

Tourism Carrying Capacity in Areas of Ecological Importance

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Introduction

The increasing public interest in nature and landscapes is considered today a major positive factor in the process of conservation and wise use of ecologically sensitive and important areas. These areas may be defined as large or small sites with a very high biodiversity, providing habitats for threatened or endangered or endemic species of fauna and flora, and maintaining a unique beauty as landscapes.

On the other hand, the growing influx of visitors may exert strong pressures on fragile ecosystems and lead to their degradation with a consequent loss of biodiversity. Such problems have already appeared in some of the most popular national parks of the United States of America (Everglades, Yellowstone, Yosemite) and are also being recognised in Europe. It becomes advisable, therefore, to examine the relationship between tourism and sensitive areas and to propose a balanced approach that might be of benefit to both sides. The carrying capacity of these areas, and measures to avoid exceeding it, must be considered within the framework of such a balanced approach, based on a theoretical and practical understanding of the issues involved.

The proposals included are based in the experience gained mainly in the Mediterranean Region.

Trends of the Tourism Sector

The increasing leisure time for most working persons throughout the world results both in the intensification and the diversification of tourism demand. As to the latter, the availability of more free periods of time encourages a shifting from traditional tourism demand to more activity-oriented choices.

A considerable part of this demand is now being directed to activities that depend on ecologically sensitive –and often important– natural areas, in which the condition of the natural environment plays a major role. The list of such activities is endless, but one can mention some of the most popular ones.

Table 7.1 Tourism activities depending on natural areas

Activities with moderate impact

Canoeing
Hiking
Horse riding
Mountain climbing
Rafting
Sailing
Sport fishing
Underwater diving

Activities with serious impact

4-wheel drive racing
Hunting
Motocross racing
Motorboat tourism
Mountain biking
Skiing
Underwater fishing

The degree of impact of each activity on the natural environment depends on both the resources used, but also on the intensity of use. The intensity in turn depends to a large extent on the number of individuals participating within a given period of time. As demand grows, the tourism sector encourages further activities, some of them quite extreme, and develops infrastructure in new areas to receive them. Thus the pressure exerted is constantly increased and the trends indicate that it will continue unabated.

On the positive side, one should note the growing realisation from the side of the tourism industry of the need to protect the resources –both natural and cultural– on which it depends. Thus the emergence of ‘green’ or sustainable tourism, strongly encouraged by the World Tourism Organization, represents a trend that will certainly play an increasing role in the first part of the 21st century.

New Realities Concerning Sensitive Areas

During the last decades of the 20th century, some positive developments have appeared concerning ecologically sensitive areas. Perhaps the primary one has been the recognition of the dramatic losses that have occurred mainly during the past 50 years, due to overexploitation of resources, land use changes, urbanization and other anthropic-induced changes. These losses have been credibly documented and confirmed. Thus the Mediterranean Region has lost more than 50% of its wetlands during that period, while many of the remaining ones are heavily degraded^[ii]. This has led to various efforts on the national and international level for their conservation.

Most of them have focused on the establishment of protected areas within various legal frameworks. National parks for example have been designated in most countries, covering a significant part of extremely valuable natural territories. In addition, international conventions –such as the Conventions on Biological Diversity, on Wetlands (Ramsar, 1971) and on the Protection of World Cultural and Natural Heritage– have attempted to encourage multilateral collaboration and concern, especially on transboundary sites, and to provide a protection status of broader recognition^[iii]. Within the territory of the European Union, the ‘Natura2000’ network was instituted to provide effective protection to characteristic ecosystem types, and is being extended to neighbouring countries.

It soon became apparent that such protection status designations were not sufficient to ensure actual implementation and to safeguard these areas against threats that usually originated from greed and ignorance. Thus integrated management and planning was adopted as a major conservation approach, and this in turn resulted in the establishment of specialized multidisciplinary bodies for its preparation and implementation. Such bodies have now been established at many of the larger protected sites and throughout the world, and have been instrumental in their rational and sustainable management.

Management bodies have been also catalytic in the recognition of the crucial role played by local communities and especially by indigenous people. Based on millennia of intimate contact with the natural environment, local people have developed a profound traditional knowledge of the functions and values of ecosystems. In many cases, their survival and well-being depends on natural resources. As a consequence, they maintain a strong sense of ownership, which cannot be disregarded without serious negative results. It has become thus accepted that the conservation of ecologically sensitive areas must be combined inextricably with a care for the legitimate needs of local communities, through the wise use of available natural resources. This has extended the mandate of management bodies in dealing not only with ecological aspects, but also with social, cultural and economic ones.

The adoption of the concept of sustainability at both the global and the national level has provided an additional boost to such a balanced, integrated and inclusive approach to sensitive areas, which aims at both the use of their resources for the benefit of the current and future

generations and to the conservation of their biodiversity, through the maintenance –and at times restoration– of their natural functions and values.

Very recently, this has led to the understanding that the relation of human communities to nature has traditionally created culture in its many forms, and that preserving and enhancing cultural expression related to nature can become a powerful tool in strengthening the links of contemporary people with their natural environment^[iv].

Interface between Tourism and Nature

Before attempting to outline a balanced approach to tourism in sensitive areas, it is useful to investigate the interface between the two.

Tourism Requirements

Most tourist activities, even those not focusing directly on nature, require an attractive natural environment, to be used with various degrees of frequency. Thus the pleasure of rafting is greatly enhanced by the existence of untouched landscapes along the river banks (as in the case of the Voidomatis River in Northwestern Greece), in opposition to an urbanized milieu.

In addition, there is a growing tourism interest in sites with particular natural features, such as rare and exciting animal and plant species, or in unique landscapes. Thus the Greater Flamingo nesting island at Salins du Midi in the Camargue or the Dalmatian Pelican colonies in Mikri Prespa and Amvrakikos Gulf in Greece attract a large –and increasing– number of visitors. The same can be said of the oases in Southern Algeria and Tunisia, the national parks of the South of Africa, or the Amazon River.

As already noted, there is the beginning of demand for areas that combine both natural and cultural interest. Such sites can be found readily throughout Southeastern Asia, but also in the Mediterranean, with Butrint in Albania, combining a rich Greek and Roman archaeological heritage with the natural elements of an important wetland site, being a characteristic example. Combining the two elements of nature and culture can provide a new tourism interpretative product, which in turn can contribute valuable returns to local populations.

A number of tourism activities (such as hunting, kayaking or rock climbing) have specialized environmental requirements, which can be satisfied only at specific locations.

Values

Thus ecologically sensitive areas can provide significant values to tourism. These include intrinsic ones, not only scientific and educational, but also eco-recreational (with opportunities for hiking, bird watching or underwater diving). Exploitation values include the potential for outdoor sports, and the availability of natural resources which can be used or collected (such as game, fish, wild fruit and mushrooms).

On the other side, tourism can contribute significantly to the conservation of sensitive areas. Just the realization that a particular place attracts visitors is often sufficient to convince local people and decision-makers of its importance and of the need to maintain it. This has been the case in the area of Prespa Lakes in Northern Greece, where public attitude towards conservation improved dramatically during the last ten years mainly due to increased visitor flow, including large numbers of schoolchildren.

In addition, visitors provide significant economic benefits to the local communities and thus contribute to the establishments of new services and the increase of employment and family

income. They also break the isolation and neglect of remote areas and create links with the rest of the world, reducing the need of emigration and the resulting demographic attrition.

Tourism Pressures

On the other hand, like most other anthropic activities, tourism –especially in its mass form– may exert serious pressures on ecologically sensitive areas in three principal ways.

The first is through the construction of facilities within the area itself, mainly hotels and resort housing, but also leisure installations, which is the case in most of the very sensitive coastal zones of the Mediterranean, and especially in large parts of the islands of Crete, Cyprus, Malta and Rhodos, as well as the Costa Brava of Spain.

The second is through the construction of infrastructure necessary for tourism, especially in the transport sector, such as road arteries, airports, harbours and marinas, often built within valuable natural areas^[M]. Islands and the coastal zones are heavily affected by such public works.

The third is through the use of the area itself by motorized or pedestrian traffic and the practice of various harassing activities. Uncontrolled mooring of pleasure boats for example causes extensive damage to *Posidonia* beds and to coral reefs.

In addition, tourists compete with local inhabitants and with nature on the use –often excessive– of water, space and energy and produce large quantities of solid and liquid wastes, which must be properly disposed. Their impact upon local societies is often quite dramatic, with loss of identity and local traditions, ethical problems and a weakening of social and family structures.

The combined result of all these pressures upon ecologically sensitive areas subjected to a large tourist influx has been dramatic environmental and social degradation, which in turn has undermined the tourist activity itself. Corfu Island in the Ionian Sea is a typical case of such abusive development, while Zakynthos –famous for its *Caretta caretta* nesting beaches– is well on its way to a similar fate. Even for the areas that have been protected up to now from mass tourism, and receive only limited numbers of visitors, the impacts –depending on their sensitivity, as in the case of sand dunes, rare forests or bird nesting colonies– can be degrading.

Criteria for a Balanced Approach

Simplistic methods to address similar highly problematic situations have never borne positive results. The first reaction of tour operators is to abandon the degraded area and move to a virgin one. Soon, however, such untouched areas are no more available. Attempting to mitigate the impacts by extensive restoration efforts is very costly, time-consuming and not always feasible, especially in cases of heavy artificialization. The example of demolition in Mallorca of old hotels built too close to the beaches is a positive one, but cannot be considered as an indication of an emerging trend. Large scale demolition of resort housing has taken place in the Faro wetland in Southern Portugal, but was not attempted because of political timidity in the core of the Messolonghi Ramsar site in Western Greece.

Setting limits –usually arbitrary– on the construction of tourism facilities and on tourist arrivals is difficult to implement and is often circumscribed, or simply ignored. In this context, efforts to calculate the carrying capacity of specific areas are interesting theoretical exercises, because they usually attempt to analyse probable impacts of tourism pressures upon the natural environment and attempt to determine an optimization level. In this way they may help to sensitize

decision-makers and the public. However, they have debatable practical relevance, as they require consistent public-level efforts and are thus difficult to implement, enforce and monitor. The use of visitor fees has been proposed as a tool to limit access and to finance relevant infrastructure, but it faces serious ideological challenges and difficulties in its application.

Thus it becomes important –particularly for ecologically important areas– to experiment with new concepts, with a novel approach that would integrate all various aspects, reconcile conflicting interests and attempt to create a ‘win-win’ situation. The European Charter for Sustainable Tourism in Protected Areas^[vi] provides useful guidelines for it. Such an approach should satisfy the following criteria:

- conservation and enhancement of the ecological and cultural values of each sensitive area;
- sustainable use of resources by the tourism sector, especially natural ones;
- significant contribution to the socio-economic development and quality of life of local communities;
- wider economic benefits, fully compatible with the above three criteria, equitably distributed.

It is obvious that all four of these criteria cannot be satisfied completely and simultaneously, and must be rather considered as goals, than *sine qua non* conditions.

Towards a New Approach

The approach proposed is based on the premise that systematic management is necessary to ensure the sustainable use of space and resources, and especially in the most sensitive or conflictual cases. The approach consists of a series of steps that must be planned and implemented in a consistent way through close collaboration among the management body of each sensitive area, the local authorities and the representatives of the tourism sector. It is not necessary to carry out the steps proposed below in a linear, sequential manner; some of them can be launched in parallel, although constant co-ordination is required.

Determination of Ecological Values

Unless credible scientific information is already available, which is the case with some of the better known natural sites, the work should start with the determination of the ecological values of each area, through systematic inventories of habitats and species. There are already sophisticated methods for producing such inventories^[vii] through a combination of remote sensing methods, global information systems (GIS) and field work.

The desirability and feasibility of restoring certain degraded habitats must be evaluated at that time and resources for it must be earmarked^[viii]. A factor to be taken into account is the desirability of such restoration actions from the visitor point of view. In the Camargue, for example, the restoration of the Marais du Vigueirat was guided to a large extent by visitor planning considerations.

The results of the inventories must be evaluated on the basis of national and international criteria and in comparison to other similar sites, so that an objective assessment of the overall ecological value of each area can be obtained.

Inventory of Tourism Attraction Resources

In parallel, a similar systematic analysis must be carried out to evaluate the tourism attraction potential of the area. This should include not only the identification of characteristics that may satisfy general or specific tourism requirements, but also the determination of existing or predictable land use conflicts or constraints.

All these in turn must be prioritized, so that necessary interventions for the use of the area and the resolution of conflicts can be planned, after suitable environmental impact (EIA) and cost-benefit analyses.

Integrated Management and Planning

The results of the previous two analytical steps must be integrated in the management planning of the sensitive area, which should consider tourism development in a balanced form versus other economic activities. This should be the task of the management body of the area, if one exists. Of course wide participation of all stakeholders in the process should be ensured, including international and national tourism operators, as well as local enterprises and individuals concerned with or related to tourist activities.

The consensus of the local communities on the proposals and measures of the management plan, which is a prerequisite for its adoption and implementation, should be cultivated through public awareness activities and the dialogue with elected representatives and non-governmental organizations (NGOs).

Zoning Patterns

A key aspect of the management planning is the zoning of the sensitive area on the basis of ecological criteria and permissible anthropic uses. Such a model has been devised and practiced successfully at the Abruzzi National Park of Central Italy, with very satisfactory results, and has been duplicated in other sensitive areas (such as the Doñana National Park in Andalusia, Spain) in one way or the other. It includes the following four zones, clearly demarcated.

Zone A, most valuable from the ecological point of view and of high vulnerability: In it access is authorized only to scientific teams for research purposes, with written permission.

Zone B, highly sensitive: Visits in predetermined itineraries are limited to small groups (not exceeding 20 persons), led by well-trained guides. The visits can be either on foot or with special vehicles driven by the guides. In the case of some of the Croatian wetlands, such visits are carried out by silent electrically-propelled boats.

Zone C, with considerable natural interest: Some traditional primary sector and tourism activities are allowed, and visitor access is free though private automobile use is limited.

Zone D, buffer area, mainly agricultural, of mild development: Tourism and visitor facilities are located here, with car access and extensive parking. Traditional villages are often included. Experience indicates that the large majority of visitors remains in this fourth zone, if the facilities provided are satisfactory, and only a small percentage shows an interest to explore Zones C and B. Naturally, significant income is produced within Zone D through commercial activities.

Infrastructure, Services and Organization

This in turn creates serious obligations from the managers of the area for the provision of the necessary services. Adequate infrastructure must be provided for transport –including public means where private vehicles are not allowed–, sanitation, health and security. Commercial facilities for overnight stays, dining and leisure of visitors must be constructed. But also information and educational opportunities must be available in properly designed and operated visitor centres, which should take into account the different age and interest groups.

In addition, a visitor management and control system, discreet but effective, must be instituted, so that the zoning regulations will be respected. Currently there are a number of proposals for such systems –some of them with very ambitious goals–, which need testing and comparative evaluation^[ix].

Monitoring

The organization responsible for the management of the sensitive area must institute a permanent monitoring scheme. Through it the impacts of tourist activities on ecosystem processes and functions will be assessed in a systematic way and indications of environmental degradation will be noted at a very early stage. Such a system, at least in the beginning, would make unnecessary the efforts to calculate the carrying capacity of the area, and to attempt to implement access and exploitation controls.

In parallel, surveys of tourism demand and modes will provide useful information about the attractiveness of the area. This would be combined with an assessment of the economic and social benefits provided through tourist activities, if any.

Feedback and Remedial Measures

On the basis of such monitoring it will be possible to plan and carry out remedial actions, wherever required. In more serious cases, the management plan of the area will have to be modified in order to address negative tourist impacts and their root causes. In extreme cases, and only if other milder methods prove inadequate, strict regulations measures may become necessary, including limits to the provision of tourist facilities and to visitor access, which would then take into account both carrying capacity calculations and a pragmatic assessment of local experience.

Principal Conclusions

From the above reflections, a number of conclusions can be drawn, which may have broader implications.

In spite of past negative experience, there are strong indications that sustainable tourism can be compatible with the conservation of ecologically important and sensitive areas, and may even contribute significantly to it.

However, integrated management planning, which must incorporate tourism activities and prescribe clear zoning of land uses, is an absolute prerequisite.

The tourism carrying capacity of sensitive areas depends on many factors, both physical and social, and is highly site specific. A key factor, however, remains the existence of appropriate

reception planning and infrastructure, integrated into the management mechanisms for each area. If these do not exist, tourist activities will prove highly destructive.

In each case, an operational determination of the carrying capacity based on a careful and on-going monitoring of physical and social parameters may prove more useful than the application of theoretical models. However, integrating the two approaches may provide valid results.

Finally, through the tourist activities in ecologically sensitive areas, there must be concrete benefits to local populations in order to offset social, economic and environmental pressures received through such activities.

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Notes

- I. MedWet Senior Advisor, Convention on Wetlands (thymiop@hol.gr).
- II. See Finlayson, C.M., G.E. Hollis and T.J. Davis (eds.) (1992), *Managing Mediterranean Wetlands and Their Birds*, Proc. Symp., Grado, Italy, 1991, IWRB Spec. Publ. No. 20, Slimbridge, UK.
- III. Such as Ramsar Sites of International Importance or World Heritage Sites.
- IV. Thus in November 2002 the Conference of the Contracting Parties of the Convention on Wetlands adopted Resolution VIII.19 on “Guiding principles for taking into account the cultural values of wetlands for the effective management of sites”.
- V. Most of the airports in the Mediterranean –such as Corfu, Larnaca, Marseille and Tunis– are built on parts of drained wetlands.
- VI. Developed recently with the support of the European Commission and the EU ROPARK Federation. The PAN Parks initiative by the Worldwide Fund for Nature (WWF) has proposed similar guidelines.
- VII. One could mention the MedWet Inventory System, extensively used for Mediterranean-type wetlands in various parts of the world.
- VIII. See Zalidis, G.C., T.L. Crisman and P.A. Gerakis (Eds.) (2002), *Restoration of Mediterranean Wetlands*, Hellenic Ministry of the Environment, Physical Planning and Public Works, EKBY, MedWet, Thermi and Athens, Greece.
- IX. Some of the better known ones are: Limits of acceptable Change (LAC), Visitor Impact Management (VIM), Visitor Experience and Resource Protection (VERP), Visitor Activity Management Process (VAMP) and the Recreation Opportunity Spectrum (ROS).