LOWER OWENS RIVER PROJECT

TECHNICAL MEMORANDUM #10

FRAMEWORK FOR THE RECREATION PLAN

TASK III B2

prepared for

Los Angeles Department of Water and Power
and
Inyo County Water Department

prepared by

Ecosystem Sciences

ABOUT TECHNICAL MEMORANDUMS

Technical memorandums are intended as information/data analysis of specific components in the Lower Owens River ecosystem management planning process. Ultimately, the individual environmental components described in tech memos will be used to build the final management plans for the Lower Owens River Project. Comments, questions, and suggestions on tech memos are encouraged; however, tech memos will not be revised. Criticisms, comments, suggestions, or recommendations which improve analysis or alter a decision on an environmental component will be incorporated into the draft management plans. These plans will in turn be subject to public review and subsequent revision leading to final plans.

TABLE OF CONTENTS

Purpose

This technical memorandum (Task III.B.2 of the workplan) describes methods to manage recreational use in the Lower Owens River Project (LORP) area. A more detailed and mapped recreational use plan will be developed from this technical memorandum as land use, wetland, wildlife, and river management plans are prepared to allow recreational use to be integrated throughout the LORP area. Recreational use refers to all human use activities in the LORP area other than livestock grazing, agriculture, and water diversion activities.

Existing and future conditions for recreational use are discussed for all management phases of the LORP, and a review is made of the recreational values that are currently held by stakeholders in the Owens Valley communities. Options to prepare for the potential increases in recreational demand and use as the LORP progresses are discussed and evaluated, and recommendations are made for education, recreational management, nature tourism (or ecotourism) and public participation in the LORP. The recreational use plan will integrate with river, wetland, and land management plans in order to ensure the sustainability of the regenerated physical and sociocultural ecosystem of the Owens Valley.

Review of Current Recreational Values

Technical memorandum #6 (S. Hill 1997) shows us clearly the social, cultural, economic, political and natural resource values of the various recreational user groups for the resources of the lower Owens River. Over 80% of those interviewed expressed a very strong desire to see collaborative decision-making and management consensus on effective and economical solutions in the planning and implementation stages, Awith an eye to the long-term management of the lower Owens River resources@ (S. Hill 1997). Though no group wants to see their specific use of the area resources to be rationed, or to see any substantial loss of access to the resources in the final LORP plans, most agreed that they understand the need to make changes in access and use for all groups if the LORP is to lead to social, economic, and environmental sustainability.

Nearly all recreational use groups, and most visitors, want to continue to enjoy open access and unrestricted recreational use of the resources, but more than 80% of those interviewed

acknowledged that LADWP is the landowner, manager, and decision-maker for access and use of the LORP area. The lower Owens Valley has become a recognized commons area through 50 years of relatively open access and use by local stakeholders (S.Hill 1997).

Due to years of conflict and negotiation about water diversion and export, most recreational users have come to perceive LADWP land and resources to be Apublic,@ and therefore many stakeholders also perceive that they should be entitled to determine individual accessibility and use of the resources without restriction. LADWP has, however, consistently allowed unrestricted recreational day-use throughout most of their landholdings in the Owens Valley, and grazing/irrigating leaseholders cannot restrict public access to more than 25% of their leased lands except irrigated pastures.

The MOU (1997) requires land management plans for problem areas (1997); the recreational use plan is part of land management plans. Most stakeholders interviewed (82%) Aare willing to cooperatively develop LORP land and water use management plans and to live with an increase in rules and regulations of use, set asides for T&E species, and closures of sensitive areas during critical seasons@ (S. Hill 1997). Most also support continued multiple use of the resources, to include grazing, water diversion, and high-impact recreational activities (i.e., hunting and mechanized recreational vehicles) in restricted areas.

Recreation Management - Current and Future

Included in the LORP is a Social Impact Assessment (SIA) that provides for sustainable development of the human values associated with the functioning of a healthy fishery and wetland habitat. Recreation is an important aspect of the SIA and will be addressed in relation to the Acommons@ resource dependent upon the implementation of the LORP (S. Hill 1997).

The MOU (1997) defines the LORP ecosystem as an interacting system of organisms considered together with their environment, taking into account economic, environmental, legal, social and technological factors. Recreation is recognized as a social, economic, and environmental component of the ecosystem, but recreationists can often degrade the land, water, and wildlife resources that support their activities by Asimplifying plant communities, increasing animal mortality, displacing and disturbing wildlife, and leaving litter and trash@ (Flather and

Cordell 1995). There is also great potential for increases in recreational use and demand associated with the LORP, therefore, recreation management is an essential part of the LORP.

Recreation management can be utilized to serve the needs of the resource, the users, and the communities surrounding the resource. Born of ecology and social psychology, it provides a recreation management approach for conflict avoidance and resolution, land stewardship, and social economics. But without an organized local group to recognize and manage the recreational values, whether monetary, aesthetic, or emotional, the LORP would be subject to the whims of users who may not be its best stewards. The LORP will undergo dramatic environmental change over the next decade, and it is the goal of the resource managers to determine how this change will affect the social and economic, as well as the environmental conditions of the Owens River valley.

Aldo Leopold described recreation as, Abarring agriculture, the most important of all land uses@ (Simpson and Cain 1995). For many stakeholders in the Owens Valley the preservation of recreational use and access takes priority among possible developments (S. Hill 1997). However, over-promotion and unrestricted growth of recreation could lead to destruction of the quality of the resource, the slow-paced rural quality of life, and recreational access and use. For the diverse group of recreational stakeholders involved in the LORP, the first step of a recreation management plan is to address the needs and effects of their participation.

The primary component of recreation in and around the LORP is the ecosystem itself. The land and water resources of the LORP become the base of the managed unit and are used as the foundation to build recreational access and use. Economic, recreational and other social needs rest on the management of sustainable natural resources in the LORP area. ARecreational activity of any sort often disturbs the natural processes in nature, and the abundance and total biomass of vegetation will decline as disturbance increases@ (Gutzwiller 1995). While precise descriptions of effects to soil are not well known, it is accepted that disturbances can adversely affect the germination, establishment, growth, and reproduction of plants (Gutzwiller 1995).

Water and land-based recreation can also affect water quality, fish habitat, erosion, and turbidity in the riparian area; trampling and informal, user-created trails impact vegetation, which can also adversely affect water quality and wildlife habitat (Cole 1997). Unrestricted

recreational use can be extremely harmful to wildlife communities; disturbance during nesting season, for example, carries effects adversely influencing the reproductive success of particular bird species (Knight and Cole 1995). A sustainable recreation resource requires a healthy and productive ecosystem and therefore demands recreation management as well as land and water management in order to continue to exist and provide opportunities for the users.

The LORP is being implemented by Inyo County and LADWP; the project is entirely on Los Angeles-owned land and all land uses, including recreational use, will be managed by LADWP. Certain parameters set by LADWP are of interest to recreationists and need to be considered. The lower Owens River and surrounding areas are currently available for recreational use on a day-use-only basis, any nighttime recreational activity is prohibited. LADWP assumes no initial responsibility or liability for recreational access and use and therefore cannot be expected to subsidize or sustain recreational management.

Development of any sort of facility on LADWP lands as part of a recreational management plan must be proposed, funded, and negotiated extensively before any action can be seriously considered. Any recreational activity that disturbs the aims and goals of LADWP and the LORP will hinder access to and use of the natural resource by any recreational group or individual.

The issue of artifact-gathering (pot-hunting) is also addressed in the user group interview results. The current lack of knowledge by most local recreational users of the LORP area of a federal law prohibiting this activity (S. Hill 1997), and the potential increase in numbers of tourists to the LORP area, could substantially increase illegal and high-impact recreational artifact gathering if a managed recreational use plan is not devised and enforced by local communities. The education of local community members and tourists, as well as the enforcement of regulations prohibiting such activity need to be addressed by the final recreation management plan. The plan can guide the development of sustainable recreation by promoting the archaeological qualities of the lower Owens River area, while also protecting the needs of local Paiute bands, and complying with federal law.

The majority of recreational users interviewed expressed a support of continued multiple use in the LORP, but also expressed a strong desire to see low-impact and dispersed use of the

LORP commons area. Recreational users and visitors enjoy being uncrowded by other recreationists, having the feeling of open-space and the enjoyment of nature, and the freedom to utilize the LORP area in an unobtrusive way. The stakeholders of the LORP do not want an overly managed resource, but do desire one that can accommodate their multiple uses (S. Hill 1997). The recreation management plan must exclude particular high-impact and obtrusive activities from notably sensitive areas, but can also protect users from feeling infringed upon in all areas of the LORP.

Tourists also indicate that they prefer many of the same qualities in recreation that local residents desire, relaxed and self-directed activities (S. Hill 1997). The recreation plan must accommodate visitor activity, while also maintaining a sustainable resource to be enjoyed by local users. It is the goal of the LORP to create an attractive and fulfilling destination to satisfy tourists= motivations, and to therefore contribute to the needs of the local tourism-based economy, but not to overwhelm the capacity of the resource and the desires of the local residents for a relatively unmanaged resource.

The factors to consider in recreation management can generally be divided into two groups: social, such as crowding, user conflicts, and resource preferences; and environmental, such as impact on fish, wildlife, and habitat. The data that follows is the result of literature research and represents the current level of inquiry into the field of recreation ecology and management.

Fishing is perhaps the most important recreational activity to consider in the development of a recreational management plan for the LORP. Regulation and enforcement of this activity are the responsibilities of California Department of Fish and Game; therefore, integration of goals and objectives with recreation management by local communities is essential.

Crowding and conflict between recreational users are potential challenges to sustainable recreation management. Trail overuse and riparian habitat disturbance need to be monitored and addressed in the recreation plan. Boat launches, parking and refuse disposal are high-impact factors and need intensive recreation management.

Motor boat noise, crowding and safety also demand attention in the recreation plan in key areas of the LORP. While motoring recreationists tend to be less sensitive to crowding than

others (Manning 1986), the issue of habitat impact is increased. Recreation research has shown a significant decrease in the proportion of eagles feeding at sites where motorized boating had occurred within 200 meters of that area during the preceding 30 minutes (Knight and Cole 1995).

Canoeing is a potential new recreational activity in the lower Owens River as a result of the LORP. As a means to view wildlife and habitat, or as a destination activity itself, canoeing is a low-impact recreation that can be enjoyed by a large number of people. The activity itself requires little in the way of technical knowledge or strength and is undertaken by people of a variety of ages and physical conditions. One important aspect of recreational canoeists to consider is their relative high sensitivity level to contact with other recreationists; canoeists were found to be more sensitive to crowding than motorized boat users (Manning 1986). A distinction should be made in the recreation plan between motoring and paddling boats, and where each activity is appropriate and when. The impact of canoeing on the resource is relatively minimal; on the other hand, parking, put-in, portage, and take-out spots are areas that need more intensive recreation management.

The impact of self-propelled river travel on wildlife deserves some consideration only during bird breeding and nesting seasons, and even then, over-use is the principal concern. In a study of wildlife areas in Wisconsin, waters heavily used by boating recreationists were not used by breeding ducks, despite the fact that the habitat was suitable for nesting in all other ways (Anderson 1995). Another study of ruddy shelduck found that less than four canoe processions per day did not affect the numbers or daily activity of birds wintering on the river (Hulbert 1990). With moderate levels of user education and regulation, canoeing offers a sustainable recreational activity for the LORP area in a few years.

Inyo National Forest supervisors have reported the most number of mountain biking visitors per year than any other National Forest in the nation (Chavez 1996). Although most users are attracted to the steep gradient and shaded canopy of the forests, an increase in mountain biking activity in the LORP area will likely result from the implementation of the LORP. Mountain biking is generally considered a moderate impact recreation in relation to wildlife, sharing this ranking with horseback riding. Specific resource damage includes trail impact, soil impact, and water related impact, listed in order of primacy (Chavez 1996). The most important

component of mountain biking to consider is the history of biker conflicts with other users: socially, mountain biking is a high-impact sport. National Forest managers reported significant conflict between mountain bikers and equestrian groups and hikers, as well as moderate levels of conflict with ORV users and pack animals (Chavez 1996). Management of mountain biker behavior is an integral component of sustaining multiple use recreation in the LORP area.

The LORP calls for the establishment of a healthy riparian ecosystem and the promotion of biodiversity (Hill and Platts 1995). Already popular, the demand for wildlife viewing will undoubtedly increase as the LORP progresses and biodiversity increases. Bird watching is one of the most popular forms of nonconsumptive, wildlife-associated recreational activities currently in the LORP and the world, and is increasing in popularity yearly; estimates range as high as 60 million participants in the United States alone. Professional tour groups, bird clubs, and individuals bring millions of dollars to the areas surrounding birding hotspots (Kerlinger and Brett 1995).

As a result of the LORP, wildfowl and many types of migratory and native birds will undoubtedly return to the LORP area over the next few years. It could even become one of the most heavily used birding areas in the U.S. as habitat and conservation measures increase in the area. Research has demonstrated that the popularity of birding has led to habitat disturbance and that some amount of recreation management is necessary in order to protect the resource. Proximity and frequency of disturbances, especially during nesting season, are the issues that demand attention by management.

The effects of recreationists= disturbance on wildlife vary for different species, but include nest abandonment and exhaustion from energy waste due to flight responses (Anderson 1995). Recreation management of the LORP resources must include methods to efficiently coexist with wildlife in order to sustain the attraction of the resource. Also, wildlife users tend to want exclusive use of an area and this is a challenge to accommodate under a multiple use framework.

Informal, archaeological Apot-hunting@ is another recreational activity that will also be affected by the LORP. Searching for artifact memorabilia is a popular recreational pastime in California, and some amount of recreation management is necessary to protect the local Paiute

heritage, to promote value for and protection of cultural and historical resources, and to inform and educate recreational users of the LORP area that there is a federal law prohibiting informal pot-hunting.

Hiking as a recreational pastime has the lowest impact to the natural environment, although it is only extremely low levels of hiking use that show significant reductions in environmental impact. Beyond low-use levels, the amount of impact remains relatively stable, until, at very high levels of use and aggravating behavior, the impact increases and the ecosystem becomes unstable (Marion 1993). Crowding is the only significant social factor involved in hiking; as the number of users increases, satisfaction level decreases.

Hunting is a consumptive, high-impact recreational activity that will grow in popularity with the advent of the LORP; hunting can alter behavior, population structure, and distribution patterns of wildlife (Knight and Cole 1995), and is therefore managed by state and federal agencies. Particularly sensitive ecological areas included in the LORP will require set-asides with no hunting or shooting activities allowed in the recreation management plan. The social implications of hunting include safety, and some user conflict with other recreationists. Under a multiple-use framework, management must take care to satisfy all users, and hunting activities will require more intense recreation management, as well as hunters= compliance with rules of access and use if they are going to continue hunting activities in the LORP.

The use of ORV=s (mechanized recreational vehicles) is another consumptive and high-impact activity that is prevalent currently in the Owens River valley, and an activity that will certainly increase as tourism increases. ORV use is highly impactful to environmental conditions, causing major disturbances to wildlife and habitat (Cole and Landres 1995). ORV users also have a history of conflict with other users within multiple use frameworks (Ourston 1995). Like hunting, ORV noise is a disturbance factor for other recreational users, but extensive damage to resources is the primary cause of conflict. In order to sustain and promote the multiple uses of the LORP area, recreation management of ORV use will need to be significant; ORV use may need to be denied initially (especially during implementation phases of the LORP) until appropriate recreation management for ORV use can be put into effect.

There are several side-effects of recreational use in the LORP that will require recreation management. Refuse and litter is a by-product of many sorts of recreational activities and management of the resource must provide local strategies (i.e., Adopt-A-River) to monitor and clean high-use sites in the LORP. Litter can disturb and tarnish the attraction of the recreational resource, and thereby negatively impact tourist motivation to use the resource. Crowding is also a potential general concern as the LORP gains more attention and recreational use demand. Trail and road overuse can lead to dust problems, limited parking could strain relations among users, and user encounter levels could detract from the natural recreational experience.

The affordability of recreation management options also needs to be addressed in the recreation management plan; how will recreation management be paid for and by whom? Many low-cost options are available for recreation management, but the inevitability of higher cost associated with increased demand is apparent. Vandalism of LADWP property is a concern for all user groups and a recreation management plan needs to address accountability before a mistake occurs. The recreation management plan must address factors that do not necessarily fall within the scope of any one user group because of the wide diversity of recreational users and groups and their different impacts upon resources. It should be noted that no current recreational use of the LORP area needs to be curtailed during the project (planning, implementation, or monitoring/adaptive management) if the activity does not negatively impact the natural environment and is compatible with LORP goals to restore the ecosystem.

Recommendations for actions that need to be taken in order to organize and construct a sustainable recreation plan are included in each of the three sections that follow: education; nature tourism, and public participation. However, general recommendations for the LORP recreation management plan suggest that the greatest amount of work needs to be accomplished in the two-plus years that separate the present from the actual re-watering of the lower Owens River. It is important to realize that: (1) the recreation resource owner and manager, LADWP, provides the educational and recreational opportunity, not the education and recreation itself, nor the management of recreational activities; and (2) how efficiently LADWP can provide that opportunity depends upon how organized the local communities are to manage their recreational activities in the LORP area.

LADWP must also be organized to receive input from three sources in order to provide sustainable recreational and educational opportunities (Jubenville and Twight 1993) in the LORP: (l) natural resource agencies; (2) recreational users and tourists; and (3) recreational service providers. Overall management of the LORP resources is being undertaken by LADWP under advice from their consultants, but an organized recreational management input and consensus by user groups and tourism service providers is lacking.

Tourism is the strongest economic resource of the Owens River valley communities. Any individuals or organizations that presently seek to manage the LORP resources through promotion, information dispersal, visitor surveys, or other means should take part in the public participation planning process to develop a recreation management plan for the final LORP plans. Decisions can be made to minimize the number of voices in the collaboration of user groups and tourism service providers while also retaining the representation of each interested party. For instance, one member per recreation and/or service provider is sufficient. Again, the task of this group is to cooperate with LADWP, who provides sustainable recreational and educational opportunities in the LORP, and to provide recreational education and rules enforcement.

It is recommended that a recreation management advisory group be organized as the LORP is being implemented to assist LADWP in establishing guidelines for recreational access and use of the LORP resources. It is proposed that the advisory group map their activities into four distinct steps. Step one is to gather input from community members regarding recreationists= constraints, needs and desires. Second, educational objectives (the actions necessary to meet LORP goals), recreational use rules, and enforcement of rules need to be established. Third, recreation guidelines for rules of access and use, and consequences for those who disregard the guidelines must be considered and eventually adopted. And, fourth, action must be taken on the local level and success evaluated.

Since recreational tastes and motivations are diverse, it is important to remember that recreation management is an on-going process, and that there is not necessarily a solution immediately to every problem (Manning 1986). Success is possible only if comprehensive input is gathered in the planning, and each step is maintained through the implementation and adaptive

management of the LORP.

Development of recreational management objectives begins with establishing broad guidelines or concepts, and working toward specific objectives that include a time frame. The primary recommended objective should be sustainable multiple-use recreation in the LORP. Examples of specific objectives might include zero conflicts reported between birders and grazing lessees, or seeing more than 15 new willow sprouts growing in a particular stretch of riparian area. Inherent in this step are value judgments that must be made in order to establish priorities. Comprehensive and explicit objectives are an integral component of sustainable recreation (Jubenville and Twight 1993).

Recreation management strategies can be numerous and sometimes complex. The major distinction between recreation strategies dividing direct rules and indirect guidelines is that indirect guidelines motivate recreationists to do no harm to the resources and the LORP, and direct rules and regulations leave little or no choice to be made by the recreationist. Research suggests that when indirect guidelines can be effective, they should be favored (Manning 1986) in order to maintain user comfort levels and compliance. Some examples of direct rules are: imposing fines, restricting access, and requiring reservations; on the other hand, improving (or not) trails, ecological impact education, and charging a constant use fee are examples of indirect guidelines. The wider the difference between current and desired conditions in the LORP, the greater will be the need for direct rules and efforts needed to meet LORP goals.

Management of recreational activity can be sustained in the LORP area as long as the guidelines and rules implemented by local communities to alter high-impact activity and behavior are effective. User education is perhaps the most desired method for all parties involved; unfortunately, this practice can leave too much trust and responsibility to recreational users, and some direct action may be necessary (Jubenville and Twight 1993). Restrictions on where and when recreational activities can take place offers the largest body of techniques, and are effective at encouraging sustainable, recreational behavior by most recreational users. It is generally recommended that a detailed map of the LORP area, with educational information, guidelines, rules of access and use, and links to other historical and cultural sites be developed cooperatively by the local recreation plan group and LADWP natural resources staff.

A plan to cover the costs of recreation management will also be necessary. Many options are available, and the most comprehensive are those that shift the cost burden toward the recreational users (Jubenville and Twight 1993). Options designed to charge tourists more than local recreationists are currently being implemented in recreational strategies throughout the U.S. and promise potential success for sustainable recreation management in the LORP. One of those options is to devise ways that visitors could voluntarily contribute locally (other than spending money in restaurants, motels, and sporting goods stores) to the ecosystem restoration and education efforts of the LORP.

Education

The area that received comment from most recreational users is the need for more factual information and education for all members of the community on the LORP. An educational component for the LORP recreation management plan is supported by a majority of Owens Valley stakeholders (S. Hill 1997). Education methods and activities need to be planned and delivered for community education about the LORP, public school-based involvement and education, and tourism education. The Owens Valley has a unique history, natural resources, cultural and historical resources, and with the implementation of the LORP, a dramatic environmental change promises to also regenerate the social and economic opportunities that have been damaged over the the last century in the Owens Valley.

Education needs to be developed by appropriate members of the Owens Valley communities (i.e. public schools; Inyo County museums and parks, etc.) for each of the three areas: (l) community education; (2) public school education; and (3) tourism education for visitors and service providers on the native plants and wildlife, the LORP restoration goals and efforts, the history and cultural values of the entire area, the unique quality of rural life, the unique contributions of the native people of the Owens Valley, the guidelines, rules and requirements for recreational access and use of the LORP resources, and links to other ecological, cultural, historical, and recreational opportunities in the Owens Valley. Many recreational groups also have expressed interest in participating in the development of educational programs, community involvement in developing rules of access and use, and

participation in implementation and monitoring/adaptive management of recreational use of the lower Owens Valley.

Numerous educational resources now exist to help local participants develop guidelines, rules, and educational material and interpretation that are dedicated to the protection of public and private lands through education (Treadlightly 1997; Ecotourism Education 1997; Office of National Tourism 1997; Knudson et. al. 1995; Ecotourism Information Centre 1997; Tourism Journals List 1997; American Rivers Organization 1997; Boo 1993; Blangy and Wood 1993; Brandon 1993; Horwich et. al. 1993).

The Greater Yellowstone Coordinating Committee has developed Aimplementing criteria@ and recreational management guidelines to protect the Asense of naturalness@, and Aimplies that management recognizes the worth of the ecologically unified area as a source of education, recreation and inspiration@ (GYCC 1989). In cooperation with federal agencies, the state of Montana developed a futures committee composed of state legislators, conservationists, businessmen, and government representatives to find permanent solutions to the financial and management problems in the ecosystem. They found that educaton can often be an effective management tool (Glick 1991). Education not only catalyzes interest and involvement in conservation activities by local recreational users, business and service providers, and governing bodies of the area, but also has forged links between educational facilities in the area (Glick 1991).

Another educational innovation that has emerged in Montana in the greater Yellowstone ecosystem is a group of non-profit learning centers that offer a wide variety of courses and hands-on natural history and ecology experiences; they have played an important role in increasing environmental knowledge locally and awareness by visitors to the area. None of these educational opportunities would exist if not for the Aspectacular open-air classrooms@ offered by the adjacent natural ecosystem (Glick 1991).

Ecotourism researchers have often concluded that the potential benefits, both economic and environmental, are yet to be realized by many communities adjacent to attractive natural ecosystems who have not learned to provide interpretative information and education for both local citizens and visitors to the area. Education of visitors is a lost opportunity if local

community members have not been educated to value and conserve the area first (Boo 1991). Tourists experiencing a natural area directly, guided by informed local citizens, are more apt to become involved in and contribute to conservation efforts if informed accurately about the LORP and the issues; local residents need to be given a great deal of information about the LORP so they can evaluate ecotourism among their other employment options and decide how they want to interact with tourists (Boo 1991). A comprehensive educational framework for planning for the LORP environmental, educational, social, and economic opportunities needs to be put into place by responsible members of the lower Owens Valley communities to both maximize potential benefits and to minimize potential costs and conflicts for people and the environment.

The most important aspect of education about the LORP is that the local communities are the Aultimate protectors@ of the valuable natural resources of the lower Owens Valley. Education is essential to modify the perceptions of local communities, especially the leaders, to show that conservation of the environment on which ecotourism is based can be economically valuable and enhance their quality of life as well as their valued recreational opportunities (Prosser 1994). Other recreation and ecotourism research indicates that education and information programs on environmental protection among the local population must be effective, especially through the public schools, and put into practice.

Recruiting local interested participants as wardens and sending them on financially beneficial training courses to strengthen recreational use guidelines and rules has proven effective in many communities (GYCC 1989). The interest, support and participation of the local community is vital (Hall and Kinnaird 1994), especially given the nature of past decision-making practices and mistrust in the area of the LORP.

In the Annapurna, Nepal conservation area project (ACAP) lack of conservation awareness at both the government and local level has contributed to the degradation of the natural system. It is felt by some who have studied the problems there that conservation efforts often failed because of arbitrary enforcement of rules and regulations (Sherpa 1987). So ACAP has now focused the heart of its project to restore the ecosystem on education and public awareness. Gurung and De Coursey (1994) write:

Unless awareness is raised among the users of the resources, both locals and outsiders, sustainable development cannot be achieved. As a result, the ACAP has identified three target groups, the children in the village, the adult population and the international visitors. Environmental education is taught as part of regular classwork at schools for the children between sixth and eighth grade. Similarly, adult education, slides and video programmes, study tours, group discussions, appropriate training and awareness raising campaigns (such as cleaning campaigns) are carried out, targeting the local adult population. To motivate international tourists, information centres have been set up and the ACAP has developed a minimum impact code which is incorporated in a brochure distributed to all trekkers going into the Annapurna region.

Nature Tourism/Ecotourism

Nature tourism, or ecotourism, can be a successful industry in the Owens Valley only if the natural resources are protected. And the natural restored ecosystem of the LORP will be best protected and sustained if there is a recreation management strategy in place prior to implementation of the project, and if the local communities of the Owens Valley take a lead role in the process of developing ecotourism as a viable economic industry.

A few years ago the word Aecotourism@ didn=t exist even though there have been naturalist travelers for a long time. But until recently, nature tourists did not provide significant social or economic benefits to the natural places they visited, nor were they involved in activities to conserve natural areas, native cultures, or endangered species (Ceballos-Lascurain 1993). It is only through the rising interest in environmental issues and conservation of natural resources that ecotourism has become a Amajor attraction for the peoples of the countries in which they are found and for tourists around the world@ (Ceballos-Lascurain 1993).

Ecotourism means different things to different people, and there are pros and cons to ecotourism depending on how it is managed and promoted. The term is generally meant as the means of tourism to provide the resources for biological conservation and community development (Exploring Ecotrouism 1997). Other studies and writers have called it Aecologically sound tourism, or ecologically sensitive tourism@ (Shores 1995); or Atravel to

enjoy the world=s amazing diversity of natural life and human culture without causing damage to either@ (Tickell 1994).

The preservation of the environment and culture upon which tourism is based is the primary goal of ecotourism, but it also heavily implies that the area being preserved is also the source of an industry that can bring wealth to the host area; wealth that can be used to preserve the natural environment and culture. However, all natural environment tourist destinations are subject to thresholds of numbers and control (Tickell 1994).

A vital requirement of ecotourism is that visitors should be educated to show respect for both the natural environment and the people who live in it, and should also be obliged to pay for their use and enjoyment (Tickell 1994). The major role members of Inyo County communities, business and civic leaders, LADWP, natural resource agencies, and conservation groups is to develop a recreation advisory group that represents their stake in sustainable tourism; Atheir present and future interests are in many ways tied to one another and to sound environmental practice@ (Cater 1994).

By the mid-1990's some 500 million tourists have crossed international boundaries each year, and domestic travel is growing as a component of social and economic change. Travel and tourism revenues are the major source of income for small communities in the Owens Valley as domestic and international tourists drive through from Los Angeles to Yosemite and beyond. Travel and tourism in the 1990's is one of the world=s fastest growing industrial sectors and is predicted to become the world leader (Prosser 1994). The World Tourism Organization (WTO, a UN affiliate) projects that tourism will become the world=s largest industry by the year 2000 (WTO 1989). Adventure travel (ecotourism or nature tourism) accounted for almost 10 percent of the tourism market in 1989 and is growing at the rate of 30% per year (Kallen 1990).

Most ecotourists are from Europe, the U.S. and Canada because they have more money and leisure time than most; most ecotourists are relatively wealthy (Wilson 1987) and likely to spend more money than other tourists (Boo 1990). Communities near protected natural sites are experiencing new employment opportunities as a result of ecotourism, and rural development specialists are looking hard at ecotourism=s economic potential for rural areas that have suffered economic setbacks over the past 30 years (Boo 1993). But there are also costs associated with

the impact of ecotourism that have created mixed feelings about the industry.

The potential costs of ecotourism are: environmental degradation; economic inequity and instability; and negative changes to the quality of life. Potential benefits are: generation of funds to protect and sustain the natural ecosystem; creation of jobs in local communities; and promotion of environmental education and conservation awareness (Boo 1993). Ecotourism is a very popular recreational activity in the U.S., where almost 300 million recreational visits have been made to the national parks system alone in recent years (Whelan 1991).

Many ecotourists come from urban and suburban settings and express a desire to Aget back in touch with nature@ (Whelan 1991), because they are bored with their urban routines, like the challenge and excitement of an untamed environment, and are concerned with the recent publicity surrounding the loss of natural areas. Other ecotravelers have already developed an interest in birding or river rafting and want to experience it somewehere else. The most popular activities for ecotourists are hiking, bird watching, nature photography, wildlife viewing, camping, mountain climbing, fishing, river rafting/canoeing/kayaking, and botanical study (Whelan 1991).

Concern over environmental impacts of tourism has grown alongside the emergence of a worldwide environmental conservation movement (McCormick 1992) that wants to participate in natural outdoor activities, but also is vitally concerned with conserving and sustaining Afinite and vulnerable environmental resources@ (Ryan 1991).

The purpose of this technical memorandum is not to actively promote or to discourage the LORP area communities from developing ecotourism in the Owens Valley. But the potential for developing an economically viable industry that is not exploitative, but compatible with the LORP is a natural alternative for eventual addition to the recreation management plan of the area. If the LORP offers the promise of a restored natural ecosystem, it also offers the potential for using that resource to help restore the social and economic vitality of the lower Owens Valley communities through ecotourism. It should only be remembered that ecotourism developments must be determined on the basis of what the natural ecosystem of the LORP area can sustain. Sustainability of ecotourism proposals, and compatibility with the LORP goal of a healthy, functioning ecosystem, then can provide the framework for planning, design development, and

details of the ecotourism activities--access, population, accomodations and services, and recreation management. Otherwise ecotourism could seriously threaten the environment and degrade the very attraction and experience desired by ecotourists (Ecotourism Explorer 1997).

Public Participation

What is needed and recommended in terms of future public participation in the LORP is the development of a county-wide, community-based recreation advisory group that is made up of local recreational and business stakeholders, and special interest conservation groups to work with LADWP and Inyo County on LORP recreational guidelines. The advisory group would be formed after the LORP is implemented, and would assist LADWP and Inyo County to develop community needs for education, tourism, and recreational use of the LORP area. It is recommended that the group be inclusive of all groups currently having a recreational and special interest in the LORP, and the advisory group should have representation by all user groups. The group will have to take an open process discussion format to talk through each stakeholder=s needs and to identify problem areas and solutions for multiple use recreational and special interest access and use of the LORP area.

Mechanisms and protocols (currently that mechanism is through LADWP and Inyo County sponsored focus groups) to offer proposals for access to the LADWP resources need to be devised with input from all diverse users. Recreational use rules and enforcement of those rules need to be devised by the group proposing access. The group can then submit proposals to LADWP natural resources department in Bishop for consideration and permission to use the resources for recreation and special interests. It is recommended that the group members also have substantial discussion and agreement on the impacts and benefits of increased recreational use and demand resulting from the implementation of the LORP.

The recreation advisory group should discuss key issues facing local communities and the potential social and economic changes and opportunities that develop as the LORP is implemented. The advisory group is encouraged to openly discuss the long-term implications, both economically and socially, of developing self-regulating recreational activities and programs that also include realistic anticipation of what the whole community wants to

encourage in the way of ecotourism development that is compatibile with the goals of the LORP to conserve the natural resources of the Owens Valley.

The advisory group should explore potential linkages between Inyo County communities and organizations, linkages with tourist and visitor use facilities, and what improvements, if any, they see as necessary for existing recreational facilities in Inyo County that are outside the LORP area. Links to Inyo County historical and cultural sites and effective ways to optimize interest and awareness of the value of conserving the existing points of interest in Inyo County should also be explored by the group. Finally, ways to improve inclusion and communication with all recreational and special interest groups in the planning process for conservation of natural, historical, and cultural resources within the county should be addressed.

Most stakeholders, including recreational, grazing/irrigating, LADWP, and natural resource agencies, would like to see a LORP that demands low-impact recreational activities, but carefully managed and monitored use in selected areas and seasons. Moderate to high-impact recreational activities (i.e. hunting, ATV use, woodcutting, plinking, et. al.) are acceptable only if those users are respectful of the LORP goal to restore the ecosystem and the mandate to do no harm to the environment. What Adoing no harm@ means will have to be carefully spelled out in concrete language, and consequences for doing harm will also have to be spelled out and enforced. It will be imperative to ration access and use by all stakeholders so that the ultimate goal of restoring the ecosystem can be met. Unlimited access to and use of the LORP area resources by any and all stakeholders (including recreationalists), with little or no regard for the interests of others, will result in the imposition of rules and regulations for use and access which have been designed and are enforced by county, state, and federal regulatory agencies and LADWP.

Nearly all stakeholders agreed that high impact recreational use that would cause any negative impact to the resources should be denied initially, especially in the implementation phase of the project. As land use and critical habitat areas in the LORP are more clearly designated, some moderate to high-impact recreational activities may be resumed in restricted areas and during non-critical seasons. Each of these moderate to high-impact recreational activities would need to be proposed to the LORP team through LADWP, and the recreational

group=s proposal to use the resources would have to clearly show how they intend to monitor and enforce compliance with multiple use guidelines for the LORP area.

LADWP will also need to have at least one staff person in their natural resources department at the Bishop office who is responsible for working with various recreational and special interest groups, and who is also responsible to see that proposed uses (low, moderate, or high-impact activities) meet the standards and guidelines developed for recreational use in the LORP area. Recreational use in leaseholders= grazing areas may also require some restricted access during grazing times (particularly winter months in the lower Owens) and reinforcement of appropriate Amultiple use manners@ toward grazing stakeholders (i.e., closing gates).

In other words, it is essential to the successful implementation of a sustainable ecosystem restoration project like the LORP that Owens Valley communities, recreational users, special interest groups, LADWP staff, Inyo County, and natural resource agencies work cooperatively to establish appropriate recreational uses for the LORP. LADWP staff needs to make the job of working with recreational and special interest groups as high a priority as working with their grazing/irrigating and research leaseholders to establish appropriate and sustainable land management plans.

The process of all stakeholders working cooperatively is essential to gain compliance with LORP management plans, and to make sustainabile use of the LORP natural resources through time without causing environmental degradation (MOU 1997).

If a request for access or use is denied by LADWP to a recreational user, the denial must be clearly supported by LADWP showing that the proposed activity is in conflict with other uses or not consistent with other goals of the LORP. It may also be necessary to temporarily suspend some high-impact recreational activities entirely in the initial stages of implementing the LORP, or to find that some high-impact activities are inconsistent with the other goals of the LORP and should no longer be allowed in the LORP area. If the denial is temporary, then a request by any recreational user or group to use the resources may be put on hold until a later time in project development when the natural ecosystem has recovered and it is clear where and how some high-impact and moderate-impact activities will not interfere with the goals of the LORP. At that time, new activities and moderate to high-impact activities can be considered for permission to

resume, or to begin, in designated areas and seasons, and then only if those activities are consistent with the goals of the LORP.

Even though many of those interviewed favor the idea of a rapid regeneration of the ecosystem, most recreational users acknowledge support for a slow, careful and patient re-watering of the lower Owens River to minimize environmental damage, and to restrain too rapid growth in the recreational interest and use in the Owens valley. A rural and slow-paced quality of life is highly valued by all stakeholders in the Owens valley; Athe long-term sustainability of their river and environment is of much more concern than a quick fix@ for either the environment or social and economic problems (S. Hill 1997).

Conclusions

Most policy proposals to avert the exploitation and overuse of natural resources recommends changes in institutional arrangements and enforcement of rules in use by a community to determine who has access, what resources can be extracted and consumed and at what times, and who will monitor and enforce the rules (Ostrom 1985a). Netting (1976) argues that unless resource use by most members of a region can promote both general access to and optimum production from natural resources (i.e. water export), while also enlisting the entire community to take conservation measures necessary to protect the resources from destruction, private landowners responsible for the management and use will necessarily have to dictate access and use.

In Ostrom=s (1990) review of historical and ethnographic studies related to resource use problems and solutions, it was found that community-based institutional arrangements are necessary to solve natural resource problems that are shared by the whole community. It is possible for those involved in resource use conflicts to arrive at a set of rules that enable them to use the resources within limits of sustainability. Four key lessons were learned; one is that it is wrong to assume that only a change in human value patterns or concepts of morality (i.e. that everyone must adopt a preservation/environmental conservation ethic) will lead to the type of behavioral change and rules needed to avoid the conflicts. No rules are self-enforcing--there has to be a scheme of penalties and they need to be enforced (McKean 1984).

The second lesson relates to time. No system of rules was created by a Asingle sweeping administrative reform that set up local councils in all communities@ (Ostrom 1990). Trial-and-error methods have been used successfully by many communities world wide until community members using the natural resources became aware of the consequences of current rules, the need for community acceptance and compliance limiting access and use, and community enforcement of access and use rules (Ostrom 1990).

The third lesson relates to rules that anticipate and allow for change in resource and recreational use as future demands and changes in activities and economics change (Ostrom 1990). Some confusion might exist initially about who has access rights and for what purpose, but a regional awareness and acceptance of rules and guidelines, and the purpose for those rules, along with a community willingness to work in cooperation with LADWP to establish recreational use rules, can avoid the need to have LADWP take over responsibility for devising and enforcing rules of recreational use in the Owens Valley.

The fourth lesson important to our understanding of recreational use and demand in the LORP area relates to the ease and ability of local communities to monitor recreational use behavior by both local inhabitants and tourists (Bennett 1996). The communities of the lower Owens Valley are small and cohesive, the recreational area of the LORP is in close proximity to lower Owens Valley communities, and the local people could directly observe and monitor how access and use rules are affecting conservation, restoration, and sustainability of the LORP. The rules agreed to and in use must be understood by the local community and tourism organizations and must be jointly enforced by the community members. The recreational use plan for the LORP must not only be compatible with conservation efforts to sustain water export and managed grazing/irrigation, but must also become a self-regulating, self-enforcing, community-based system of rules of access, use, and consequences for breaking the rules.

From these lessons a more detailed recreation plan for the LORP will be developed that will address the following activities: fishing; hunting; mountain biking; hiking/trekking; ORV or ATV use; woodcutting activities; canoeing/kayaking/rafting; motor boating; bird watching and wildlife viewing, and sight-seeing. Each recreational activity will be assigned general designated use areas, preferred access routes, restriction for critical areas and times, parking

areas, and general guidelines for recreational use. Initially a minimum number of guidelines will be developed to: direct activities; minimize recreational conflicts; minimize environmental impacts; and to avoid conflicts with grazing and water diversion activities. The center piece of the recreation management plan will be a map brochure that will illustrate access roads, activity areas, parking areas, critical habitats, and guidelines and restrictions.

The recreational users of the Owens valley have a large stake to conserve the natural resources and potential tourist-related income base that the LORP offers, not only to ensure their quality of life, but also that of their children. LADWP, with input from Inyo County and the recreation advisory group, should use the final land management plan (including the recreation plan) as the basis for long-term use and guidelines in the LORP area.

References

American Rivers Organization. 1997. American Rivers 1997 Urban Hometown River Award, utoy.html at www.amrivers.org

Anderson, Stanley H. 1995. Recreational Disturbance and Wildlife Populations. Wildlife and Recreationists. R. L. Knight and K. J. Gutzwiller, eds. Island Press, Covelo, CA.

Bennett, John W. 1996. Human Ecology as Human Behavior. Transaction Publishers. London, U.K.

Blangy, S. and M.E. Wood. 1993. Developing and Implementing Ecotourism Guidelines for Wildlands and Neighboring Communities, *in* Ecotourism: A Guide for Planners and Managers, K. Lindberg and D.E. Hawkins, eds. The Ecotourism Society, North Bennington, Vermont.

Boo, Elizabeth. 1991. Making Ecotourism Sustainable: Recommendations for Planning, Development, and Management, *in* Nature Tourism, Managing for the Environment, Tensie Whelan, ed. Island Press, Washington, D.C.

Boo, Elizabeth. 1993. Ecotourism Planning for Protected Areas, *in* Ecotourism: A Guide for Planners and Managers, K. Lindberg and D.E. Hawkins, eds. The Ecotourism Society, North Bennington, Vermont.

Brandon, Katrina. 1993. Basic Steps Toward Encouraging Local Participation in Nature Tourism Projects, *in* Ecotourism, A Guide for Planners and Managers. K. Lindberg and D.E. Hawkins, eds. The Ecotourism Society, North Bennington, Vermont.

Cater, Erlet. 1994. Introduction *in* Ecotourism, A Sustainable Option? John Wiley & Sons, Chichester, England.

Ceballos-Lascurain, Hector. 1993. Ecotourism as a Worldwide Phenomenon, *in* Ecotourism: A Guide for Planners and Managers. K. Lindberg and D.E. Hawkins, eds. The Ecotourism Society, North Bennington, Vermont.

Chavez, Deborah J. 1996. Mountain biking: issues and actions for USDA Forest Service managers. Res. Paper PSW-RP-226-Web. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Cole, David N. 1997. Appendix A: Low -Impact Recreational Practices for Wilderness and Backcountry. RECM 495D-Web. Missoula, MT: University of Montana.

Cole, David N. and P. B. Landres. 1995. Indirect Effects of Recreation on Wildlife, Wildlife and Recreationists. R. L. Knight and K. J. Gutzwiller, eds. Island Press, Covelo, CA.
Ecotourism Education. 1997. Useful Organizations. Office of National Tourism.

http://tourism.gov.au/publications/ecotour/uo_int.html

Ecotourism Information Centre. 1997. Johnstone Centre of Parks, Recreation and Heritage at Charles Stuart University, in collaboration with the Ecotourism Assn. of Australia Office of Natl. Tourism. http://lorenz.mur.csu.edu.au/ecotour/EcoTrHme.html

Flather, Curtis H. and H. Ken Cordell. 1995. Outdoor Recreation: Historical and Anticipated Trends, *in* Wildlife and Recreationists. R. L. Knight and K. J. Gutzwiller, eds. Island Press, Covelo, CA.

Glick, Dennis. 1991. Tourism in Greater Yellowstone: Maximizing the Good, Minimizing the Bad, Eliminating the Ugly, *in* Nature Tourism, Managing for the Environment. Tensie Whelan, ed. Island Press, Washington, D.C.

Gurung, C.P. and M. De Coursey. 1994. The Annapurna Conservation Area Project: a Pioneering Example of Sustainable Tourism? *in* Ecotourism, A Sustainable Option? E. Cater and G. Lowman, eds. John Wiley & Sons, Chichester, England.

Gutzwiller, Kevin J. 1995. Recreational Disturbance and Wildlife Communities, *in* Wildlife and Recreationists. R.L. Knight and K. J. Gutzwiller, eds. Island Press, Covelo, CA.

GYCC (Greater Yellowstone Coordinating Committee). 1989. Vision for the Future of the Greater Yellowstone Area. Billings, Montana: GYCC.

Hall, D. and V. Kinnaird. 1994. Ecotourism in Eastern Europe. *in* Ecotourism, A Sustainable Option? E. Cater and G. Lowman, eds. John Wiley & Sons, Chichester, England.

Hill, Mark and William Platts. 1995. Lower Owens River Watershed Ecosystem Management Plan, Action Plan and Concept Document, Los Angeles Department of Water and Power and Inyo County, CA.

Hill, Susan. 1997. LORProject Technical Memorandum #6, Results of User Group Interviews, Los Angeles Department of Water and Power and Inyo County Water Department, CA.

Horwich, R.H., D. Murray, E. Saqui, J. Lyon, and D. Godfrey. 1993. Ecotourism and Community Development: A View from Belize, *in* Ecotourism: A Guide for Planners and Managers. K. Lindberg and D.E. Hawkins, eds. The Ecotourism Society, North Bennington, Vermont.

Hulbert, Ian A. R. 1990. The Response of Ruddy Shelduck Tadorna ferruginea to Tourist Activity in the Royal Chitwan National Park of Nepal, Biological Conservation, 52: 113-123.

Jubenville, Alan and B. W. Twight. Outdoor Recreation Management: Theory and Application. Venture Publishing, State College, PA.

Kallen, C. 1990. Ecotourism: The Light at the End of the Terminal. E. Magazine (July/August).

Kerlinger, Paul and J. Brett. 1995. Hawk Mountain Sanctuary: A Case Study of Birder Visitation and Birding Economics, *in* Wildlife and Recreationists, R.L. Knight and K.J. Gutzwiller, eds. Island Press, Covelo, CA.

Knight, Richard L. and David N. Cole. 1995. Factors That Influence Wildlife Responses to Recreationists, *in* Wildlife and Recreationists, R.L. Knight and K.J. Gutzwiller, eds. Island Press, Covelo, CA.

Knudson, Douglas M., T.T. Cable, and L. Beck. 1995. Interpretation of Cultural and Natural Resources. Venture Publishing, Inc., State College, PA.

Manning, Robert E. 1986. Search and Research for Satisfaction, *in* Studies in Outdoor Recreation. Oregon State University Press, Corvallis, Oregon.

Marion, Jeffrey L. 1993. Recreation Ecology Research Findings: Implications for Wilderness and Park Managers, Silviculture in the Appalachian Mountains. Web: Virginia Tech Cooperative Extension Service, Blacksburg, VA.

McCormick, J. 1992. The Global Environmental Movement, Blehaven, London, U.K.

McKean, M.A. 1984. Management of Traditional Common Lands (iriachi) in Japan. Paper prepared for the Fall 1984 workshops on Common Property and Environmental Management, Duke University, Sponsored by the Board on Science and Technology for Intl. Development of the Natl. Research Council, Natl. Academy of Sciences.

MOU (Memorandum of Understanding). 1997. Between Inyo County and City of Los Angeles et al. In the Court of Appeals of the State of California Third Appellate District, Sacramento, CA.

Netting, R. 1976 What Alpine Peasants Have in Common: Observations on Communal Tenure in a Swiss Village. Human Ecology 4(2): 135.46.

Office of National Tourism. 1997. Ecotourism Education.
http://tourism.gov.au/publications/ecotour/erm_9.html

Ostrom, Elinor. 1985a. The Origins of Institutions for Collective Action in Commonpool Resource Situations. *Working Paper 14,* Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington.

Ostrom, Elinor. 1990. Institutional Arrangements for Resolving the Commons Dilemma: Some Contending Approaches, *in* The Question of the Commons, the Culture and Ecology of Communal Resources. B.J. McCay and J.M. Acheson, eds. The University of Arizona Press,

Tucson.

Ourston, Todd. 1995. Conflicts on Multiple-Use Trails: Synthesis of the Literature and State of the Practice. Web: Marinfo BBS; Marin County, CA.

Prosser, Robert. 1994. Societal Change and the Growth in Alternative Tourism. *in* Ecotourism, A Sustainable Option? E. Cater and G. Lowman, eds. John Wiley & Sons, Chichester, England.

Ryan, C. 1991. Recreational Tourism. Routledge, London, U.K.

Sherpa, M.N. 1987. People, park problems and challenges in the Annapurna Conservation Area in Nepal, paper presented at the Intl. Symposium on Portected Landscapes, Grange-over-Sands, 5-10 Oct., 1987, Cumbria, U.K.

Shores, John N. 1995. The Challenge of Ecotourism. 1828 Kilbourne Place NW, Washington DC 20010 USA; jshores@capaccess.org

Simpson, Steven V. and Kelly D. Cain. 1995. Aldo Leopold on Recreation. University of Wisconsin-LaCrosse, WI.

Tourism Journals List. 1997. Tourism Research Reso...Purdue Tourism & Hospitality Research Center. Purdue University, West Lafayette, IN.

Treadlightly! Information. 1997. Treadlightly! On Public and Private Lands, the Program. http://www.treadlightly.org/tlinfo.htm

Whelan, Tensie. 1991. Ecotourism and Its Role in Sustainable Development. Nature Tourism, Managing for the Environment, T. Whelan, ed. Island Press, Washington, D.C.

Wilson, M. 1987. Nature-Oriented Tourism in Ecuador: Assessment of Industry Structure and Development Needs. Forestry Private Enterprise Initiative Working Paper No. 20. Raleigh, N.C.: North Carolina State University.

WTO (World Tourism Organization). 1989. Policy and Activities for Tourism and the Environment. Madrid: WTO.

Tickell, Sir Crispin. 1994. Foreword *in* Ecotourism, A Sustainable Option? E. Cater and G. Lowman, eds. John Wiley & Sons, Chichester, England.