Tourism and Biodiversity: the Balearic experience

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The wave of tourism

Tourism is a quite recent and rapidly growing impact on many island ecosystems. One of the major concerns about this novelty is the variety and strength of its effects on the biodiversity of such small territories. The sustainability of tourism depends largely on its ability to become host-friendly and conservation-minded. And in turn, the fate of biodiversity in areas under tourist pressure is contingent upon its recognition and appraisement.

There have been excellent breakthroughs in this area (e.g. Edington & Edington 1986; Eckert & Cremer 1997), and eco-tourism is a flourishing, albeit still quite a minority novelty, in many places (*e.g.* Castroviejo & Herrero 1992). Yet, the fact is that tourist developers and managers mostly look at landscapes and beaches as products on sale, while tourists themselves appear largely as a nuisance to be ignored by most naturalists. As a result, the vast majority of research papers or essays on either tourism or biodiversity (even in tourist destinations) make little or no serious mention of each other.

Therefore, it might be useful to focus on a case where tourism has a long history and, having reached its zenith as a sustainable industry, is now seeking to survive in a competitive, environmentally conscious area. The Balearic Islands have been a well-known tourist destination for at least fifty years. The enormous changes that the tourist industry has triggered in Balearic society have come a long way from the problems of poverty and emigration to those of opulence and immigration. In terms of biodiversity conservation, some problems have been solved by changes in habits and land use, but many others have appeared along with demographic, economic, and urban growth (Picornell 1991; Mayol & Machado 1992).

Tourists exert a huge pressure on the islands' nature. This is already feeding back on tourism itself. Thus, there is a need for a new model of development aimed at sustainability. In order to develop such a model in every instance we need first to understand the particular biological history of each island. Together with factual documentation on tourism, it may then be possible to foresee ways of putting this new factor into a reasonable, tailored formula.

Splendid biodiversity

The Balearic Islands are home for an extraordinary and unique biodiversity. Such richness is largely due to the fact that they are the most isolated archipelago in the Mediterranean. Moreover, the Mediterranean region, formed by the complex collision of several tectonic plates, hosts one of the highest concentration of species, and one of the largest proportions of restricted-range endemisms (Cody 1986; Oosterbroek 1994; de Jong 1998; Altaba 1999, in press b). The Balearics, known worldwide as an emporium of the tourism industry, are something more than a nice scenario for publicity images – and for the naturalist, much more so.

The flora and fauna of the Balearics contains many endemics, often limited to a quite small part of the archipelago's territory. A rugged geography, with more than a hundred islets large enough to host terrestrial ecosystems, and an abrupt orography, with mountaintop zones very different from shoreline environments, add a variety of habitats favouring diversification. However, the study of autochtonous biodiversity is still insufficient, because there are groups having received little or no attention – and may be more worrisome, because species identification has traditionally suffered from a bias towards Iberian fauna and flora.

In almost every islet there are particular varieties of lizards, land snails and non-flying beetles (*e.g.* Alcover *et al*. 1993). These populations have no chance of gene exchange, and have been isolated since the sea level rose at the end of the last glaciation. Some beetles are considered distinct species, but differences in size among populations inhabiting different islets have not deserved recognition as subspecies. In the case of lizards, a lot of subspecies are accepted, endemic to one or two close islets. In contrast, snails have in general not received nomenclatural recognition, even in cases of quite obvious diagnostic differences.

Figure 1 (A to D, from top). The natural vegetation of the Balearics consists mostly of various types of garrigue. At the northernmost tip of Mallorca, large expanses of "càrritx" *Amphelosdesmos mauretanica* alternate with Aleppo pine *Pinus halepensis* woods (A), together with stands of small palms known as "garballons" *Chamaerops humilis*. In the highest parts of the mountain ranges (B) there are communities formed mostly by species endemic to such heights, adapted to an extreme climate. Human activity, transforming island nature over many centuries, becomes evident in the habitat mosaic of Menorca (C), including pastures and cultivated fields among more or less interconnected trimmings of forests and garrigues. Peripheral islets, such as those known as Vedrà and Vedranell and lying to the south-west of Eivissa (D), host endemics belonging to several groups of organisms unable to breach the channels isolating them. Even though they are strictly protected, all such islets have been subjected to tremendous aggressions, rendering their terrestrial ecosystems different from what they would have been before the arrival of humans.

Extending this overview to plants, further anomalies emerge (Alomar *et al*. 1997). For example, the vine *Rubia angustifolia* is endemic to the Balearics, and is not rare in the tiny island of Cabrera. There lives also another plant, similar but growing as a herb and only in a very small area swept by storms. No hybrids are known between the two forms, and their characteristic morphology does not seem affected by cultivation side by side in botanical gardens. Surprisingly, botanical tradition stands heavily enough as to make the latter to be recognized at most at the level of "subspecies" – *Rubia angustifolia* subsp. *caespitosa*.

In some instances at least, it is clear that such insular taxa merit species status, because they have undergone a long evolutionary history in isolation and have not interbred with continental taxa for an extended period. Among birds, the Balearic shearwater *Puffinus mauretanicus*, the Mallorcan crossbill *Loxia curvirostra* and the Balearic warbler *Sylvia balearica* must be considered as valid species – not by applying innovative or debatable species concepts, nor due only to important morphological differences, but after considering evidence on their distribution, behaviour and fossil record (Altaba 1994, 1999). The discovery of endemism among birds highlights how little we really know about biodiversity in the Balearics, or in the Mediterranean at large.

A wreck's environmental history

The origin of the native Balearic biota dates back from the late Oligocene, some 30 million years ago

(Cardona 1979; Altaba 1998; de Jong 1998). At that time, the emerged land-mass that would eventually become the Balearic Archipelago detached from Sardinia and adjacent lands, starting evolution in isolation of the species living there. The only later connection to the nearby continents took place during the Middle Miocene (in the Serravallian, some 14 million years ago), when the formation of the Arc of Gibraltar involved the Balearic Promontory, giving it a form close to the present one. This connection was relatively brief, although it allowed the arrival of a few terrestrial vertebrates (Altaba 1997).

Figure 2 (A to C from top). The Balearic fauna includes many endemic species. The examples shown here are a blind cave-dwelling crustacean known from a few sites (*Typhlocirolana moraguesi*, A), a land snail restricted to the high mountains (*Iberellus balearicus*, B), and a lizard found only in one islet (*Podarcis pytiusensis vedranellensis*, C).

It is worth pointing out here the debate around the purported desiccation of the Mediterranean at the end of the Miocene (in the Messinian, 5.5 million years ago). This hypothesis was intended to explain the saline deposits in the bottom of the basin, and has extended a powerful influence in biogeographic studies. Yet, from a strictly geological point of view, it is quite unclear whether the Mediterranean dried up. And concerning its biogeographic implications, it does not seem it had any noticeable effect on the terrestrial fauna and flora, not only in the Balearics, but throughout the whole basin (Altaba 1998). These facts notwithstanding, it is an idea that has been advocated to explain all sorts of distributions around the Mare Nostrum.

Later on, an undoubtedly important episode happened, still dated with little precision sometime in the Lower Pleistocene: a mass extinction, perhaps caused by a submarine volcanic eruption, triggering a dramatic reduction in the number of insular species, especially in the southern island group (the Pytiusics). Many species of land snails, in addition to lizards, a giant tortoise, an artiodactyl, and a dormouse appear in Plio-Pleistocene sediments. And then, in younger sites, only a few snails and the Pytiusic lizard are to be found. Thus, the islands of Eivissa (Ibiza) and Formentera were quite similar in their ecology to oceanic islands, e.g. those never having been united to continents. This makes them an anomaly of utmost interest in the Mediterranean context (Paul & Altaba 1992; Alcover *et al*. 1994).

Finally, climatic and sea level fluctuations throughout the Quaternary furnished ample opportunities for the evolution of a remarkable biota. Several instances of highly restricted endemism (in islets, mountaintops, isolated swamps, caves and remote cliffs) can be accounted for in this manner.

Human settlement of the Balearics, dating only some 5,000 years ago, represented a cataclysm. In the first place, enormous changes in vegetation were produced (Yll *et al*. 1997). As in other islands worldwide, centuries of such changes brought the introduction of an impressive array of invasive species. Most of these exotics probably arrived though an "invasion corridor" from the area around Sicily, from where merchant Greek and Carthaginian ships sailed to commerce with the aboriginal Balearics (Altaba 2000a). The final result is that the Balearic biota has been deeply altered. Indeed, all present-day terrestrial mammals are newcomers, while those endemic were exterminated by human causes. Such pattern is equivalent to what happened in all Mediterranean islands (excepting the Pytiusics). Of the original insular mammal fauna, only two shrews remain (in Crete and Malta). Birds probably suffered a comparable disaster, even though it is difficult to evaluate its extent because there are still many unresolved issues in the taxonomy of pre-human species in the whole Mediterranean region.

Figure 3 (A to B from top). The native herbivore of the northern Balearics was a small caprine, called *Myotragus balearicus*. Virtually free of predators (only eagles could prey on it), it must have exerted an intense pressure on vegetation. It became extinct shortly after the arrival of humans to these last unsettled islands in the Mediterranean. Today we find its remains in caves, and also in the peculiarities of the endemic flora. The extremely toxic "didalera" (*Digitalis minor*, A) is one of the few non-endangered natives, thriving even in areas with a high density of feral goats. Other plants have mechanical defences, such as the amazingly thorny "socarrell gros" (*Anthyllis hystrix*, B), which often exhibits the effect of northerly winds in its shape and position of live parts.

Among insular species, many have survived devastation of original ecosystems thanks to the existence of unexpected refugia, where habitat conditions are often only marginally adequate. This is the case of New Zealand's tuatara, Guadalupe's native flora, or Mauritius' monsoon forests, all of which still hang out in tiny peripheral islets. This is also the case of native lizards in the northern Balearics (or Gymnesics), and of some endemic plants scattered across the whole archipelago (Altaba in press b). Another surprising example is provided by the Mallorcan midwife toad *Alytes muletensis*, first known from subfossil remains, and later found living in some remote mountain streams (Hemmer & Alcover 1984).

Island vertebrates underwent an almost complete extinction, but this collapse did not affect other groups of organisms, at least not to a comparable degree (Altaba 1999, in press b). Even though the number of introduced land snail species is very large, it does not appear that any extinction has taken place among the Mediterranean island fauna. Land snails and plants have comparable patterns of endemism, yet only the former leave a good fossil record. However, it is also true that no extinctions have been recorded among endemic plants. (The only known loss is *Lysimachia minoricensis*, which survives in botanical gardens after disappearing from the wild well within the 20th century.)

In order to understand this exceedingly low (or null) extinction rate among plants and land snails, it is necessary to rewind Balearic history to grasp how a previous "extinction filter" (Balmford 1996) had already affected these taxa. The profusion of thorns and toxins among plants endemic to Mediterranean islands suggests indeed that they evolved under a selection imposed by a very intense herbivory pressure by endemic ungulates roaming virtually free of predator control. Therefore, the substitution of domestic or feral livestock (such as goats in Mallorca; Altaba 2000b) for those ungulates meant no havoc, in contrast with what happened in many oceanic islands lacking herbivores where plants had no defence.

There is thus no evidence suggesting a great extinction among Balearic (or Mediterranean) native plants (Greuter 1994) taking place before the existence of botanical records. Instead, there is much favouring the alternative that plants (and land snails as well) remained largely unaffected by traditional, extensive land uses. Therefore, the outcome in this particular context is that much of the original biodiversity still exists, although most of the endemics' ranges have become even more restricted, and thus more dependent on a fine-grained pattern of land use. In the last quarter century, however, changes in those uses have occurred with unprecedented magnitude and speed, putting now many species in critical danger (Altaba 1999, in press a; Bestard *et al*. 2000)

Tourism on a fragile land

Following a few millenia of human occupation, the Balearics have become a complex mosaic of habitats largely affected by the activities of our species. After a

resident population of the Balearic Archipelago is close to 800,000. Nearly 60% of these live in the metropolitan area of Palma, where most political, industrial, commercial and financial activities are concentrated. The parallel increase of tourism has promoted a conspicuous economic progress (Mayol & Machado 1992; Manera *et al*. 1999; Conselleria de Turisme 2000).

As a result, the per capita income stands as the highest in Spain. In 1999, the three airports received 19.2 million passengers, while the main harbours registered 2.2 million. That same year, the islands were visited by 10.7 million tourists, occupying 405,000 beds and 256,000 restaurant seats. This generated a gross income around 916 billion pesetas (ca. 5.5 million euros). Unquestionably, the Balearics are a leader in vacational tourism. The tourist sector is highly sophisticated, and is also a leader in the development of other tourist destinations worldwide.

There are, however, negative aspects to all this development. Indeed, the massive destruction of the coastline has yielded the term "Balearization". Domestic refuse production is twice Spain's average. With nearly 900 cars per 1000 residents, traffic has become a nightmare. The mean level of water tables has fallen 90 m in 15 years, and aquifers lie at a mere 7% of their capacity. Electrical consumption rose 37% between 1993 and 1998. Air pollution in Palma is twice that of Madrid. All together, the "ecological footprint" is equivalent to that of a much larger population on an enormously wider territory. And these problems are appreciated by tourists: 34% of all their queries relate to environmental questions.

Those queries are indeed taken seriously, because current wealth is based mostly on tourism: 84% of the Balearic GNP is related to it. And it is widely acknowledged that the vagaries of tourism may not be predictable. On a yearly basis, it is a fact that the fraction of hotel rooms occupied fluctuates drastically: while it is at least 97% in August, it falls to a mere 12% in December. This variation is responsible for much temporary unemployment. In addition, income is quite unevenly distributed, making the Balearic poverty ratio stand among the highest in the European Union. Even if the gross economic figures may look satisfactory, there is a growing concern about environmental issues (Verd 2000).

All this happens on a territory that provides huge incomes but receives little investment from the Spanish central government. For example, roads are just 67% of Spain's average per inhabitant, and the proportion of university students stands at half. Although if new investments are to be in the form of plans elaborated by the Spanish Environment Ministry, it may be better to avoid them; they appear to aim at paving the whole coastline and transforming protected areas into a perpetual display.

Figure 4. Preserving the remaining natural habitats, such as Cape Cavalleria in Menorca (the northernmost tip of the Balearic archipelago), depends upon finding a win-win solution for both the conservation of endemic communities and the public use of these lands. Tourism can easily be a disturbing impact, yet with careful planning it can promote the successful, albeit complex management of protected areas.

Keeping Paradise afloat

Much, perhaps most, of the natural heritage of the Balearic Islands is currently endangered. Most endemics survive only where there are less human-induced perturbations, and thus fewer exotics (Pretus & Chust 2001). The biological richness surviving in the still little altered landscape cut-offs deserves to be protected with exquisite dedication.

There are sound scientific reasons for conservation in such small and impacted territories. Also, and perhaps in a more important way, deep ethical motivations exist. In addition, an economy based on the two pillars of entertainment and information should constitute sufficient grounds not to spare any efforts.

The current economics might render these islands an advance of what human impact is causing everywhere: with an extremely high, and growing energy consumption, and with an accelerated occupation of the territory with no equilibria, they are years ahead of what ought to happen elsewhere.

A clear sign of the current situation was recently in the local news. The first publicized draft of an ambitious Territorial Plan for Mallorca included a firm proposal to "ameliorate" the island's nature. This was to be performed through the introduction of several species that have never existed there, including beech, roe deer... even Spanish lynx! A storm of criticisms and jokes (*e.g.* Perelló 2001) elicited the following response from the surroundings of the Council of Mallorca's presidency: "that was simply the pre-diagnosis, not even a diagnosis previous to the Plan's development" (Artigues 2001). With such reasoning, it becomes clear that the island's biodiversity is still far from understood or appreciated in certain relevant quarters.

Yet, there are reasons for hope. After many years of modest or dubious environmental action, the Government of the Balearic Islands is now ruled by a left-centre coalition whose goals include explicitly conservation and sustainability. Most interestingly, the Department of the Environment is now in the hands of the Greens, and several relevant steps are being taken (Conselleria de Medi Ambient 2001). Resource use and traffic are being rationalized, recycling and waste reduction is incentivized, and water demand is starting to be managed. A comprehensive Biodiversity Law is now almost ready to go through the Parliament of the Balearic Islands, and an extensive network of nature reserves is being developed. Most noticeably, environmental education is taking off with impetus (Bestard *et al*. 2000).

Putting tourists into the equation

There is an urgent need for finding a model of sustainable development in the whole Mediterranean region (Mooney 1988; Bifani 1999). It must be kept in mind that the current bonanza for the Balearic economy has been the outcome of various crises affecting potential competitors. The bet is now for a more varied, more even and more recognized tourist offer. This is to be achieved through action along two paths: giving an explicit value to natural areas, and tuning tourist zones.

The tourist industry, even if hostile to anything that might imply less than cost-cutting, is drifting towards a general "greening", pushed by market forces putting a value on environmental matters (Picornell Vaquer 1999). On the part of the Government of the Balearic Islands, there is an innovative programme, called "Ecotur", aimed at helping tourism companies along this path (Chacártegui Cirerol 1999). The risk, of course, consists of putting on too much make-up, to the point of achieving the disguise of truly "Balearized" townships (such as Calvià; see Eckert & Cremer 1997) as environmentally friendly places.

The enormous cost of a serious "greening" plan requires additional financial resources, which ought to be produced largely by the tourism industry itself. On 10th April 2001, the ecotax has finally been approved in the Parliament of the Balearic Islands, with the applause of the majority, widespread and eloquent support among residents and tourists, and the acrimonious promise of legal battles on the part of witnessing hotel owners and of the Spanish central government (Payeras 2001).

The Balearics now support a very complex society, which is starting to make sophisticated evaluations in order to make careful choices for the future. Biodiversity is already deeply rooted in most people's view of the islands they inhabit (Ginés Gràcia 1999). Public participation in decision-making is a fundamental issue, requiring large doses of environmental education focused on the reality of the islands' resources and problems. Tourists also can and should be taught, instead of being driven merely as valuable livestock. In the end, tourism must be seen in the first place as a legitimate, obligately peaceful and potentially egalitarian sharing of the Earth.

The human footprint, deep and ancient in the Balearics, allows us to comprehend what kind of impacts our species' activities have. Maybe then might we be able to predict what effects our attitudes can have. Thus, the lessons we can extract from the Balearic Islands may be valuable to understand and save biodiversity throughout the world. Human condition notwithstanding, times ahead look better for the amazing, fragile and precious biodiversity of a small archipelago shipwrecked in the middle of the "first Eden" – showing, by the way, how we may learn to coexist on a planetary scale with the birds, lizards, beetles, snails, plants, and everybody else.

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Figure 5. Environmental education is probably the key issue in finding a model of sustainable harmony between biodiversity conservation and tourism. Enlightening of both residents and visitors may be the best way to promote wealth and happiness in those small territories fortunate enough to be selected as holiday destinations. As an example of this perspective, perhaps the soundest reason to enforce protection of Cabrera National Park is, arguably but simply enough, that it is the last place in the Mediterranean where one can read the Odyssey and feel it is somehow true.

Ulixes 21: Towards Sustainable Tourism in the Mediterranean

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Introduction: Tourism in the Mediterranean

The Mediterranean Basin has an exceptionally rich range of natural and cultural values, the explanation for its tourist potential. The area is one of the world's main foci of tourist attraction. In 1996, this area received 175,726,000 international tourists, representing 30% of the tourist flow in the world. This tourist flow has clear repercussions in the Mediterranean's economy: about five million jobs and an income of more than 100,000 million dollars a year, representing – in the coastal strip – about 7% of the Gross Domestic Product.

Even so, tourism also has devastating effects on the coastal environment. Water pollution, soil erosion processes, degradation of the underwater flora and fauna, and especially landscape degradation, are some of the clearest signs of a tourist model based on extensive growth and in indiscriminate use of land, far above the territory's carrying capacity. This tourist model is based on concentration in both space and in time. This concentration in space is because the tourist infrastructure is sited in the coastal strip, in a thin layer that ignores the adjacent inland areas. In fact, 75% of the tourist activity in the Mediterranean is concentrated in the four countries that are members of the European Union, and only 25% is generated in the rest of the Mediterranean Basin. It is concentrated in time, because the arrival of tourists is highly seasonal, peaking in the summer period, a fact that increases the impact on the environment and weakens the economic model of Mediterranean tourism.

What do we mean by sustainable tourism?

The World Commission on Environment and Development (WCED) defines "sustainable development" as that "which meets current needs without compromising the ability of future generations to meet their own needs". In the 2nd World Conservation Strategy (1990) *Caring for the Earth*, the term sustainable development is used with the following meaning: “to improve the quality of life of the human beings by living within the carrying capacity of the ecosystems that support life”. The need for sustainable development forms part of the world priorities expressed in the recommendations of Agenda 21 adopted at the Rio Conference and Community Action Programme 5 for Sustainable Development.

Starting from the basis that tourist activity should form part of a broader framework of sustainable development in the Mediterranean, we consider that tourism is not an end in itself but a means to ensure more harmonious development of the societies of the Mediterranean Basin.

This project starts from the conviction that tourist activity is neither intrinsically positive nor negative; this, in our opinion, is a function of tourism's impact on the space in which it occurs, meaning we can consider it as an instrument that increases the value of natural or cultural resources or as an instrument leading to the ruin of these resources.

The mass tourism model, which has characterized tourist flows since the 1950s, is a clearly unsustainable model, for at least four reasons:

1. It has not considered the importance of the conservation of the natural systems or of the rational use of natural resources as a value.
2. It has emphasized growth over the qualitative aspects of growth.
3. It has distributed the benefits of development very unfairly.
4. It has not included the surrounding area and its special features within the tourist offer, thus favouring homogenization and depersonalization.

Rather than a model based on economic growth and the predatory use of natural resources, what is needed is a model of tourism that is sustainable. We understand sustainable tourism to mean the tourism that combines tourist development with respect for and preservation of natural, cultural and social resources. Sustainable tourism favours the reduction of tensions between the tourism industry, the visitors, the host communities and the environment.

We consider that sustainable tourism is a tourism that is:

- ***Long-lasting*** (economically viable in the long-term, planned and well managed, which implies avoidance of mass tourism, and a low impact).

- ***Environment friendly*** (adapted to the carrying capacity of the natural and cultural spaces, minimizing seasonal effects)
- ***Diversified*** (in relation to the hinterland, adapted to the site's personality, based on local enterprises and avoiding total dedication to tourism)
- ***Participatory*** (with the participation of the local towns and villages)

Aims of the Project Ulixes 21

Project Ulixes 21 seeks to spread information about the values of the Mediterranean coastline and the environmental problems affecting it, as a consequence of the generalization of a tourist model that does not contemplate the need for its development to be compatible with the conservation of the environment. The basis of this project is the deep conviction that tourism models in the Mediterranean must be encouraged to restructure and aim for criteria of sustainability.

The project's aims are to communicate, raise public awareness and educate the different agents involved in tourist activity about the need for greater integration of environmental problems in the planning and use of all the activities derived from tourism, to ensure sustainable development of tourism in the Mediterranean coastline. Therefore the target of the project includes tourists, local administration, citizens of the localities receiving tourists and all the social and economic sectors that live from this activity or are related to it.

The project starts from the idea that it is essential for the different agents genuinely to want to cooperate and to assume, in their daily life, the responsibilities relating to sustainable development. The emphasis is on that it is necessary to raise the population's awareness and their commitment to seek solutions to the environmental problems of the Mediterranean coastline, so that they can take responsibility for themselves and play an active role in the present and future.

Field of activity

The project will take place in two geographic areas:

In the country of origin: especially Germany, Great Britain and France, and will seek to influence potential tourists and tourist-related companies and organizations.

At the destination: in the countries that receive tourists, specifically on the Mediterranean coastline of France, Spain and Morocco, Malta, Tunisia (Portugal and Croatia in the near future). Here the target will be the actual tourists, the managers of tourism (especially the local authorities) and also the populations that receive tourism.

Activities and Targets

	ACTIVITIES	TARGETS
WEBSITE www.medforum.org/ulixes21	Interactive web page Info about project 4 languages	General public Experts Potential tourists
TOURIST AWARENESS-RAISING CAMPAIGN	Awareness among tourists An amusing questionnaire 600,000 leaflets so far	Mediterranean tourists Potential tourists
TRAVELLING EXHIBITION	20 panels about the Med environment and tourism	General public School children
GUIDE-BOOK FOR MANAGERS	Good practices Concepts of sustainable tourism and recommendations	Tourism managers Professionals Students
INTERNATIONAL CONGRESS	Sustainable tourism in the Mediterranean: The participation of civil society	NGOs Administration Professionals Students

Wildlife and Tourism: the Gibraltar Situation

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Introduction

Gibraltar is sited on the north-eastern side of the Strait of Gibraltar dominating the Bay of Gibraltar to its western side. Rising some 1400 feet (398 metres) above sea-level, it is as impressive now as it was in classical times.

The eastern side of Gibraltar is predominantly cliff formation, broken only by talus slopes from its summit down to sea level. The western side is steady vegetated slope of Mediterranean matorral with maquis and garrique dominating the Rock's upper reaches right down to, and until it reaches, the city on the lower slope.

Gibraltar is fortunate to have nature protection laws, insofar as they protect all natural habitats both terrestrial and marine (Nature Protection Ordinance 1991). These laws now provide protection to the 30% of Gibraltar's natural coastline that still remains, and gives blanket protection to its territorial waters. Likewise these same laws protect the Rock's upper reaches that are to the great part still natural, with blanket protection to all flora and fauna wherever found.

Flagship Species

Within each respective area, marine and terrestrial, Gibraltar supports two flagship species. The Common Dolphin *Delphinus delpis* for marine and the Barbary "ape" *Macaca sylvanus* (a maquaque) for the terrestrial.

The marine flagship species *Delphinus delpis* has been visited on a commercial level by single vessel, the Sea Marauder for over twenty years but only during the summer months. Until research work carried out by the Helping Hand, a sister charity of the Gibraltar Ornithological and Natural History Society (GONHS), commercial dolphin watching was not exploited as it is today. This work showed that the Bay area is in fact the home range for dolphins that were present throughout the year, plus the added fact that the Bay area is also a calving ground to no less than three species of dolphin, *Delpinus delphis, Stenella coeruleoalba*, and *Tursiops truncates*.

Today vessels ply this trade with a carrying capacity of well over one hundred passengers. The original vessel carried twelve and did no more than three trips each day. Whereas now, the hours of daylight dictate the number of trips undertaken.

The terrestrial flagship species *Macaca sylvanus* has it origins on the Rock lost in time. The Phoenicians made note of these animals on the coast of Barbary, Greek and Etruscan art depicted them on vase paintings. The first notation of their presence in Gibraltar was by Ayala is 1778 in his history and description of the same. General Rainsford likewise reported then in 1791. Present day thought has them ranging fromkey remnants of a native European population to secreting themselves to Gibraltar by subterranean tunnel from Morocco. Fact, fiction, legend or import, the choice is wide open; in truth we do not know how they came to be here. What we do know is like the dolphin they are here and they are our flagship species.

Problems

What are the dangers for flagship species? The first danger is us, the ones who wish to protect and preserve. To the great part, most NGOs spend a great deal of their time trying to promote the need for preservation and protection of species believed in danger. Present day examples are tigers in India, or polar bears in Alaska.

Within the waters of Gibraltar, the efforts of a few reflect much the same story. Construction of an artificial reel, on Gibraltar's western shoreline, took well over a decade to find any kind of support. Now, 25 years down the line, it is being exploited by both government and commercial interests, without any understanding of what kind of support it truly needs for its longevity.

Support for these issues, when it arrives, comes as it does in many areas throughout the globe – from governments, councils, administrations acting for and on behalf of, whoever! Plus the ever-vigilant commercial entity. They know of the tigers of India and the polar bears in Alaska. They likewise know of the flagship species of Gibraltar; who told them? We

told them, the NGOs, societies and all round green do-gooders.

In our search for support and protection we have pointed out at every given opportunity how eco-tourism can help the hidden economy. Now tigers, polar bears, dolphins and apes can be seen by everyone anywhere any time in the name of eco-tourism, and all with the blessing of governments, councils and administrations.

So where does that leave us? In the case of Gibraltar's flagship species, to the great part on very thin ice. Our initial plan of introducing true protection law (Gibraltar Gazette April 1991) was a wise move. The need to protect under the law is vital. Without that all, species protection is futile.

Dolphins in the bay area of Gibraltar, however, are under pressure, and protocols for dolphin watching vessels are long overdue. To date, these are not forthcoming from local governments.

The Junta de Andalucia in Spain on the other hand is looking into the loss of this future eco-tourism before they have it in place, by setting up protocols for dolphin watching vessels before these commercial interest are *in situ*. This, for their part, is a lesson they have taken on board from their problem with whale watching in the Canary Islands.

Apes on the Upper Rock are suffering a similar situation. With tourism ever on the increase, tour operators and taxis are subjecting these animals to human interactions on a scale never before seen – with results of stress-related problems such as biting, loss of family structure, and splits within groups as we have never seen before. This, plus visitor feeding all types of foods with the aid of the tour operator drivers (coaches and taxis), to the point where animals are obese, effectively decreasing fertility and bringing about shorter life-spans. Notwithstanding that, when these new types of food are not available, the animals go in search of them within urban areas.

Solutions

What effectively are needed are draconian measures to protect operators from themselves and their blindness that it will last forever or at least until they are rich. Governments, councils and administrations for their part should not fear these commercial interests. Both are in need of each other, and the wildlife is in need of the funding for its protection and preservation.

Effective laws and protocols must be introduced and administered effectively and firmly, for and on behalf of all participants (operators, governments, flora and fauna).

A sinking fund to provide for the protection, preservation and management on the part of wildlife should be provided from those who gain from it (governments, operators and eco-tourists).

Eco-tourism is such that people will gladly pay if they see monies are being spent effectively on protection, preservation and management – and they are the end-users who, via operators and government, pay the bill.

Without effective measures on these flagship species and other areas of the eco-tourism's hidden economy, such as botanical walks, bird watching and diving holidays, will – along with our big-sellers – be lost to the local economy. For us there will be no turning back.

Nature and its habitats have suffered much and survived all. There have been many losses down through time from which there is no return. Nature's ability for collective survival, however, has been adhered too. Let us not have our right of free-will, above all things, bring about our downfall through lack of vision. If we must sell, let us sell a better future for flagship species and all wildlife. Let us once more become part of our landscape and not just the shaper of it.

Conclusions

The need for laws in nature protection should not end with their implementation. Laws should be effective on the ground, not just on paper but in practice. Blanket selling of an eco-product, should take on board its after-effect on the product once sold. Funding should have a pass-down effect so all who benefit likewise contribute. Overselling of an eco-product can be detrimental in the long term without the following being taken into account.

Policing – effective and firm

Education – effective and understandable

Funding – levy operators and ecotourists. Don't like it; don't buy it; don't sell it

Management - global and myopic

Protocols - implementation accentual

Consolidation is the key-word to the stability of eco-tourism. Oversell has a detrimental effect not only on wildlife but also on the hidden economy that grows up around such commercial ventures.

Superabundance, plethora (call it what you like), when selling eco-tourism is the one thing we do not have. Our fragment of paradise is limited; because of this

we must limit its growth accordingly. However it can only be done with the cooperation of all involved.

The Government of Gibraltar, for its fragment of paradise, needs to show courage and forward planning far beyond its term in office if our flagship species are to survive this new era of plenty. They are the ones who must see wisdom in the misfortunes of others who have tried and failed in their stead.

Flagship species: Dolphins in Gibraltar Bay, and a Barbary macaque (right) in apparent consultation with the author (left).

Trails: Conservation that makes Dollars & Sense

Paul Butler

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Over the past few decades tourism has been one of the world's most consistent growth industries. Worldwide, international tourist arrivals grew by 9.7% from 1980 to 1985, and by an astonishing 31.7% between 1985 and 1990.

In 1992 an estimated 425 million people, representing almost 10% of the Earth's total population, made trips outside their own countries. They spent almost US$ 2 trillion, contributing to a sector that ranks third amongst all export industries and makes up 25% of international trade in services. Former American Airlines Chairman, Robert Crandall, writes: "Travel and tourism meets an annual payroll of US$ 540 billion, pays 6% of the world's total taxes, provides one in fifteen of the world's jobs and accounts for more than 7% of all capital investment."

The economic importance of this industry to small islands, such as those in the Caribbean, is indisputable. Indeed tourism is the lifeblood of many West Indian nations. In 1990, this region received 11.84 million tourist arrivals and an additional 7.45 million cruise ship passengers. Together these visitors spent US$ 8.9 billion and provided direct and indirect employment for more than 300,000 people. Between 1970 and 1990, Caribbean tourist arrivals grew by 180%. The Caribbean Travel Organisation reports average annual growth over the past fifteen years at about 7%, considerably higher than worldwide average annual growth in this sector. Spending is also on the increase.

Today, islands face difficult times. Agriculture for many is under threat with changing global trade practises, withdrawal of preferential trade agreements and competition. Aid and donor assistance is becoming more targeted and more frugal. As island nations develop, they are perceived as being "less in need". All this is happening at a time when human populations are burgeoning and material expectations are on the rise. For many islands tourism is seen as the answer. There is little doubt that it can generate enormous windfalls and does create jobs. The problem is that, unless carefully managed, it can wreck havoc on fragile environments, with little or no return.

Believing that tourism is inevitable, and that island governments will continue to solicit more and more arrivals, RARE Center has encouraged Forestry and National Trust personnel at least to try to access some of the monetary benefits that tourism brings, to plough back into conservation and resource management. It has done this through the production of a step by step manual: *Trails: Conservation That Make Dollars and Sense*, and a targeted programme of construction grants.

Tourists are interested in the environment. In 1990 Elizabeth Boo (WWF) noted that a 1982 study showed 29 million Americans were interested in "non-consumptive wildlife use", having participated in 310 million nature trips away from their homes in 1980 alone. She added that these figures included 1,031,000 people who made 4,067,000 trips, with a predominately ecological interest to foreign countries.

A Fitch and Bubbenmoyer study (1989) noted that "there are more than 80 million Americans interested in bird watching… Some 30 million consider themselves "active birders", making bird watching one of the fastest growing pastimes in the USA". The report added that bird enthusiasts spend more than US$1 billion on bird seed alone, and have a demographic profile that would delight any salesperson. Forty percent are between 18-45 years old and 17% have disposable household incomes in excess of US$ 50,000 – and that was in 1989!

As resource managers we MUST maximise the potential financial resources that interested nature lovers can bring to our islands, while minimising the damage they do. Carefully constructed and managed trails can facilitate this. If only 10% of the Caribbean's stay-over tourists visited a trail and paid just US$10 for the privilege, more than US$10 million would be generated annually.

To address this matter, *RARE* Center has produced a manual: *Trails: Conservation that Makes Dollars and Sense*. Printed in English and Spanish, this manual guides its reader through a step-by-step process of designing and constructing a nature-trail system. It aims to help the resource manager to maximize the economic benefits of their country's natural heritage through tourism, while minimizing its environmental impact. It strives to provide the "tools" required to develop quality, low-impact trails, and to upgrade guide services, thereby providing visitors with new opportunities to see more of their destination, while at the same time bringing in much needed foreign exchange and jobs. The manual's ten chapters include ones dedicated to market research, preparation of proposal, site-selection, cost/benefit analysis, trail

construction, marketing, interpretation, financial management and carrying capacity. It also includes Survey Pro computer software which is used in the visitor surveys. The manual is directed at mid-level technical officers who are actively involved in trail design, construction, interpretation or administration; including Forestry or National Trust personnel.

Like RARE Center's other manuals – *Promoting Protection Through Pride* (Education) and *Reaching Out Through Radio* (Family Planning Serial Dramas), the text provides a basic, step-by-step guide taking the reader through the entire process of trail development. The manual's loose-leaf binder format enables the reader to insert his/her own examples where appropriate. Sample sheets, funding proposals and worked examples are printed on yellow paper. As these are reached, they can be replaced with copies of original work. Design formats for trail furniture and interpretive materials are printed on blue paper, so they can be given to those individuals directly involved in construction. RARE Center's original trail development manual was distributed free throughout the English-speaking Caribbean, with over 50 government agencies and non-government organizations receiving complimentary copies. Additional manuals were sent to regional organizations such as the Institute of Tropical Forestry, the Canadian International Development Agency, UNDP, and the British Development Division.

NOTE: A further manual on guide training is currently in press and will be of value in improving guide training skills. A fully revised trail manual, and a Spanish translation are also in the final stage of development, incorporating lessons learned.

RARE Center also invited proposals for trail grants, requesting the applicant use the manual's opening sections to form the basis of their proposals (an analysis of visitor preferences, a survey plan of the proposed site, a line-item list of materials, and a cost/benefit analysis etc). In the months following its distribution, RARE Center received about 30 letters of inquiry and/or trail development proposals from around the region. About one-third of the proposals failed to follow the guidelines outlined in the manual, lacking two or more of what were deemed essential prerequisites, such as data on tourism arrivals, a comprehensive bill of quantities, a survey plan, or a cost-benefit analysis. Of those proposals that did include all, or almost all, of these prerequisites, many appeared to have followed the steps outlined in the manual.

For example, in the Jamaica's Oatley Trail, the JCDT conducted a visitor survey and utilized the software included in the manual. In the Turks and Calicos, the TCI National Trust had pre-existing data from their tourism department and used this in their proposal. In the case of the Cayman Islands and Montserrat, trail traces were surveyed, while in the case of Nevis, existing maps were used.

Of the proposals that were received, and which included all or most of the proposal prerequisites suggested in the trial manual, some like Trinidad's North-East Forest trail, were rejected, because there was little evidence of matching funding being obtained and it was thought unlikely that the trail would be financially viable – based upon the statistics provided. Others were rejected simply because RARE Center had insufficient funds to finance all the proposals that were submitted. When data were missing from the proposals, each applicant was afforded the opportunity to submit an addendum to bring their proposal more into line with what was required. In most cases, RARE Center personnel were familiar with the various sites and, where they were not, a site visit was undertaken.

Over several years, RARE Center assisted in financing the construction of ten trials: nine in the wider Caribbean and one in the Pacific. Approximately US $137,000 of RARE Center's own funding was expended on these, with this leveraging about 260% (US $359,123) from other sources. Each trial was then visited either at its official opening or shortly thereafter. Once again, it was found that the local lead agencies had used RARE Center's trail manual in the manner to which it was intended. It was used as a reference source as and when required. For example, at Belize's Tropical Education Center trial, the manual's format sheet for look-out construction was given to the contractor as the basis for his work. On the Cayman Island's Mastic Trial, Trust staff used the manual and made a number of recommendations that have been subsequently included in it. In the Turks and Caicos they have used the accounting format provided in chapter three of the manual.

In line with donor requests, RARE Center has continued to monitor all of the trail sites it has financed and has produced regular updates on their status and financial viability. Four of its trails have now been open for several years. These sites include: Des Cartier in Saint Lucia; Little Water Cay in the Turks and Caicos; the Mastic Trial in the Cayman Islands; and En Bas Saut also in Saint Lucia. These trails offer an interesting mix of both ecosystems and management operations. For example, the Saint Lucia sites are located in rainforest, while those in the Turks and Caicos and Cayman islands are located in dry areas. Those in Saint Lucia are managed by government departments, while those in the other two sites are managed by non-governmental National Trusts. Three of the four sites are generating significant profits, while the Mastic Trail continues to

run at a modest profit, after several years of operational losses.

To illustrate the potential value of trails in the conservationist's portfolio, here are the latest operations figures from the four aforementioned trails. Both the Saint Lucian trails were new and were carved out of the forest; in the Cayman Isalnds the trail followed an existing trace, while in Turks & Caicos, visitation to Little Water Cay to see the Iguanas has been a long-time phenomenon. However previously there were no board-walk trails, and visitors often damaged Iguana burrows, and no revenue accrued from visitation to contribute toward the area's management.

Trail: Des Cartier Trail

Country: Saint Lucia

Collaborating Agency:
Forest and Lands Department

Reporting Period:
April 1st 1999 – December 31st 1999.

The Forestry Department's Des Cartier Trail continues to function well generating significant revenue for the local economy as well as contributing much needed funds to the Government's Consolidated Fund. Although Saint Lucia was hit by many storms during this reporting period, the trail continues to do well. The Des Cartier Trail also has to compete with new trails opening all over the island. Despite all this, Des Cartier remains the premier rainforest trail in Saint Lucia.

Income for reporting period:
During the nine-month period under review the Forestry Department generated EC$85,925 (US$32,061.75).

Expenditure for reporting period:
During the nine-month period under review the Forestry Department expended EC$28,329 (US$10,570.64), on trail maintenance, tour guides, and other related costs.

Profitability for the reporting period:
Between April 1st 1999 and December 31st 1999 Forestry Department's Des Cartier Trail generated a profit of EC$57,596 (US$21,491.04).

Since the US$10 entry fee levied by the Forestry Department represents less than one-fifth of the total (US$55) charged by the tour company, we can estimate the amount of revenue generated for the general economy during the reporting period by multiplying the 3,206 tourists that visited the trail by US$55 fee charged, which equals US$176,330.

In the forty months since this trail first opened it is estimated that it has generated over US$954,470 or more than EC$2.5 million for the local economy.

Source: Annias Verneuil, Forestry Department

Trail: En Bas Saut Trail

Country: Saint Lucia

Collaborating Agency: Forestry Department

Reporting Period:
April 1st 1999 – December 31st 1999.

The Forestry Department's En Bas Saut Trail continues to function well generating significant revenue for the local economy as well as contributing much needed funds to the Government's Consolidated Fund. Visitation to this trail has significantly increased over the past nine months and, over this reporting period, surpassed revenues even from the Des Cartiers trail. This is despite the fact that new private-sector nature trails seem to be opening monthly competing for the same target audience.

Income for reporting period:
During the nine month period under review the Forestry Department generated EC$88,573 (US$33,049.62).

Expenditure for reporting period:
During the nine month period under review the Forestry Department expended EC$27,955 (US$10,430.97), on trail maintenance, tour guides, and other related costs.

Profitability for the reporting period:
Between April 1st 1999 and December 31st 1999 Forestry Department's En Bas Saut Trail generated a profit of EC$60,618 (US$22,618.65).

Since the US$10 entry fee levied by the Forestry Department represents less than one-eighth of the total (US$85) charged by the tour company, we can estimate the amount of revenue generated for the general economy during the reporting period by multiplying the 3,636 tourists that visited the trail by US$85 fee charged which equals US$309,060.

In the thirty-three months since this trail first opened it is estimated that it has generated over US$581,073 or more than EC$1.5 million for the local economy.

Source: Adams Toussaint, Forestry Department

Trail: Little Water Cay Trail

Country: Turks and Caicos Islands

Collaborating Agency:
Turks and Caicos National Trust

Summary report: April 15th – December 31st 1999.

Executive Director of the Turks and Caicos National Trust Ethlyn Gibbs-Williams notes:

The Little Water Cay Programme still operates under the same principles set out in the Memorandum of Understanding drawn up in 1996. However, there have been changes in the management of the Programme. A committee of seven members drawn from the Watersports Association, the Tourist Board, the National Trust, the Department of Environment and Coastal Resources and the Private Sector advise on projects to be funded from the LWC Conservation Fund and make recommendations on matters pertaining to the management of the Nature Reserve. Little Water Cay continues to receive international recognition. CNN featured the nature reserve in a 30 minute documentary on the Turks & Caicos Islands aired in the latter part of 1999.

She continues: From observations during our periodic checks, there seem to be no evidence of negative impact to the natural habitat. However, it was noted that in addition to the debris brought in by the storm surges often experience during this time of year, natural factors such as termite invasion has been noticed for the first time.

Income for reporting period:
The Little Water Cay Nature Trail programme continues to be well-visited and profitable as well. Between January 1st 1998 and 31st 1999 approximately 23,219 tourists have visited the trail; the cost of this varies from US$ 35-75, depending on which other activities are included in the tour: snorkelling, picnic etc. Assuming the average tour price to be US$ 45, it is estimated that, over this period, the Little Water Cay Trails have contributed in excess of US$ 1,044,855 to the local economy. Each visitor pays an additional fee of $3 into a fund that helps to maintain the trail and support other conservation projects. Thus, to date almost $70,000 has been paid into this fund. Projects supported have included a trail on Middle Caicos, educational materials, mooring buoys, an underwater snorkel trail and funding the visit of an Iguana biologist.

Based upon the $3 entry fee, total income for this reporting period, March 30 through December 31, 1999 was $17,981. This gives an average of $1,998.00 per month and can be translated into 666 visitors to the reserve on a monthly basis.

Expenditure for reporting period:
Ethlyn Gibbs-Williams reports:

Administrative cost for this period March 30th-December 31st 1999 totalled $2,115.37. This includes telephone charges, fuel, and other incidentals itemized on invoices submitted to the Trust by Marsha Pardee.

The amount of $2,622.00 was spent on supplies, which includes $2,598.00 for purchase of iguana buttons and $24.00 on iguana etiquette cards. Maintenance cost for this period amounted to $413.00. The LWC Conservation Fund also contributed $2,000.00 towards other projects during the reporting period (MC Ecotourism Project Trail Guide).

Profitability for the reporting period:
Total expenses for the period totals $7,150.37. Therefore, net income to the Conservation Fund was $10,830.63.

Source: Ethlyn Gibbs-Williams; Executive Director TCI National Trust

Trail: Mastic Trail

Country: Cayman Islands

Collaborating Agency:
National Trust for the Cayman Islands

Reporting Period:
April 15th 1999- December 31st 1999

Silver Thatch Excursions has continued to be the only tour operator conducting guided tours of the Mastic Trail. The arrangement requires a commission payment of 15% to the National Trust for the Cayman Islands.

Fred Burton, Executive Director of the National Trust for the Cayman Islands notes:

Impacts on the natural environment resulting from trail use continue to be very slight. The tour operator reported that he was collecting small amounts of trash, apparently from local unguided walkers, during the cooler months (up to June). No statistics on unguided use are collected, but Trust staff and the tour operator have noted a gradual increase in local recreational use of the trail. This is welcomed, since it serves one of the major purposes of the trail (to increase awareness and build a sense of value for our dry forest ecosystem among the resident population).

The condition of the trail stood up well to the wet season, confirming that an annual volunteer-based clearing session is sufficient to maintain the trail in good shape. The next session will be scheduled in early 2000. The trail was heavily flooded at several times during the summer, in particular as a result of record rainfall in November 1999. By mid December the trail was dry again throughout. The generally flat terrain, and preponderance of rock substrates, means that no significant damage to the trail results from such events.

Income for reporting period:
*Please note that the reported income is for four months.

Statements from Silver Thatch have not been received for the full 1999 year, so trail use statistics are not yet fully available. The level of paid-tour activity remains well below potential, as a result of low interest among other tour operators. However the Trust continues to see a modest net income from this arrangement.

Month	Number of tours	Number of persons	Commission to Trust
April	6	28	US$ 181.50
May	9	27	US$ 202.5
June	7	38	US$ 120.71 *
July	3	6	US$ 60.00

* Incl. 23 students from Red Bay Primary School.

Expenditure for reporting period:
There has been no expenditure on the trail by the National Trust in the period April – December.

Profitability for reporting period:
Based on the fact that all trail works are carried out by a team of volunteers, that no materials were purchased during this reporting period, and that the guide is provided (and paid for) by Silver Thatch Tours, the full US$ 564.71 generated for the Trust by the Mastic Trail was profit.

Source: Fred Burton, National Trust for the Cayman Islands.

A question often posed to RARE Center field staff, is whether to construct guided or self-guided trails, and which are more profitable. A self-guided trail requires an initial investment for interpretive signs and trail pamphlets, but involves little subsequent expenditure for interpretation. Perhaps the biggest drawback is that unsupervised visitation can lead to resource degradation – either directly from flower picking, littering or vandalism, or indirectly from over-use. The latter can lead to erosion of the trail and the disturbance of wildlife populations owing to noise and unrelenting activity.

With a guided trail, access to the area can be better regulated. However, a guided trail requires major commitments of time and labour, as well as the accompanying recurrent financial expenditure. Guided trails typically will lead to higher revenue streams and greater visitor satisfaction, assuming the prescence of a competent, informed guide! An added benefit is the protective role guides play. Their frequent visits enable them to detect illegal activities around the trail, and they can supervise the activities of the visitors they accompany. A final alternative, is a mix of the two: open access to the trail and the provision of guided tours for those desiring a greater insight into the area's fauna and flora. One possibility is to offer guided tours at certain times or on certain days, with interpretation limited to self-guided activities at other times.

Experience drawn from RARE Center's ten trails has proven that the most effective, and financially viable way to manage trails is to franchise them to certified tour operators. Under this system the trail and its environs are declared off-limits to the general public, without a permit. Perhaps they lie within a Forest Reserve or Protected Area. The Management Authority (Forestry Department/National Trust) then allocates (either directly or through tender), specific days to local operators that the handle the tour operations. Such that it becomes the responsibility of the tour company to solicit clients and sell tours. The tour company also arranges and provides transport from the client's hotel to the trail-head, lunches and other services. They might provide their own certified guides, who have received training from the Management Authority, or provide space for an Authority guide to join them. The Management Authority, in conjunction with the Tour Operator, can determine maximum and minimum group sizes, and other logistical details.

A per-person user fee is levied and incorporated into the overall cost of the tour. For example, a visit to the Des Cartier Trail costs US$ 55/per person. Of this US$ 10 is paid as the user-fee to the Forestry Department. Invoicing tour operators can be carried out weekly or monthly using ticket stubs collected by the guide and provided to the Management Authority. In the low season tour companies can be encouraged to work together on any of their allocated days, liaising amongst themselves to reach declared minimum group size, thereby maximising their profits.

This management option generates revenue and employment, as well as boosts private-sector involvement. It also provides a mechanism for visitor control and minimizes the day to day involvement of the Management Authority in visitor solicitation. Most Tour Operators have their own staff based at hotel desks and have far better access to potential clients than does a resource agency, such as a local Forestry Department.

Visitor fees can also be used to under-write local visitation, and certain days of the week – such as weekends can be allocated to in-country clients.

RARE Center's trail program, and our local in-country collaborators have shown that carefully designed, well marketed and managed trails can provide tangible dividends in terms of jobs and income, while increasing the likelihood of local support for conservation.

If you would like to find out more about RARE Center's trail programme and our manuals, please contact:

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Bird catching on an industrial scale in the Sovereign Base Areas (SBA) of Cyprus

by Judy Dawes and David Whaley

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In Gibraltar we reported bird-catching on an industrial scale within the Sovereign Base Areas (SBA) of Cyprus. Since then, many of you will have seen this taken up by the British newspapers and wildlife magazines.

We had brought the situation to the attention of Michael Gore, and he was able to involve the RSPB. During the autumn migration, an RSPB investigative team visited the Eastern Sovereign Base Area and were able to photograph and video the extensive netting and liming. Coincidentally a journalist birdwatcher also visited the Republic and reported extensively on bird-catching within the Republic.

Both governments have responded positively, and we wait to see if serious efforts are made during the spring migration to curb the illegal activities of the bird-catchers. We shall be closely monitoring the situation and now have direct lines to the people who can make decisions.

We had another success in helping to persuade the SBA to allow the Republics Game Fund (anti-poaching) officers to join the SBA police in joint patrols within the SBA. The expertise of the Game Fund will be of great help.

We continue to assist the Cyprus Conservation Foundation, where we can, in their efforts to prevent the despoilation of the Akamas penisula, a wild gem that requires National Park status. We are in close touch with conservationists on the Western Sovereign Base Area who, together with the Republic's Forest Department, are preparing an action plan for the Akrotiri Penisula, an important wetland. We are also trying to assist the Cyprus Ornithological Societies in their efforts to bring the importance of conservation issues into schools.

We hope to be able to persuade both the SBA and the Cyprus Government departments to take part in the next Overseas Territories conservation conference.

The breeding birds atlas field work continues – slowly. This year we hope to fill the obvious gaps (such as "why haven't we recorded Cyprus Warbler in this square?") and publish an atlas for the Paphos District, in the west of the island. This is about one sixth of the total area.