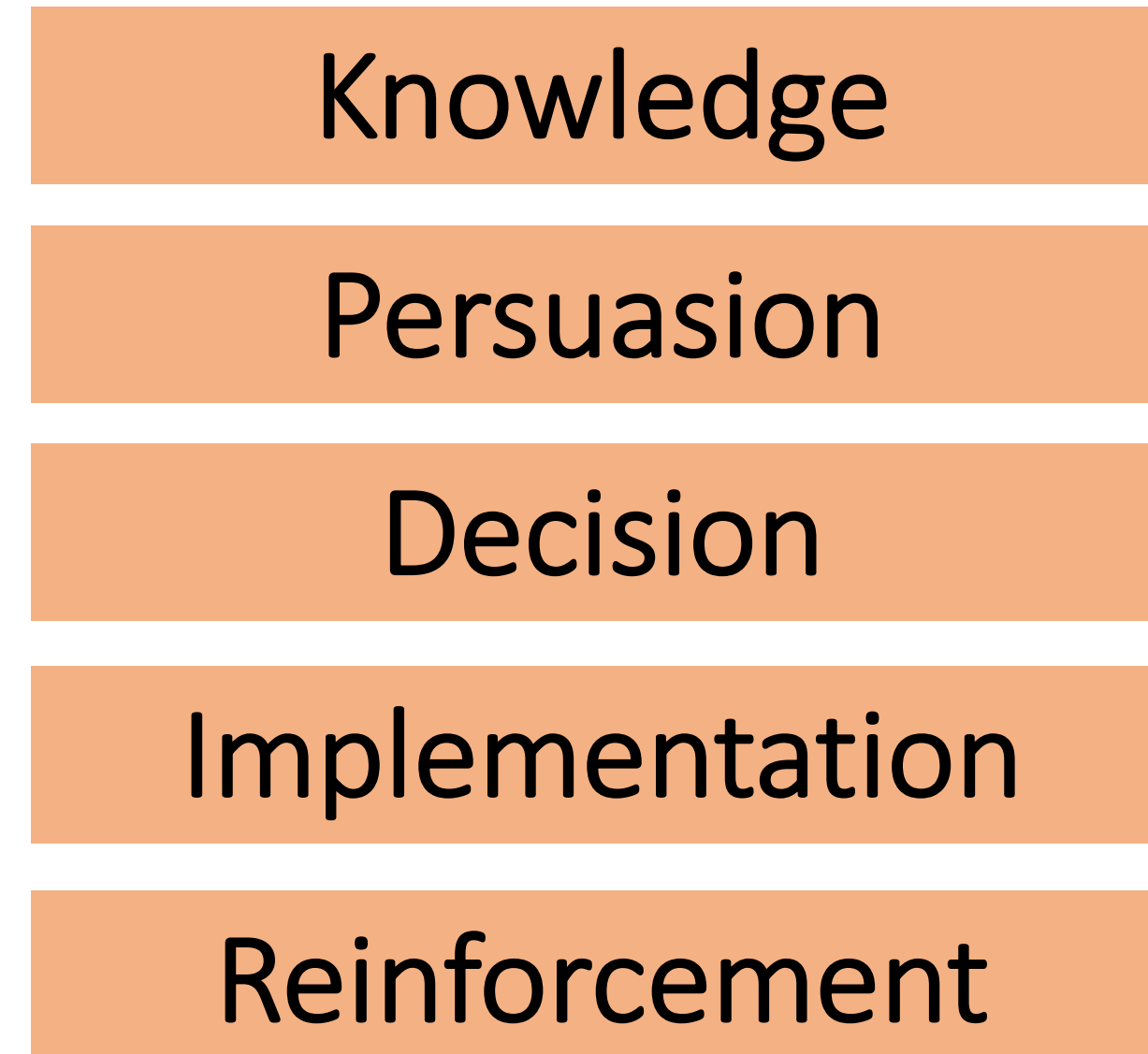
- Texas Commission on Environmental Quality (TCEQ; 2014a) deemed Little River unusable for recreational use as it “fail[ed] to meet contact recreation use standards” (Foust, 2010, para. 1), due to presence of bacteria.
- Bacteria could be reduced if landowners adopted best management practices (BMPs) associated with watershed based plans (WBPs).
- Many landowners face perceived barriers that prevent adoption of BMPs.
- Landowners should be educated about BMPs by targeting their motivations (Knowles, Holton, & Swanson, 1998) and addressing the perceived barriers to encourage adoption.



Map of Little River, Big Elm, and San Gabriel tributaries across Bell, Milam, and Falls counties (TWR, 2016). Adapted with permission from T. A. Berthold, Texas Water Resources Institute.

Theoretical Framework

Innovation-Decision process (Rogers, 2010)



Research Objectives/Questions

- Describe landowners' demographic and general land management/ownership and opinions regarding water quality.
 - What is the current land management/ownership of landowners in the area?
 - What agricultural commodities are produced on landowners' property?
 - How much household net income results from agricultural commodities produced on landowners' property?
- Describe landowners' economic, intrinsic, and knowledge motivations for and barriers to adopting BMPs related to WBPs.
 - What factors motivate landowners to adopt and implement BMPs related to water quality?
 - What barriers keep landowners from adopting and implementing BMPs related to water quality?

Note: This study was part of a larger project to communicate, educate, and encourage adoption of BMPs associated with creating a WBP in the identified watershed and to reduce bacteria in the waterway.

Method

- Quantitative – mail questionnaire (Dillman, Smyth & Christian, 2014), option to submit questionnaire online.
- Landowners in the Little River watershed ($N = 7,592$), obtained using GIS coordinates.
- Simple random sampling method ($n = 1,881$).
- 1,880 deliverable questionnaires.
- 25% ($n = 462$) response rate, 15% ($n = 275$) usable data.
- SPSS 23, descriptive statistics and t-tests (Field, 2013).
- No significant differences were found between early and late respondents (Lindner, Murphy, & Briers, 2001).
- Reliable post-hoc Cronbach's alpha of .969 and .905.
- 55 to 64 years of age ($n = 78$; 28.4%), male ($n = 185$; 67.3%), Caucasian ($n = 230$; 83.6%), bachelor's degree ($n = 66$; 24.0%).

Results

- 140 participants reported to raise livestock on their land.
- Participants reported they were concerned with drought and pollution.
- 37% received 0% of household income from commodities produced from their land whereas only 3% received 81-100% from commodities produced on their land.
- 39.2% were aware of the term BMP, 51.3% were aware of efforts to control water pollution through BMPs, and 41.9% were aware of the term incentive program.
- 8% were enrolled in the EQIP, and 7.1% were enrolled in the CRP.
- Participants reported water quality in their area was very important, they believed water quality status in their area was average, and they expected future water quality in their area to remain the same.

Motivators

- Economic profitability of BMP ($M = 4.19$, $SD = .94$)
- Improve/maintain environment for future generations ($M = 4.19$, $SD = .94$)
- Align with personal values and connection with land ($M = 4.12$, $SD = 1.00$)
- Increase property value of land ($M = 4.05$, $SD = 1.02$)

Barriers

- Unsure of government rules and regulations ($M = 3.75$, $SD = .99$)
- Lack information about the effectiveness of the BMP ($M = 3.67$, $SD = .99$)
- Unaware of incentive programs ($M = 3.66$, $SD = 1.09$)
- Initial cost of implementing BMPs ($M = 3.61$, $SD = 1.03$)

Motivators and barriers scale: ≤ 1.50 = strongly disagree; 1.51 – 2.49 = disagree; 2.50 – 3.49 = somewhat agree; 3.50 – 4.49 = agree; 4.50 \leq strongly agree.

Conclusions/Recommendations

- Qualitative interviews with landowners to provide a deeper understanding of factors that motivate or prevent landowners from adopting BMPs
- Provide landowners with educational resources and information about incentive programs through preferred communication methods, which is the first step in the Innovation-Decision process (Rogers, 2010).
- Implement a Systems Thinking Approach (Weinberg, 1975) to create a holistic understanding of all perceptions of stakeholders which will encourage support and adoption of BMPs.

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This project was supported by Clean Water Act Section 319(h) Nonpoint Source (NPS) Grant Program, Grant no. 131527 SRS M1502190, from the Texas Commission on Environmental Quality.