# Part 3. Assessment of Opportunities and Threats

As set out in Part 1, the objective of this Plan is to maintain the biodiversity and cultural integrity of the Caicos Islands including the Ramsar wetland of international importance through enabling the local people to protect the area by generating sustainable usage involving eco-tourism-based activities. More specifically:

1. To provide a means by which the rich biodiversity and cultural heritage of the area can be treasured by local people and experienced by visitors without damage to these internationally important ecosystems

2. To facilitate the development of the capacity of local people to establish small businesses based on eco-tourism and traditional crafts, so as both to provide the economic incentive for (1) and employment for young people so that they no longer need to leave the islands to find work, thereby maintaining the communities and cultural integrity.

3. To provide means of coordinating the work, educating local children (and where appropriate adults) and visitors and integrating the work into the National Physical Plan [now the Sustainable Development Planning Initiative].

4. To use this experimental approach to provide an example to the widely spread small island communities which are searching for ways of maintaining biodiversity and local culture while generating an income so that these can be maintained rather than surrendering to intensive development models imposed and driven by external investment replacing local culture and control by North American/European systems.

This Part starts to place the features that make that location important, in some sort of evaluated context. In order to do this, this Part summarises the features of priority biodiversity importance outlined in Part 2. The second main section in this Part then considers the other features of the area which provide opportunities or threats to the implementation of the Plan objectives. This then leads to the operational plan in Part 4.

## 3.1. Confirmation of important features of biodiversity

In this section, the initial information on the various taxa surveyed are summarised in terms of local, regional and/or international importance, taking account as practicable and appropriate aspects such as rarity, characteristic of the region or ecosystem, naturalness, and fragility.

### 3.1.1. Plants

Processing of the plant material collected under the Darwin Initiative project continues, and the botanical data compiled to date cannot be regarded as comprehensive. Indeed, given the number of different species involved, and the difficulty of collecting in denser habitats, further fieldwork is required (and planned) to accumulate additional specimens. The relationship between the Turks & Caicos National Trust and the Fairchild Tropical Garden is developing positively, and will provide a basis for further work in this area.

However, even on the basis of the specimens and observations collected thus far, a number of priorities for sensitive conservation management are becoming apparent. A number of individual species recorded by the Darwin Initiative study (or reported elsewhere as occurring in the Turks & Caicos) are worthy of particular attention. For example, the status of the palm *Pseudophoenix sargentii* should be evaluated and studied; this has been recorded in cultivation, but if an indigenous population could be located, this would be an important biodiversity resource in conservation terms. The orchid *Encyclia caicensis* is also notable, as an apparent Turks & Caicos endemic; biosystematic work is required to clarify the taxonomic status of this species.

As well as species-level interest, the habitats of the Turks & Caicos are also of conservation relevance in botanical terms. The presence of disjunct pineland of *Pinus caribea* var. *bahamensis* (Griseb.) is notable; the gallery forest adjacent to Wade's Green Plantation (North Caicos) is also a botanically interesting area, worthy of conservation and further investigation; and the limited fresh water habitats support locally rare botanical communities, the value of which should be recognised in conservation planning.

## 3.1.2. Insects

As noted in part 2 of this Plan, knowledge of differing aspects of the insect fauna of the Turks & Caicos Islands is very variable in its extent. In assessing the 'range size rarity' of individual species, the limited knowledge of the faunas of neighbouring islands (or even continental mainlands) creates a further difficulty. Some Turks & Caicos Islands' species of restricted distribution (endemics) are likely in most of the major insect orders, and may also occur in those orders with few local representatives. Such species of particular conservation value and local interest certainly occur in the one insect group for which relatively comprehensive data are available – the butterflies.

### 3.1.2.1. Endemicity amongt Turks & Caicos Islands butterflies

Biogeographically, the Turks & Caicos Islands are part of a set of southern Bahamian islands, and it is in this context that butterfly species of restricted distribution (endemics) are considered here. A useful analysis of endemicity of butterfly faunas in the southern Bahamian islands has been conducted by Miller *et al.* (1992). Observations of Turks & Caicos butterflies conducted under the Darwin Initiative project do not significantly conflict with these authors' conclusions.

Miller *et al.* (1992) conclude that 42.5% of the species recorded from Crooked, Acklins, Mayaguana and the Inaguas are "widely distributed, monomorphic, apparently vagile species that are of limited use in a biogeographic analysis". They consider this to be consistent with the approximately 50% of the overall West Indian butterfly fauna which is expected to fall into the category of "dispersalist". In relation to individual islands, Miller *et al.* (1992) conclude that the following numbers and proportions of species are widespread and vagile:

- Crooked, 16 out of 33 (48.5%);
- Acklins, 14 out of 26 (53.9%);
- Mayaguana, 12 out of 22 [including a sight record for *Ascia monuste*, but excluding a sight record of *Hamadryas feronia diasia*] (54.5%)
- Great Inagua, 17 out of 37 [excluding "the one *very* questionable *Ephyriades zephodes* record cited by Clench & Bjorndal (1980)"] (46%).

It is likely that widespread species make up a similar proportion of Turks & Caicos Islands butterflies, leaving approximately 50% of the fauna showing some degree of endemicity. Based on faunal lists with such widespread species removed, Miller *et al.* (1992) note that, in general, Crooked and Acklins support similar faunas ("as expected, because they share the same bank"); that the Inaguas usually share faunal elements with the Turks & Caicos; that Mayaguana supports a fauna similar to that found in the Inaguas, but more similar to that of the Turks & Caicos; and that the Crooked / Acklins fauna is rather different from that found across the Inaguas / Mayaguana / Turks & Caicos.

Miller *et al*. (1992) go on to consider the southern Bahamian butterflies not included on their list of "widespread" species; these "endemic taxa" have more or less restricted distributions within the southern Bahamian islands (summarised in Miller *et al.'*s Table 1). As such, these authors consider the following to be closest to having TCI endemic status:

- *Strymon acis leucosticha* (TCI only)
- *Memphis intermedia intermedia* (TCI, Inaguas)
- *Eurema chamberlaini mariguanae* (TCI, Mayaguana)
- *Cyclargus thomasi clenchi* (TCI, Inaguas, Mayaguana)
- *Heraclides aristodemus bjorndalae* (TCI, Inaguas, Mayaguana)
- *Wallengrenia* sp. (TCI, Inaguas, Mayaguana)

Note: Smith *et al.* (1994) refer to Jacqueline Miller's intention to describe a new subspecies of *Wallengrenia drury* (cf. the new species promised to be forthcoming from this author by Clench & Bjorndal (1980) and Miller *et al*. (1992)). Those earlier papers had suggested that the Turks & Caicos form of *Wallengrenia* would be included in the new entity (with the restricted distribution shown above), but Smith *et al.* (1994) suggest that the TCI form is the "typical *W. drury*", which is much more widely distributed.

On this basis, *Strymon acis leucosticha* appears to be the one butterfly that is entirely confined in its distribution to the Turks & Caicos Islands.

Miller *et al.* (1992) include the formal description of *leucosticha* by Harry Clench (based on 55 specimens collected in 1978, mostly from Conch Bar, Middle Caicos, with some also from Whitby, North Caicos). In his description, Clench notes that "we flew over to Middle Caicos for the day, and, as we walked westward from the airstrip at Conch Bar, we encountered several *Croton* plants, where we found and took a few more *acis*. We proceeded further, and both *Croton* and *acis* became more numerous. Soon we reached a side road that headed north toward the nearby coast, and we followed it. It quickly began to cross an area of rolling hills, in sight of the sea. This area was covered solidly with low, heath-like vegetation, rarely more than 0.4-0.6m high, at least half of which was *Croton* (the remainder included *Coccothrinax* palms and *Cocoloba uvifera*, among other things). In this *Croton* heath *acis leucosticha* was extremely common, and hundreds could have been taken in a few hours. They were flying, perching on the *Croton* leaves and feeding at its flowers." This passage suggests that the area where Clench found *leucosticha* most abundant is precisely the same area where Oliver Cheesman found it to be most common during surveys under the Darwin Initiative project in 2001/02. Given the significance of this butterfly in biodiversity terms, this area (immediately between Conch Bar village and the northern shore, and to the west in the Crossing Place Trail / Fish Ponds area) is probably of much greater conservation value than is immediately apparent.

### 3.1.3. Reptiles and Amphibians

There is no evidence of an indigenous amphibian fauna in the Turks & Caicos Islands; both amphibian species found during herpetile surveys are recent introductions (the frogs *Osteopilus septentrionalis* and *Eleuthrodactylus planirostrus planirostrus*). However, the reptile fauna not only contains a high proportion of indigenous species, it also exhibits a high level of endemicity. Herpetile surveys indicate that the Turks & Caicos Islands support four endemic species of lizard (the gecko *Aristelliger hechti*, Curly Tail *Leiocephalus psammodromus*, Caicos Islands Reef Gecko *Sphaerodactylus caicosensis* and pygmy gecko *Sphaerodactylus underwoodi*) and one endemic species of snake (the Caicos Islands Trope Boa *Tropidophis greenwayi*). In addition there are three further lizards (Turks & Caicos Bark Anole *Anolis scriptus scriptus*, Turks & Caicos Rock Iguana *Cyclura carinata carinata* and Mabuya Skink *Mabuya mabouya sloanei*) and one snake (Bahaman Rainbow Boa *Epicrates chrysogaster chrysogaster*) that are endemic at the subspecific level. Certain reptiles, whilst not confined to the Turks & Caicos, are very narrowly distributed. For example, the only subspecies of *Cyclura carinata* found outside the Turks & Caicos Islands is confined to the small island of Booby Cay off nearby Mayaguana, and *Sphaerodactylus mariguanae* is also restricted to Mayaguana and the Turks & Caicos.

The vulnerability of the Turks & Caicos herpetofauna is recognised to a limited extent by the international conservation status of certain local species. The snakes *Tropidophis greenwayi* and *Epicrates chrysogaster* are protected under Appendix II of the Convention on International Trade in Endagered Species (CITES, 1992), and the iguana *Cyclura carinata* is protected under Appendix I of the same Convention, as well as being listed as "Threatened" by USFWS (1994) and "Critically Endangered" by IUCN (1996).

The lizard fauna is common throughout the island habitats, although *Mabouya mabuya sloanei* is more common in higher scrub forest with a more open understory. More vital for the reptiles are the small pockets of freshwater influenced moist habitats such as caves and sinkholes. While *Sphaerodactylus caicensis* may be encountered under leaf-litter of all of the scrub habitats and around human dwellings, it is more frequent around the mouths of caves and sinkholes: in areas where the ground is more moist and leaf litter has had a chance to accumulate deeply. A similar habitat frequented by this endemic species are the moist, shady microclimates under large trees (not exclusively native tree species). Snakes may be found in all areas of scrub habitat but are most frequent, like *Sphaerodactylus caicensis* (one of their prey items), in moister habitats. *Tropidophis greenwayi greenwayi* is commonly encountered under rocks and logs beside freshwater ponds. This snake is also common where *Sphaerodactylus caicosensis* are abundant, this being their major prey item.

Apart from habitat loss, the biggest threat to snakes is persecution, partly under the mistaken assumption that they are venomous. This attitude can be changed only by education. Occasionally, the Darwin Project Officer was called out to collect "nuisance" snakes and, sometimes, braver people brought them to the Project headquarters in a bucket. The Project kept one Rainbow Boa for educational purposes, using it in classroom presentations throughout the islands. Children who had not yet had the chance to develop a fear and disdain for snakes were given the opportunity to learn about these animals and other reptiles while meeting this special classroom visitor. The snake is

a very well-liked guest in the classroom; when Bryan meets children in the villages, their first question is often "...when will you bring the snake back to school?!" With the help of this special animal, the students get a chance to learn about the creatures that share their island home, and how to live happily alongside them.

### 3.1.4. Bats

Four species were found in caves (one of them also occurs in small rock shelters and houses). Of these, the Big-eared Bat *Macrotus waterhousii* feeds on large insects, such as cockroaches and katydids and even the giant Erebus moth; the bat lives singly or in small groups near the entrance to the caves or in disused houses. The Buffy Flower Bat *Erophylla sezekorni* and Leach's Long-tongued Bat *Monophyllus redmani* form larger groups deeper into the cave, and both have long noses and tongues to feed on nectar from flowers; both species will also eat pollen and some insects. The fourth cave species, the Cuban Fruit-eating Bat *Brachyphylla nana* feeds mainly on fruit. The latter three species are all endemic to the Caribbean and are probably very important for the pollination and seed dispersal of many plants. The fruit-eating bat has quite a restricted range and the large colony on Middle Caicos marks the northern limit of its distribution. These bats have been recorded in TCI before, but a fifth species (initially heard on a bat detector, and finally trapped with a mist-net) proved to be a new record for the islands: the Red Bat *Lasiurus borealis*. This species feeds on small insects. Four further species have been recorded from TCI, two from fossil material, and two from Providenciales (a widespread species seen there in the 1970s, and a single record of a well-known North American migrant).

A quarter of the world's bat species are listed as threatened and a further quarter are close to slipping into one of the threatened categories. One of the Middle Caicos species fits into the latter category. Tony Hutson found it very refreshing to be on an island where there did not seem to be any serious conservation threats at present. But it may not always be so; the high level of development on Providenciales has probably already had a significant impact on the bats there. We hope that the islanders will remain aware of the value and conservation needs of bats, and that future development and other human activities will allow a healthy and varied bat population to thrive on the islands. The people of Middle Caicos are interested in their bats, and rather like having them around (perhaps because some species feed on the local mosquitoes and biting midges!). Many tourists also visit the Conch Bar Caves and see the bats. Here is a possible source of conservation concern. It is important that the tourists and their guides have the opportunity to appreciate the bats, but also recognise the bats' sensitivity to disturbance. A policy on cave tours to maintain the biological and other interests of Conch Bar Village Cave (and any other tour caves used by bats) should be established. There should be greater involvement of nature conservation interests in the management of the site. Monitoring the bat populations on the island will help to identify changes that arise from human activity or natural causes, and a conservation code for cave visits has been drafted (see 4.5.2).

### 3.1.5. Birds

Birds move around more freely than most animals. It is often thought that they can go somewhere else if something goes wrong with their habitat in a particular place. However, recent ecological studies indicate that bird populations survive only because the birds have a network of habitats available to them – nowhere is surplus to their requirements. Fieldwork on wetland birds before and during the Darwin Project has shown that the TCI study area is very important to waterbirds and that usage is very variable. This variability is seasonal and year-to-year, and probably relates largely to weather conditions. It is important that human intervention does not make things yet more complicated. Consider the vulnerable West Indian Whistling Duck. The project has raised local interest in this important and secretive bird, and several valuable breeding observations have been made by local residents and project staff. However, one breeding site was made unavailable in 2001 because someone hunting crabs burnt the vegetation where the bird nests, even though this is a Nature Resrve.

The interesting and unusual flora and fauna of Turks and Caicos Islands wetlands, particularly the bird life such as flamingos, provides valuable opportunities for education, scientific study, tourism and recreation. Few areas in the West Indies offer large areas of undisturbed wetland habitat for native and migratory waterfowl. The geographical location of these wetlands serves as a "stepping stone" in the eastern flyway that bridges two continents, North and South America. Waterfowl find crucial respite and refuelling from the rigours of migration when moving south in the

late summer and early autumn and north again in spring. The wetlands of the Turks and Caicos are extremely important for the continued survival of several migrant and native species. This is particularly true for migrant shorebirds whose populations are at their lowest as they return to breeding areas in North America. West Indian species of waterfowl (ducks, flamingos, herons, and shorebirds) are also losing habitat as tourism related development expands in the region. Among species of particular concern that are found in the Turks and Caicos are the Reddish Egret (scarce and considered vulnerable – Directory of Neotropical Wetlands, Scott & Carbonell 1986), West Indian Whistling Duck (vulnerable, being threatened by hunting and habitat loss – IUCN Red List, 1986) and American Flamingo. The area regularly supports internationally important populations of:

West Indian whistling duck *Dendrocyhna arborea* (VU),
the Caribbean population of brown pelicans *Pelecanus occidentalis*,
the nominate subspecies of the reddish egret *Egretta rufescens*,
the "Cuban/Bahaman" population of the West Indian flamingo *Phoenicopterus ruber*,
white-cheeked (or Bahama) pintail *Anas bahamensis*,
possibly non-breeding black-bellied plover *Pluvialis squatarola cynosurae*,
possibly non-breeding lesser yellowlegs *Tringa flavipes*,
Caribbean subspecies of gull-billed tern *Sterna nilotica aranea*.

Whilst the importance of the wetlands is increasingly well known, the dry woodlands had not been noted for their wildlife. It is now clear that birds here make themselves obvious only in the one or two hours just after dawn and at certain times of year. The study has found that these woodlands support important breeding populations of characteristic local birds, some widespread but others found in no or few other places (such as the Bahamas, Cuba or Hispaniola); these include Thick-billed Vireo, Bahama Woodstar Hummingbird, Greater Antillean Bullfinch and Cuban Crow. In addition to these, the woodlands are vital wintering areas for some North American breeding populations. These birds may also be more obvious in April-May than at other times, because they spend a lot of time feeding to fuel their migrations to their breeding grounds. Among the most important finds during the recent fieldwork were several Kirtland's Warblers. This is one of the most threatened bird species of the region, the world population consisting of only about 3000 individuals. They breed only in a restricted habitat in one part of Michigan, USA and spend the non-breeding season in largely unknown locations in the Bahamas and TCI. It is now clear that the woodland on Middle Caicos is important to the survival of this species and for the continued well-being of many others. Indeed, it is likely that the scrublands and woodlands throughout TCI are of much more importance to wildlife than generally realised. All too often they are regarded as wastelands, but we should be very careful how these areas are treated during the Islands' development.

TCI is usually grouped with the Bahamas as an "endemic bird area" (holding species which occur nowhere else). However, TCI also shares the Cuban Crow only with Cuba. The Darwin project has sighted yet more species otherwise restricted to Cuba (see Part 2).

Internationally important dry-land species occurring on the Ramsar site (and in some cases more importantly on the adjacent woodland area which is ecologically linked):
Cuban Crow *Corvus nasicus* - occurs only in Cuba and in the Caicos Islands;
Thickbilled Vireo *Vireo crassirostris stalagmium* - endemic subspecies restricted to the Caicos Islands;
Greater Antillean Bullfinch *Loxigilla violacea ofella* - endemic subspecies restricted to Middle and East Caicos;
Kirtland's Warbler *Dendroica kirtlandii*(VU) - see above.

### 3.1.6. Ecosystems

The preliminary results of the preceding Darwin Initiative project – combined with local knowledge – underline the importance of the wetlands and the terrestrial ecosystems for fisheries and farmers.

### 3.1.6.1. Wetlands

Ray and Sprunt (1971) pointed out the great value of the habitats in the Turks and Caicos Islands because in many cases they are as close to the natural state as any to be found on similar island systems in the American tropics. These considerations make the Turks and Caicos Islands likely candidates for the possession of wetlands of international importance.

In tropical systems such as the Turks and Caicos Islands coastal mangroves are now recognised as one of the most productive systems in the world providing rich nursery grounds for many commercial species. Thus the important local fisheries for conch, lobster and bonefish depend on organic food material produced in mangrove areas and distributed by the numerous creeks and channels to the bank and reefs. Enclosed Lagoons and Mangrove Swamps make up 25% of the wetlands in the Turks and Caicos Islands and the large shallow sea channels separating North, Middle and East Caicos are fringed by dense growths of Red Mangrove.

Mangrove swamps and salt ponds also serve to reduce flooding and trap sediments which would otherwise enter the coastal waters during heavy rainfall and smother corals and seagrass beds that depend on clear water.

Mangroves serve to protect coastlines against erosion especially during heavy storms. This natural barrier may be damaged in storms but will grow back again without cost to man. Island building and maintenance is a living process and the dynamics of island formation and erosion are complex.

The salinas and salt ponds of the Turks and Caicos make up 65% of the wetlands on the islands providing valuable wildlife habitat. They have also been valuable sources of salt and retain cultural and historical value.

Freshwater formations make up 10% of the wetlands on the islands and represent the watershed system of the Turks and Caicos Islands and thus form a vital resource which if degraded affects every sphere of land use, especially in a dry climate. Pollution or depletion of the watershed can affect agriculture and water supplies linked through the porous limestone rock, and can eventually affect offshore marine habitats such as coral reefs.

For the above reasons international conservation bodies have been particularly concerned over the decline of wetland habitats in the Caribbean region and every effort should be made to conserve this resource while it is still in relatively good condition in the Turks and Caicos.

The importance of some of the wetlands of the area, including the area later designated as a Ramsar site, was established by Clarke & Norton (1987), who also noted the importance of the following areas outside that site:

Dick Hill Creek (now a Nature Reserve)
Bellfield Landing (now a Nature Reserve)
Mangrove Pond
Mud Hole Pond
Moore Hall Pond
Pumpkin Bluff Pond (now a Nature Reserve)
Cottage Pond (now a Nature Reserve)
Bottle Creek
Fish Pond
Montpeller [including Turnup] Pond
Windward Going Through
The Lagoon, East Caicos
Ponds, East Caicos

Since that report, the Parties [i.e. nations] to the Convention have identified major gaps in coverage of ecosystems amongst the designated sites across the world, and have identified these gaps as priorities. These include coral reefs, seagrass beds and mangrove swamps. In addition, there is a developing approach to include within boundaries complete functional systems, rather than example habitat-types.

On these bases and more recent information outlined earlier, the following areas should be considered as candidates for safeguarding as part of the heritage and as an investment for local community economic development, based on heritage:

Nanny Pond & Trail
Long Bay, Middle Caicos
The creeks and flats at Lorimers and Increase, Middle Caicos
Duck Pond, Middle Caicos
Turnup & Montpeller Ponds, Middle Caicos
Joe Grant's Cay and the adjacent channels
English Pond, Middle Caicos
Jack Pond, Middle Caicos
East Caicos flats and marshes
Fish Ponds, Middle Caicos
Blowing Hole, Middle Caicos
Juniper Hole, Middle Caicos
East Caicos ponds
Small cays for iguanas etc
The reef off the north & east shore of East Caicos
The reef off the north shore of Middle Caicos

The Darwin Initiative project results have confirmed the importance of the Ramsar site, and identified additional aspects of importance. North, Middle & East Caicos comprise one of the largest and probably the most pristine wetland systems in the Caribbean (and coral/mangrove systems generally). The Ramsar site is the fourth largest Wetland of International Importance designated by the UK and its Overseas Territories. This is important because there is increasing evidence that the long-term survival of many populations of animals and plants is dependent on the continued existence of large, continuous blocks of suitable habitats.

#### 3.1.6.2. Terrestrial areas

The systematic survey of important areas for nature conservation of the late 1980s addressed wetlands but not terrestrial habitats. The importance of these has therefore been overlooked. The work of the Darwin Initiative project and other recent studies are now able to start correcting this. Some particularly important areas are:

Woodland and scrub areas between Lorimers and Bambarra, Middle Caicos
Crossing Place Trail west of Conch Bar, Middle Caicos
Gallery forest adjacent to Wade's Green, NW North Caicos.

#### 3.1.6.3. Marine areas

The Darwin Initiative work has not centred on marine areas, because this is the focus of work by DECR and CRMP. However, in the context of inter-relatedness of systems and proximity to the existing Ramsar site, it is worth noting the summary map supplied to UK Foreign & Commonwealth Office by IUCN World Conservation Monitoring Centre (reproduced on the following page). The importance of the coral reef off North, Middle and East Caicos is evident, as is the particularly extensive area off the eastern shore of East Caicos.

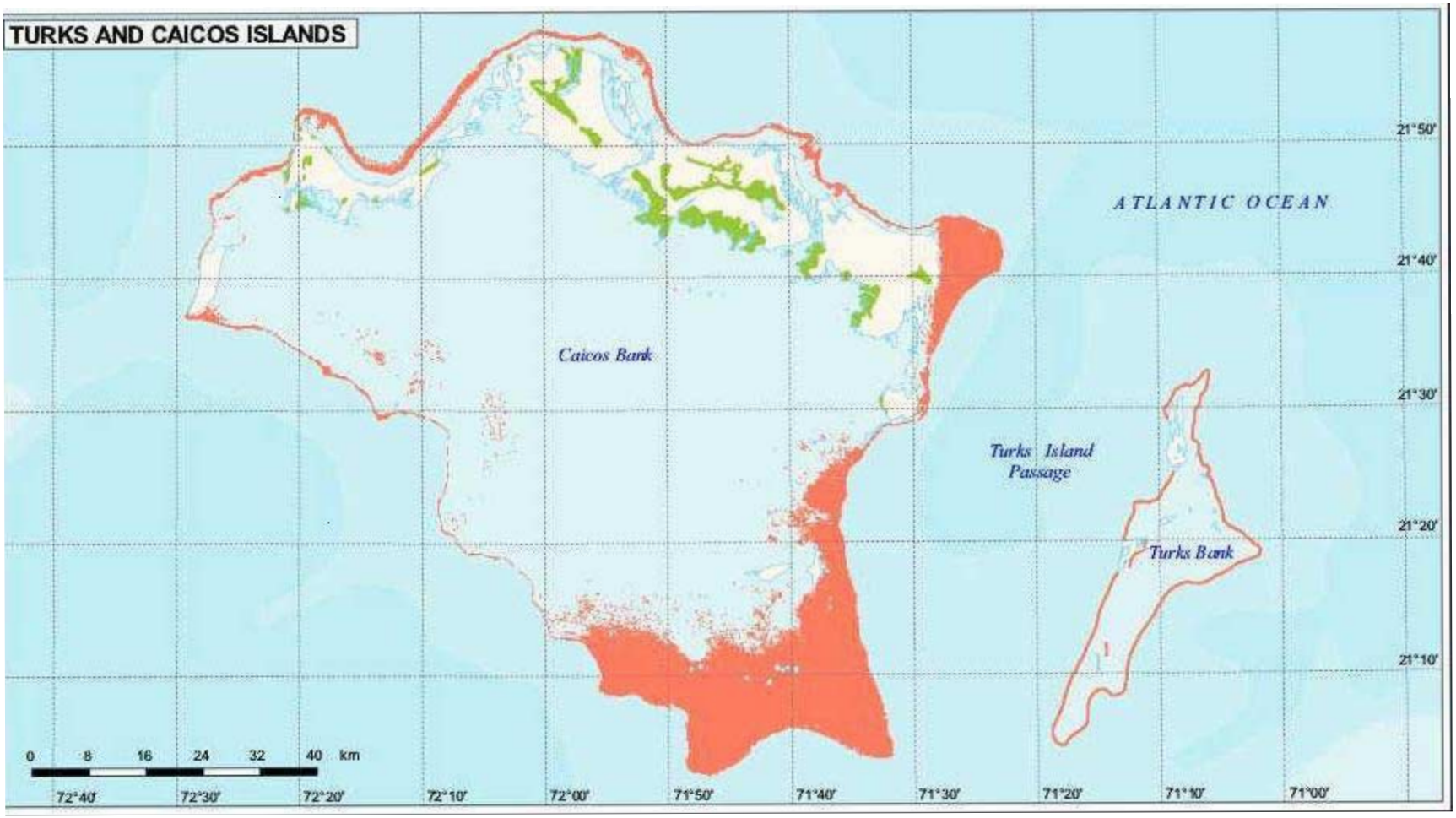
**Key to map:**

Red = coral

Green = main mangrove areas [Note that this is summary information; the more precise information from the current project summarised in Fig 1 should be used in preference.]

Water depths indicated by shades of blue, with changes at depths of 200m and 2000m

Source: IUCN World Conservation Monitoring Centre/ UK Foreign & Commonwealth Office


TURKS AND CAICOS ISLANDS
ATLANTIC OCEAN
Caicos Bank
Turks Island Passage
Turks Bank
21°50'
21°40'
21°30'
21°20'
21°10'
0 8 16 24 32 40 km
72°40'
72°30'
72°20'
72°10'
72°00'
71°50'
71°40'
71°30'
71°20'
71°10'
71°00'

# 3.2. Related opportunities and threats

## 3.2.1. Historical and archaeological sites

Long-term archaeological work has been carried out on the Arawak sites within the area. A site (MC6, or *Ia góra*), within the Ramsar site on the south side of Middle Caicos, is considered to have been a major regional centre of pre-Columbian society (e.g. Keegan 1997, although this is questioned by Jones O'Day 2002), as were the caves on both Middle and East Caicos. Several other Lucayan settlement sites on the north shore of Middle Caicos have also been excavated, with important finds.

TCNT and the National Museum have both worked on the historic plantations, and this material will also be incorporated in trails and displays. Some of the more important plantation features include:

Wades Green, North Caicos
Haulover Plantation Ruins and Field, Middle Caicos
Dustry Plantation Ruins, Middle Caicos
Dr John Lorimers tomb & surrounds, Middle Caicos
Jacksonville ruins, East Caicos

## 3.2.2. Visitor sites and interest

There is already a low level of visiting to some parts of the area. Cottage Pond and the viewing position at the north end of Flamingo Pond on North Caicos are both popular places, but interpretation is lacking. TCNT's recent opening of Wade's Green on North Caicos is already attracting visitors.

On Middle Caicos, the shore on parts of Crossing Place Trail, Conch Bar Caves, Indian Cave and Man o'War Bush are popular visitor sites. Indeed, concern at how to manage increasing visitors to the caves is one of the priority concerns of local residents who welcomed the development of this Plan partly for this reason.

This embryonic visitor interest is both an opportunity and a potential threat, if it were to develop unmanaged. Now is the time to implement such management, before serious problems arise.

## 3.2.3. Protected and other important sites

Several sites in North, Middle and East Caicos have already been listed under the National Parks Ordinance as protected areas, although management for these areas awaits the implementation of the present plan. In addition, several sites, although not listed as protected areas, are also protected by Ordinance by virtue of ownership by Turks & Caicos National Trust. Several other sites have been recognised in previous reports as being of importance, but are not as yet protected.

| Site | Status | Ownership | Comment |
|---|---|---|---|
| Wades Green - North Caicos | - | TCNT | ExCo agreed 99-year lease to TCNT for Wades Green on 17 Nov 1999. Management part of Darwin study |
| Gallery forest near Wade's Green, NW North Caicos | | Mainly private, with some Crown | Management part of Darwin study |
| East Bay Islands National Park - North Caicos | NP | ?Crown | |
| Cottage Pond Nature Reserve - North Caicos | NR | ?Crown | |
| Dick Hill Creek and Bellefield Landing Pond Nature Reserve - North Caicos | NR | ?Crown | |
| Mangrove Pond, N Caicos | | | Identified by Clarke & Norton 1987 |
| Mud Hole Pond | | | |
| St Thomas Hill Pond | | | |
| Moore Hall Pond | | | |
| Pumpkin Bluff Pond Nature Reserve - North Caicos | NR | ?Crown | |
| Three Mary Cays Sanctuary - North Caicos | Sanct | ?Crown | |

| Site | Status | Ownership | Comment |
|---|---|---|---|
| North, Middle and East Caicos (International Ramsar Site) | NR | Crown | Wholly includes also NR22: Vine Point (Man O'War Bush) and Ocean Hole Nature Reserve - Middle Caicos. Management part of Darwin study |
| Crossing Place Trail, Middle Caicos (including Blowing & Juniper Holes) | - | Various, but much Crown | Management part of Darwin study |
| Fish Ponds, Middle Caicos | - | Crown | Management part of Darwin study |
| Indian Cave, Middle Caicos | - | Crown | Management part of Darwin study |
| Conch Bar Caves National Park - Middle Caicos | NP; should be NR | Crown | Includes Village Pond & Buttonwood Pond. Management part of Darwin study |
| English Pond, Middle Caicos | - | ?Crown | |
| Jack Pond, Middle Caicos | - | ?Crown | |
| Old School and grounds, Bambarra | - | TCNT | Transfer from TCIG agreed 2001 for eco-centre. Management part of Darwin study |
| Woodland and scrub areas between Loriners & Bambarra, including: | - | Various owners including some Crown | Management part of Darwin study |
| - Haulover Plantation Ruins and Field, including trail | - | Crown | Management part of Darwin study |
| - Nanny Pond & Trail | - | Crown | Management part of Darwin study |
| - Trail to Armstrong Pond | - | Mainly Crown | Armstrong Pond is within the Ramsar site NR17. Management part of Darwin study |
| - Trail to flats & Big Pond | - | Mainly private where not on flats | Management part of Darwin study |
| Turnup & Montpeller Ponds, Middle Caicos | - | Crown | Management part of Darwin study |
| Corry & Washing Ponds | - | Crown/ private | Management part of Darwin study |
| Duck Pond, Middle Caicos | - | Crown | Management part of Darwin study |
| Long Bay, Middle Caicos | - | Crown | Management part of Darwin study |
| Dustry Plantation Ruins, Middle Caicos | - | ?private | |
| Dr John Lorimers tomb & surrounds, Middle Caicos | - | ?privaye | |
| School House in Lorimers, Middle Caicos | - | ?Crown | |
| The creeks and flats at Lorimers and Increase, Middle Caicos | - | Crown | Management part of Darwin study |
| Joe Grant's Cay and the adjacent channels incl Windward Going Through | - | ?Crown | Identified by Clarke & Norton 1987 |
| East Caicos Caves | | Crown | Identified by Clarke & Norton 1987 |
| Jacksonville ruins, East Caicos | - | ?Crown | |
| East Caicos ponds | - | ?Crown | |
| East Caicos flats and marshes | - | Crown | Identified by Clarke & Norton 1987 |
| Small cays for iguanas etc | - | ?Crown | |
| The reef off the north shore of East & Middle Caicos | - | Crown | Spalding et al; FCO |
| The reef off the east shore of East Caicos | - | Crown | Spalding et al; FCO |
| Areas of importance for plants with traditional uses | | | To be identified in further work |
| Other historical/archaeological sites | | | To be identified in further work |

### 3.2.4. Built development activities

The continual tendency for multinational companies to develop resorts and speculative developments on previously unspoilt islands has been one of the major problems in many areas. The history of these demonstrates all too frequently damage to the environment and to the quality of life of local people, usually not accompanied by any financial benefits to them, as opposed to the overseas investors. A common pattern is for development to become increasingly intensive, with the result that most of the originally attractive nature is lost. Subsequently, custom and investment declines, and the economy becomes depressed, without the possibility of attractive areas on which to base more sustainable development. Such a pattern has happened in turn to many areas around the Mediterranean and more recently elsewhere. In the last few years, there are several reports of regular visitors to, e.g., the Cayman Islands abandoning them because they considered them spoilt, and moving to TCI.

Within TCI, the most intensive development has been in Providenciales. However, there are plans (with implementation not funded) for a huge resort and mega-cruise-liner port at East Caicos, smaller developments (on which sporadic work has begun) on Middle Caicos, and substantial areas of individual building development on both North and Middle Caicos.

### 3.2.5. Visitor centre

In 2001, TCI Government decided to transfer to the Turks & Caicos National Trust the former Vera Hamilton Primary School in Bambarra, Middle Caicos. The property consists of a large, open area near the heart of Bambarra Settlement, and several buildings. The largest of these is the school house, which consists of two large adjacent rooms, each of about 80m$^2$. Architectural plans are currently being drawn up, and funds for the renovation of the buildings are being sought. The District Commissioner's Office recently renovated the basketball court within the grounds of the former school, a first step in returning the property to being a centre for community activities.

It is intended that much of the property will be used as an interpretive visitors' centre and a research base. Included in the grounds will be a botanical garden of native plants and plants of cultural importance. A working "field" or garden, is also planned for the site. One of the school building's rooms will be renovated as a visitors' centre and research station. Exhibit areas will hold cultural, historical, and natural history displays. This area will also include an office and space for herbarium and collections, as well as a research room available for visiting scientists and students. The other half of the school will be used as lodgings for visiting scientists, students, and National Trust staff and affiliates.

### 3.2.6. Local communities

The local community took a major role in initiating this Plan and the work which underlies it, making it clear that they wished to find ways to maintain their communities and quality of life with many traditional elements. Local people noted that they have seen the rapid built development on adjacent islands and therefore have a clear idea of the alternative routes, and would prefer a sustainable one if that can be facilitated. The presence of senior citizens with first-hand knowledge of sustainable practices and willingness to pass this on is a major asset, and is the basis of the information in many of the immediately following sections.

The population of Middle & North Caicos is about 3000, including about 350 school children, teachers, 500 farmers, 120 fishermen, 200 small business persons, including crafts-people preserving traditional skills, and those interested in developing these and other skills.

Comparable small communities around the world are seeking solutions for sustainable development and environmental conservation, and will be interested in learning from the experiences here.

In the light of the intensive development pressures, many external, in TCI at present and the resultant plethora of pressures and initiatives, this project aims to provide a strategic framework which will enable local people to harness these initiatives for the benefit of wildlife resource and their own sustainable development.

### 3.2.7. Field-roads

Amongst the local knowledge which TCNT has started to deploy under this Plan is that of Field-roads. These are the traditional paths across the islands, most of which have fallen into disuse in the last few years, subsequently becoming overgrown and impassable. These field-roads are potentially valuable bases for interpreted and guided trails. This is because they link interesting places, through valuable habitat, which allows demonstration of wildlife, culturally important plants, and historic features. Work on finding, assessing, opening and developing these field-roads has already commenced, and is noted in Part 4. Part of the assessment addresses whether opening would have negative impacts on the environment or socially important features.

### 3.2.8. Traditional crafts

One of the most positive aspects of the traditional crafts of the Turks and Caicos Islands is that the undertaking of the majority of them are sustainable practices. One of the few products that is not very sustainable (at the levels practiced) is charcoal production; but this has nearly ceased with the drop in Middle Caicos population (although it is increasing in Providenciales, where many Haitian immigrants use charcoal production as a way to make extra money).

Two main types of "straw" crafts are made: Fanner Grass baskets, and Top Straw products. Fanner Grass is a coastal grass found on the dune habitats. The grass is cut (not uprooted) and it can recover from this harvesting so long as it is not done too frequently. The grass is dried and then used as the base for coil baskets, which are sewn with dried, waxed Silver Top Palm fronts (see following section, Top Palms). The baskets are made in three basic styles. A broad, shallow pan shaped basket, which is the true Fanner basket, is used to separate the shell from the meal of ground corn. "Fanning" the corn is done by shaking it in this type of basket and removing the corn shell by wind action and by hand. Shallow oblong baskets are made for holding bread and small objects. Taller baskets, often with tight-fitting lids, are made for sale to tourists. The coil style is identical to the baskets produced in West Africa today. It is believed that the Gambian people marrooned on the Caicos Bank in the 1840's from the wreck of the Spanish Slave Ship *Truvador / Esperanza* first introduced this style of basketry to the Caicos Islands. Similar baskets in Gambia are woven so tightly, that they are used for carrying water.

Indeed, many cultures employ this style, and nearly identical baskets can be found in North, South and Central America, India and Southeast Asia. This global production suggests that the artists here could adapt other world-wide styles into their work here, to increase variety. One recent idea is the inclusion of Bahama Pine needles in the baskets to add a pleasant scent – this is common in the coil baskets of the Southeast United States.

The only imported items needed for production are wax (which is often found washed ashore on the beaches) and large sewing needles. Some artisans use the coil style with White Top leaves to produce an open-weave basket or unique wall hangings. Although uncommon, some artisans in the past have made thong slippers using this method.

The Top Palm Straw crafts fall into two categories: woven, and plaited. White Top Palm *Sabal palmetto*, Silver Top Palm *Cocothrinax* and Buffalo Top Palm *Thrinax*, are the plants used for this straw work. All are palmetto trees with palmate or costa-palmate leaves. The leaves are cut in such a way that the tree is not killed for its product.

White Top is a wetland tree that prefers open areas and tolerates periodical flooding. The large leaves are stripped and dried for weaving and plaiting. Silver Top is a small scrub forest tree. The leaves are stripped and dried, or dried in bundles for other products besides straw products. Buffalo Top is a small tree found in moister areas. Its broad leaves are harvested primarily for covering thatch roofs.

Weaving: The White Top leaves can be cut into broad strips and woven into bags, baskets, and mats. The production of hats by hand weaving results in a "Mexican Hat."

Plaiting: The White Top leaves can be sliced thinly and "plaited" into "fathoms," which are long, flat strips of woven leaves, several inches in width. These "fathoms" are then sewn by hand or machine to produce bags, purses, hats, dolls, mats, and baskets. Recently, artisans have been experimenting with other ideas such as portfolios and compact disk or video racks. Most artisans choose to dress their products with print fabrics or lace, and often they will use plastic raffia (as do Bahaman crafters) to add wording, patterns, or designs. Coconut leaves, which dry

much darker than the White Top leaves, are used for colour variety and patterning known as “peas ’n rice.” Workshops held by the National Trust continue to present development and marketing ideas to the crafters to diversity their wares.

Bundles: Other crafts made from Silver Top clusters are the famous Middle Caicos Mosquito Whisks, small hand-brooms, and large house brooms.

Fibre: Other traditional uses of Silver Top are for a cheap, quick fibre. Conch is nearly always strung on Silver Top fibre for drying. Chickens are “tied” when transporting (to prevent escape) with Silver Top leaves. Young Silver Top leaves are sometimes pulled from the tree so that the tender parts can be eaten as a vegetable or field snack, but care must be taken not to break the terminal bud as this will kill the plant.

Cattails: “Dawn” (*Typha*) is used in the weaving of mats and baskets as well. It is usually braided then hand sewn in a coil form to make mats or rugs. The same is done with rope gathered from old nets that drift on to the beaches.

Gum Elemi Boats: Small model boats are carved from Gum Elemi tree wood *Bursera simaruba*. This soft wood grows quickly with adequate rain.

Caicos Sloops: The Caicos sloops are built largely from traditional materials. Mahogany wood is used for the keel, and Locust wood is used for the ribs. Trees are not felled for the locust ribs; only branches are taken. For many years, Middle and North Caicos residents benefited from trade with Haiti by using locally produced sloops. The sloops carried dried conch and fish out through the reef cuts, over the Caicos Bank, and then to Cap Haitien. They returned loaded with produce, seeds, household goods, and livestock. While no trade sloops are currently in use on Middle and North Caicos, smaller versions of these boats are still built today, using traditional methods and many traditional materials. Mr. Headly Forbes of Bambarra (pictured in the Summary 0.1.3.5), building a sloop’s skeleton from West Indian mahogany *Swietenia mahogani* and locust *Lysiloma latisiliquum*. Because of the extreme hardness of the wood, mahogany is used for the outer keel, and the natural zig-zags in the branch form of locust can be used to create strong, curved ribs. *Lysiloma* trees need not be felled to harvest the contorted branches, as the trees do not grow much higher than twenty feet (about 6 m). An experienced boat builder can produce a perfectly formed rib from a raw, crooked branch of *Lysiloma* in a matter of minutes, first using a hatchet, then a hand plane. While the lightest of the local woods were once used to cover the ribs, imported, untreated white pine planks are the preferred material for the boats’ hulls now. Once the single mast is fixed in place, the few remaining boat builders enjoy using bright colours to paint their boats. Every August, a festival is held in Middle Caicos (the “M.C. Expo”) which features a sloop race. A regatta in South Caicos also attracts the boat builders and sailors. Some people also practice this craft on a much smaller scale, building model boats for decoration or sale. Sloop building is one example of the many crafts that are being lost in the Turks & Caicos Islands. The Turks & Caicos National Trust are working on ways to encourage recruitment of new craftspeople for the boats so that this skill will not be lost forever.

The artisans of Middle Caicos recognize that more developed areas do not have the plant diversity to support their crafts any longer. They would like to see the areas where traditional craft materials grow protected. The sustainable harvest of materials must continue so that should the demand for crafts increase in the future, the areas will be protected from over-harvest as well.

### 3.2.9. Bush-medecine (or Ethnobotany)

Many of the above elements depend on local knowledge of the uses and distribution of a wide range of naturally occurring materials, especially many species of plants. A number of the plant species that occur in the Turks & Caicos Islands have particular cultural significance, particularly in relation to their traditional medicinal uses.

A wide range of bush medicines is available in the Turks and Caicos Islands. Bush Doctors were once quite common but now are few and far between. Younger people seem to respect the knowledge, and often use the products themselves – but as far as the National Trust can tell, there are no bush doctors in the making. Because 80% of the world’s medicines are plant-derived, it is important to catalogue the knowledge since it may benefit the entire world someday. The Rosy Periwinkle, a common introduced yard flower (known as a dangerous invasive in more suitable climates) is used here for the treatment of diabetes. It is known to have medicinal compounds that fight childhood leukaemia as well. Several plants are soaked in water to make cooling drinks. Local key limes are

used for the treatment of sore throats. Several plants are used for the reduction of fever (including baths of Indian Neem and several teas). At least one homeopathic medicinal plant, a *Croton*, is said to be under study by a pharmaceutical corporation.

One medicine of special concern is the tree known as Maubey. Maubey trees are found in low, moist areas and are now uncommon. The mature wood of this slow-growing tree is boiled to make a bitter "heal-all" still commonly used. The tree has yet to be matched to a botanical name – its identification is important so that we may better protect it from over-harvest.

The use of plants in traditional medicine on Middle Caicos has been summarised by Halberstein (1997), and the use of many of these species in the wider region is described by Honychurch (1980).

### 3.2.10. Local food production

Many structural features from the Plantation period remained in use in the post-plantation subsistence-agricultural period. Old cattle enclosure walls are still present in some areas, and some are marked on the published maps. Local sources indicated that cattle-keeping on Middle Caicos stopped in the 1940s. They reported also that horses and cattle suffered considerably from mosquitoes.

Large areas of Middle Caicos were under cultivation before the majority of the population left to find work in the Bahamas and Providenciales in the 1970s. The farming supported the population, and produced a surplus that could be traded to other islands. Senior citizens recall days when the sloops could not carry all of the sweet potatoes produced to Grand Turk, and had to leave many lying on the beaches for later transport. Piles of corn were roasted. Sloops full of crates of fowls were sent to Grand Turk for the traditional Sunday dinner of "scrub chicken." The surplus of the conch-fishing industry was sent to Haiti for trade.

Today farming has largely halted. Older people with medium to high incomes sometimes farm as a tradition, but there are few true subsistence farmers left. When treated appropriately, the land can yield a great deal. With the recent restriction of agricultural professions to Belongers only, there is great opportunity to develop farming practices, preferably those that are sustainable and ecologically friendly. Her Majesty's Prison in Grand Turk has a fruit and vegetable farm, and raises goats and pigs for market slaughter in Grand Turk. They have a sizeable poultry farm that supplies Grand Turk with fresh eggs and meat. These agricultural practices not only relieve dependency on imported food, but they also provide a much fresher food source, as opposed to the foods that arrive from other countries. Fresh, local foods are also less likely to have the contamination risks of the internationally shipped perishable food, which may not always be kept under the optimal conditions.

There are several traditional poultry breeds, some of which now constitute endangered heritage.

**Dominique Fowl.** Locally called "dominicks," the Dominique is the first New World pure-bred chicken. The breed is over 250 years old and was developed in the American colonies. Pioneers preferred Dominiques because they produce eggs and meat, and they are capable of foraging for themselves. They were common in the American Colonies as early as 1750 and this is the breed the Loyalists would have brought with them in the 1780s. They are considered a critically endangered poultry breed and efforts are underway to preserve this historical chicken.

**Scrub Fowl.** "Scrub Chicken" was the traditional Sunday meal in the Turks and Caicos Islands. The colorful Scrub Chickens are mixed breeds able to survive free-ranging. Roosters often show the "red" color of the red junglefowl, the wild Asian jungle bird from which all domestic chickens are descended.

**Guinea Fowl.** Known as "guinea chicks" locally, helmeted guinea fowl originate on the savannas of Africa. They were introduced to Europe through Turkey, and so were originally called Turkey Fowl. They are still popular on farms in southern Europe. Their fame in France made Guinea Fowl popular in Haiti. Most of the Turks and Caicos Guinea fowl came from Haiti as part of the trade goods which replaced the dried conch sent to Haiti by the Caicos Islands fishermen.

**Turkeys.** Turkeys were brought to the Caicos Islands from Haiti by the fishermen who sold their dry conch in Cap Haitien. Turkeys are originally from North America, and when they were first brought to Europe, people mistook them for Guinea Fowl, which were called Turkey Fowl at the time. Thus, Turkeys became known

for the country from which Guinea Fowl first reached Europe.

Fishing has long been an important activity. In the waterways, it is important to note the existence of a cut, made some years ago by a visiting RAF team at the request of Lorimers villagers. This is through the isthmus between Lorimers Creek and Increase Creek (at grid reference 192239 24101). It avoids a long detour and dragging the boat through shallow water (where the map marks Ingram Channel). However, note that these shallow channels need local knowledge for safe navigation.

### 3.2.11. Education and school relations

TCNT has a strong record in environmental education, including summer schools and the development and implementation in local schools of the curriculum programme *Our Land, Our Sea, Our People.*

The Darwin Initiative project also involved training elements at various levels. During the volunteer specialists' visits, a wide range of those interested in developing skills have been invited to join in on Middle Caicos. Those to take advantage of this ranged from the local elementary school on Middle Caicos and the British West Indies Collegiate from Providenciales. From the latter, the biology teacher and her students got a chance to explore Middle Caicos and work hands-on with plant collections, insect trapping and catching methods, and mist-netting, weighing, measuring, and parasite collection of bats. Four high school biology students and their teacher, from Raymond Gardiner High School in North Caicos, attended the November 2001 Field Research Training Session. Two staff members of the DECR also attended the training at different times. Their learning focused on plants, bats and birds. The students participated in a plant and bird watching walk early in the morning, and attended a hands-on plant identification workshop. They were also able to visit Indian Cave one evening, where bat specialists Tim McCarthy and Tony Hutson were mist-netting bats for a DNA study. One student, Simone Johnson, and one DECR staff member, Jasmine Parker, were asked to assist in the "wing punching" of the bats for the DNA study, and braved considerable opposition from mosquitoes during this delicate process! The group has expressed interest in returning to Middle Caicos and working with the National Trust in the future. Completion certificates for students who have participated in this programme (and survived the mosquitoes) are being developed.

Another extra area of training developed was capacity-building in the Middle Caicos community as a whole to take an increased part in decision-making of the future of their island, based partly on the preliminary results of this project discussed in community meetings.

### 3.2.12. Small business workshops

A recent TCI Government-commissioned study of poverty (Kairi 2000) highlights the urgent needs of these islands. Work by two groups, TCNT and TCI Government, are already trying to address these. TCNT, with part funding from CANARI Caribbean Natural Resources Institute, has been conducting a series of well-received small business workshops in Middle Caicos (see below). TCI Government's agency TCInvest has established, with UNDP assistance, projects on the Development of Small-scale Enterprises for Income and employment Creation, and The Small Enterprise Development Centre. There is close contact between TCNT and TCInvest, and this integrated approach will be developed further in this project.

An example of this work is provided by the small business workshops on Middle Caicos conducted by TCNT in January and February 2000. These aimed to:

1. Engage local entrepreneurs in exercises to help organize their ideas.
2. Assist business people with respect to starting and managing a small business.
3. Obtain information from individuals to make sessions relevant to their needs.
4. Provide information to enable participants to complete a simple business plan.
5. Expose participants to samples of relevant documents required for establishing and managing a business.
6. Provide Tour Guides with additional valuable information on historic sites and other places of significance to

incorporate into their presentations.

7. Provide basic First Aid Training.

Role-play was one activity used to emphasise statements and reinforce points raised in the discussions and presentations. Participants were placed in various situations to see how they would deal with visitors to the islands with varying interests. The workshop setting also allowed for small working groups. Group exercises involved: identifying a business; designing a flyer for publicity; and making a presentation on the business. Participants had a chance to use their creativity and presentation skills. Other activities included packing and wrapping; some items were products made by the participants. All participants were given receipt books and business cards to help them with their record keeping and promotion of their business.

Participants from all three settlements on Middle Caicos were actively involved in the sessions, which covered topics including: product, packaging, promotion, customer service, pricing, business plan, distribution, professionalism and effectiveness as a customer service person. At the end of the last session, much appreciation was extended to the Trust for conducting these training exercises. The Trust will maintain contact with this interest group.

### 3.2.13. Native plants

A recent (April 2002) workshop, held by the Planning Department, Ministry of Natural Resources, and Architects and Designers Organization on Providenciales, addressed the issue of disappearing scrub forest. The Planning Department wishes to work with the National Trust and other botanical authorities to draw up guidelines for the replacement of native vegetation on sites cleared for development. A critical need for the *enforcement* of the guidelines already existing was addressed.

Currently, native plants are used by some of the landscapers: they are favourable because they are largely adaptable to the climate, they need little or no irrigation, they do not interrupt the low profile of the scrub forest, and they have countless benefits to the native fauna. Unfortunately, the majority of the "native" species sold and used here are imported from South Florida, where the native plant industry is thriving. This, of course, creates the problem of the inadvertent introduction of non-native animals and possibly harmful weed species. Foreign snails, lizards, amphibians, and insects have been introduced to the islands in this manner. With the Miami area being a key import site for the exotic pet trade, a number of exotic reptile species have become established there and could easily make their way to the Turks and Caicos Islands through the plant trade.

The National Trust could use an established native plant nursery to train interested people in native plant propagation tactics, which would create opportunities for the aforementioned agricultural professions. The National Trust is also working towards labelling plant specimens at its sites so that visiting residents can make selections of native plants for their own properties based on what they see in these settings.

### 3.2.14. Turks & Caicos National Trust (TCNT)

TCNT a local membership-based statutorily established NGO which can provide the focus for management.

Under its Ordinance, the Turks & Caicos National Trust has a unique and statutory role to represent civil society. The Ordinance includes a range of roles, including:

o Identify, investigate, classify, protect and preserve any area, site, building, structure, or object of cultural, historic or natural significance;

o Receive land from the Crown

o Hold this and other property in trust for the future, including the powers (and requirement in the case of land transferred from the Crown) to declare such property inalienable and to provide public access;

o Create a Heritage Register.

The Trust has an excellent record of achievement over its short period of active operations and a good working

relationship with Government, which is represented on its Council.

TCNT has built up a widely acknowledged expertise in environmental education. This started with awareness raising on endemic and threatened species (Turks & Caicos Rock Iguana Conservation Programme, and later work on the West Indian Whistling Duck). Later work developed self-supporting public access to small nature reserves, such as Little Water Cay, and the major curriculum development programme *Our Land Our Sea Our People*.

TCNT has taken the lead amongst local organisations in respect of conservation of heritage and sustainable development on Middle and North Caicos.

Some examples of these and other activities are included at Appendix 4. TCNT's outline note of its Middle Caicos Eco-tourism Project is copied below.

**Middle Caicos: A Mecca for Eco-tour Opportunities**

Middle Caicos, known as the Cameo of the Caicos Cays. A silhouette of beauty and strength symbolically carved in the passage of time. This rugged, yet regal landscape personifies a place where the past has left a legacy for a future full of promise and prosperity.

Fast becoming a mecca for eco-tour opportunities in the Turks and Caicos Islands, Middle Caicos is using its past to create a future in this environmentally conscious industry. Not yet spoiled by the trappings of large-scale development, the island has managed to maintain its own strength of culture and character. The people of Middle are a reflection of their surroundings, having thrived for several centuries by living in harmony with the land and sea; a precedent they actively strive to maintain.

The Middle Caicos Eco-tourism Project is an effort to help them continue to do just that. This local community based program, prompted through the National Trust, seeks to give the financial and physical support needed to promote eco-tour activities on the island. As the infrastructure is already in place, carved through the island's illustrious history and nature's own perfection, these attributes are easily embellished upon for the opening of an eco-tourism trade.

The first major endeavor of the project, The Crossing Place Trail (CPT), combines the aspiration for preserving the past while conserving nature for the future. This magnificent coastal trail has shared its treasures with many through the years by providing a means of livelihood and communication to the islands in between. The old coastal path has now been reopened from Conch Bar to a site along the western shores of Middle, known as Crossing Place, where settlers used to cross-over to North Caicos. A haven for those that love to hike, the 5 mile trail leads along coastal headlands, down beaches and through inland bush. Now open once again, it has become an avenue for commerce and contact with the worlds beyond Middle Caicos.

The CPT continues from Conch Bar to Bambarra, where one can take a leisurely bike ride along the beach. The 7 mile biking trail follows what is known as the old Bay Road. Along the route, there are numerous spots to stop for a snorkel or swim. The trail ends at Bambarra Beach and Landing, where one can find native sloops and tikki huts, or take a walk through shallow waters towards Pelican Cay. Sailing enthusiasts can even enjoy an outing on one of the locally made sloops. Other watersports services are also available for those who wish to free dive and fish or just explore the watery realms.

Coolin'out in the caves is another eco-tour option. Conch Bar Caves are the most renowned with numerous underground caverns that wind and dip extensively. A haunt for bats and Indian bones, the local lore given during your guided tour certainly adds spice to the adventure. Indian Cave has a dramatic dome shaped ceiling with an aerial arbor of roots and trees and can be easily accessed from the CPT.

Remnants from the prosperous Loyalist Era can be found in the form of plantation walls and foundations. Trails have been reopened to the once prosperous Haulover and Dustry estates near the settlement of Lorimers. Numerous other sites are easily accessed or viewed from today's roads and paths. Digressing even further in time, evidence of Lucayan sites on Middle date back to the early 1400's. Several archeological expeditions have unearthed fossils and facts that lead to the belief that this island was once an epicenter for these ancient Indian tribes. The most renowned site, labeled MC-6, can be accessed by a 2 hr hike to an interior lake region.

In searching for the past, one mustn't forget to enjoy the pleasures of present day Middle Caicos. The natural splendor of the settings are unsurpassed; the native flora and fauna revel in this yet unrivaled land. But the key to truly experiencing the aura of this incredible place lies in its human inhabitants. Steeped in old world wisdom and idioms, the natives are filled with local legends and lore.

Aside from opening their hearts and minds, the residents of Middle will open their homes to visitors for a sampling of the delectable local fare. Peas and rice, lobster, conch, chicken and their famous Middle Caicos grits are just a few of the appetizing selections. Several

hand-made products are produced on island, such as woven baskets and hats, mosquito whips, whisk brooms and cloth dolls. Sample bags of the locally grown and ground grits complete with favorite recipes are also available. These items can now also be purchased at the National Trust office.

Getting to Middle Caicos is an experience in itself. Whether by boat or local charter flight, one gets an eye-opening view of the Caicos island chain. Arrangements can be made via your local tour desk, water-sports operator or airline services. Taxi and rental car services, trail and cave guides, water sports operators and local food establishments are available on island, but need to be booked in advance. Ask to see a Middle Caicos booklet at your resort or rental residence for further details on arranging an eco-tour excursion.

*The options are endless for those who prefer the environmentally and historically orientated adventure. Hiking, snorkeling, and biking while exploring historical sites and caves are just the beginning of what the Eco-tourism Project has in store for its future. Middle Caicos welcomes all to experience an adventure back in time with their motto "Our Past is Our Future…..Explore it With Us*

### 3.2.15. Specialist expertise

TCNT's membership of, and involvement in, the UK Overseas Territories Conservation Forum gives it access to the Forum's wide network of expertise, often available to help colleagues in TCI at little or no cost. This has being deployed, for example, in facilitating capacity development of the Trust, in assisting TCI and UK Governments fulfil their commitments in providing maps and details of the Ramsar site, the technical input into the Darwin Initiative project, historic building restoration expertise and others. Various other possibilities are also being explored, including the facilities of the international Millennium seed-bank of Royal Botanic Gardens Kew.

### 3.2.16. Department of Environmental & Coastal Resources and the Coastal Resources Management Project

The Department of Environmental & Coastal Resources (DECR), within the Ministry of Natural Resources, is the TCI Government Department responsible for nature conservation, fisheries and related matters. Limited resources had prevented much progress on the management of protected areas by official bodies. Because of this, UK's Department for International Development (DFID) have funded for several years a project (CRMP) with TCI Government to develop and implement management plans for three of TCI's marine National Parks, in the seas adjacent to Providenciales and West Caicos, as well as building an environment centre on Providenciales and funding some interpretative work. (In TCI usage, National Parks implies a strong element of recreational activity in the protected area.) With the ending of the project, CRMP is developing into a protected areas department within DECR. It is to be hoped that this official protected areas service will be able successfully to implement these three plans and extend to other TCI marine national parks and some other protected areas.

This work is complementary to TCNT's expertise in terrestrial and wetland conservation, and the management of nature reserves and historic sites. There is considerable potential for collaboration and sharing of the major needs for conservation work in TCI.

### 3.2.17. Conservation Fund

TCI benefits from having a newly established Conservation Fund. This is funded by a 1 percentage point addition to the previously existing 8% tax on visitors, charged mainly on accommodation and meals. This Fund provides a mechanism for ongoing funding for management of protected areas. The ways of implementing these intentions are still being developed.

This general area was the subject of much discussion at the UKOT environmental conferences organised by UK Government in London in 1999 and by UKOTCF and Gibraltar Government and NGO in Gibraltar in 2000. Relevant parts of the conclusions of these conferences were:

**London conference:**

'There was considerable formal and informal discussion at the conference of ways to fund environmental projects. Several territories have already established environmental protection funds, typically through a levy on incoming and

departing tourists, or through an accommodation or similar tax. This method of fundraising was seen as a useful mechanism to link environmental sustainability with economic activity, e.g. eco-tourism. The natural environment provides a major source of economic livelihood for many people in the OTs. However, environmental taxes were not seen as a solution for all environmental problems. There was recognition that the carrying capacity of valuable habitats (e.g. coral reefs and intensity of diving activity) set limits to the growth of taxable exploitation of the environment. Further, an environmental fund should not replace existing expenditure on environmental conservation; nor should it be used to fund environmental impact assessments (which should fall to the proposer of developments) or to mitigate environmental damage by any operation (which should fall to the operator). Typical uses for an environmental protection fund could include: the purchase of land to be used as a nature reserve; provision of management services for protected areas; public environmental education.

'… There was widespread recognition of the need for transparency in the planning and administration of environmental levies. Several participants suggested that Boards of Stakeholders be set up to include those with key roles in environmental protection in the territory (e.g. government, non-governmental organisations, corporate sponsors, educational bodies).

'In addition, this kind of good governance relies on transparency, freedom of information, consultative decision making and wide participation. And good governance criteria should also apply to procedures for levying, allocating and using environmental funds. …Overall, features essential to success are: openness in the management and operation of the fund; clear criteria for projects to be funded; the involvement of both governmental and non-governmental environmental bodies in the decision making; and feedback to visitors and others who contribute to the fund on how the resources are spent. These should specify outcomes achieved or intended (e.g. "This will enable us to expand the area of protected coral/mangrove/tussac grass/forest at X"; "As a result of the fund we have established a visitor information centre at Y"; "The fund will support work to expand the area covered with indigenous plant species")."

**Gibraltar conference:**

'A frequently repeated message in several sessions has been the importance of owning land in order to ensure long-term conservation. …Those territories with National Trust type legislation have a particularly helpful mechanism available for governments to enlist the resources of NGOs. Lands given by governments to National Trusts can be declared inalienable, so that the NT cannot treat this land as an ordinary disposable asset, but must safeguard it in trust for the people. Such transfers of land by government tend to attract further contributions by private individuals and organisations, making this a very cost-effective investment by government. It is also important to ensure an income stream for site-management. Sunday morning's discussion presented one strong route. Conservation Funds can be one of the few popular taxes. At least part of these can be ear-marked for the organisations managing protected areas. Again, there are extra benefits in that NGOs managing such protected areas can often draw in matching funding from both domestic and international sources, as well as major volunteer effort.

'Something of a consensus evolved in discussion of the management of dedicated environmental funds in several OTs. The most successful examples involve an environmental tax being placed in a statutory fund separate from general government funds, managed by a Board with representation from government, NGO and private sector interests. Openness and accountability, strong and unambiguous legislation, and a constructive relationship between environmental NGOs and local governments are seen as key elements. Relative access between government and NGO agencies to grants from such funds is an ongoing concern needing resolution in several OTs.'

#### 3.2.17.1. Some specific experiences

The Cayman Islands Government has suffered all sorts of criticism, domestically and internationally, for mishandling a conservation tax. It made official announcements that this tax would be used to set up a conservation fund but then did not get round to formalising this in law. Later, when funds became tight, it simply used the money to assist in balancing general expenditure – which, because of the omission, may have been legal but certainly resulted in serious criticism of the Government. It has now indicated that will put in place the legislation that it had originally indicated, to address future income from the tax. In the Falkland Islands, a similar thing happened when the Government introduced an "environmental" tax on visitors although it was actually a general tax. They quickly saw the light

and removed the claim that it was environmental.

### 3.2.17.2. Applying this to TCI

It is important that the criteria for the use of these public funds be transparent, appropriate and accountable. It is also important that the handling of the fund is efficient and does not itself consume excessive resources (including personnel time). There should also be effective requirements for agreeing objectives for projects, monitoring whether these are met through a defined reporting programme, and feeding lessons learnt back into consideration of future rounds of projects.

The fund should be additional to existing Government funding. It is important that Government, special funds and non-governmental organisations share responsibility for conservation. This is reflected in point 6 of Annex 5 (*Management policies for the Conservation Fund*) of the *Coastal Resources Management Project Memorandum* (TCI Government & Department for International Development, August 1998, and contained in all updated versions): "The Conservation Fund is not intended to replace TCIG allocations for DECR." It is also important that the fund is not used to finance remedial or protective measures which should be met by the developer whose development causes this need (the "polluter pays" principle adopted by many countries).

In recent discusions, four main possibilities have been identified for the use of the Conservation Fund, and consideration is being given to what usage is appropriate. This is set against a background of fluctuating revenues given that the Fund is generated through a levy on hotel bills. These four possibilities are:

1. The need to fund the national parks service in TCI Government, emerging from the Coastal Resources Management Project.

2. The need to secure the funds the National Trust, especially in respect of its management of some protected areas.

3. The need to direct resources from the conservation fund to a small grants scheme which supports small scale environmental initiatives in TCI.

4. If sufficient funds are available to contribute towards the funding of the existing TCI Government Department of Environmental & Coastal Resources (DECR).

Because "the Conservation Fund is not intended to replace TCIG allocations for DECR" (see above), there is some difficulty with point 4 above. The Cayman debacle and the other experiences touched on above make it all the more vital for good governance purposes that TCI be transparent and true to initial undertakings in how this is set up.

In terms of how to deploy the funds as between, 1, 2 & 3 above, it seems desirable to avoid fossilising interim practices as if they were the objective. There seems some danger also of assuming from interim practice as to which are "core" and which not. Experience shows that a more successful model would be look at the underlying objectives, and attempt to design the mechanism to address these. The Memorandum between UK and TCI Governments, with sometime involvement of TCNT makes it clear that the overall objective is protection of the country's natural and historical resources.

One of the potential strengths of the situation in TCI is that more than one agency, including at least one governmental and one non-governmental, are involved in managing protected areas. Amongst all the countries on which information is available, multi-agency models result in better conservation than monopoly suppliers. However, problems arise when one agency is dependent on another, so some degree of symmetry is desirable. For example, it would be a recipe for problems if one body had to apply to another for funds or approval when both are in similar businesses. Ideally, both should be looking to a third body for funding support (and there is the potential for this in the committee system in TCI). Experience in many places tends to support this. One striking example which came up at the conferences was the Seychelles. Here, there has been much toing-and-froing and rewriting of rules in order to achieve a successful model for a fund. The key proved to be a high degree of openness and a decision committee drawn widely from both government and NGO bodies. Earlier attempts to work just through government appointees were not sustainable.

It seems important not to confuse core support for conservation bodies with funding their work to manage parts of

the protected area system. It is understood that some parts of the protected area system (e.g. all historic sites, and certain Parks and Reserves) will be looked after by other agencies, and not the emerging national parks service. Provision must be made in the guidelines for funding for those part of the protected area system. To the extent the Trust is involved in such management, support for these specific Protected Areas should not be conflated with thecore support for the Trust.

The concept of small project grants, if well managed, is potentially very productive. It should be provided for in the budgeting, as for the other elements.

The next issue is how to decide on the division of funding. It is not quite the same issue, but a comparable problem is how to deploy the costs of organisations which are funded from several others. Such organisations occur in both governmental and non-governmental situations. For both the sharing-out-of-funds situation and the sharing-out-of-costs one, there seem to have been two basic models tried.

In one, some sort of rationale is used to work out an appropriate percentage division of the income as between those bodies managing the various protected areas (with an element too for the small projects fund). The advantages of this method are that it avoids an annual scrum, and gives the bodies concerned a reasonable indication of what to expect in the following years, aiding sensible forward planning. The difficulties are related to setting the percentages, and in the lack of accountability of previous performance feeding into future allocations.

The main alternative is a bidding model. This is the route favoured by UK (and most other governments) in dealing with its departments, agencies and other bodies it expects work from. In this scheme of things, each body produces its report on work done in the preceding period, its plan for work in the next period, and its budget. The last includes its expenditure, income from other sources, and requested income from the conservation fund. The advantages are that it is open and encourages accountability and effective performance. The disadvantages are that it involves work in making a transparent decision each year, and that there is more uncertainty in the future (but that could also be considered as an advantage, in that those delivering well will be encouraged to do more).

It is possible that one could use a hybrid system. There could be an amount or percentage fixed for several (say 3 to 5) years, relating to some of the core work which is not volume-related. (This seems conceptually linked to the idea of part of the government's protected area service as well as the annual subvention to the National Trust.) A second amount could be related more to an annual bid along the lines indicated above, related to the management needs of the protected areas managed by each body.

It is strongly recommended that the same system is used in respect of all the bodies managing protected areas for TCI, whether these bodies are NGO or governmental. All the experience elsewhere points to continuing problems and friction if there is an asymmetric situation.

Point 4 of Annex 5 of the *Project Memorandum* sets out: "The general function of the National Parks Advisory Committee (NPAC) will be to encourage and promote for the benefit and enjoyment of present and future generations of the people of the Turks and Caicos Islands the provision, protection, conservation and enhancement of the natural and historical resources of the Turks and Caicos Islands." Point 5 of Annex 5 of the *Project Memorandum* requires that the NPAC will establish specific criteria for grant applications for financing from the Conservation Fund. These criteria will be for:

· encouragement, promotion, and assistance in the development, management and conservation of national and marine parks

· efforts by qualified individuals and organizations on research, studies, or management activities to establish, operate, maintain and manage parks and protected areas

· activities that directly support the management of national and marine parks..."

An early task for NPEAC is to establish specific criteria on appropriate and priority uses for the Conservation Fund. A basis for these criteria is readily available by inspection of the requirements of international agreements on conservation to which TCI is a party (by agreement with and through UK Government, which handles international treaties). Some of these ideas which might be developed into appropriate criteria include:

***1.*** ***Core support for the TCI National Trust*** (a membership NGO established by statute), to undertake works including consultation by government, to aid good government by providing an independent voice on conservation matters. For efficiency, it may be sensible to provide an annual figure for core activities of such an organisation, rather than waste large quantities of time attempting to convert such core activities into artificial "projects". Specific project proposals by this organisation would be handled as for other projects.

***2.*** Support for ***further development of the National Parks system***, with clearly set out plans and objectives

***3.*** ***Development of plans for – and mechanisms for delivery of – the conservation of biodiversity and heritage*** throughout the land- and sea-areas of TCI, and the incorporation of biodiversity conservation in the plans for all sectors of the economy (This is an activity which should be government funded, but complementary activities by NGOs would be appropriate for funding.)

***4.*** Implementation of ***site-safeguard*** for the most important areas for biodiversity and heritage, with clear management plans developed and implemented (Again, this is an activity which should be partly Government-funded, but the elements handled by conservation NGOs would be appropriate for Conservation Fund support.)

Some would argue that items 5 to 9 below should be government-funded, as they fall within the basic remit of the Government's Department of Environmental and Coastal Resources, although it could be argued that non-governmental contributions could be eligible for support from the Conservation Fund.

***5.*** The ***development of biodiversity and heritage targets***, including restoration and recovery of damaged ecosystems and threatened wildlife populations, ***and action plans*** to achieve these.

***6.*** The ***compilation of existing data on biodiversity and heritage, new surveys where required***, and cross-sectoral reviews of policies that relate to the use and conservation of biodiversity and heritage.

***7.*** ***Ecological studies necessary to inform plans for conservation.*** (This should not include the costs of Environmental Impact Assessments – whose costs should be included in the relevant development and met fully by the developer.)

***8.*** A system for ***monitoring and reporting*** publicly (including in fulfilment of international commitments) on the state of biodiversity and heritage and any impacts upon it

***9.*** ***Training programmes*** for key personnel and the integration of biodiversity and heritage conservation into ***education*** curricula ***and public awareness*** programmes.

It is now recognised that the conservation of biodiversity is important in its own right, but also as a fundamental basis of human economies, as well as important for the quality of human life. Globally, the services supplied to the human economy by ecosystems has recently been costed as at least US$ 33 trillion ($10^{12}$) per year, compared with global gross national product total of US$ 18 trillion per year (Costanza *et al.* 1997). In TCI, the economy relies even more directly on the natural environment than it does in many other places. This is not surprising as TCI is particularly rich in biodiversity, containing some of the most natural wetland systems in the Caribbean. This is particularly important for the fisheries and the tourism industry. TCI's tourism slogan of "Beautiful by nature" is particularly appropriate. However, the natural environment is easily damaged. The international tourism market is likely to be particularly sensitive to see that the funds raised from the levy are well used to maintain this nature. Development and transparent application of appropriate criteria for use of the Conservation Fund will therefore be crucial both to the industry and to the maintenance of the outstanding natural environment and historic heritage of TCI.

The way in which the Conservation Fund guidelines and implementation are settled will have a major bearing on matters in this Plan, as well as TCI's implementation of the Environmental Charter more generally.

## 3.3. Conclusions

The sections above outline some of the importance of the area in international and local terms, as well as the features which provide opportunities and threats to the objectives of the plan. The purpose is to provide means by which the

internationally important biodiversity and cultural heritage of the Caicos Islands, including the Ramsar wetland of international importance, can be treasured by local people and experienced by visitors without damage; this will be through enabling the local people to protect the area by generating sustainable usage involving eco-tourism-based activities, as well as education. The core of this will be a shared, regularly reviewed management plan, trained local personnel, and integrated programmes of development of trails, hides, a centre, displays, courses, booklets etc.

The approach is multi-sectoral, integrated and firmly rooted in unique local culture, rather than focussing on just one element as happens in some development projects (which might, e.g. relate just to craft work or to nature protection or to tourism development).

The following, operational Part integrates the foregoing to list the actions required. It is envisaged that the implementation work-plans will be drawn from this overall Plan in the light of resources available at each period.