

# **2009 USDA-CRESS Water Conference**

## **Saint Louis, MO**

### **“Using Rural Stewardship Schemes In Environmental Protection”**

**By**

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# Scope of the Presentation

- Purpose of the Research
- Background Information and Issues
- Methodology and the Study Area
- Review of the Studies
- Initiatives By Various Stakeholders
- Findings
- Recommendations and Conclusions

# Objectives of the Research

- To assess issues in rural environmental protection
- To update the literature on rural stewardship schemes
- To analyze the conservation and recovery initiatives adopted in stewardship programs
- To design a tool for informing decision making

# Background Information/the Issues

- Stewardship refers to programs to encourage the provision of environmental amenities and the reduction of dis-amenities.
- Countryside environment embody a sense of rural living with numerous habitats and species diversity
- Aside from these benefits, rural environment is being degraded by the growing influence of human activities
- The pressures are leading to the loss of green space, natural habitats, biodiversity decline and water pollution, etc.
- To deal with these problems, rural stewardship schemes emerged as a tool to reward farmers and land owners for carrying out their activities in an environmental friendly manner
- In 5 selected sites (Hawaii, Georgia, Florida, South Dakota and Ohio) with vast support for variety of wildlife, biodiversity and agriculture activities
- Unsustainable practices, other variables and stressors from land use threaten the rural environment This has resulted in the flow of pollutants into watersheds, habitat decline, land loss /species endangerment
- Notwithstanding these problems, very little had been done to analyze pressures from human activities in the 3 regions and the role of stakeholders in confronting the problems
- Under these circumstances, the analysis of rural stewardship programs as a tool for nature preservation merits an urgent attention in research



Figure 1.1: Small Farms In Rural America



Figure 1.2: The Depiction of Rural Landscapes



Figure 1.3: Rural Portions of San Pedro Watershed In Arizona Rich In Biodiversity



Figure 1.4 : Rising Demand Threatening Biodiversity Along Upper San Pedro Watershed



Figure 1.5: The Problems of Rural Water Use and Over Pumping



Figure 1.6: The Growing Pressures Mounted By Human Settlement Impacting Rural Lands In Arizona



Figure 1.7: Agricultural Lands Under Threat From Urbanization



Figure 1.8 :Dumping of Hazardous Materials Quite Common In Rural Areas



Figure 1.9: Rural Areas Used As Dump Sites For Liquid Industrial Wastes



Figure 1.10: Waste From Mining

# Methods and the Study Area

- This research stresses a mix scale approach involving data gathering activities, data design and descriptive analysis
- **Stage 1: Literature Search**
  - Keyword based search for the relevant documents on rural stewardship and nature protection
  - Information from both academic/government databases and abstracts currently available
- **Stage 2: Identification of Study Sites and Field Data Gathering**
  - Identification of some of the essential study sites through field trip
  - The sites encompasses natural habitats, rural agricultural landscapes etc
- **Stage 3: Design of Data and Analysis**
  - The design of qualitative data sets containing natural areas and agricultural landscapes
  - The assessment of their relevance, and a descriptive analysis of the trends/ stewardship activities

# Study Area

- The study area in figure 2.1 covers sites in 5 states (Hawaii, Georgia, Ohio, South Dakota and Florida)
- Selecting these states stems from the scale of human activities in the rural environment, the impacts and the potentials for stewardship initiatives
- Study area endowed with habitats supporting a vast array of wildlife and plant communities
- These 3 agricultural regions provide timber and farm products for the people and some of the finest recreation lands in the country
- Habitat loss and species disappearance posing concerns in Hawaii and Georgia. In both states marginal habitats threatening the survival of red-cockaded woodpeckers and Nene waterfowl
- Growing concerns about water quality decline due to agriculture activities along the Ohio and South Dakota sites mostly within two major watersheds (Lake Erie and Big Sioux)
- Water quality in several areas of the Big Sioux river watershed below permissible standards due to excessive levels of fecal coliform bacteria, fertilizer run off on the rise in Lake Erie
- In the case of Florida, rural agricultural areas rapidly disappearing to accommodate changing population and development
- These attributes along with the ecological significance of the sites in nature preservation offer great opportunities for assessing the uses of rural stewardship schemes

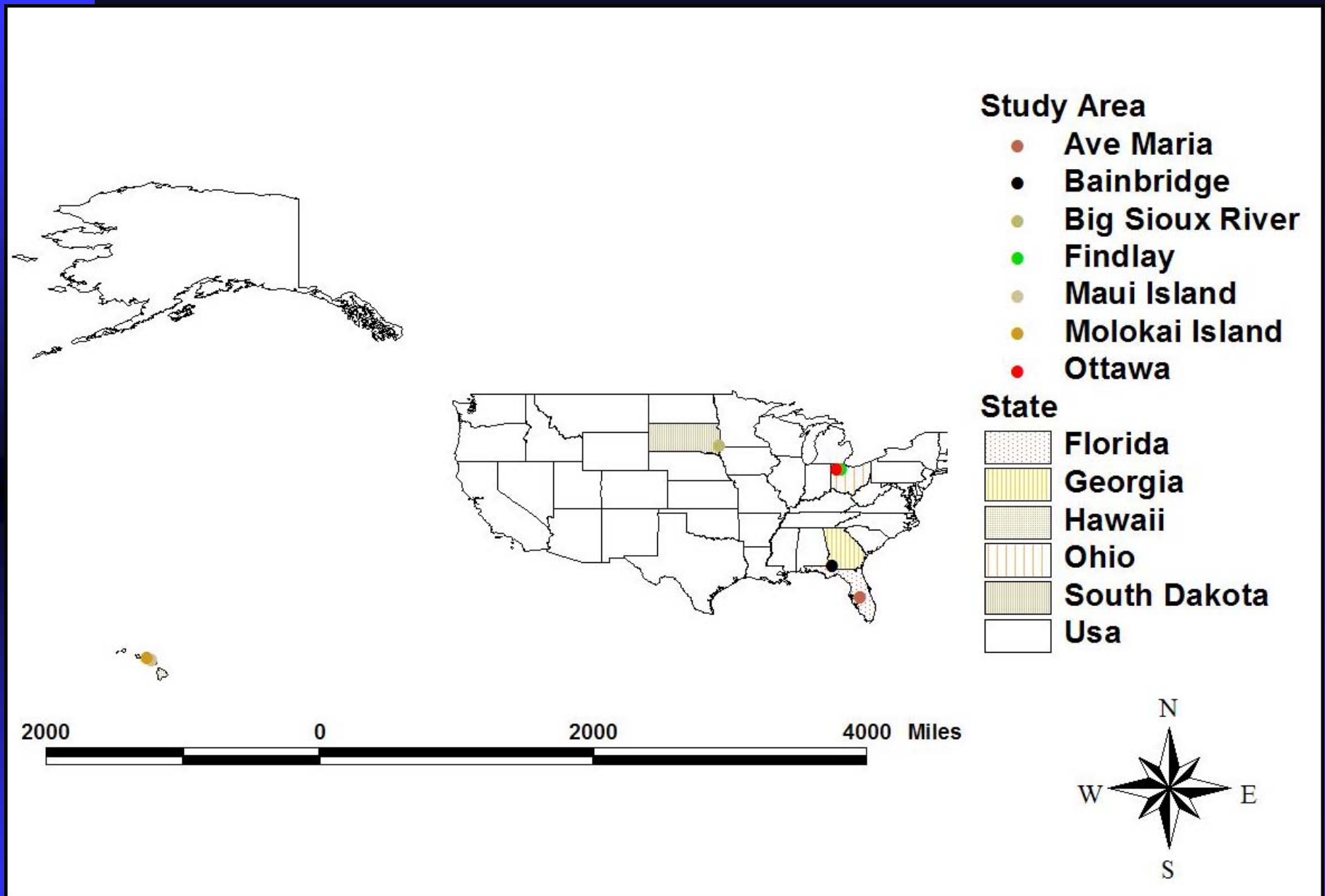


Figure 2.1: Map of The Study Area

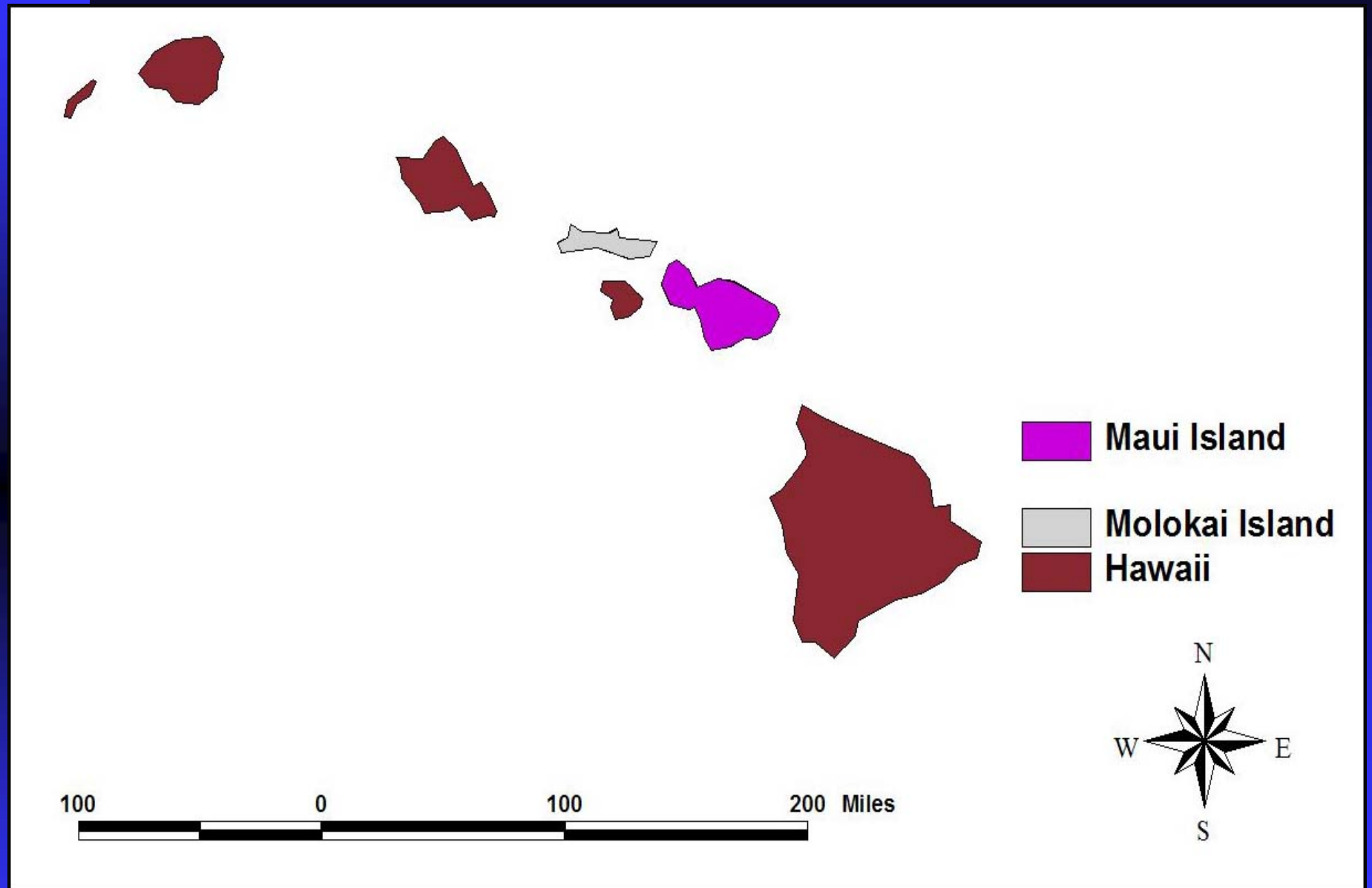


Figure 2.1b: Map of The Study Area Islands of Hawaii

# The Study Area and the Justifications

Table 1.1 Some of The Environmental Concerns In The Study Area

States	Sites	Ecological Concerns	Causes
<b>Hawaii</b>	Maui, and Molokai Island	Habitat loss and endangered species disappearance	Human activities, predation
<b>Georgia</b>	Bainbridge	Habitat loss and endangered species disappearance	Human activities
<b>Ohio</b>	Western Lake Erie: Findlay/ Ottawa	Water quality decline	Fertilizer run from agriculture
<b>South Dakota</b>	Big Sioux River	Water quality decline	Run off and fecal coliform, total suspended solids from livestock access. Agriculture,
<b>Florida</b>	Collier County, Ave Maria Town/ University	Loss of agricultural land and natural areas	Development, population growth and poor land use practices

# Case 1: Habitat and Species Recovery Program (Maui, Molokai, Hawaii and Bainbridge, Georgia)

- Through habitat protection schemes under the safe harbour agreements, private landowners from Islands of Maui, and Molokai in Hawaii and Bainbridge Georgia, facilitating species recovery effort
- Endangered birds Nene in Hawaii and the red-cockaded woodpeckers in Georgia experienced a remarkable recovery and reintroduction into healthy habitats.
- With the recovery habitats in both cases made up of farms and forest conservations land.
- The efforts in Hawaii involved pond design for molting season and the planting of native plants known to be nene food sources. This led to 600 acres in grassland habitat
- In one ranch, since 2001 more than 60 captive-bred nene have been released on the island
- The recovery efforts in Bainbridge part of Georgia focused on the provision of quality habitats for woodpecker
- From the stewardship program put into place, the population of these birds grew substantially at the Southlands Experimental Forest owned by International paper



Figure 2.1: Nene Waterfowl Birds In a Rural Ranch , Maui Hawaii (ED)



Figure 2.2: Piiholo Ranch Helping Endangered Nene Birds Survive In their Ranch (ED)



Figure 2.3: Endangered Red-cockaded Woodpeckers  
Benefiting From Conservation Incentive Programs In Georgia (ED)



Figure 2.4: The Red-Cockaded Woodpecker's Preferred Habitat: The Open Park-Like Structure of Mature Longleaf forest (ED)

## Case 2: Water Quality Improvement- (Ohio and South Dakota Lake Eire and Big Sioux Watersheds)

- With the quality of both watersheds threatened by flow of excess fertilizers and pesticides, fecal coliform, livestock access and feedlot run off from farm lands

- The recourse to conservation quickened moves to restore water quality in two degraded watersheds

- Conservation Reserve Enhancement Program (CREP) on the Ohio side provided farmers opportunities to boost conservation in order to alleviate impacts from farmland runoff

- The program pays farmers to take acres in marginal areas and convert them to grass, tree buffers and wetlands that filter pollutants and help detain sediments before they enter the stream

- CREP emphasis on such practices as advanced residue management and precision nutrient management has yielded dividends among farmers

- To improve water quality on the South Dakota side, landowners embarked on voluntary restriction of livestock access in several areas of the watershed below permissible standards



Figure 3.1: Grass and Tree buffers Used to Improve Water Quality and Flood Protection For Farmers Along Lake Erie In Ohio (USDA, NRCS/



Figure 3.2 :Grass Filter Strip Benefits Lake Erie Water Quality By Filtering Runoff From Cropland Within a Drainage System (USDA, NRCS/ ED)



Figure 3.3: Farms Protected by CREP-Funded Grass From Brown Silt Washed Over By Floodwaters In Ohio ( USDA, NRCS/ ED)



Figure 3.4: Landowner and Other participants in The Lake Erie Project Examine Improved Soil Structure Resulting From Best Farm practices Using a Soil Probe (USDA/ NRCS/ ED)



Figure 3.5: Landowners' Efforts To Restrict Livestock Access To Improve Water Quality Along the Big Sioux River In South Dakota ( Northern Prairies Land Trust)



Figure 3.6: Hazards To Farm Machinery On Stream Edge and Water Quality Addressed By Planting of Buffer Through an Easement Program For Landowners (NPLT)

## Case 3: Using Rural Land Stewardship In the Protection of Nature and Farm Land (Collier County, Florida)

- In a state where 2.8 million acres of farmland were converted to non agricultural uses from 1977 -2002
- The Rural Lands Stewardship Plan incentivizes the private protection of natural resources and agriculture, and promotes compact and sustainable communities
- Building on the principles of rural sustainability, land owners focused on the maintenance of the viability of farms, protection of ecosystem habitats and natural resources
- The implementation of the RLSP at Ave Maria University and Town on rural lands yielded a new strategy that offers significant promise for nature protection
- Designed to plan for the future of 200,000 acres of undeveloped land in Eastern Collier County while protecting the environment, agriculture and economic vitality
- Participants decided to put into protection some 17,000 acres and ecologically significant lands
- The program has not only been instrumental in allowing for the protection of significant habitats and wetland resources, but it allows for the continued operation of agricultural lands



Figure 4.1: Areas Slated For RLSP In Florida

# Stakeholder Efforts

## ■ Funding

- Funding by private land owners crucial in using RLSP help communities confront ecological decline in Collier County, Florida
- This resulted in the protection of natural resources, maintaining of open space, rural character and viability of agricultural enterprise

## ■ Collaboration In Habitat and Endangered Species Recovery

- In Hawaii, government, ranchers and industry worked jointly towards recovery plans to restrain loss of species and their habitats
- The use of incentive programs by landowners helped the U.S. Fish & Wildlife Service and the Hawaii Dept of Land and Natural Resources recover the endangered nene
- These partnerships of private landowners with state and federal agencies, as well as DU creating new opportunities to restore native habitats in Hawaii

## ■ Involvement of Community Organizations In Water Quality Improvement

- Environmental Defense working with NRCS and farmers in Ohio CREP to reduce losses of nutrients and sediments that flow into Lake Erie
- In South Dakota, North Prairie Land Trusts partnered with state agencies to initiate a pilot project to test lakes that drain into the Big Sioux for harmful bacteria

# Summary of Findings

- The results reveal that the study area's rural environment experienced some degradation due to human activities
- In response to the problems, stewardship programs emerged as valuable decision support tool to reverse the trends
- Promotion of habitat protection schemes through stewardship plans leading to endangered species recovery
- Implementation of stewardship plans yielding protection of nature and farmlands
- Conservation measures built on landowner incentives helping restore water quality along rural watersheds
- Numerous stakeholders very active in the stewardship schemes

# Recommendations

- To address some of the concerns that were identified in the research, four recommendations are presented as part of the remedies

- **Improve Stewardship Programs**

- Current programs should be improved by rewarding good stewardship on various categories of lands in order to foster a new class of conservation-oriented land owners in rural areas

- **Seek Inputs From Rural Residents**

- Government cannot deal with environmental problems in rural areas alone, rural dwellers at the center of these problems should be involved in policy implementation

- **Continue Funding For Stewardship Programs and Education**

- Notwithstanding the current fiscal climate, the existing policy framework must again fully fund stewardship programs and the education of landowners

- **Support Multi-stakeholder Partnerships**

- Government agencies and land owners should continue working with various stakeholders in their respective communities in future initiatives

# Conclusions

## ■ Six vital conclusions can be drawn from this study

- 1) The results point to widespread benefits of rural environmental stewardship programs
- 2) Environmental stewardship programs can be beneficial to policy makers in the protection of rural areas
- 3) Much of the ecological issues consist of degradation of natural areas, loss of farm lands and habitats, species endangerment and threats to water quality
- 4) With that came the gradual the emergence of rural environmental schemes as a regular component of policy response
- 5) Government response for dealing with the problems through stewardship schemes covered a series of programs to encourage ecosystem protection
- 6) The studies highlighted a sustained commitment towards environmental protection in the areas of rare species recovery and habitat conservation, with emphasis on water quality improvement, agricultural land and nature conservation

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