

**The Lower Rio Grande Valley**  
**National Wildlife Refuge:**  
**Adapting a Political Ecology Approach for Decision-making**

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This paper focuses on a project that is being conducted by the U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS) in the Lower Rio Grande Valley (LRGV) in South Texas. The project originally was called the Land Protection Plan for the Lower Rio Grande Valley Wildlife Refuge in Cameron, Hidalgo, Starr and Willacy counties in Texas. It was implemented in 1979 and is still proceeding today. The purpose of this plan was stated in the first official document produced for this project.

“This land protection plan (LPP) presents a combination of alternative actions to protect and maintain 10 distinct wildlife communities totaling 107,500 acres which represent the best remaining habitat for certain threatened species on the U.S. side of the Lower Rio Grande Valley (LRGV). More than 115 species of wildlife will benefit, including the white-wing dove, chachalaca; numerous endangered species such as the jaguarundi, ocelot, bald eagle, brown pelican, and peregrine falcon. Permanent protection of these communities will provide an area for the natural occurrence and distribution of those wildlife species and will eliminate the present threat of habitat destruction.

Present trends suggest that the remaining LRGV brushland in private ownership will be developed (destroyed as wildlife habitat) within five years. Some 90 percent has already been lost. Similar habitat on the Mexico side of the river is also being developed rapidly, particularly for agriculture. The Santa Ana National Wildlife Refuge (NWR) established 1942 and Lower Rio Grande Valley National Wildlife Refuge (NWR) established 1979 are considered in this LRGV NWR as a single unit.”(USDOI 1984).

This paper will provide an overview of this project and its progress over the last several years based primarily on the *Interim Comprehensive Management Plan (ICMP)* prepared by the USFWS in September of 1997. The report was prepared to fulfill the requirements of National Environmental Policy Act's requirement to conduct an Environmental Impact Assessment for Federal actions that might result in a significant environmental impact.

In this paper I use political ecology (Blaikie and Brookfield 1987) as a theoretical framework and conduct an assessment of the project. My interest is to evaluate the effectiveness of the ICMP to address issues which are highlighted in a political ecology approach.

One primary component of the LRGV NWR is that the current status of land acquisition has resulted in fragmented parcels of land being incorporated into the LRGV NWR. The issues are: the fragmented nature of the land acquisition program, and; the potential political and social boundaries that are being created. In order to conduct a more geographically based assessment, I reviewed the last ten years of five geographic journals (Geography, Geographical Journal, Progress in Physical Geography, Progress in Human Geography, and the Annals of the Association of American Geographers). I specifically looked for research by geographers that had been conducted on similar projects. What I found were articles that give some treatment of subjects that might be considered “peripheral” but there were no articles that discussed thoroughly the issues similar to the LRGV NWR project.

The complexity of this review became apparent the further I delved into the literature. The articles could only partially be adapted to the context of the LRGV NWR; however, I will provide a brief overview later in this paper.

#### *Literature Review*

### **Political Ecology**

Blaikie and Brookfield's (1987) political ecology approach provides the theoretical framework for this paper. Emel and Peet (1989) feature Blaikie's (1985) political economic

approach as it was used to describe the dynamics of soil erosion in developing countries. Emel and Peet (1989; 60) describe his theoretical approach as a combination of “two systems, the physical and the socio-economic in integration.” Blakie (1985) argues for the necessity to do more than consider one aspect (e.g. social, economic) of an area when making a resource assessment. He points out that a comprehensive perspective needs to place what one is trying to assess in a socio-political, geographical and historical context. Blakie’s (1985) emphasis is on the social element assessing, that is why certain land uses take place in terms of the political-economic context in which land users find themselves.

Blaikie and Brookfield (1987) expand on this theory in *Land Degradation and Society*. They argue that a “fundamental, theoretical confusion exists in the literature on land degradation.” They (1987) suggest that a theory to address land degradation must be able to explain the “local conjuncture of physical and social processes as well as provide a clearly understood basis for generalization about processes worldwide”(p. xx). Blaikie and Brookfield (1987) suggest that there are three causes of confusion about land degradation that arise from the literature.

“1) the nature of the debate between scientists, commentators and decision-makers has not been critically examined” (p. xvii)

Land degradation is by nature an interdisciplinary issue. Thus, there is a need to develop a comprehensive theory in which analytical tools of both the natural and social sciences are combined. Such a comprehensive approach will more effectively address the central question; “why land managers (e.g., peasants, pastoralists, commercial farmers, state forest departments etc.) are so often unwilling or unable to prevent such accelerated degradation?”

The second cause for confusion is:

2) “Profound differences of opinions about the significance of land degradation which arise from opposing theories of social change degradation” (Blaikie and Brookfield 1987: xviii).

Some researchers see there to be no degradation problem. Others treat land degradation as an externality—an unavoidable result of development and economic growth. The third point of view is that economic growth comes first and land degradation issues can be dealt with if the first task has been accomplished.

The other side of this confusion resides with natural scientists who don’t give due consideration to the social, economic, or political realities. They fail to ask the ‘right questions about the deeper causes of land degradation’ (Blaikie and Brookfield 1987: xix).

The third point of confusion is related to the previous points:

3) “...failure to view degradation within a wide historical and geographical framework” (p. xix).

An example of this point is highlighted by attempts to export policies and techniques from the U.S. to deal with land degradation in developing countries” (Blaikie and Brookfield 1987).”

Apparently, Blaikie’s approach has received significant recognition as a valid geographical approach. Westcoat (1991: 76) recognized Blaikie and Brookfield’s approach as fusing ecological and political-economic approaches. However, Watts (1997) in Progress in

Human Geography, *Classics in Human Geography Revisited*, criticizes Blaikie's first book (and the sequel) as having an "impoverished and non-dynamic sense of politics and the way in which power is exercised." Watts (1997) provides a fairly blunt review of the political weaknesses of Blaikie's book. Nonetheless, in the end, he praises the "stunning effect" in which Blaikie employed the political economy approach. Blaikie's approach has withstood the test of time and is still recognized as an approach that merits credibility. This same theory might be applied to other contexts and regions (Westcoat 1991), such as with the case of the LRGV NWR project.

### **Relevant research in the Geographical Literature**

I looked for articles that might be associated with the general character of the LRGV NWR. Specifically, I was looking for research dealt with land fragmentation, resource management, biotic preserves or any subject that could be peripherally associated with Blaikie's political ecology approach. These articles are grouped into the following categories: boundaries, policy, political ecology, and physical geography.

#### **Boundaries**

The geographical literature with boundary aspects covers a broad range of issues including international borderlands (Slowe 1991), boundaries associated with conflicting land uses (Long 1992) or ecological boundaries associated with wetlands. Slowe (1991) discusses economic and environmental characteristics of the border between Canada and the United States. Economically, the Free Trade Agreement has had more impact on Quebec than the U.S. side of the border, mainly in the form of a decline in the retail sector and a threat to the forestry sector. The boundary has also retarded the development of environmental policy, specifically associated

with the administration of the border lakes where agreements have been difficult to reach because of an increase in bureaucracy.

Barbier (1993), on the other hand, provides an argument for considering the maintenance of an historically unrecognized ecological boundary associated with wetlands. In this paper Barbier suggests that tropical wetlands provide, economic and environmental benefits that are often overlooked. He further outlines specific methods on how wetlands can be valued economically.

Long (1992) looked at conflicting land-use in the Amazon region of Ecuador. This paper overviews a resettlement project for earthquake victims and the subsequent conflict that resulted when they were moved to an area being considered for inclusion as a protected area under U.S. Agency for International Development (USAID). He addresses a larger scope of boundary issues associated with international agreements and impacts. These issues can have significant impact on local people.

## **Policy**

Policy implications for the LRGV NWR can be considerable if one views the overall context of the program. Land is being purchased, and easements are being made, in the four counties. In addition, it is apparent from the Interim Comprehensive Management Plan (ICMP)(USFWS 1997) that the USFWS is looking to both sides of the U.S./Mexican border for ecological balance. Included in this region are approximately thirty communities. Each of these political entities can have some voice in the LRGV NWR.

The geographical literature on policy is similarly diverse as the articles found about boundaries. South (1990) considered the proliferation of transnational Maquiladora along the U.

S.-Mexico border. In this article, the author conducted research to identify if there were locational associations with U.S. markets and parent plants. Even though the article looks beyond the scope of the regional context, the implications of this research are important for the LRGV.

Okoye (1991) overviewed a 'bottom-up' approach of rural development in Nigeria. This case study of Ambra State identified pivotal groups in transforming rural areas through the development of self-help initiatives; however, lack of clear policy guidelines has limited their effectiveness.

Morris and Young (1997) overviewed the Countryside Stewardship (CS) scheme in the United Kingdom which is considered "the cornerstone of the government's attempts to resolve agri-environmental problems." In general, the CS program was established as a part of UK agri-environmental policy to provide incentives to farmers for the protection of landscapes, wildlife features and to enhance public access to the countryside. The paper presents a case study of Cheshire. It assesses the geographical uptake of CS, and concludes that the program is accomplishing what it set out to do.

Keeler and Skuras (1990) look to problems of land fragmentation in Greek agriculture and how policies aimed at consolidating lands have been successful at addressing problems. Historically, through various policies and traditions, land in Greece has been divided into small economically un-viable properties. The authors conclude the policy efforts have been somewhat successful since 21 % of agricultural land has been consolidated. An important point made in this article is the importance of promoting the benefits of the consolidation schemes. These promotional efforts are necessary in order to overcome the natural conservatism of farmers who "at best, have little faith in the workings of the state and, at worst, distrust them (p. 75).



Rees (1991) looks at policies aimed at sustainable. Important in this analysis is the consideration of inter-generational equity. Current consumptive use of environmental resources must be curbed for future generations to use. In this article Rees attempted to illuminate that “the apparent consensus over the desirable nature of future environmental policy is really a sham”.

Although none of these papers are anything like the LRGV NWR project, each has important policy. When the underlying issues of these articles are compared the situation in the LRGV, they can provide important guidance and insights into developing a land protection program.

## **Biogeography**

Articles in biogeography would seem to be highly relevant to this topic. However, I found very few articles in the geographical literature. Haines-Young (1991) points out that geographers have not been central players in the “green movement”, even though geography would have been a “natural vehicle” (p. 101). He argues for a more applied biogeography, outlining specific activities such as resource inventory and evaluation, functional ecosystem studies, and ecosystem management methods that would lend credibility to the discipline. In a second article, Haines-Young (1992) refers back to his earlier work and overviews progress since the previous article. It is not entirely clear if his previous concerns were met; however, he concludes the article stating: “The study of ‘real world’ or ‘applied’ biogeography will, it seems, be a challenge indeed.”

Kupfer (1995) highlights the need to take on the challenge of merging the field with landscape ecology to address “...an important and pressing issue: nature reserve design and

functioning.” He reviews five landscape ecological themes that have relevance to reserve design and management: reserve distribution, reserve shape, landscape corridor design and functioning, boundary dynamics, and reserve functioning. Kupfer (1995: 18) stresses: “1) the role that landscape ecological theories may have in integrating existing principles from applied biogeography and population biology, and 2) the unique insights provided by a landscape ecological approach. He finally sees that, since biogeographers have distinct skills, they could contribute to the development of landscape ecological theory (Kupfer 1995)

#### Ecology, Biological Conservation and Nature Reserve Design

The LRGV is located where two American migratory bird flyways meet. As a result, considerations for ecological management could be framed around the needs of migratory birds. However, research is critically needed, not only for types of landscape elements, but also on the minimum sizes of those elements (Petit et al 1995). Some research has been done to examine the effects of fragmentation on migratory species in the neotropics. It shows a lack of detrimental effect, however, these results cannot be considered conclusive because of the limited amount of research that has been conducted (Petit et al 1995).

The debate regarding a single large or several small refuges (SLOSS) was apparently was “put to bed” by the time Soule and Simberloff (1986) wrote their article. The debate centered around the issue of whether a large refuge would provide more species diversity than several small ones. “Observational studies revealed that a few, dispersed sites usually contain as many species as does a single site of equal area” (Soule and Simberloff 1986). In their paper, they point out that the SLOSS argument is somewhat moot because the choice of whether to protect a large area or a series of small areas rarely occurs. They outlined a three step process, to identify the optimal size of nature reserves: “1) identify target or keystone species whose disappearance

would significantly decrease the value or species diversity of the reserve; 2) determine the minimum number of individuals in a population needed to guarantee a high probability of survival for these species; 3) using known densities, estimate the area needed to sustain the minimum number.” It is interesting to note that, although they outline an ecological approach to reserve design, they suggest that “cultural, political and economic factors should be considered the first class of criteria for nature reserve location (Soule and Simberloff 1986). Yet there is very little discussion of these criteria.

An additional concern of reserve design is the edge effect. Smaller isolated reserves may be expensive to maintain because of high ratios of edge to area (Soule and Simberloff 1986).

Fragmentation is a primary characteristic of the LRGV NWR. As can be seen in Map 5 the tracts of land included in the refuge are widely dispersed. The ICMP states that the aim of the LRGV NWR is for these tracts to be linked with corridors, however, at this point fragmentation should be a major concern. Fragmentation has been studied in numerous articles (Fahrig 1997, Lamberson et al 1992, Meyer et al 1998, Bascompte and Sole 1996, Diffendorfer et al, 1995, Hamel et al, 1993, Robinson et al 1992, Robinson et al 1995, Petit et al 1995, Groom and Schumaker 1993, McKelvey et al 1993, Schumaker 1996). Fahrig (1997) compared the relative effects of habitat loss and fragmentation on population extinction. Based on his “spatially explicit simulation model” that loss of habitat is significantly more important than fragmentation. This result is consistent with Soule and Simberloff’s(1986) findings.

Throughout the literature on fragmented habitat is the point that a clear understanding of impacts on resident species must be determined for a specific area--that different species (potentially biotic communities) respond differently to habitat fragmentation (Soule and Simberloff 1986, Robinson et al 1992). Robinson et al (1992), observing forest fragmentation,

recognized that in the most fragmented landscapes, certain species survival was dependent upon immigration of species from larger areas with more extensive forest cover. Diffendorfer et al (1995) studied the movements of three small mammals and discovered a variety of responses to increasing fragmentation, although, in the majority, these mammals moved more frequently to the larger patches.

Another important consideration for fragmented nature reserves is the consideration of garnering support from adjacent land-holders to foster wildlife preservation. Soule and Simberloff (1986) suggested that an important way to protect already established reserves was to create buffers zones. In their example, local people could be brought in and trained to the help with management of natural resources. This suggestion fits well within the context of political ecology.

Considerable research has also been conducted about refuge design (Fluery and Brown 1996, Russell 1994, Noss and Harris 1986, Noss and Cooperrider 1994, Bedward and Keith 1994). Important considerations include edge effect, establishment of corridors or buffers (Noss and Copperrider 1994). Pressey et al (1994) suggested that preserves be chosen “efficiently” so that preserves are not duplicated. I am not sure if I agree with this notion; however, all of the other issues should be considered in the LRGV NWR project management.

## **A Regional Context**

A major problem with implementing Blaikie’s approach on a project like the LRGV NWR is the highly complex sets of issues that exist in the LRGV. The ecological complexity of this project is highlighted in the Interim Comprehensive Management Plan (USFWS 1997). Eleven biotic communities have been prioritized for land acquisition. Boundaries for these

communities are based on historical information, soil types, hydrology and existing natural vegetation. These biotic area delineations specifically exclude administrative concerns, political jurisdictions or land ownership (USFWS 1997, 15). The ecological complexity of this region is further highlighted by the report containing forty-four pages of species lists of plants and animals that reside in the LRGV.

Another way to highlight the complexity of this region, and the nature of a project being implemented by the federal government, is the number of laws that “provide special guidance and have strong implications” for the USFWS implementing the LRGV NWR(USFWS 1997, 32). There are fifty-two separate Federal statutes listed in this report and those are only the ones that provide specific legal parameters and policy direction to the National Wildlife Refuge System. There is no reference in this document to state or local laws that would likely have an impact.

It is beyond the scope of this paper to even begin a thorough overview of the political, environmental or social aspects that exist in the LRGV. One way to deal with the problem of complexity would be to generalize the major components and simplify the political, economic, social and ecological to conduct the analysis (Kimmel 1998)(see figure 1 for a “working” schematic). In any case, a brief overview can provide some insights into the importance of considering more than just ecological concerns for the establishment of a project like the LRGV NWR. The ICMP provides a very brief overview of the socio-economic character of the LRGV--totally insufficient for a program designed to acquire 132,500 acres of land. Nonetheless, much of the information provided will suffice for providing a backdrop for this paper. It identifies three areas

**“Population Growth:** The LRGV is one of the fastest growing areas in the United States, with a population on both sides of the border approximately two million people. Between the years 1975 and 1995 the Cameron, Hidalgo and Willacy counties will grow an average of 29.4 percent. Populations in Cameron County have grown to surpass the projected 240,000 for 1995. The total Valley tourist population has surpassed the 1995 projected 150,000. This growth is equaled by bordering cities in Mexico whose combined growth with that of the U.S. in the LRGV is projected to grow to 4.3 million by the year 2020.

**Income Trends:** Growth in LRGVs can be linked to the development of the maquiladora industry in Mexico, and is expected to double between 1990 and 2010. Yet, close to half of the population is on the U.S. side has an annual income below the poverty level. The LRGV is considered to be one of the most impoverished regions in the United States.

**Economic Development Pressures:** According to 1983 figures, economic development with the ecosystem can be divided into five segments: 1) Trade 2) Manufacturing 3) Agriculture 4) Oil and Gas Production, and 5) Tourism. Tourism contributes \$500 million per year to the total economy (Rio Grande Valley Chamber of Commerce 1992)

Trade with Mexico increased 250% since 1983 and is projected to increase 400% by the year 2020 (USFWS 1997).

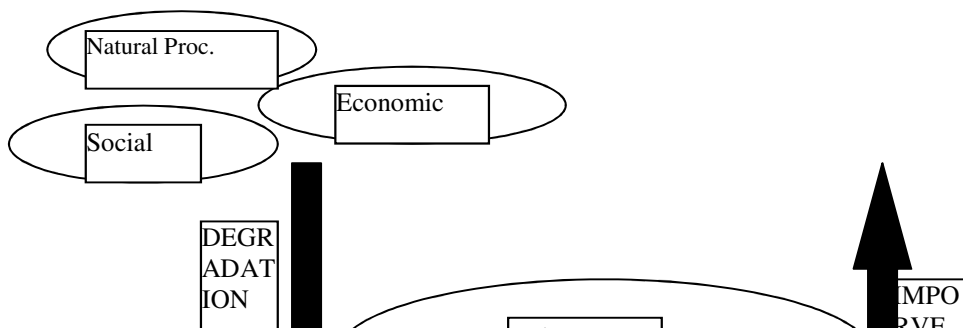


Figure 1. Diagram depicting a modified version of Blaikie and Brookfields (1987: 7)  
Degradation equation

[net degradation = (natural degrading processes + human interference) – (natural reproduction + restorative management)]

A Geography of the Lower Rio Grande Valley

The LRGV is not actually a “valley”, but the gently sloping delta of the Rio Grande River. The area supports an abundance of neotropical migratory songbirds, mammals, snakes, lizards and salamanders and contains many rare and unique plant and animal species, many of which reach the northernmost limits of their distribution in the LRGV. Approximately 18 Federally listed threatened and endangered species are found in the LRGV. Several other plant species are being proposed for listing as endangered species (USFWS 1997).

It is estimated that, since the 1920’s, approximately 95% of the original native brush land has been cleared or altered for agriculture or urban development. Also, it is estimated that 99% of the riparian vegetation on the U.S. side of the Rio Grande has been cleared (USFWS 1997). Falcon Dam, Retamal Dam, and Anzalduas Dam that were constructed for flood control,

irrigation, and municipal uses, have eliminated regular periodic flooding of the delta woodland and wetlands which has further aided clearing of native brush for agriculture. Development pressures are also major contributors to the loss of native brush land and wetland degradation and elimination. Population and development pressures will likely continue as the population in the LRGV continues to expand and the passing of the North American Free Trade Agreement (NAFTA) (USFWS 1997).

To date, approximately 66,000 acres of the 132,500 acres proposed for acquisition are currently under management by the LRGV NWR. This LRGV NWR's original emphasis was land acquisition which would eventually protect the remnants of existing native habitat to form a riparian corridor for plants and wildlife. "The project also called for the reclamation of acquired agricultural lands in order to reestablish native habitats for the benefit of the native plant and wildlife resources throughout the Area of Ecological Concern." (USFWS 1997). The Area of Ecological Concern includes the counties of Cameron, Hidalgo, Starr and Willacy. Adjacent portions of Tamaulipas, the Municipios of Matamoros, San Fernando, Valle Hermoso, Rio Bravo, Reynosa, Dias Ordaz, Camargo, Miguel Aleman, Mier Guerrero also pertain to this ecological district. Blair (1950) describes the Matamoros District as follows:

The southern part of the province in Texas is poorly drained...The brushlands of the Lower Rio Grande Valley, in Cameron, Willacy, Hidalgo, and Starr Counties are more luxuriant than the brushlands farther south, and they are characterized by the predominance of several species of plants that decrease in abundance northward. The most important of these species include: Retama (*Parkinsonia aculeata*), Texas ebony (*Siderocarpus flexicaulis*), wild olive (*Cordia boissieri*) and knockaway (*Ehretia Elliptica*). The most luxuriant brush occurs on the



immediate flood-plain of the Lower Rio Grande. Large elms (*Ulmus crassifolia*) dominate the flood-plain in some places, and there is usually an alternation of elm dominants and brush species.

As highlighted in the ICMP, the USFWS Refuge Manual outlines the need for long range management of national wildlife refuges. The ICMP recognizes four “pressures” that exist which provide the impetus to “coordinate major natural resource decisions.” These include:

1) the refuge consists of many separate tracts of land dispersed throughout a four county area, 2) other agencies and entities of management are involved in land and natural resource management in the same area, 3) the multitude of management needs arising as additional lands are acquired, and 4) the increasing urban, international, and economic development. This results in an ecosystem management approach rather than decision-making that would benefit only one particular resource over another. Planning provides a road map to facilitate the kind of coordination that is necessary to enhance the efficiency of implementing management actions designed to benefit the LGV NWR, Santa Ana NWR, and the Area of Ecological Concern.” (USFWS 1997, 12).

It is important to note that in this “Need for Action” section, a statement is made to develop “strategies/management actions that are consistent with ecologically desirable outcomes”. This statement highlights the focus of the USFWS. The concern is with the maintenance of the ecological balance of the biotic communities that have been identified as important for protection. In order to accomplish this task, the management plan is subdivided into management districts, which are identified by the counties in which the refuge tracts reside. The following figures give an overview of the project and the various components that are a part of the management plan. Map 1 shows the USFWS Region 2 and highlights the Area of Ecological Concern. Map 2 outlines the biotic communities identified in the management plan. Map 3 shows the Santa Ana NWR which is a primary part of the community outreach that is recommended in

the plan. Map 4 identifies the Acquisition Zone/Management Districts. Map 5 shows the actual tracts of land that are or proposed to be a part of the LRGV NWR. Map 6 shows Wetland/Water Management Priorities. Map 7 outlines areas that are of special concern in the ICMF for management because of fire potential or illegal trash dumping. Finally, Map 8 identifies areas that have potential for public use under Executive Order 12996 (USFWS 1997).

It is interesting to note that, except for an extensive species list and biotic descriptions, the report provides very little discussion of ecological, or other political, social or economic concerns that are associated with this project. The plan, however, does provide explicit management objectives. An earlier USFWS (1984) document provides a more detailed and discussion of these issues. It also considers concerns outside of the jurisdiction of the LRGV NWR more and overviews the social conditions in 1978. It, as well, outlines cooperating agencies and organizations to be involved in the project (USFWS 1983).

#### *Overview of the Land Protection Plan*

The vision for the LRGV NWR is to assist the development of an area to contain some of the last parcels of sub-tropical thorn forests back from the brink of extinction. The intent of the program is for the refuge to contain 132,500 acres of mostly contiguous tracts of natural brush, reforested farmlands and wetlands (USFWS 1997). The future for the program is of “land acquisition, habitat restoration, wetland recovery and compatible wildlife dependent recreation where the American public can enjoy this rare treasure”. The planning process has resulted in five major Refuge goals that are supported by a series of objectives and specific implementation strategies. These goals include:

#### **Goal I: Protect Biological Diversity, Land and Waters**

To restore, enhance and protect the natural diversity of the Lower Rio Grande Valley including threatened and endangered species on and off refuge lands, through

- Land acquisition when appropriate;
- Management of habitat and wildlife resources on refuge lands;
- Strengthening existing, and establishing new cooperative efforts with public and private conservation agencies, and other government jurisdictions including Mexico.

Under this goal quite specific and extensive objectives are outlined under the following categories including: a) acquisition and land status b) research objectives, c) endangered species objectives, d) revegetation and habitat management, e) fire management, f) law enforcement, and g) partnerships and cooperative efforts (USFWS 1997).

### **Goal II: Protect Water Rights, Water Management and the Management of Wetlands**

- To protect existing water rights holdings in the Area of Ecological Concern and obtain additional water rights, to the extent needed
- Improve the efficiency of water delivery systems and more effectively gauge water use for the benefit of refuge revegetation purposes and wetland restoration and enhancement purposes
- To achieve wetlands protection, enhancement, and rehabilitation within the Area of Ecological Concern.

Objectives for this goal become very specific and identify cooperation with certain agencies and the work to be completed of particular tracts of land within the refuge.

### **Goal III: Protect and Improve Water Quality**

- Improve refuge water quality and ensure water management projects are monitored for contamination and,
- reduce contaminant related fish and wildlife resource losses.

As with the last goal, objectives are fairly extensive and well thought out; however, details about specific areas of concern are not explicitly stated.

#### **Goal VI: Protect Cultural Resources**

- To protect, maintain, and plan for Service managed cultural resources on the Lower Rio Grande Valley NWR for the benefit of present and future generations.

This goal's objectives have significantly less detail than the previous goals. Mainly the objectives outline how current interpretive activities could be enhanced.

#### **Goal V: Public use, Recreation, and Wildlife Interpretation and Education**

- Continue to offer a quality wildlife observational trail system on Santa Ana NWR
- Offer compatible wildlife-dependent public access and recreational opportunities on tracts of the LRGV NWR that result in furthering the public's appreciation of LRGV Area of Ecological Concern and the National Wildlife Refuge System. This will be done by the provision of wildlife observation, photography, fishing and hunting recreational opportunities in accordance with Executive Order 12996 (Recreational uses are considered Compatible when they do not "materially detract from or interfere with the purposes for which a refuge is established).
- Continue wildlife interpretation and education efforts at Santa Ana NWR and initiate interpretive efforts for LRGV NWR in coordination with private groups and other jurisdictions

## **Can a Political Ecology Approach Be Adapted to the LRGV NWR Project?**

This paper has attempted to illuminate two overriding themes that stand out as important to optimize the success of the LRGV NWR. These two themes are: 1) consideration of important area specific ecological concerns, and 2) regional political ecology. In my estimation the USFWS is well equipped to address the concerns for the ecological management; however, based on the ICMP it appears there is a lack of consideration of the socio-political context. As has been highlighted previously, this region has highly complex characteristics in both of these arenas. It would be easy to get lost in the minutia and the complexities of the LRGV. Nonetheless, the history of this region suggests that some of the influences that Blaikie (1985) recognized have been occurring in the LRGV. The whole development of the LRGV NWR is a reaction to the loss of a significant portion of the native biotic communities within the Area of Ecological Concern.

An interesting result of this paper is that both of the basic themes (ecological and political ecology) have arrived at the same conclusion. That is, in order to understand the “real” picture, one must focus on what is happening at the local level, whether that is the local biotic community or the larger human community. Political ecology demands a pluralistic approach rather than unicausal theories and analysis (Pickles and Watts 1992) in which a “few strategic variables. . . relate together in a causal manner” (Blaikie and Brookfield 1987: 48). Blaikie and Brookfield were concerned with theorizing the environmental at the intersection of the local and the global. In doing so they focus on three key concepts: “1) the notion of political, economic, and ecological marginality, in which environmental degradation is the outcome of rational survival strategies by poor households responding to changes in physical and political economic contexts; 2) the idea of pressure of production of resources, where surplus extraction and exploitation among classes or

individuals may impose excessive demands on the environment, and; 3) the concept of *landesque* capital, where the investment in land beyond the life of the crop only takes place when other factors of production are present” (Pickles and Watts 1992

In order for the political ecological approach to be theoretically sound, it must be applicable to other contexts. The majority of articles that discuss political ecology do so in the context of developing countries (Grossman 1993, Blaikie 1985, Blaikie and Brookfield 1987, Blaikie 1995, Lee 1993). It is not clear why political ecology has not been used (from my literature review) in developed countries. Based on Watts (1997) critique, I might question whether it is more difficult to apply this theory to a more politically and economically complex situation. Nonetheless, the theory provides a starting point for conducting “contextual” research in the LRGV. And as I looked more closely at the situation in the LRGV it became more apparent that the demands this approach.

Ultimately it might not be necessary for the USFWS to do anything about the current situation in the LRGV and it is likely that they would have a moderately successful Refuge. As long as the EIS (which gave a finding of no significant impact on the Refuge properties) was accepted by the general public and they have the appropriated money from the U.S. Congress for acquisition and management of these properties, they could be successful at managing these reserves. However, larger questions arise regarding whether or not the fragmented nature of the LRGV NWR will be able to maintain the biotic species that the whole effort is aimed at protecting. Would these efforts be enhanced if the USFWS had a clearer understanding of the political ecology of the area that caused the land degradation? Would their efforts be enhanced if they could clarify the kinds of attitudes that the majority hispanic population has in regards to the federal government purchasing land to take out of agricultural production and put into native

vegetation. Map 8 shows tracts of the LRGV NWR that are prone to fire and illegal trash dumping. Are these trash dumping's symbolic of local peoples' attitudes toward the preservation efforts? Do the local people appreciate the efforts of the USFWS?

It is apparent from the ICMP that extensive consideration has been given to the goals for protecting the ecological and water (quantity and quality) related aspects of the project. Numerous specific accomplishable objectives have been outlined in the ICMP. However, for the socio-economic goals there is a very general treatment to the objectives and they tend to be vague and un-measurable. These goals also appear to be contained primarily within the services that are currently being offered by the Santa Ana Wildlife Refuge. The fact is if the Santa Ana NWR were simply to minimally expand their efforts for interpretation and cooperation with other organizations, these goals could easily be met.

Blaikie and Brookfield's (1987) approach begs the question of whether or not the "real" issues in the LRGV are being addressed or not. Will the economic and social pressures continue to erode the attempts of the USFWS to protect the vanishing biotic habitats. Ted Eubanks (1998) suggested that the LRGV is much like a third-world country in regards to the socio-economic and environmental situation. He also suggested that current census data for ethnicity and poverty in the LRGV correlates well with the original border between Mexico and the U.S. Census data reveals that, for the four counties included in the LRGV NWR, incomes for households are significantly lower than the national average.

Stea (1998) suggests that there is a general misunderstanding among Americans about the structure of the Mexican family and their attitudes towards the government. That Mexican people typically have a general disrespect for institutional authority. The social structure of the community is centered around the mother of the family. The interior of homes reflects a high

level of respect. The home he suggests is “always in order”. The environment outside the home is given little consideration. Are the illegal trash dumpings a symptom of these kinds of attitudes towards the efforts of the USFWS?

The earlier USFWS (1983) report reflects more consideration of socio-economic concerns than the current ICMP; however, it lacked specificity in goals and objectives. Based on my review of the ICMP it would behoove the USFWS to reassess their consideration of the socio-economic situation in the LRGV. The potential for their efforts to enhance the economy because of nature tourism is significant. Considerable opportunities for jobs and other benefits could be provided for the local community. However, Stea (1998) suggested that the majority of the local people in the LRGV are essentially Mexican. And their experience with government institutions is not very positive. Thus, they likely will have no interest in a project like the LRGV NWR and they could very well actively oppose it. However, if a concerted effort was made to fit the project into the communities with the specific goal of helping, it would likely have greater potential for success.

#### *Conclusion*

This paper has made a start of applying the theory of political ecology to the U.S. Fish and Wildlife’s LRGV NWR. What I have concluded from this research is that for both the ecological and socio-economic situation it is necessary to apply this approach to a specific context. Most of the ecological information necessary to make a start is already in place. For the socio-economic situation there is much work to be done. Although the LRGV is not a developing country, it has many of the characteristics of a developing country. The State of Texas and the U.S. Government should be very concerned about the situation in the Valley. NAFTA in the long



run could bring significant attention to our borderlands and if we want to look like we are a developed country, we should be very concerned about the image that the LRGV creates.

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