Toward Sustainable Tourism

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Introduction

Chile, New Zealand, and Australia may be half a world away, but the ingenuity and efforts applied to sustainable tourism in these countries inspire people interested in the tourism industry. Fact-finding treks to these countries have led to 14 general observations about sustainable tourism and insights into specific ways to generate a sustainable tourism culture within a community and within a country. The observations and insights documented here suggest that sustainability is an increasingly critical goal for tourism industries to pursue, regardless of national affiliations.

Sustainable tourism meets the needs of tourists and the places they visit while protecting and enhancing future opportunities by:

- Minimizing the environmental impacts of tourism
- Contributing to a local sustainable economy
- Consuming minimal amounts of non-renewable resources
- Stressing local ownership and the well-being of local people
- Supporting efforts to conserve the environment

Given the number of people on the planet and their general expectations for drinkable water, breathable air, and fertile soil, the need for adopting sustainable natural resource policies and practices is unquestionable. Global environmental conditions suggest that debates should focus on how sustainable concepts should be implemented, not if they are necessary. As preservers and users of natural resources, tourism-related industries have stakes in these discussions.

The resources required to sustain tourism are a mix of local and global materials, services, and environments. Local resources (especially for resource-dependent tourism) are the lands, waters, and climate that attract visitors and businesses. Transportation, leisure time, economic constraints, and the availability of essential materials help determine how, when, and where tourists might go; the financial and environmental aspects regarding the fuel consumed to move tourists to their destination, exemplifies tourism's global impacts.

Efforts to manage tourism's impacts on natural resources depend on the cooperation of visitors and society. To achieve sustainability, a community needs to manage resources in a way that supports economic, social, and aesthetic success while maintaining cultural integrity, essential ecological processes, and biological diversity. Without community support, ventures that embrace sustainable principles may founder. Beginning at modest and reasonable scales is a proven way to build sustainable practices into individual, local, and regional cultures; each success increases the pressure for higher-level action.
Observations

1. **“SUSTAINABILITY” NEEDS TO BE DEFINED.** Sustainability is a nebulous concept to most people. Community values surrounding resource sustainability often need sharpening. Sustainability requires that renewable resources regenerate as quickly as they are consumed. It also means that the ecosystem related to those resources is not systematically degraded. Nonrenewable resources can be used in a cyclical way (recycling) so that the material does not end up in landfills or in the environment.

2. **SUSTAINABILITY REQUIRES COMMUNITY COMMITMENT.** The tourism sector within a community cannot create a culture of sustainability by itself. The industry’s efforts to protect a natural resource base, while laudable, are unlikely to succeed if the host community is uninterested or uninvolved. Whether or not a community-wide sustainability culture can be created depends on many elements, including:
   - Commitment of local government to incorporate sustainability into comprehensive planning
   - Demonstrations of successful projects or programs
   - Educational programs for youths and adults
   - Publicity and marketing to instill concepts
   - Involvement of the community including civic leaders, businesses, industries, volunteer groups, youth groups, religious groups, and political organizations
   - Values and protects local culture

3. **PEOPLE NEED TO RECOGNIZE THAT SOME NATURAL RESOURCES HAVE USE LIMITS.** Cumulative impacts on a regional scale can dramatically affect natural resources. As roads, buildings, traffic, and human activity accumulate, knowing how the ecosystem functions and determining what elements are vital to its preservation can eliminate costly remediation. Understanding the importance of proactively managing resources, some communities are implementing concepts like *triple bottom-line accounting*, which values economic,

4. CHANGING CULTURAL NORMS CAN BE SLOW AND DIFFICULT. An abrupt cultural shift from “consumerism” to “sustainability” is unlikely to happen. People receive cues about values from observations and experiences. An individual can make a significant statement and commitment to sustainable natural resources but the ability to transfer those values to others is more difficult. Sustainable resource values are relatively new while consumerism is deeply etched into society. When values clash, the newer ones often succumb to traditional ways of thinking. As more people (in a group, a business, or a community) adopt sustainability values, it is easier for others to follow. A culture of sustainability needs to be developed in successful phases to convert skeptics.

5. RESOURCE SUSTAINABILITY CAN BE ACHIEVED IN MULTIPLE WAYS. If a tourism industry is leading efforts to protect environmental or cultural resources, it should do so with a willingness to work beyond its own interests if the community and visitors are expected to accept sustainability values. Tourism leaders should not expect to achieve resource sustainability without broad community support involving residents and businesses. Publicizing the efforts of groups, businesses, and individuals that are adopting sustainable practices generates momentum for more and other similar efforts.

6. ENVIRONMENTAL IMPACTS FROM OTHER INDUSTRIES ARE OFTEN MUCH GREATER THAN FROM TOURISM. In most natural areas, visitors have a slight to moderate negative impact on the environment. Some areas can be significantly damaged, like ocean beaches or lakeshores ringed with resorts, homes and cottages, or recreational zones that are overused or poorly maintained. Generally, other facets of a community (industry, agriculture, residential development, etc.) damage natural resources more than tourism does. Yet because tourism sites are often highly valued and visible, people frequently view the tourism industry as responsible for unsustainable development.

Aboriginal art, Kakadu National Park, Australia
7. MOST VISITORS ACT APPROPRIATELY IF THEY KNOW WHAT IS EXPECTED. Educating guests about what is locally important and expectations for behavior can minimize tourism’s damage to natural resources. Tour guides can be excellent “visitor managers” in this respect. Explicit “Visitor Codes of Conduct” can be especially valuable for independent travelers, whose behavior can be a greater problem if they have not seen guidelines.

8. INNOVATIVE TECHNOLOGY AND DESIGN CAN MINIMIZE IMPACTS. From rooftops to walkways, constructed features can serve a purpose while minimizing damage to environmentally or culturally important areas. Building plans might include catchments for rainwater, permeable parking lots, and structures that blend into a natural background. Walkways can keep visitors from trampling critical habitats and damaging plants while multi-faceted interpretative programs might inform visitors about the ecology and the people of the area. Anchored platforms equipped with boat ties can keep boats in deeper water and protect delicate reefs. Blinds give birders high quality viewing opportunities while minimizing stress to the animals and surrounding vegetation.

9. DEVELOPMENT “BLIGHT” MARS SCENIC AND VISUAL LANDSCAPES IN POPULAR AREAS. In numerous high-amenity and fragile landscapes billboards, urban sprawl, inappropriate building design and placement, excessive/inappropriate road construction, etc., can stress the natural and aesthetic values of an environment. Usually, visual degradation precedes resource deterioration. With some exceptions, signs for restaurants and lodging in tourist areas abroad are less prolific than they are in the U.S. Minimizing billboard and sign clutter significantly improves scenic quality. When billboards are virtually non-existent, cities and the countryside are more visible, interesting, and attractive.

10. SUSTAINABLE TOURISM CAN BE MORE SUCCESSFUL IF DIRECTED AT TOURISTS RATHER THAN TOURISM BUSINESSES. Tourism businesses are generally not motivated to change until there is clear economic incentive. Sufficient consumer demand can...
change menus, hotel practices, and touring operations. Despite the efforts of many resource-dependent tourism businesses to implement sustainable practices, most tourism businesses will continue to exploit resources for short-term interests, even if they are knowingly damaging resources.

11. **Restricting Access Effectively Limits Use.** Controlling visitation rates by limiting access is common and can take multiple forms, including:

- Issuing a defined number of individual user permits
- Issuing business licenses that limit the number of tours per day/week/season, group size, the number of tour operations, etc.
- Keeping facilities small or minimal
- Limiting parking, then posting signs telling visitors to come back later if the lot is filled
- Prohibiting bus traffic or bus parking
- Permitting access by guided tour only
- Designing roads with barriers (ferry service across water) and constraints (winding gravel paving)
- Limiting overnight accommodations such as campsites and lodging in surrounding communities

12. **Indigenous People Often Manage Tourism With Environmental Sensitivity.** Native cultures are generally conscious about the limits of their natural environment and tend to value sustainable ideals. Tourism programs operated by indigenous people often blend environmental management with cultural understanding.

13. **Green Globe is a Worthwhile Accreditation Program for Eco- and Sustainable Tourism.** ([www.ec3global.com](http://www.ec3global.com))

Green Globe is a worldwide benchmarking and certification program facilitating sustainable travel and tourism for consumers, companies and communities. This organization is a world leader in setting standards for sustainable tourism and maintains goals based on “Agenda 21” and principles for sustainable development endorsed at the United Nations Rio de Janeiro Earth Summit held in 1992.

14. **Tourism Has Helped Prevent the Over-Exploitation of Natural Resources.** Examples gathered from Chile, New Zealand, and Australia showcase how resource sustainability can be a fundamental and realistic goal for the tourism industry. Whether large or small, policies and actions show how people endeavor to create a sustainable future for themselves and their communities.
Lessons from Chile

**Chiloé Island, Chiloé National Park**

- Large beach, limited camping
- Walkers mix with a few cars, horses, and bicycles
- The cold ocean prompts swimmers into the warmer pools of streams winding through the sand. The quality of the water in these streams is questionable due to livestock access and poor sanitary conditions.
- Members of the Huilliche Tribe live at the end of a well-marked trail branching from the main hiking trail, making and selling an assortment of crudely carved wooden items, jams, and honey. By connecting with hikers in this unique way, the crafters probably attract more customers than they would at a roadside stand and generate significant revenue during the tourist season.
- World Heritage Site because of unique church architecture

**The Lakes Region**

- Tourism does not dominate the towns and villages (exceptions: Pucon (which suffers from development “blight”), Puerto Varas, and some other villages).
- Local shops and tourist shops intermingle on main streets
- More locals than tourists use urban coastal or shoreline parks
- In village squares, activities are not staged for tourists but for the community. Authenticity gives individuality and uniqueness to these communities.

**National Parks**

- Facilities reflect the small budget
- Interpretative signs and visitor centers exist, but information is basic and printed materials for trail users are scarce.
- Most areas are in very good condition

**Bahia Mansa—Antithesis of sustainable tourism**

- Beach community catering to lower income Chilean vacationers
- Livestock, swimmers, bathers, and dishwashers use the same pools
- Wastewater oozes from hillside cabanas
Chile spans a variety of ecological sub-regions ranging from blistering deserts to tropical forests; from snow-peaked mountains to coastal beaches. About 19% of its land is set aside in national parks and reservations. Most of these lands are located in the south and are largely mountainous regions in the Andes that are difficult to develop. Many of these protected areas are contiguous, forming huge tracts that function much like national and state parks in the U.S. Additionally, they provide a backdrop for tourism activities on private lands outside the parks, and in villages and rural businesses. Most of the tourism business comes from domestic and Argentinean travelers. Europeans are the predominant overseas visitors.

In Chile, tourism seems to be generating a political constituency that is against monoculture tree plantations and logging in native forests. Chileans do not generally demonstrate great concern over environmental issues but agency staff and non-governmental organizations are alarmed over the loss of native forest and have made headway into the consciousness of the public regarding the consequences. The strategy has been to focus on the old-growth forests and the associated native forest ecosystem. In private and national parks, unique monkey puzzle trees or ancient alerce and beech trees (many over 1,000 years old) are used to make people more aware of environmental values. Economic development may rest heavily on the ability of indigenous people to develop successful ecotourism as a substitute for logging.
Environmental philanthropy

Started through a 42,000-acre (17,000-ha) purchase by an American philanthropist in 1991, Pumalin Park (Parque Pumalin; www.parquepumalin.cl) contains over 700,000 acres (283,300 ha) of native forest and combines resource protection with sustainable economic activities developed at a scale to create jobs for local people. The private park lies within the popular Lakes District. Ecological protection is its purpose and the alerce tree, endangered by logging, is a focal point.

Generating a self-sustaining income from farming and tourism is one of the park’s objectives. A series of valley farms produce fruits, vegetables, honey, dairy products, poultry and eggs, and sheep, wool and wool products. Most of the fresh produce is sold in the park’s restaurant and gift shops, and in local towns. Additional farm product sales are anticipated when organic certification is obtained and an export market for ulmo honey and organic jams is cultivated in Europe. (Ulmo is a large flowering tree used by bees to create a highly prized honey in Chile). All phases of product creation—growing, packaging, marketing—are handled by farming staff. Lacking roads, all farms have an airstrip or sea access.

Camping, cabanas (cabins), a restaurant, and boat tours of the farming operations generate revenue. Tourism is critical to the park’s success; cooperators anticipate that tourism will provide a large portion of the gross income, allowing the operations to become self-sufficient. Before this can happen, additional infrastructure, facilities, and trails are needed. Visitors include young backpackers reaching the area by bus or tour van and a mix of more upscale international travelers.

Pumalin Park’s strategy for sustainability (ecological and economic) is progressing. Because of adequate financing and the founder’s continued interest, methodical and strategic development and marketing protect the natural resources as administrators and staff refine operations. During the first five years, park efforts were oriented
toward acquiring property; over the next five years they focused on developing infrastructure; now the next phase—product sales and tourism—is underway.

Chile offers only minimal incentives for owners to protect their land so most conserve from a desire to preserve ecosystems. Some individuals have worked cooperatively to set aside adjacent lands to form larger tracts. The concept that wealthy individuals concerned about conservation can become a pathway for natural resource protection has not gone unnoticed; the U.S. nonprofit Ancient Forest International (AFI) is endeavoring to create additional preserves in southern Chile through philanthropy. The greatest obstacle might be the Chilean government, which opposes the concept.

**Political controversy**
delayed the transfer of Pumalin Park to a Chilean non-profit and land purchases to unite its northern and southern segments. Protocol has been signed with the Chilean government, Pumalin’s Natural Sanctuary Status has been approved, and the land title has been transferred into Fundación Pumalín, a Chilean charitable foundation. According to the Patagonia Land Trust, additional lands have been set aside in both Chile and Argentina and the combined total is now over 1.4 million acres (566,600 ha).

**National Rural Tourism Program**
The Chilean Agriculture Department offers **Programa Nacional de Turismo Rural** (the National Rural Tourism Program) for indigenous farmers, small farms, and small business operators so that they might earn additional income through agro-tourism. The rural and village-based program includes assistance for startup businesses such as bed-and-breakfasts (B&Bs) farm stays, camping, horseback riding vacations, boating and fishing excursion operations, and sales of farm products and handicrafts to tourists. This type of small-scale tourism is generally regarded as benefiting residents and having fewer negative impacts than mass tourism. Farmers must apply for the program and show potential for agro-tourism success. Those selected are trained in business management, product development, tourism, and tourism marketing. Small loans are available to assist with product development. The Department of Agriculture helps eligible farmers with professional marketing information; posters and brochures sell the concept, and booklets describe the participants’ products and service offerings.
Site visits during the height of the tourist season

A campground participating in the rural tourism program was more spacious than typical private campgrounds, but there were no guests. The operator blamed a weak economy and problems in Argentina, claiming that the sites were full a year ago. This campground was within 5 miles (8 km) of a large lake with a medium-sized campground that was nearly full. It seemed as though the rural tourism campground was an overflow to the campground by the lake. Possibly the market for the campground and vulnerability of the businesses to economic or political change was misunderstood.
Indigenous people and tourism

A nonprofit collaboration is preserving the ecosystem near Osorno with the cooperation of indigenous people who hold the last roadless stretch of native coastal forest. Since much of the ecology is inadequately studied or understood, coalition members felt these lands were significant and that forests should be kept intact. By preserving a representative corridor, officials hope that the flora and fauna of the region might recover more quickly from changes caused by humans or nature. Representative areas should also sustain robust plant and animal populations by allowing continued genetic mixing. Tourism is part of the preservation plan. Indigenous communities have received training in tourism business development. If the effort can produce enough income to equal or exceed that from logging, indigenous people will be allies in protecting the native forests. The coalition’s objectives are:

- To preserve a belt of land extending from the sea to the Argentinean border and protect the ecosystems within the belt to ensure that they are not isolated pockets.
- To solidify the loosely protected land rights of indigenous people.
- To use tourism as an alternative economic base for landowners, particularly indigenous people, so that native forests will be protected and native cultures may

Bed and Breakfast on Chiloé Island, Chile

A B&B operation in a small fishing village on Chiloé Island involved a multi-generational household. The quality of the facility was marginal and probably not acceptable to most U.S. visitors, however it provided access to an out-of-the-way part of the island. An older woman ran the B&B and her husband, a fisherman, could be hired to provide a boat tour of the area, which included aquaculture facilities, penguins, and a small island community with interesting architectural features like a bridge linking opposite sides of a bay. Another nicer B&B in the same village was also a part of the Rural Tourism Program. This facility was clean and epitomized quaint rural lodging. Its operator seemed better suited to the business.
continue without exploitation of the forest resources upon which these cultures are based.

- To oppose the construction of a coastal highway proposed by the government that would open up the area for logging and other resource exploitation.
- To block the construction of a wood chip plant that would increase pulpwood demand and the logging of ancient forests.

### Non-Tourism Pressures

**TIMBER HARVEST** — Privately owed native forestlands are being converted into monocultures of non-indigenous pine or eucalyptus. Since species diversity is a global concern, environmental groups and agencies criticize this practice for negatively impacting basic ecological building blocks. Even though there would be little tourist interest in visiting such forests, most plantations are private and allow no public access. To the untrained eye, mountainsides of monoculture plantations look healthy and scenic, masking the huge biological changes they bring.

**AQUACULTURE** — The consequences of intensive net-pen aquaculture in the south are unknown but concern health and environmental experts. The primary aquaculture species is salmon but trout are also raised in inland lakes. Experts suggest that aquaculture represents about 15% of the pollution in lakes. Agricultural wastes, logging runoff, and domestic effluent are larger pollution sources. A conflict regarding fish dumping (dead fish on land) with Pumalin Park resulted in a lawsuit favoring the park. The (illegal) killing of sea lions that invade the aquaculture pens have resulted in convictions.

*An aquafarm off of Chiloé Island, Chile*
Lessons from New Zealand’s South Island

Great Walks
- Access only by permit
- Overnight hikers must use provided shelters

Southern Alps parks
- Includes World Heritage Site: Mount Cook

Milford Sound
- End of the Milford Track
- Sightseeing destination that experiences noise pollution

Banks Peninsula
- Preserved native forests through private and scenic reserves

Kaikoura
- Whale watching
- Dolphin experiences

Doubtful Sound
- Sightseeing destination with no noise pollution

Catlins
- Successful example of rural eco-tourism

Otago Peninsula
- Albatross colony
- Bird watching experiences

Queenstown — Antithesis of sustainable tourism
- Lack of planning resulted in runaway growth as area moved from a quaint ecotourism center to an adventure tourism Mecca
- Shorelines, mountain roads, and surrounding areas show significant environmental deterioration
The South Island of New Zealand has extensive natural resources including many national parks and coastal attractions. “Excellent and ubiquitous” describe the interpretative information throughout New Zealand. Generally, guides are knowledgeable, well-trained, and interactive; boat tours, hiking tours, shuttle drivers, and even intercity bus operators provide extensive commentary on scenery and places. Interpretive signs and kiosks in towns, parks, and monuments are informational, appealing and make for traveler-friendly communities. Relatively simple gestures, such as good signage, accessible visitor information centers, and clean public rest rooms, project warmth and national pride.

**Permit-limited access**

In New Zealand, permits help conserve natural resources for tourism. The New Zealand Department of Conservation (DOC) manages many of the natural resources that attract tourists (land, water, parks, wildlife, trails, etc.) and uses permits to control visitor numbers. The DOC is also responsible for managing wildlife, including marine mammals that interest tourists.

A visitor permit system regulates the use of the Great Walks trails that are located in national parks and offer spectacular scenery. User permits match the hut accommodations that are built at intervals of roughly one-day’s hike. Overnight hikers must use the shelters and must arrive and depart on the designated day. Without the permits and the shelters, traffic would exceed the trails’ DOC-determined capacity. Some Great Walks have a dual hut system: one provides dormitory accommodations, kitchen facilities, and a warming area; the other, operated by a concessionaire holding a DOC permit, offers better accommodations, meals, and guide services. The objective of the permit system is to keep the quality of each hiker’s experience high and to minimize trail deterioration and environmental degradation (thus the camping ban). The trails are well-maintained and have
minimal impacts on the environment. The hut system minimizes the area needed to accommodate trail users and helps eliminate issues of drinking water and waste.

**Wildlife tourism**

New Zealand has numerous wildlife-based tourism enterprises that exemplify how good management and limited access can help keep wildlife populations thriving. Examples include:

**MARINE MAMMALS OFF OF KAIKOURA.** Home to juvenile sperm whales, whale sightings in Kaikoura are quite reliable. Whale Watch ([www.whalewatch.co.nz](http://www.whalewatch.co.nz)), a Maori-operated business that holds the only DOC permit for a commercial boat operator to take passengers to see whales in the South Island’s center for whale watching. Allowing a monopoly on a wildlife-based or environment-based tourism business eliminates competition and its tendency to undermine resource sustainability. (When businesses compete for customers, the focus often shifts away from resource or wildlife protection.)

The purpose of marine mammal permits is to maintain the health and wellbeing of the species and minimize harm from human interaction. Under the permit conditions, Whale Watch uses large jet-powered catamarans (no propellers) holding less than 150 passengers. The DOC permit requires a separation of
at least 150 feet (45 meters) between boats. It also limits the number of daily and yearly trips that the company can conduct.

The DOC works with Whale Watch to create conditions where the business can profit and provide customer satisfaction, yet ensure that operations do not adversely impact the whales. Permit requirements are adjusted as more is learned. Whale Watch operates from a modern land base where visitors can purchase tickets, view an orientation video that includes information about Maori customs, and purchase products at a café and souvenir store. From this base, visitors are taken by motor coach to a dock about a mile (1.6 km) away to board the catamarans.

Dolphin Encounter (www.dolphin.co.nz/kaikoura) is another business in Kaikoura that holds a DOC permit. Operators are allowed to take visitors in boats to see dusky dolphins, which are particularly entertaining and friendly. These dolphins swim in groups and are known for their aerial acrobatics (a single dolphin can do 10 or more backflips in a row). Patrons may elect to be towed behind the boat where the dolphins often swim. DOC regulations require that no more than three boats (whether commercial or private) gather around any group of dolphins to prevent the dolphins from feeling trapped. If dolphins move to locations with more than three boats, some boats must move.
RARE BIRDS ON OTAGO PENINSULA.
Otago Peninsula (www.albatross.org.nz) has become popular for wildlife viewing, which has helped preserve it from development. The relatively narrow peninsula extends about 19 miles (30 km) from Dunedin to Taiaroa Head, location of the only mainland nesting site for any albatross species in the world. Although this colony is
small, it has attracted attention since the first albatross nested there during World War I. The albatross nesting site is designated as a “Flora and Fauna Reserve,” under control of the DOC.

The Royal Albatross Society has created a visitor center and soundproof viewing hide (a place for people to watch the birds without disturbing them). Strict limits on group size (22 visitors every half-hour) to the hide (via a fenced path) keeps disturbance to the royal albatross colony to a minimum. The Otago Peninsula Trust, a non-profit organization that manages cultural and historic properties on the peninsula, operates the Royal Albatross Center through a complex management arrangement including DOC permits. Guided tours began in 1972, with two afternoon tours of no more than 10 people. The number of tours has increased to a maximum of 21 per day with over 135,000 people entering the center and 45,000 watching the albatrosses from the observatory annually (separate admission; 2001 data). Despite extensive controls and constant monitoring, albatross have experienced stress caused by visitors resulting in the relocation of nest sites to less suitable locations and higher chick mortality.

In addition to albatross, many other birds nest on the head, including a large colony of cormorants (spotted and little shags) and two species of endangered penguins: yellow-eyed and little blue. Capitalizing on the albatross
center’s high visitation rates, neighboring farmers offer opportunities to see yellow-eyed penguins. The total world population of these birds is about 5,000 and New Zealand is one of the major nesting locations. The DOC ordinarily manages wildlife but these penguins nest in scattered locations around the peninsula, mostly on farmlands. Special hides have been constructed close to nesting and resting sites, allowing visitors to see penguins without disturbing them. Opinions vary about the sustainability of these operations, however it is generally felt that penguin viewing has helped prevent the sale and subdivision of some of these farms. Additionally, farmers have learned about penguin habitat and have worked to make habitat improvements and to protect wildlife breeding sites.

**Small-scale ecotourism**

Forests, sheep farms, and small villages abut the coastline of the **Catlins**. The area’s reputation for being a place to escape crowds and enjoy nature is enhanced by areas of native old growth forest and wildlife similar to the Otago Peninsula populations (except for albatross). Tourism operates at a minimal level, primarily with pass-through bus tours and small ecotourism services. Bus tours focus on a few stops. Eco-tourism businesses, like Catlins Wildlife Trackers ([www.catlins-ecotours.co.nz](http://www.catlins-ecotours.co.nz)), which operates under a printed environmental code, provide immersive experiences. Catlins Wildlife Trackers include a B&B stay in their home where homegrown foods are served. The proprietors provide customized tours, which might include detailed information about:

- local flora and fauna
- geography and geology
- the way changes in the environment are linked to development
- cultural values of Maoris and current residents

A day’s outing from Christchurch, rural tourism on **Banks Peninsula** involves farms, 28 scenic reserves, and other types of nature reserves. The bayside village of Akaroa attracts bus tours and individual travelers with interesting craft boutiques, historic architecture, and a relaxed atmosphere. Hinewai Reserve, a 2,600-acre (1,050-ha) conservation project outside Akaroa, is privately funded and has protected and restored native forest. Private reserves, such as Hinewai, augment DOC efforts. In this sheep farming area, grazing has altered most of the land.
Demonstrating that native forests can be successfully protected, the reserve has ongoing programs to eliminate exotic plants and animals.

Remnants of native forests harbor a wealth of endemic species and show a different picture of New Zealand than the typical green-pasture postcard views. The country has come to realize the value of these remaining native forests and is trying to expand and protect them from logging and the invasion of exotic species.

**Ecotourism in national parks**

**Southern Alps parks** include Mount Cook and surrounding mountains that remain snow covered all year. Mount Cook is a World Heritage Site. A road to Mount Cook Village brings busloads of tourists to the Hermitage, the most famous hotel in New Zealand. Beyond this, there is not a great deal of tourism activity. There are several day hikes, trails for experienced mountain climbers, and a non-technical 2-3-day guided walk. Adventure tours include aerial sightseeing and heli-skiing/heli-hiking, guided horse treks, and four-wheel-drive trips.

**Milford Sound** is the best known of New Zealand’s fiords and is the endpoint of the Milford Track, the most famous “Great Walk.” The current infrastructure effectively manages the large volume of visitors. Limits on lodging and food service show ecological sensitivity;

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**Exotic Species**

Since New Zealand flora and fauna evolved in isolation, many species are unable to defend themselves against the animals (especially mammals) and plants that have been introduced by humans. Mustelids (ferrets, stoats, weasels) and Australian possums are the greatest non-human animal threats. The environmental impacts of possums are so severe that the DOC endorses the use of a controversial but highly toxic poison called “1080” (sodium fluoroacetate) against them. Fluoroacetate is found naturally in some plants native to South Africa, South America, and Australia and is thought to have evolved as a deterrent to browsing animals. Since “1080” is biodegradable, it does not bio-accumulate.

Feral cats and rats add to the problem. The DOC has ongoing programs to control populations of these animals as well as similarly disruptive plants. New Zealand uses offshore islands that are free of damaging invasive species as protected areas for native species and has also developed a biosecurity strategy (**[www.biosecurity.govt.nz](http://www.biosecurity.govt.nz)**) to help prevent non-native plants and animals from entering the country.

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**The United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List** includes about 880 properties forming part of the cultural and natural heritage that the World Heritage Committee considers as having outstanding universal value. These include 679 cultural, 174 natural, and 25 mixed properties. ([http://whc.unesco.org](http://whc.unesco.org))
only two small lodging/dining options are available (one mid-level accommodation and one backpacker motel). As a result, most people make day trips from Queenstown or other places aboard motor coaches or in vans. Group travel minimizes the need for extensive roads and amenities. The DOC has granted permits to several businesses operating boat tours. Vessels range in size from kayaks to large ferries. All except the kayaks leave from a common interpretation/ticket station and vessel boarding area. Except for boat wakes, the waters of Milford Sound are only minimally impacted by mass tourism. The DOC also issues permits for small plane and helicopter flights. These operations are noisy with flights constantly taking off and landing from an airstrip near the boat boarding area. Sightseeing planes from Queenstown also make excursions to the sound where the steep terrain causes aircraft noise to echo. This noise pollution has become a topic of public debate.

Visitors to **Doubtful Sound** must take a ferry across Lake Manapouri in Fiordland National Park to a remote transfer station where a bus follows a narrow gravel road through a mountain pass and down to the end of Doubtful Sound. From there, visitors board one of two excursion boats at a small dock operated by a company under DOC permit. No other public buildings are present on the sound. One of the boats takes visitors on day trips while the other provides overnight excursions. No aircraft operate in this sound and virtually no other human activities distract from the natural setting.

Contrasting Milford Sound with Doubtful Sound, it is obvious how a difference in human activity patterns creates a different experience.
Lessons from Australia

**Great Barrier Reef Marine Park**
- World Heritage Site
- Access mostly by tour operations that promote environmental awareness

**Douglas Shire**
- Includes Wet Tropics World Heritage Area, which incorporates Daintree National Park
- Local government aggressively maintains natural resources through policy and planning

**Cairns**
- Urban center for Great Barrier Reef trips

**Magnetic Island**
- Over half of island is a national park
- Many eco-friendly eco-tourism features

**Whitsundays**
- Popular and well-managed Great Barrier Reef islands
- Great boating, snorkeling, and diving

**Fraser Island**
- World Heritage Area
- Largest sand island in the world
- Four-wheel-drive vehicles traverse beaches without notable environmental impact

**Noosa Shire**
- Growth regulations controlled construction since 1980s
- Quality of life and conservation trump growth in shire; tourism maintained

**Kakadu National Park**
- World Heritage Area
- Indigenous people responsible for many facilities and operations
- Limited infrastructure restricts traffic

**Undara National Park**
- Guide-only tours of lava tubes
- Employs well-trained guides

**Gold Coast City** — Antithesis of sustainable tourism
- Packed with high-rise towers including the tallest apartment building in the world
- Difficult to reconcile shoreland development density with claims of sustainability
Australia makes a smallish continent but a huge country—the sixth largest in the world. Of the 20 million people there, more than 80% live within 60 miles (about 100 km) of the ocean. Tourism generates an estimated $14 billion (U.S.) with most visitors and income coming from New Zealand, the United Kingdom, Japan, the United States, and China. Beaches, the Great Barrier Reef, and tropical forests attract many of the 5.5 million visitors, along with the cities of Sydney, Melbourne, and Brisbane. Tourism Australia (www.tourism.australia.com) is the government authority responsible for tourism marketing, and delivering tourism research and forecasts. The agency is obligated under the Tourism Australia Act (2004) to help foster a sustainable tourism industry in Australia. To comply, Tourism Australia developed a Sustainable Tourism Plan that includes:

- Partnerships contributing to the long-term environmental, social and economic sustainability of the tourism industry;
- A knowledge base to enable effective decision making that integrates both long-term and short-term economic, environmental, and social considerations;
- A sustainable tourism focus for marketing activities.

The lives and cultural identity of indigenous Australians have been bound to the land, its forms, flora, and fauna for of thousands of years. Australia is the driest inhabited continent on earth; one third of the continent produces almost no run-off, and rainfall and stream-flow vary elsewhere. Soils and seas are generally nutrient poor and unproductive, reflecting an ancient and dry land surface. Still, the continent’s biodiversity is substantial and unique; over 80% of flowering plants, mammals (including over 100 species of marsupials), inshore freshwater fish, and marine species found in southern Australian waters are endemic, along with more than 45% of the birds.

Australian identity has been, and still is, linked to nature. About 10% of the mainland’s natural environment and 7% of Australia’s oceans are protected. The United Nations’ World Heritage List contains 16 Australian properties. Australians are generally more environmentally aware than Americans and there is political momentum for sustainable practices.

The pressure caused by human activity continues to mount. Pollution is a serious marine problem. The vast majority is caused by land-based activities that involve soil erosion, fertilizer use, intensive animal production, sewage, and other urban industrial discharges. To sustain land activities, large volumes of water are required from both surface and groundwater supplies. Land clearing, water extraction, and poor soil conservation are all causes of a decline in the quality of Australia’s soils. Environmental challenges also involve mining practices, overgrazing by sheep and cattle, rampant coastal development, and the vulnerability of the continent’s flora and fauna to invasive species.
Marine parks

Access to the Great Barrier Reef Marine Park, one of the Seven Wonders of the World and a World Heritage Site that includes the entire 1430-mile (2,300-km) length of the Great Barrier Reef (GBR), is restricted to a small number of licensed tour operators. For most of its length, the GBR is an average of 30 miles (48 km) or more from shore. Individuals can take private boats to the reef, however, due to the distance, expense, and perhaps safety, most people (over 80% according to park authorities) visit via tour boats.

Tour operators are required to conduct educational programs that provide visitor safety and reef protection information to snorkelers and divers. The long trip to the reef is an opportunity for tour operators to demonstrate safety practices and discuss the care visitors should take to avoid damaging the corals and other reef flora. Tour boats also continuously play videos describing various reef species. The main departure points for the GBR include Cairns, Port Douglas, Townsville, and the Whitsunday region.

The GBR Marine Park Authority (GBRMPA, www.gbrmpa.gov.au) manages and monitors reef quality, and issues licenses to commercial tour operators. The GBRMPA allows tour boat operators to place huge docking and diving platforms at dive and snorkel sites to protect coral from anchors. The platforms are permanently anchored next to the reef, allowing visitors to swim in reef areas. The platforms are useful for serving meals and for resting. GBRMPA staff report that the platforms reduce damage as well as pollution; studies showing a steep decline in damage from tour operations on the reef support staff observations. Private boats still damage the reef by anchoring to the fragile ecosystem because boaters are not necessarily exposed to reef protection information.
Island ecotourism

Located 5 miles (8 km) offshore, over half of Magnetic Island’s 12,810 acres (5,184 ha) are national parklands (www.magnetic-island.com.au). Modest resorts, homes, and cottages are located in small development pockets along the coast that complement the national park by providing visitor hospitality services. Visitors can day-trip or stay overnight since a ferry service runs to the island several times a day. Accommodations are mostly small resorts or B&Bs and many cater to the backpacker/youth market. The national park has viable populations of koala and rock wallaby, hiking trails to scenic views, and interpretative information about plants and animals.

On Magnetic Island, a marina project exemplifies how government policy decisions (supporting large-scale development) sometimes conflict with local values and management objectives for a national park. Amidst major and prolonged controversy, the Magnetic Quay marina development project involved dynamiting one of the headlands at Nelly Bay to make space for a massive resort and to provide rock for two breakwalls. The government-supported project permanently changed a community and a landscape.

A stinger net

Stinger nets

“Stingers” is a generic term for stinging jellyfish, including the deadly box and irukandji jellyfishes. Stingers inhabit much of the Queensland’s nearshore areas from October to May. Consequently, “stinger nets” (swimming enclosures that exclude stingers) are set, although protection is not guaranteed. Box jellyfish tentacles can extend 30 feet (9 m) and are so clear that swimmers usually don’t see them. Most swimmers wear “stinger suits” (nylon hooded body suits), leaving only the hands and face exposed. Stingers are not found offshore in the Great Barrier Reef.
for sand-and-surf getaways. Despite numerous resorts on various islands and in communities on the adjacent mainland, many of the islands are parks and the coral reefs are maintained with considerable care. Anchoring rules are strict. Some reefs have a buoy line marking the boundary for anchoring. Anchoring is not allowed on other reefs and boaters must use the offered tie-up buoys. Overnight stays in reef areas are not permitted. The best diving/snorkeling reefs are marked on maps and despite high visitation, water quality, reef conditions, and fish populations remain high. Agencies including the Great Barrier Reef Marine Park Authority, Queensland Parks, and others manage these areas to maintain a high quality environment.

**Fraser Island World Heritage Area** ([www.environment.gov.au/heritage](http://www.environment.gov.au/heritage)) is the largest sand island in the world and more than half of the island is part of the Great Sandy National Park. Visitors, who arrive by car ferry, are allowed to travel the beaches with four-wheel-drive vehicles, which are mainly sports utility vehicles, but include buses and trucks. Vehicles ply the beach, often at speeds over 50 miles (85 km) per hour. The island's roads are single-track, narrow, and made of sand so traffic moves more slowly. In some areas, they are too rutted or soft for any traffic; rubber mats are laid out to provide adequate traction on some steep inclines. The limits of ferry service and stiff penalties for improper
driving seem to keep the current rates and types of use from causing alarming damage.

Island attractions include the forest, much of which is virgin old growth with a mix of conifer and deciduous varieties. Dingoes are common and are said to be a relatively pure strain (not mixed with dogs). There are exceptional inland lakes, at least two of which have brilliant white sand beaches and intensely blue waters. However, the greatest attraction seems to be driving on the eastern shore beach (ocean side), which, at low tide, is wide, flat, and extends for 62 miles (100 km) or more. (During high tide, the beach can be impassible.) Fraser Island is promoted as an ecotourism-oriented place so the idea of seeing the island by four-wheel-drive seems incongruous. However, people apparently drive only on roads or beaches thanks in part to information packets for all drivers explaining the severe penalties for driving off-road. Visitors renting a vehicle are required to view a training video emphasizing the expectations for drivers, why the rules are needed, and the penalties for non-compliance. Still, questions about traffic, roads, and their impacts remain. It could be prudent to close the beach to vehicles at particular times such as turtle egg laying, limit the number of vehicles on the island at a given time, and investigate threats to the environment.
From a development standpoint, Kingfisher Bay Resort (www.kingfisherbay.com), a large eco-resort on the west side of the Fraser Island, is laudable and has received numerous ecotourism awards for its approaches. With a capacity of 1,200 people, the resort is placed and designed to blend into the surrounding forest. It leaves a small environmental footprint, minimizes disturbance to natural vegetation, maximizes environmentally friendly practices, and facilitates environmental education programs. The resort has been especially resourceful in retaining the native vegetation to screen buildings. Through its own uniformed rangers and children's programs, it conveys environmental values to its visitors.

**Coastal planning**

**Noosa Shire** is a tourist area that manages growth. The shire's features—beaches, fishing ports, surfing sites, national parks, and excellent weather all located 100 miles (160 km) from Brisbane—create great pressure for tourism and retirement development. To control construction, the shire adopted strict growth regulations and set a population cap. After actively managing growth for more than 20 years, tourism (the driving economic force) continues to thrive. Sustainable planning has been long-term with “conservation and lifestyle protection” as guiding concepts.

Noosa Heads is a popular tourist destination that is experiencing significant pressure to expand tourism facilities and increase housing. Implementing a carefully developed strategic plan, growth opportunities are strictly controlled, and parks, open space, agriculture, and other land uses are clearly designated. Furthermore, population limits have been specified as a means of limiting demands on the natural resources and maintaining the characteristics of the various communities in the shire. The orientation of the comprehensive plan is on preservation of natural resources (i.e., growth can occur only if the natural resource base is not degraded).
Maintaining the character and quality of the natural resources pervades all aspects of the plan and growth is not an objective; growth should maintain or enhance quality of life.

**Cairns**, a coastal hub for tourism, is the largest urban area in Northern Queensland. Because the Great Barrier Reef comes relatively close to the mainland near Cairns, many reef tours operate within the area. Other attractions include: the Tjapukai Aboriginal Cultural Park, Skyrail Rainforest Cableway (a gondola system spanning over 4.5 miles (7.5 km) of rainforest canopy to Kuranda, a former mining town), and the Kuranda Scenic Rail excursion train, and beaches. This is home to the GBRMPA, which oversees management plans for the reef system, conducts research, manages commercial licenses, monitors use and reef health, and publishes reef information for the public. Roads from Cairns lead to the fabled Australian Outback and to national parks within the region. To the north of Cairns, a campus of the James Cook University offers a rapidly growing tourism undergraduate program. Ironically, the campus is in an area that is experiencing sprawl-type growth.

The most controversial of a number of sustainable natural resource issues was the building of Skyrail. Opponents felt it would create a gash in the mountain vegetation, marring the scenic beauty. However, the towers were placed so that the forest was not disturbed. Drivers might not even notice the cableway system from the coast highway. Evidently, now that the Skyrail is operating, people see it as an eco-friendly attraction and asset.

Less than two hours north of Cairns, **Douglas Shire** has enacted a significant growth management/development strategy for agriculture and wet tropics tourism, and devised a local biodiversity plan. Tourism is the major economic generator in the shire and is founded upon the **Wet Tropics World Heritage Area** ([www.wettropics.gov.au](http://www.wettropics.gov.au)), coastal beaches, and tours to the Great Barrier Reef. Documents acknowledge a limit to the number of visitors and that these limits should not be exceeded. The plan discourages development north of the Daintree River. Portions of the region are set aside to protect the endangered cassowary (Cassowary Protected Area), a flightless, ostrich-like jungle bird threatened by loss of habitat and vehicle collisions.

The main highway north of the Daintree River is designed to enhance visitor experience in the Wet
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Tropics World Heritage Area and to minimally intrude on the surrounding forest. The highway, while paved to Cape Tribulation, is narrow and winding. On straighter stretches, speed bumps slow traffic, while signs warn drivers of the cassowaries. This highway design, coupled with the Daintree River ferry, limits the number of visitors and minimizes large vehicle traffic. Purposeful decisions (no bridge across the Daintree; no widening or straightening of the highway, no paving beyond Cape Tribulation) keep visitation to sustainable levels and discourage development.

A tax on auto ferry crossings (the only public alternative) over the Daintree River into the **Daintree National Park** (part of the Wet Tropics World Heritage Area) was enacted to purchase property that was previously subdivided for housing. However, the tax, which would have preserved coastal forests from development, was found to be illegal in a court challenge. Daintree National Park includes **Mossman Gorge** and a tour run by the Mossman Gorge Aboriginal Community (Kuku Yalanji Dreamtime Tours), which leads small groups through the ancient native rainforest and explains how indigenous people have traditionally preserved it, enjoyed its benefits, and learned its hazards.

In all, Douglas Shire has taken an aggressive, government-led approach to sustainability. A recent mayor began his political career by confronting bulldozer operators attempting to push a road through the rainforest. The road became a national scandal and was halted, but the issue united people interested in basing an economy on sustainable natural resource principles beginning with preserving the tropical rainforest. The shire has moved steadily toward more sustainable practices with the support of residents. Their progress includes:

- A population cap
- No bridge across the Daintree River
• The road north of the Daintree River is kept narrow, with minimal cut and fill engineering, making travel slower and discouraging tour buses. (It also makes living north of the Daintree more difficult as travel time is increased to communities, which are all south of the Daintree River.)

• Cooperative work with cane growers to find environmentally sound ways to grow, harvest, and process cane, the major agricultural crop. (Concerns over polluted runoff killing reef areas prompted changes in agricultural practices.)

• A biodiversity plan recognizing the critical role that plants and animals have in the economic and environmental well-being of the shire.

Tourism in the Outback

Kakadu is Australia’s largest national park and indigenous people run many of its commercial facilities and tourist operations. This outback region of the Northern Territory features dry eucalyptus forests, rivers, waterfalls with plunge pools for swimming, wildlife (particularly birds), and aboriginal sites (many with rock art). East Alligator River Cruises, one of the Aboriginal-managed tours, includes discussions of the characteristics of the river, its inhabitants (estuarine crocodiles, birds), demonstrations of indigenous fishing and hunting tools, and didgeridoo playing. The interpretative skills and extensive knowledge of aboriginal guides make the boat tours impressive and memorable.

The rock art creates a challenge for preservation and access. Many sites have platforms that let visitors see yet keep them beyond the reach of the art. Excellent interpretation complements the sites, providing information on cultural significance and the age of the art (some is extremely old). Because of the size of the park, individual sites are not staffed. In addition to methods to protect aboriginal art, passive measures help protect the environment:

• Some roads are built to keep buses out (no pavement, narrow width, and turns or curves that buses cannot negotiate).
• Parking limits visitor traffic to the plunge pools that form at the bases of waterfalls. (In this dry environment, they offer swimming holes that could easily be overrun.)

• Signs instruct drivers to park only in designated spaces and to come back another time if the lot is full.

Undara National Park features ancient lava tubes that radiate for miles from a volcano eruption site. The lava tubes are fragile, housing sensitive creatures like bats and

(ABOVE) Aboriginal Art, Kakdu National Park, Australia

(RIGHT) Swimming in a plunge pool, Litchfield National Park, Australia
cave-dwelling insects, and contain aboriginal artifacts. To avoid damaging the sites while offering experiences in this unique environment, visitors may see the lava tubes via group tours led by highly trained guides. Savannah Guides provide the guide-only tours of the lava tubes and conduct all tours in the park. In addition to knowing specifics of the lava tubes, they know a great deal about the land and aboriginal culture. To convey the necessary code of conduct for visitors, the guides use non-threatening language and keep participants on pathways.

The Savannah Guides (www.savannah-guides.com.au) demonstrate how high quality interpretation can be a significant part of a policy of natural resource sustainability. They are an example of the private sector (in the form of a non-profit organization) committing to cultural and natural resource sites. Savannah Guides uses locals, including Aboriginal people, as tour guides. The organization trains and certifies guides who may be hired for public or private operations in Australia. Guides must take ongoing training to maintain certification. The concept was developed and initiated by the Cooperative Research Centers (CRC) for Savannas. CRCs are university-based centers in specific topics including tourism, environment, etc. CRCs, initially supported with government funds, are conducting many efforts related to sustainability.
Lessons about Transportation

Transportation can dramatically affect natural resource sustainability. Highway corridors consume natural resources and generally degrade areas they pass through. Travel options in Chile, New Zealand, and Australia include:

**BUSES** — In Chile, bus travel is abundant, cheap, and almost all privately run, however, where service is less frequent, buses can become dangerously overloaded.
In New Zealand, motor coach tours are popular and intercity buses can accommodate bulky luggage. In some places, a shuttle service (a van towing a covered trailer) transports travelers to bus departure points. A bus concept (known as the Bottom Bus) allows travelers to buy a ticket to their farthest destination, but permits them to make stops anywhere along the way. For people who have flexible schedules and backpacker tourists, this is an attractive option. A similar system operates in Australia.

**COLLECTIVOS** — In Chile, certain taxis take more than one customer at a time to the same destination at a lower price per customer. These are particularly attractive where great distances (over 50 miles or 80 km) make normal taxi fares prohibitive.

**CAR AND MOTOR HOME RENTAL** — In New Zealand and Australia, some rental agencies have older cars that can be leased cheaply for longer periods (usually a month or more). Young backpackers, who might pool resources to rent a car, favor these. Small motor homes are popular rental vehicles for families or groups. For more than two people, motor homes might have economic advantages but they are not necessarily compatible with sustainable principles and consume fuel rapidly.

**CAR PURCHASE** — In both New Zealand and Australia, budget travelers staying for extended periods (one month or longer) frequently purchase an older vehicle. There are networks for buying and selling such vehicles. Often notices are posted in city centers and on the Internet regarding “backpacker” cars for sale.
Conclusions

The tourism and outdoor recreation capacity of natural resources are finite and travelers can be high-impact users of them. Even the most benign activities (hiking, wildlife watching, non-motorized boating, snorkeling, etc.) produce detrimental environmental impacts. As the number of users increases, impacts are compounded. Tourism leaders must identify and acknowledge these impacts before being able to reduce or eliminate them. Government programs creating various reserves (public parks and forests, marine parks, world heritage areas, etc.) offer a platform for resource sustainability. In general, the tourism industry will move toward natural resource sustainability when customers demand it. For customers to demand natural resource sustainability, it must become a part of their frame of reference, a concept that is part of their personal values.

As seen from examples in Chile, New Zealand, and Australia, it is possible for individuals and communities to adopt practices that sustain natural resources. U.S. efforts could benefit by understanding and, where feasible, adopting the pioneering efforts in sustainable natural resources that have been successfully implemented by these countries.

The public generally supports resource protection efforts—valuing natural resource systems more highly than the individual components that may be mined, cut, extracted, harvested, or developed. Many have come to understand that sustaining such resources is fundamental to preserving water and air quality, and that biodiversity preservation is critical to our well-being.

Individually, nonprofit organizations, and businesses as well as government agencies at the local, state, and national levels are continuing their efforts to preserve special lands from exploitation and development. People and businesses working in the tourism industry should also be involved in this effort; if for no other reason, out of self-preservation. Advocacy and education about sustaining our natural resources are in the self-interest of the tourism industry and are generally welcomed by the public. Consumers of natural resource-based tourism are likely to look for and appreciate sustainability efforts. Since the tourism industry, particularly in rural areas, depends on the sustained attractiveness of natural resources, tourism businesses and leaders can:

- Advocate for natural resource protection,
- Support protection efforts,
- Adopt environmentally sound practices,
- Educate people about the value of natural resource preservation.
Afterword
The author gathered information from Chile, New Zealand, and Australia during a study leave (January–May 2002). The author met with professionals in the fields and related interest areas, and visited sites with the goals of learning about sustainable tourism and ecotourism policy development and implementation.

Web Resources
World Tourism Organization
(www.unwto.org/sdt)

Global Development Research Center
(www.gdrc.org/uem/eco-tour/eco-tour.html)

United Nations Environment Program
(www.unep.fr/scp/tourism)

United Nations World Heritage List
(http://whc.unesco.org)

Sustainable Measures
(www.sustainablemeasures.com)

Ancient trees and a sand road, Fraser Island, Australia