INTEGRATING TOURISM IN MULTIPLE USE PLANNING FOR COASTAL AND MARINE PROTECTED AREAS

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Abstract: *Coastal and marine areas the world over provide food, transportation, recreation, and energy resources to increasing numbers of people each year. As demands for these resources rise, the potential for user conflicts is radically heightened. Traditional uses of coastal resources are often displaced by profitable but non-conservative technologies which preclude effective, comprehensive, and long-term management. This situation can even be avoided or counteracted by instigating proactive multiple use planning in which all users can be accommodated in a sustainable way.*

Tourism is one use which can be encouraged in coastal management plans aimed at achieving sustainability, since it is essentially non-extractive and non-degrading if properly controlled. Tourism can provide economic and political incentives for management and for conservation, and can have additional benefits to local communities and regional economies. Tourism is especially important as a component of planning in tropical coastal areas where ecosystems are heavily burdened with stress and where growth and development are important national priorities. Examples where tourism has been or is becoming successfully integrated into multiple use planning include parts of Quintana Roo, Mexico; the Galapagos Islands in Ecuador; and the Lesser Antilles.

Introduction to Coastal and Marine Conservation

The earth's coastal zones are in dire straits. It is ironic and troubling that the portion of the earth most valued by visitors and residents alike is the one most threatened by chronic environmental degradation. The world's coastal belt, extending from the inland margin of the coastal plain to coastal waters offshore, provides critical fisheries resources for much of the world's inhabitants, supports the biggest tourist trade of any area on earth and is home to over 70% of the world's population (Ray, 1976). Though this area accounts for only 10% of the earth's surface, it is responsible for producing at least 30% of the ocean's immense productivity (Cherfas, 1990). Recent widespread algal blooms, fish kills, and other catastrophic phenomena suggest that his vital ecosystem is undergoing dramatic global change. The irony is that this destruction is occurring at the hands of humans, who so thoroughly value and need the coastal environment intact.

Degradation in the coastal zone takes many forms. Direct impacts by humans include overfishing, ocean dumping, poisoning of marine organisms, wetlands removal, coastal deforestation, dynamiting of coral reefs, harvesting of endangered species, and habitat alteration through the construction of breakwaters, sea walls, dykes, and the like. Indirect anthropogenic impacts are often low-level but chronic, and therefore, more insidious than many direct effects. These include downstream effects of riverine pollution, nutrient loading of coastal waters via rivers, streams, and terrigenous run-off, changes in coastal ecosystem community structure brought about by the loss of a key species or the introduction of a species foreign to that system, and changes in ecosystem function brought about by the loss or degradation of a linked critical habitat, even many miles away.

Our track record in curbing these insults or in taking preventive measures to avoid localized environmental problems has not been laudable (IUCN, 1975). History shows efforts to manage our use of the coastal fringe have been piecemeal, driven by economic and political desires rather than ecological reality, and, by being reactive, often too late. Examples of such piecemeal crisis management include attempts to manage fisheries by controlling take of a single species and attempts to manage ecosystems by designating small (and often ecologically insignificant) coastal areas as parks or refuges (Kenchington and Agardy, 1989). These sectoral management efforts, by virtue of the fact that they focus on only one component of a big and intricately-linked system, can not succeed as anthropogenic impacts continue to rise (IUCN, 1984). The vastness of linkages between species and between critical habitats in a coastal or marine ecosystem requires comprehensive management of all its parts. Anything short of comprehensive management is just a stab in the dark, and equally risky.

Multiple Use Planning

The oceans and coastal areas are many things to many people. To commercial and artisanal fishermen and their customers they are a seemingly limitless breadbasket there for the taking. For anglers, yachtsmen, surfers, swimmers, etc., they present boundless opportunities for recreation. To energy and shipping technologies, the seas present an invaluable industrial resource. For some, the shoreline and oceans have some unquantifiable yet important spiritual value. These human perceptions of the importance of marine areas exist exclusive of the fact that the oceans and

coastal margins play a vital role in maintaining the biosphere itself. The value of the coastal zone is thus more than the sum of its calculable parts.

Despite this, the coastal zones remain in peril. No overseeing steward for ocean and coastal areas exists: in many countries management of marine areas, if it exists at all, is an auxillary function in the naval or commercial branches of government. Hardin's (1968) "tragedy of the commons" has been exemplified time and time again. And all sectors continue to make demands on ocean space and ocean resources, even as they continue to be degraded.

The only logical way to accommodate all users and avoid resource conflict in areas where coastal populations are on the rise is to undertake comprehensive and proactive planning (Agardy, 1990). This planning ought to utilize zoning for different uses and degrees of use. Some areas, notably the Great Barrier Reef Marine Park in Australia, use such multiple use zoning to minimize impacts on ecologically critical areas. Thus, the needs of local inhabitants, visiting tourists, scientists, and industry continue to be met in a system that puts ecosystem requirements ahead of all others (Kelleher and Kenchington, 1988). Unfortunately, few such examples exist.

The nature of a multiple use area, its design, and its regulatory framework will all depend on the primary objectives it helps to achieve. In some places, conservation will be the prime motivating force for a protected area designation; in others, preservation of traditional use will be paramount, and so forth. The identified objective(s) will influence the size, shape and other design constraints of the protected area, and its implementation. Since specific objectives and circumstances vary so widely in coastal areas around the world, no model for coastal protected areas can be said to be universally applicable (Agardy, 1989).

Tourism is one of the most important uses to be considered in planning a coastal multiple use protected area (Boo, 1990). Whether this area is to be a park, biosphere reserve, marine sanctuary, or any of the other seven categories of marine protected area (Salm and Clark, 1989), tourism can be made to fit with, and even complement, other uses of the area. Controlled tourism is non-extractive and non-degrading, and can have economic and social spillover effects which benefit local peoples.

Role of Protected Areas in Promoting Tourism

Protected marine and coastal areas help to conserve critical ecological processes and threatened habitats and species. They can also help to achieve the following: 1) safeguard traditional sustainable uses; 2) serve as centers for public education and schooling; 3) act to provide models for training programs in coastal zone management; 4) serve as research stations for monitoring and experimental research; 5) provide controlled habitats for ecological restoration; 6) guarantee public access to shorelines; 7) institute a means to limit entry to an area or to a particular user group; 8) facilitate the political empowerment of local users who might not otherwise be represented; 9) allow coordination of existing management entities; and 10) provide a salient example of how to achieve sustainable use of coastal/marine resources.

The process through which any of the above objectives is achieved may be attractive to tourists with an interest in environmentalism or cultural anthropology. The products, *i.e.*, a healthy, thriving coastal ecosystem, and a proud group of constituents behind it, is the primary draw for ecotourists.

Tourists that visit coastal and marine areas come for a variety of reasons. The sun- seeking beachgoer, with little on his or her mind but the SPF number of the suntan lotion to be smeared on, is not likely to be an environmentally discriminating tourist. In fact, the members of this tourism sector are generally lacking in environmental awareness altogether. Only when the condition of the ecosystem becomes degraded to the point of directly impacting the tourist, via the stench of eutrophied waters or the erosion of beach sand, will the tourism industry that caters to this sector be jeopardized.

Fortunately, the undiscriminating beachgoer is but one category among the numerous types of tourist that visit coastal areas. In these days of heightened environmental awareness among the public at large, these tourists are becoming even rarer relative to other types of visitors. People visit natural coastal areas for various reasons that all fall under the category of "ecotourism", including to view wildlife (such as birds, sea turtles, and marine mammals), to learn about coastal ecology (especially wetlands ecology), to SCUBA dive or snorkel in undisturbed areas, or to experience nature in its broadest sense. Other environmentally aware tourists may visit a coastal area to learn about the local indigenous culture and its particular traditional use of coastal land and sea (Johannes, 1984), learn about marine archeology and

history, or partake in other coastal recreational activities such as angling, sailing, canoeing, *etc.*

The above types of coastal visitors will be more inclined to visit a well-managed protected area where species diversity is high, water quality is good, and the landscape/seascape are kept intact. They will also gravitate towards areas where protected areas have helped to instill or protect an existing sense of pride in the local area among local inhabitants. A well-planned protected area, which serves to protect the ecosystem and the vested interests of local peoples, will foster a sense of stewardship and pride. These feelings, in turn, make the area both more attractive and more hospitable for interested tourists.

Role of Tourism in Promoting Protected Areas

The relationship between tourism and conservation can be a symbiotic one. The benefits that a well-managed coastal area can accrue to the tourist industry are clear; however, tourism can also facilitate the protection of coastal areas. If tourism is properly controlled, it can lead to better conservation and more comprehensive and proactive planning. An external interest can promote greater awareness of the value of those resources and can give a voice to local inhabitants in their own governments as well as internationally (McEachern and Towle, 1974). Institution-building, an integral part of coastal zone planning, can be facilitated by a combination of outside interest and intrinsic motivation (Sorenson *et al.*, 1984).

Ecotourism interest can also convince local people that their resources are as valuable, if not more, when intact than when extracted from the ecosystem. When a user fee or visitor admission fee structure is imposed, real economic incentives for protected areas can facilitate their formation.

Examples of Tourism in Protected Area Planning

Tourism can be an integral component of coastal planning and is especially important in developing countries where growth and development are top priorities. Revenues generated directly from tourism and service industries that support it can boost local economies and give political leverage to local groups. Tourism interest can also promote better conservation efforts and cause government administrators to focus on areas that might be otherwise overlooked. The relationship between tourism and coastal protection is bi-directional, such that tourism provides incentives for protection and well-managed areas provide incentives for visitation.

Three examples are cited which reflect the ways in which tourism can boost coastal management efforts in established protected areas. These three, all tropical, differ in the type of experience offered tourists, the primary objectives for which the protected areas were established, the design of the protected areas, and their implementation. The examples are Sian Ka'an Biosphere Reserve, the Galapagos National Park, and the Saba Marine Park.

Sian Ka'an Biosphere Reserve (Quintana Roo, Mexico)

Located on the eastern shore of the Yucatan peninsula in Mexico (*Figure 1*), Sian Ka'an encompasses coastal dry forest, immense shallow water lagoons, a portion of the second largest barrier reef in the world, Mayan temples and other ruins, and an abundance of limestone sinkholes, each with its own biota. It is truly a diverse area, not only in species but also in habitats and in patterns of human use. Some 800 Mayan people live within the bounds of the Reserve, continuing their traditional use of coastal resources and participating in local economies which cater primarily to tourists.

When the Reserve was officially dedicated in 1986, it became one of the nearly 300 Biosphere Reserves established by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). It remains one of the flagships of the UNESCO program, which aims to promote conservation while fostering sustainable use to meet the legitimate needs of local peoples (IUCN, 1986). It is a multiple use area: core zones are analogous to strict nature reserves in which extractive uses of the forest and coastal areas are forbidden, while various buffer zones accommodate the needs of commercial fishermen, artisanal fishermen, recreational anglers, snorkelers, sightseers, and the like. The location of core and buffer areas is based on ecology: critical areas such as spawning grounds for important fish species or stands of mature forest are protected for conservation aims, while less critical areas remain available to residents for their use.

Tourism in the state of Quintana Roo is booming, though most of it revolves around the beaches of Cancun, where some 2 million vacationers lay prostrate in the sunshine in 1988 (Emory, 1989). Sian Ka'an is only now beginning to have appropriate facilities for tourism, thus, the number of tourists visiting and impacting the Reserve are naturally limited. The Mayan residents of Sian Ka'an have erected and manned several visitor centers, and nature tours are beginning to spring up. People visiting forest trails or

Mayan ruins are charged a very small visitor fee, which helps to support reserve staff and maintenance of trails.

One particularly interesting aspect of these nature tourism enterprises is local involvement in sea turtle conservation. Residents of Sian Ka'an help guard nesting sea turtles and their young from natural predators and human poachers. Both species which utilize the beaches of Sian Ka'an for nesting (green sea turtles and loggerhead sea turtles) are threatened with extinction; this part of Mexico is one of the last undeveloped habitats afforded them (Agardy, 1988). Tourists can come and assist in nightly beach patrols and eggs relocation efforts, and seem thrilled to do so. Some 80 volunteers a year travel to this part of Mexico to volunteer under an Earthwatch-sponsored program; revenues generated by their share-of-costs contribution help to hire local guards and scientific staff. Sian Ka'an is under grave threat, however. Development in Quintana Roo is booming, and the scourge of ecologically-insensitive development is fast approaching the borders of the Reserve. The number of beaches that can accommodate mindless sunbathers appears limitless, but already irreversible ecosystem changes have appeared throughout the region. Nutrient loading and other forms of pollution taxes the coastal ecosystem, and poor land use practices have severely lowered water quality. Important habitats that are linked to the coral reef system, such as seagrass beds and mangrove forests, are being destroyed; this is undermining the reef's ability to function (Ogden and Zieman, 1977). Without proper management of all the components of the ecosystem, the viability of the entire coastal zone is threatened (Kelleher and Hudson, 1984).

Ironically, the very industry that is changing the face of Quintana Roo and causing its environmental degradation is the only one that can save Sian Ka'an from direct and indirect assaults. A new generation of tourists, aware and educated, has begun a fight to stress the importance of protecting Sian Ka'an are doing all they can to survive the onslaught, but they will need the vested interest of the dedicated ecotourist to help them and their land survive.

Galapagos Islands Park and Marine Reserve (Ecuador)

Tourism is synonymous with the word Galapagos these days, just as Darwinism used to be. The Galapagos present an unusual case of multiple use planning for tourism, due to their underlying uniqueness. Virtually every visitor to the Galapagos is an ecotourist, and most are well-prepared and well-educated. Over 90% of the island's land area is protected under the Galapagos National Park (PNG), and similar protection is currently planned for the offshore areas (Broadus and Gaines, 1987) (*Figure 2*). The government of Ecuador has established a system for limiting the number of visitors to the Galapagos through a quota system, although the decreed quotas are exceeded each year (Agardy and Epler, 1986).

The immense success of tourism in the Galapagos is not without its costs, however. User conflicts are beginning to emerge between tourists and scientists studying the endemic fauna, and between tourists and commercial fishermen who reap the productive marine waters for tuna and other fish. One reason for the appearance of these conflicts was the fact that the PNG was never planned as a multiple use area, and never brought the coastal waters into consideration. With better proactive planning, the Galapagos could be the model for protected area management and ecotourism that it deserves to be.

Saba Island Marine Park (Netherlands Antilles)

Saba Island is a small extinct volcano that rises steeply from the deep ocean floor of the Lesser Antillean chain. Despite its small size (5 sq. mi. in area) and population (approximately 1000 inhabitants), it has succeeded in attracting and maintaining a thriving tourist trade. The main reason people come to Saba is to SCUBA dive: the volcanic cone plunges dramatically, creating beautiful walls and pinnacles. Fish are abundant; the productive Saba Banks are situated to the west and support large stocks of pelagics, and the fringing reefs around the island harbor many reef fish species. The diversity of coral reefs has been shown to rival that of rain forests (Connell, 1978), and the diverse marine biota of Saba is a lure for ecotourists and divers alike. The coastal zone is relatively unperturbed, since waterfront development is close to impossible on the steep slopes of the island, agriculture and industry are practiced only in the small scale, and population size remains low.

The Saba Marine Park encompasses the entire coastal zone of the island, from mean high water to a depth of 200 ft., and two offshore sea mounts (*Figure 3*). The Park was established in 1987, as a means if controlling the activities of dive boat and charter boat operators in Saba's waters. The creation of the Park was very much a proactive, forward-thinking measure, since environmental quality remains high. Nonetheless, the residents of Saba felt it best if anchor damage and the take of marine organisms was minimized through the established of a multiple use protected area.

The Park is divided into 4 zones: 1) multiple use zones in which fishing and diving are permitted;

Figure 1: Location of the Sian Ka'an Biosphere Reserve in Mexico.

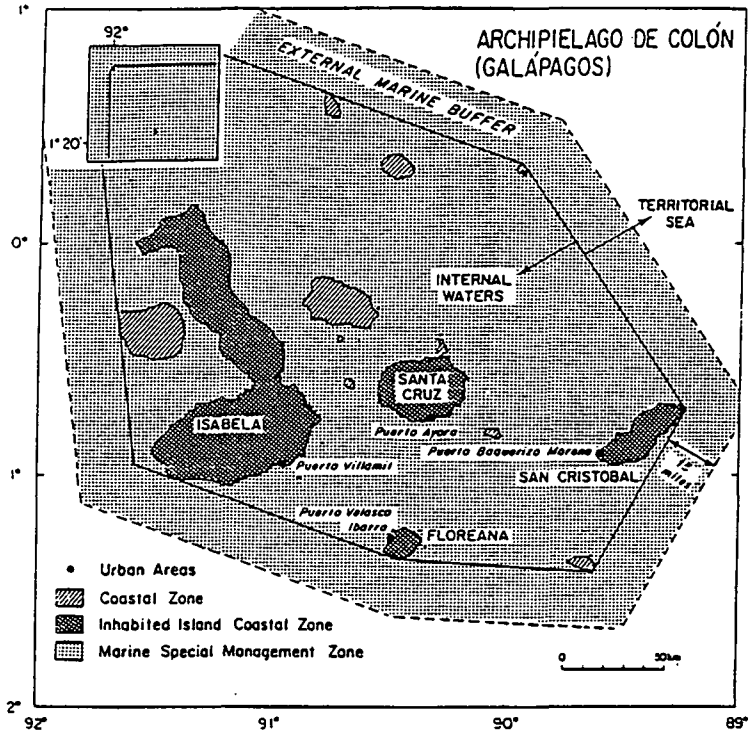

Figure 2: A two-zone management concept, proposed by Robert Knecht (in Broadus et al., 1984) and hypothetically applied to the Galapagos Islands. In this instance, the Special Marine Management Zone embraces all internal waters, a band of coastal land (overlapping the coastal zone) and an external marine buffer.

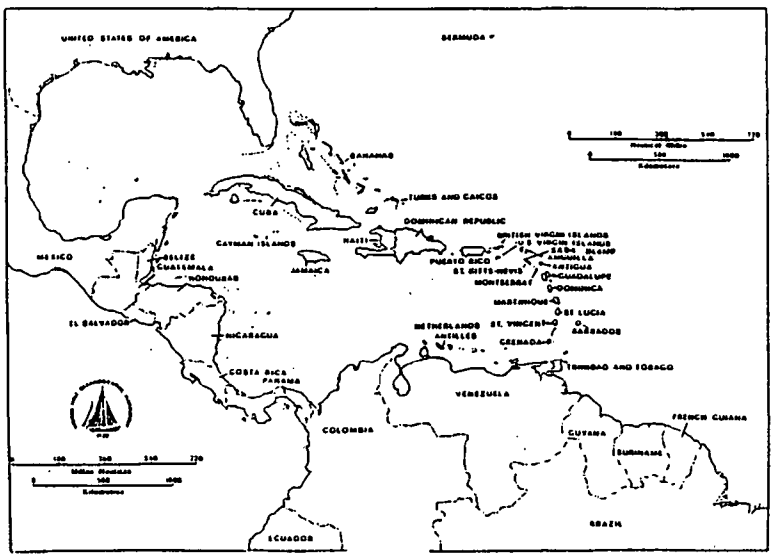

Figure 3: Location of Saba Island in the Antillean chain.

2) recreational diving zones where fishing and anchoring are not permitted; 3) anchor zones in which free anchoring and mooring are permitted; and 4) recreational zones which accommodate swimming, boating, snorkeling, diving, and fishing (Van't Hof, 1985). Users' conflicts are minimized, impacts on the environment are curtailed, and public education about ecological processes is made available through park hand-outs, brochures, and signs. Since the creation of the Park, tourism has increased, in part due to the attractiveness of pristine protected areas to ecotourists. User fees generated by the "dollar-a-dive" rule allow Sabans to generate enough revenues to support patrols, buoy maintenance, and visitor services. Sabans are proud of their Park and do much to promote the marketing potential of this tourist destination.

Towards Sustainability and Long Term Compromises

Multiple use planning, which is based on the ecology of the system and its requirements for self-sufficiency, can lead to sustainability of resource as well. Ecosystems are miraculous recyclers of energy and will provide the resources man needs as long as critical processes are left undisturbed. Zoning a protected area for multiple uses can ensure that critical core areas are unimpacted.

Multiple use planning, however, will only succeed if the needs and desires of local and visiting users are fully expressed and understood, and if local peoples are made a part of the planning process. When inhabitants of coastal areas recognize the value of their coastal environment, stewardship and a vested interest in sustainability can ensure that management will be effective in the long run. Tourism, by generating income for local inhabitants and by fostering a sense of pride in their environment, is one of the strongest ways to catalyze this process.

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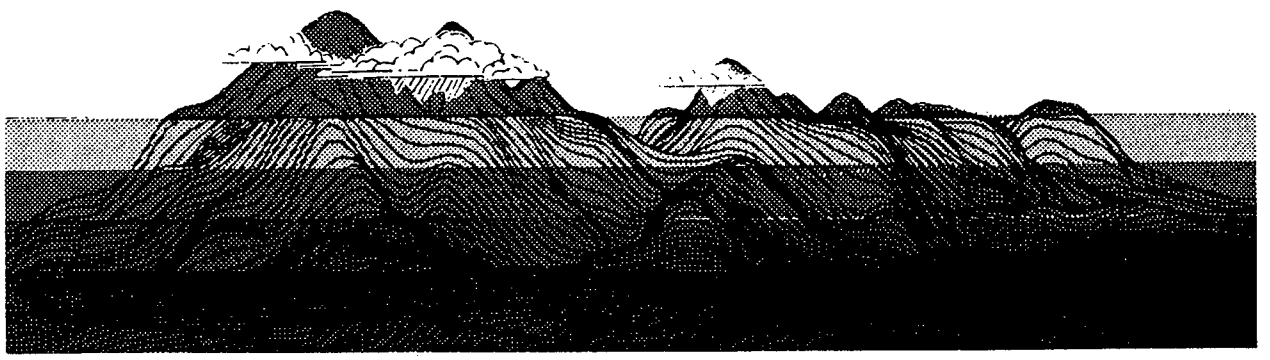

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