A conservation plan involving sustainable development with local community – North, Middle & East Caicos Ramsar site & surrounds

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This reports on the major project to develop a management plan for the fourth largest UK Ramsar site and its adjacent areas. The work was led by the Turks & Caicos National Trust, the UK Overseas Territories Conservation Forum and CAB International, in conjunction with the local community and in partnership with TCI Government. The project was supported by the Defra Darwin Initiative and FCO. The resulting *Plan for Biodiversity Management and Sustainable Development around Turks & Caicos Ramsar Site* was established as a document and process in 2002. It aims both to fulfill an international commitment, and provide the infrastructure for the community to be able to sustain itself by conserving and showing the heritage. This plan analyses the needs for conservation, and includes actions such as trail development, as specified within the plan, as having positive environmental impact, and indeed as a core element of the strategy.

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The Turks and Caicos National Trust is a specially created non-governmental membership organization established by statute by the Turks & Caicos Government, for the purpose of safeguarding the heritage of the Turks and Caicos Islands for present and future generations. The organisation is one of the lead agencies in conservation management in the country.

The management plan is a conservation initiative, the process of which got underway in November of 1999, spearheaded by the National Trust and its partners, namely the UK Overseas Territories Conservation Forum and CABI Bioscience, in conjunction with Turks & Caicos Government and the local communities. The management plan is an output from the Darwin Initiative Project, which formed a core of the work.

The purpose of the plan is to provide means by which the internationally important biodiversity and cultural heritage of the Caicos Islands can be treasured by local people and experienced by visitors without damage. The plan works through wide-ranging co-operative action with the local

Plan for Biodiversity Management and Sustainable Development around Turks & Caicos Ramsar Site

Version 1.00

This plan is an output from the Darwin Initiative project "Developing Biodiversity Management Capacity Around the Ramsar Site in Turks & Caicos Islands". The Darwin Initiative, which part-funded the work, is run by the UK Department of Environment, Food and Rural Affairs.

The organisations running the project were:

Turks & Caicos National Trust

UK Overseas Territories Conservation Forum

CABI Bioscience

The project was undertaken under a Memorandum of Understanding between the project partner organisations and the Government of the Turks & Caicos Islands

people, local Government and other institutional stakeholders, and deploys biodiversity and other heritage information for the long- term benefit of the Islands and their inhabitants. This will enable the local people to protect the area by generating sustainable usage involving eco-tourism-based activities as well as education.

Implementing the plan fulfils many of the UK and TCI Government commitments under the Ramsar Convention, the Convention on Biological Diversity and the Environment Charter.

The wishes of the local people have been sought and have been integrated throughout the development of the plan. This will continue throughout implementation.

The plan objective is to provide a practicable means to conserve the rich biodiversity and cultural integrity of the Caicos Islands, including the Ramsar Wetland of International Importance. And more specifically:

1. To provide a means by which the rich biodiversity and cultural heritage of the area can be appreciated and cherished by local people and experienced by visitors without harm to these 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 item 1 and employment for local 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, residents and visitors and integrating the work into the National Physical Plan and the implementation of the Environmental Charter.

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.

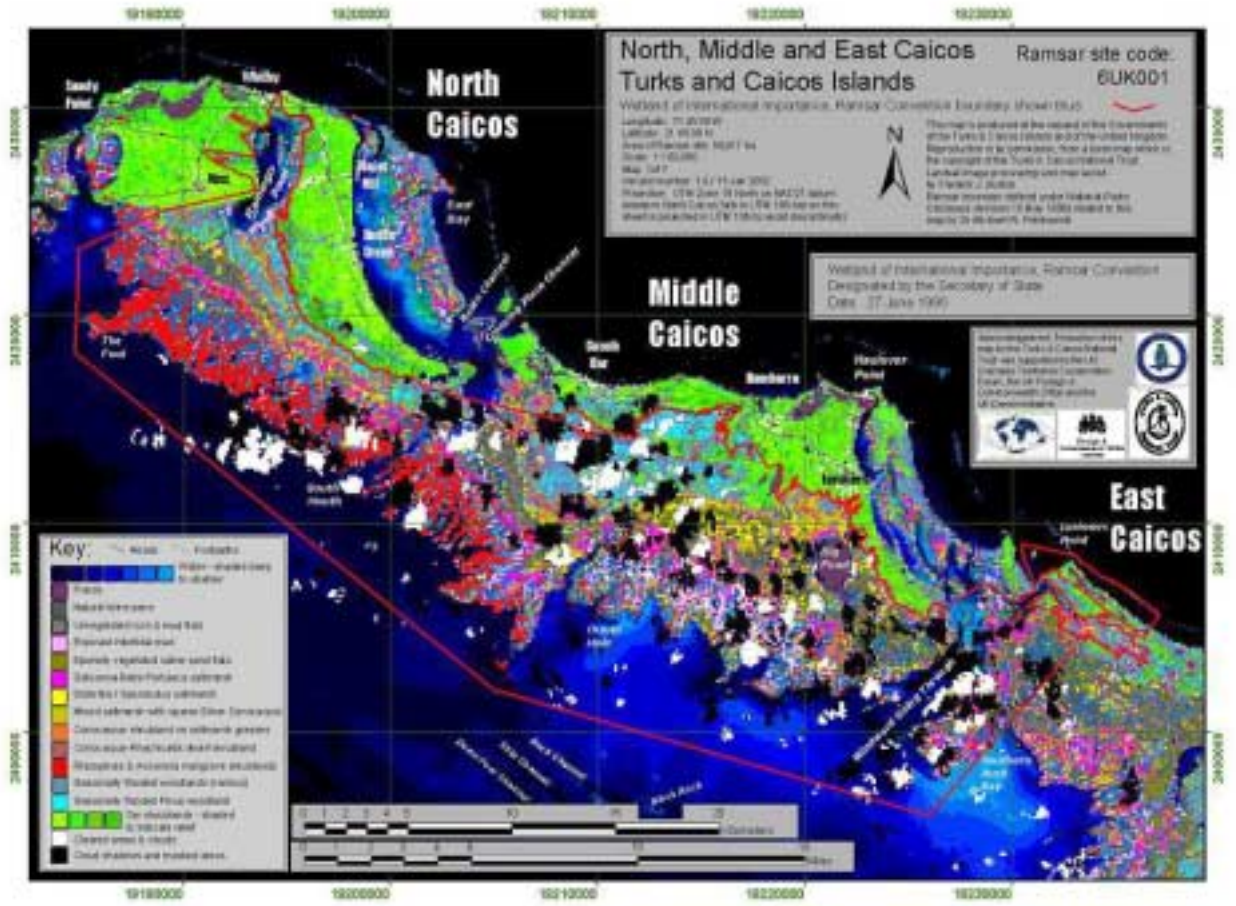
The plan lists sites, cultural features, and certain flora and fauna within the study area which provide opportunities for meeting the plan's objectives.

Flora, Fauna and Habitat

The plan continues the process as started under the Darwin Project of data collection on flora and fauna of the study 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.

As well as species-level surveys for bats, birds, herpetiles, insects and plants (see below), the Darwin project has invested a lot of effort in developing a detailed and accurate habitat map for the study site in TCI. Knowledge of the distribution of habitats, as well as species, is vital for biodiversity management planning. Dr Fred Burton (Cayman Islands) co-ordinated the production of a habitat map for the project. A provisional map (based on satellite imagery) was prepared initially, and this was subjected to "ground truthing" over subsequent months. Fred, and Bryan Manco, both spent a great deal of time in the field, fighting through dense undergrowth in places, to check and record the locations of particular plant communities and the boundaries between habitat types. Dr Mike Pienkowski (UK Overseas Territories Conservation Forum, UK) also undertook some of this as well as spending many weeks analysing and refining the results, which were also used to provide an accurate map of the boundary of the TCI Ramsar site – information required by the TCI and UK governments. The detailed outputs of the habitat mapping exercise form an important part of the draft management plan developed by the project.

The main map is reproduced here to illustrate the



range and distributions of habitats across the study site.

The Darwin Project plant work led by Dr Gerald "Stinger" Guala and Jimi Sadle (Fairchild Tropical Gardens, USA) has provided valuable new information. Fred Burton and Bryan Manco have also collected many specimens for the project, and Kathleen McNary Wood (Providenciales) has provided valuable advice. Work is still ongoing to identify plant material collected under the Darwin project, but hundreds of specimens have already been mounted and processed for herbarium storage. These include a number of new records for TCI. Plants of particular interest in TCI include the palm *Pseudophoenix sargentii*. This has been seen in cultivation, but if a natural wild population could be located it would represent an important discovery. The orchid *Encyclia caicensis* is also of particular significance, as an apparent TCI endemic – at least half a dozen other plants may also be unique to the islands. Some of the plant material collected by the Darwin project can be viewed in the "virtual herbarium" established by Fairchild Tropical Gardens (www.virtualherbarium.org/lf/tci/tci.html).

Turks & Caicos Orchid
Encyclia rufa

At present there is more information on butterflies than any other insects. There are four butterflies, subspecies which are endemic to Turks & Caicos and southern Bahamas. Furthermore, a subspecies of Drury's Hairstreak *Strymon acis leycosticla* is found in Turks & Caicos only. Preservation of endemic species is a high conservation priority and the area in Middle Caicos along the Crossing Place Tril west from Conch Bar Village has been identified as important habitat for this endemic butterfly, giving that area higher conservation value than previously understood.

Drury's Hairstreak Strymon acis leycosticla

The extensive work carried out on butterflies is in the process of turning into a small book being written by Dr Oliver Cheesman and Richard Ground. Richard Ground also produced the book *Birds of the Turks and Caicos Islands*.

While the study did not reveal any indigenous amphibians, surveys indicate that the Islands support one endemic species of snake (Caicos Islands Trope Boa *Tropidophis greenwayi*). (This

species has caught the interest of National Geographic and a film crew will be visiting the Island of North Caicos next month (April 2003) to create a documentary of the species). Four species of lizard (Curly Tail *Leiocephalus psammodromus*,

Caicos Islands Reef Gecko *Sphaerodactylus caicosensis*, Pygmy Gecko *Sphaerodactylus underwoodi*, gecko *Aristelliger hechti*) and three subspecies and one snake subspecies, Rainbow Boa *Epicrates chrysogaster chrysogaster* represent Turks & Caicos endemic reptiles.

Conch Bar Caves entrance, a close-up of big-eared bat

Bats and their habitat were also studied. A complete management plan for Conch Bar Caves National Park has been developed which gives detailed guidelines for allowing access to the Caves (which are crucially important to the bats) while protecting the delicate geological features as well as the bat colonies. It entails limiting access to the caves only to people who are in the company of a trained, certified guide. The plan details the physical improvements needed, and recommendations that the designation be changed to Nature Reserve, and that it be transferred into conservation ownership to prevent any future development of the site.

The plan lays out in general terms the things to be taken into consideration for management of the other cave systems in the plan area, Indian Cave and other smaller systems in both Middle and East Caicos.

Fieldwork on wetland birds before and during the Darwin Project has shown that the TCI study area is very important to water birds and that usage is very variable. This variability is seasonal and year-to-year, and probably relates to weather conditions. Recent ecological studies indicate that bird populations survive only because the birds have a network of habitats available to them-none of these is surplus to their requirements. It is important that human intervention does not make things yet more

West Indian Whistling duck pair with young

complicated. West Indian species of waterfowl (ducks, flamingos, herons and shorebirds) are also losing habitat as tourism-related development expands in the region.

Work under the Darwin project has demonstrated that TCI is also much more important for dry-land species than had been appreciated. The dry forest and shrublands that occupy much of the higher ground, inland on Middle Caicos (and other islands), support important breeding populations of endemic and near endemic birds. These include the cuban crow *Corvus nasicus* (restricted to Cuba and the Caicos islands), a subspecies of the thick-billed vireo *Vireo crassirostris stalagmium* (endemic to the Caicos islands), and a subspecies of the Greater Antillean bullfinch *Loxigilla violacea ofella* (endemic to Middle and East Caicos). A number of other species are restricted to TCI and the Bahamas. In addition, the dry shrublands provide important wintering areas for birds that breed in North America, notably Kirtland's warbler *Dendroica kirtlandii*. This species, listed as *Vulnerable* by the IUCN, is one of the most threatened bird species of the region, with a world population of only about 3000 individuals. These dry scrubland forests are important also for many other plants and animals.

The plan looks at other TCI ecosystems, which have especially great value 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. Within the wetlands, coastal mangroves are now recognized as one of the most productive systems in the world, providing rich nursery grounds for many commercial species. The important local fisheries for conch, lobster and bonefish depend on organic food material produced in mangrove areas. The complex transitions between natural ecosystems here are also of great importance.

The patchy *Pinus caribea* var. *bahamensis* woodlands, and the gallery forest adjacent to Wade's Green Plantation (North Caicos) have been identified as being of particular interest, and worthy of further investigation. In addition, the limited freshwater habitats appear to support locally rare botanical and animal communities, the value of which needs to be recognised in conservation planning.

Aerial view of parts of the lower flats and bank, with complex patterns of vegetation types

Historical and archaeological sites

Long-term archaeological work has been carried out on the Arawak sites within the plan area (finding artifacts such as those pictured above at the initial cleaning stage). A site (MC6), within the Ramsar site on the south of Middle Caicos, is considered to have been a major regional centre of pre-Columbian society, as were the caves on both Middle and East Caicos.

The Trust and the National Museum have both worked on the historic plantations, and this material will also be incorporated in trails and displays. One of the important sites, Wades Green Plantation on North Caicos is listed by UNESCO as one of the most significant slave sites in the region. All of the sites are both important elements of the TCI national heritage and potentially valuable educational and eco-tourism resources for which the management plan proposes various uses.

TCNT junior members visiting Wades Green historic plantation ruins

The plan identifies a number of traditional paths or field roads across the islands which link interesting places, through valuable habitat, culturally important plants and historic features. These field-roads are potentially valuable bases for interpreted and guided trails. The Haulover Plantation Field-road has been selected as the first in the plan to be developed in such manner.

Interpretation for field roads: *a programme of integrated leaflets (above), signs and displays matched to the opening of each trail or facility.*

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. Craft products made of fanner grass and palmetto fronds are especially important, and both materials are traditionally collected in a sustainable manner. Local materials are also used in potentially important craft areas such as boat building (Caicos sloops).

In recognizing the beauty and importance of the native vegetation the plan is creating awareness,

Weaving a straw hat

Construction of Caicos Sloop

and the Trust has established a native plants nursery. The Government is concerned about the disappearing scrub forest, and wishes to work with the Trust and other botanical authorities to draw up guidelines for the replacement of native vegetation on sites cleared for development. Opportunities are now available for interested persons to train in native plant propagation which could lead to agricultural professions. The Trust is also 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.

The Plan

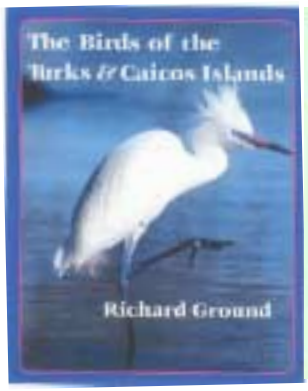
The plan is a work-in-progress and should be so for the duration of the management programme. It details in specific terms the elements that could be developed to allow access to the areas while affording protection to the environment.

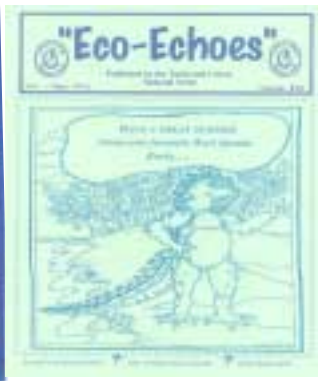
Several factors are taken into account in developing a system of facilities for experiencing the heritage of the Caicos Islands. These include:

- The development of the system should be modular, so that some elements can become fully operational at an early stage.
- Even though modular, the scheme should fit a wider plan, so that the various elements will be integrated at later stages when more are in place.
- Trails and hides should cover a range of ecosystems and other interests.
- Wherever possible, historical and cultural features should be included as well as biological ones.
- Trails should incorporate a range of distances and challenges.
- Throughout, damage to the biological, historic and cultural heritage should be avoided. Indeed, the object is to conserve these.
- Usage should be monitored.
- Schemes to generate income should be implemented as early as possible, so as to support maintenance of existing facilities and the addition of more modules (following the example of the successful Little Water Cay Trails).
- Wherever possible, facilities should be related to Information Centres or other TCNT facilities, so as to enhance interpretation, aid supervision and provide a range of opportunities for visitors.

The plan identifies trails, boat trips and other sites which have potential for visitors, describes each, and details the work needed to make each usable or to improve usage. The same detail is prepared for facilities such as hides/blinds, the construction thereof and uses.

A variety of publications have been created and some are in process.





These publications help visitors understand more about the wildlife and the environment that they are experiencing.

The plan supports the establishment of visitor centres throughout the Islands. The TCI Government has donated the former school building in Bambarra, Middle Caicos and its land to the Trust for the development of an eco-centre. Part funding has been secured for the refurbishment of the building; additional funds are still needed in order to commence and complete the project. The plan includes exhibits such as:

- Outdoor exhibits dealing with traditional farming, medicinal plants, heirloom live-

stock, traditional building techniques, and traditional outdoor cooking demonstrations.
- Indoor exhibits with information about traditional crafts.
- Display cases holding items of cultural, natural and historic interests
- A reptile exhibit

Training and Environmental Education

Training will be provided for personnel recruited by the institutions to implement the plan. Environmental education work will centre on expanding the highly successful modular curriculum course in environmental education *Our Land, Our Sea, Our People,* developed by the Trust in consultation with the TCI Education Department and the Forum, with support from FCO. Trust-managed sites will be made available as living class-rooms. Junior conservation programmes will be developed for school-children to participate in conservation work in their communities. The potential for post-school education will be explored with the developing Community College curriculum.

Training will be provided for local people in skills needed to support the work, including trail-management, guide work, and the establishment and operation of small businesses compatible with, and supportive of, maintenance of the heritage and way of life.

Socio-economic aspects, Awareness and Marketing

There are considerable possibilities for local employment both in working for the Trust implementing and operating conservation and visitor facilities, and in related work providing for visitors. This kind of employment supports local communities and maintains their traditions and quality of life, rather than replacing this with a different (and, in many ways, unwanted) imported social system.

One of the main objectives of the plan is the creation of high-quality, low-impact tourism. Aspects of this area are already active, and it is important that growth is progressive at a rate that the local capacity can manage without damaging the communities themselves or the cultural and natural heritage features that provide the interest. There is a need to develop an integrated marketing strategy incorporating input from biodiversity and cultural management plans and socio-economic study.

Biological monitoring

The work of the Darwin Initiative project provided a baseline of information on a range of taxa. The more detailed results continue to be analysed by volunteer specialists involved. If problems are subsequently revealed, adjustments to the management plan can be developed to address these. Biodiversity surveying and monitoring will use a combination of volunteer outside specialists working with local people so as to produce the necessary information while transferring skills. Monitoring techniques are being developed and will be incorporated in the revisions to the plan.

Evaluation and revision procedures

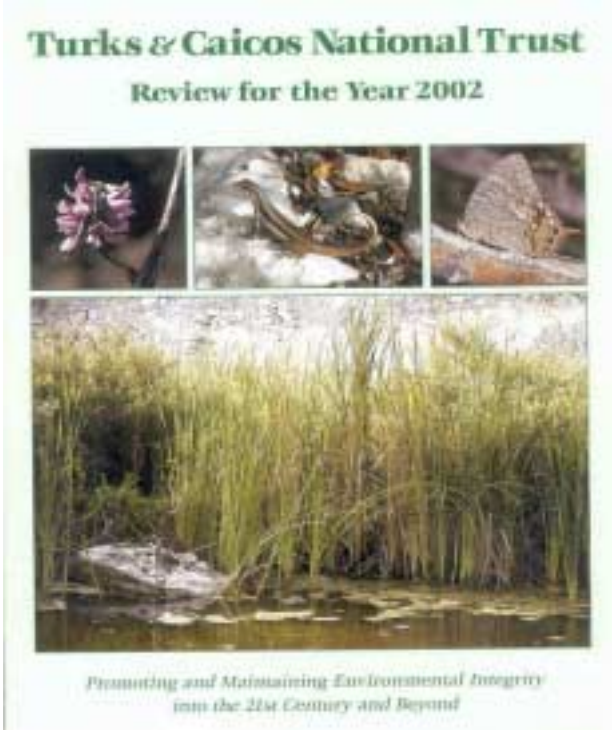
The basic information allowing monitoring of the biodiversity of the area will become available from the techniques being developed. The monitoring of the management work done and its outcomes will be achieved by means set out in the Logical Framework in the document. The main features include:

- Regular meetings and reports;
- Scientific survey and monitoring to ensure the safeguarding of biodiversity;
- The development of a long-term financial plan
- Clear information on utilisation, from visitor centre records, tour fees and other ticket sales, records of school visits;
- Information on local businesses and demographics from TCI Government;
- Records of presentations, publications and web-visits;
- Formal project reporting.

Conclusion

Institutions

The Trust was created by ordinance in 1992, and given special powers to enable it to carry out conservation of TCI's historic and environmental heritage. The Trust Ordinance enables the Trust to own conservation properties and make them inalienable, so that they will be protected and held in trust for the people of TCI forever. It also gives the protection of the criminal law to all Trust



properties. These special powers make the Trust an ideal organisation to manage conservation lands, and its partnership with the Forum gives it an international resource base on which to draw.

The Department of Environment and 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 management of protected areas by official bodies. Because of this, the UK 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 the marine national parks, as well as building an environment centre in Providenciales, establishing an environment fund and funding in part some public awareness activities. With the ending of the project, the CRMP has transitioned into a protected areas department within the DECR. It is to be hoped that this official protected areas service will be able successfully to implement these three management 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 reserve and historic sites. There is considerable potential for collaboration and sharing of the major needs for conservation work in TCI.

The Conservation Fund

The TCI benefits from having a newly established Conservation Fund, funded by a 1% addition to the existing 8% accommodation tax. This fund provides a mechanism for ongoing funding for management of protected areas. The ways of implementing these intentions are still being developed, and it is crucial that, as guidelines for the uses of this fund are developed, it be used to protect the most critically important environmental and historic resources of the TCI. Access to this fund for carrying out elements of this management plan is essential.

Acknowledgements

The project partners would like to acknowledge the financial support of the UK Government's Darwin Initiative. Activities that have complemented and strengthened the Darwin project have received funding from the UK Government's Foreign & Commonwealth Office, and some flights have been subsidised under British Airways *Assisting Conservation* programme. ESRI supported in the form of mapping software. The TCI Government has provided project vehicles, and the Norbellis Foundation has assisted with accommodation and support to TCNT. Much of the survey and research work was undertaken by international specialists in unpaid time, and many people across the islands have also given up their time, to participate in fieldwork, planning meetings and workshops.

However, the success of the Darwin project in TCI has also benefitted from generous support from a range of institutions and individuals. We would also like to thank the Governors and their staff, the Chief Minister and Ministers for Natural Resources and their officers, especially in the Minis-

try of Natural Resources, the Department of Environmental and Coastal Resources, the Department of Economic Planning and Statistics, the District Commissioners and many other officials. The team are particularly grateful to the communities on Middle and North Caicos for making them so welcome and sharing their intimate knowledge of their islands.

References

Ground, R. 2001. *The Birds of the Turks and Caicos*. Turks & Caicos National Trust, Providenciales.

Pienkowski, M. (Ed.) 2002. *Plan for Biodiversity Management and Sustainable Development around Turks & Caicos Ramsar Site*. www.ukotcf.org (Publications)

CAB International and the UK Overseas Territories (poster)

Oliver D. Cheesman

Cheeseman, O.D. 2003. CAB International and the UK Overseas Territories. p 177 in *A Sense of Direction: a conference on conservation in UK Overseas Territories and other small island communities* (ed. M. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

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CAB International became a supporting member of the UK Overseas Territories Conservation Forum in 1998, but its work in the UKOTs goes back much further. Some of CABI Bioscience's recent work in the UKOTs is described in poster presentations included in these Proceedings. However, a general introduction to the organisation will help to put these into context.

CAB International (CABI) is a global non-profit organisation generating, validating and delivering knowledge solutions in the applied life sciences through information products and services and by utilising its expertise in biodiversity for the benefit of agriculture, trade and the environment.

CAB International is a treaty-level, intergovernmental organisation with 41 Member Countries. It began in 1913 as a London-based insect identification service supporting agricultural scientists. The service expanded, and in 1929 was formally constituted as the Imperial Agricultural Bureaux (IAB), becoming the Commonwealth Agricultural Bureaux (CAB) in 1948. In 1985, it was granted international status, becoming CAB International and opening its membership to non-Commonwealth countries.

CAB International is self-funded, deriving income from: publishing revenues; scientific and information services; member contributions; and contracted or sponsored research, aimed predominantly at problems in developing countries. It operates through two Divisions (Publishing and Bioscience) and the *Information for Development* Programme.

CABI Publishing is a leading applied life sciences publisher, producing and marketing worldwide a range of printed and electronic products within the areas of agriculture, forestry, natural resource management, socio-economics, veterinary science and related disciplines, including human health.

CABI Bioscience provides research, training, consultancy and other specialised services worldwide, with a particular focus on: sustainable agriculture; characterising, conserving and utilising biodiversity; managing environmental change; protecting the environment from the damaging effects of human activity, and building human capacity.

CAB International's *Information for Development* Programme assists developing countries in the acquisition and management of scientific information.

CAB International employs 450 staff at 9 Centres around the world: the corporate head office in the UK and offices in India and China; joint Regional and Bioscience Centres in Malaysia, Kenya and Trinidad; Bioscience Centres in Pakistan, Switzerland and the UK; and Publishing offices in the UK and USA.

Some of the UK Overseas Territories (Anguilla, Bermuda, British Virgin Islands, Falkland Islands, Montserrat and St Helena) together constitute a CABI Member Country, represented on CABI's Executive Council by the UK Government's Department for International Development. However, CABI's work in the UKOTs is not restricted to these countries, or to DFID's policy priorities.

The following poster presentation illustrates work conducted under the recent Darwin Initiative Project in the Turks & Caicos Islands, which has increased knowledge of local biodiversity and fed directly into a pioneering Management Plan for the terrestrial species and habitats around the Ramsar site in TCI (the full Management Plan is available on the UKOTCF website: www.ukotcf.org).

The following poster should be cited as:

> Cheesman. O. 2003. Butterflies of the Turks & Caicos Islands: their status and conservation. p 178 in *A Sense of Direction: a conference on conservation in UK Overseas Territories and other small island communities* (ed. M. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

Butterflies of the Turks & Caicos Islands: their status and conservation

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Introduction

The Turks & Caicos Islands, one of the UK's Overseas Territories, lie at the southern extreme of the Bahamas, in the West Indies. They contain a substantial Ramsar site (wetland of international importance), but their terrestrial biodiversity has been relatively poorly documented. These are low-lying, limestone islands, where conditions are relatively arid. A number of islands in the Turks & Caicos are largely untouched by major tourist development, and local residents have expressed a wish to preserve their natural and cultural heritage.

Figure 1: The Turks and Caicos Islands and neighbouring islands of the Bahamas (right); Terrestrial habitats of the Turks & Caicos (left) include dry scrub/woodland (foreground) and hypersaline mud flats (background)

A Darwin Initiative project, led by CABI *Bioscience*, the UK Overseas Territories Conservation Forum and the Turks & Caicos National Trust, has recently conducted biodiversity surveys across an area centred on Middle Caicos. Butterflies were selected for study, alongside other insect groups, birds, bats, herpetiles, and higher plants.

Turks & Caicos Butterflies

In one of the few published accounts of Turks & Caicos butterflies, Bob St Leger recorded 37 species (St Leger, 1983). Further study now suggests that 47 different butterflies are known from the islands. This figure is broadly consistent with the numbers expected from a group of islands of this size, and with the numbers recorded from neighbouring islands of the Bahamas: 22 from Mayaguana (Miller *et al.*, 1992) and 37 from Great Inagua (Clench & Bjorndal, 1980; Simon & Miller, 1986).

Family	Turks & Caicos representatives
DANAIDAE (Milkweeds, Monarchs)	3
NYMPHALIDAE (Fritillaries, Emperors, Admirals, etc)	9
HELICONIIDAE (Heliconias)	1
LYCAENIDAE (Blues, Hairstreaks)	10
PIERIDAE (Whites, Sulphurs)	12
PAPILIONIDAE (Swallowtails)	3
HESPERIIDAE (Skippers)	9

Table 1: Numbers of representatives of different butterfly families amongst the Turks & Caicos fauna

...their Status

It has been suggested that many of the butterflies of the southern Bahamian islands (including Turks & Caicos) originally came from Cuba and the northern Bahamas, with a small number originating from Hispaniola to the south (Clench & Bjorndal, 1980; Miller *et al.*, 1992).

Figure 2: Amongst the Turks & Caicos butterflies that are relatively widespread in the West Indies are the Gulf Fritillary *Agraulis vanillae insularis* (left); the Cuban Grey Hairstreak *Strymon martialis* (centre); the Obscure Skipper *Panoqina panoquinoides panoquinoides* (right)

Whilst some are common and widespread in the region (see Smith *et al.*, 1994), a number of Turks & Caicos butterflies have very restricted distributions, and are only known from these islands and their immediate Bahamian neighbours (Miller *et al.*, 1992 - summarised in Table 2). Of particular interest is *Strymon acis leucosticha*, which appears to be endemic to the Turks & Caicos.

Butterfly	Distribution
Strymon acis leucosticha	Turks & Caicos
Memphis intermedia intermedia	Turks & Caicos, the Inaguas
Eurema chamberlaini mariguanae	Turks & Caicos, Mayaguana
Cyclargus thomasi clenchi	Turks & Caicos, the Inaguas, Mayaguana
Heraclides aristodemus bjorndalae	Turks & Caicos, the Inaguas, Mayaguana
Wallengrenia sp.	Turks & Caicos, the Inaguas, Mayaguana

Table 2: Endemic butterflies of the southern Bahamian islands (including Turks & Caicos)

Figure 3: Amongst the Turks & Caicos butterflies with very restricted distributions are local subspecies of Drury's Hairstreak *Strymon acis* (left) and the Turk Island Leaf Butterfly *Memphis intermedia* (centre). Both are believed to use *Croton discolor* (right) as a larval food plant.

As well as clarifying the status of particular butterflies in the Turks & Caicos, observations made under the Darwin Initiative project are contributing to our knowledge of their ecology. For example, favoured nectar plants include *Stachytarpheta jamaicensis*, *Waltheria indica* and *Borrichia arborescens*.

...their Conservation

The specific conservation requirements of many Turks & Caicos butterflies are poorly understood. Whilst some are associated with disturbed habitats, and frequently occur around human habitations, others are associated with undisturbed scrub/woodland, or with the sparse vegetation of hypersaline habitats. Until further, specific information on the ecology of particular species is available, butterfly conservation in the Turks & Caicos is dependent on holistic measures.

As well as conducting biodiversity surveys, the Darwin Initiative project is putting in place a number of measures to further the conservation of biodiversity in the Turks & Caicos Islands. In consultation with the local community, a draft management plan for the study area is being developed. This recognises the potential of the area to attract modest numbers of eco-tourists, stimulating the local economy without causing substantial environmental degradation. Butterflies are amongst the attractions for such visitors, and a photographic guide to the local fauna is being prepared. A former school building in Bambarra, Middle Caicos, has been given by the Turks & Caicos Government, and it is planned to convert this into a study centre for visitors and local residents.

Figure 4: Darwin Initiative project personnel meet with Middle Caicos residents to discuss the development of a management plan (left); the Bambarra school building - a future study centre (right)

References

Clench, H.K. & Bjorndal, K.A. (1980) Butterflies of Great and Little Inagua, Bahamas. *Annals of Carnegie Museum*, **49**, 1-30.

Miller, L.D., Simon, M.J. & Harvey, D.J. (1992) The butterflies (Insecta: Lepidoptera) of Crooked, Acklins and Mayaguana Islands, Bahamas, with a discussion of the biogeographical affinities of the southern Bahamas and description of a new subspecies by H.K. Clench. *Annals of Carnegie Museum*, **61**(1) 1-31.

St Leger, R. (1983) Butterflies of T&C. *Turks & Caicos Current* 1983, 48-56.

Simon, M.J. & Miller, L.D. (1986) Observations on the butterflies of Great Inagua island, Bahamas, with records of three species new to the island. *Bulletin of the Allyn Museum* No. 105, 1-14.

Smith, D.S., Miller, L.D. & Miller, J.Y. (1994) *The Butterflies of the West Indies and South Florida*. Oxford University Press, Oxford.

(Common names used above follow Riley, N.D. (1975) *A Field Guide to the Butterflies of the West Indies*. Collins, London.)

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Inter-country plan: marine turtles in the Caribbean UK Overseas Territories (TCOT)

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Godley, B.J., Broderick, A.C., Ranger, S. & Richardson,P.B. 2003. Inter-country plan: marine turtles in the Caribbean UK Overseas Territories (TCOT). pp 179-183 in *A Sense of Direction: a conference on conservation in UK Overseas Territories and other small island communities* (ed. M. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The exploitation of marine turtles in the Caribbean has generated an extraordinary level of international concern in recent years. Consequently, the CITES Hawksbill Turtle Range State Dialogue Process has led to a general agreement among Range States to work towards a regional management strategy for the hawksbill turtle in the Caribbean. In line with recommendations made through the Dialogue process, the UK Government has commissioned a three-year project to address critical gaps in the knowledge of marine turtle populations found in the UK Overseas Territories. The project, known as TCOT (Turtles in the Caribbean Overseas Territories), was launched in November 2001 and aims to assess the status and exploitation of the marine turtle populations found in Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Montserrat and Turks and Caicos Islands. This paper describes the partnership approach adopted by TCOT to implement habitat monitoring, genetic stock analysis, tagging and socio-economic survey programmes designed to meet the project's objectives in each Territory, and highlights significant findings to date.

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Overview

The exploitation of marine turtles in the Caribbean has generated an extraordinary level of international concern in recent years. Consequently, the CITES Hawksbill Turtle Range State Dialogue Process has led to a general agreement among Range States to work towards a regional management strategy for the hawksbill turtle in the Caribbean. In line with recommendations made through the dialogue process, the UK Government has commissioned a three-year project to address critical gaps in the knowledge of marine turtle populations found in the UK Overseas Territories. The 3-year project, known as TCOT (Turtles in the Caribbean Overseas Territories), was launched in November 2001 and aims to assess the status and exploitation of the marine turtle populations found in Anguilla, Bermuda, the British Virgin Islands (BVI), the Cayman Islands (CI), Montserrat and the Turks & Caicos Islands (TCI). The project operates using a partnership approach with local organisations and is co-funded by Defra (UK Department of Environment, Food & Rural Affairs) and FCO Environment Fund for the Overseas Territories with substantial in-kinds coming from the original project consortium.

Project Goals

The specific goals of the project as outlined at the inception were to:

- Identify project partners and initiate monitoring projects incorporating an initial training programme.
- Assemble quantitative and socio-economic data on the harvest and uses of marine turtle populations.
- Assess current conservation status of, and trends in, marine turtle populations and their habitat.

- Determine by DNA analysis the genetic profile of the turtle populations in UKOTs and the origin of harvested animals.
- Provide an assessment of the sustainability of any harvest.
- Provide recommendations for the future conservation, monitoring and management of marine turtles in the UKOTs.

Beach Monitoring in Cayman

Project Structure

The project is co-ordinated in the UK by the Marine Turtle Research Group, University of Wales, Swansea and the Marine Conservation Society. Additional members of the project consortium donating their time from the outset were University of Wales, Cardiff (to undertake genetic analyses), University Western Ontario (to co-ordinate socio-economic aspects of the project) and both Cayman Islands Department of Environment and Cayman Turtle Farm (to support training initiatives by extensive collaboration including the co-hosting of a training workshop (see below)).

The Project coordinators have invested extensive effort into forging relationships with many collaborating organisations in the UKOTs in the belief that TCOT will only succeed through extensive co-operation. The growing list includes: **Anguilla**: Director of Fisheries, Anguilla National Trust; **Bermuda**: The Bermuda Turtle Project, The Government of Bermuda; **BVI**: Conservation and Fisheries Department, BVI National Parks Trust, H. Lavity Stout Community College, Island Resources Foundation; **CI**: CI Department of Environment, Cayman Turtle Farm; **Montserrat**: Montserrat Department of Agriculture, Montserrat Department of Fisheries, Montserrat Divers; Montserrat National Trust, Montserrat Volcano Observatory, Sea Wolf Diving School, **TCI**: Department of Environment and Coastal Resources, Centre for Marine Resources South Caicos, Turks and Caicos National Trust, Turks and Caicos Coastal Resources Management Project.

Project Activities and Outputs

The activities and outputs as we approach the midpoint of the project (1 May 2003) have been diverse and we summarise below.

Monitoring and Research
TCOT personnel have contributed towards fieldwork in all six UKOTs.

Ongoing nesting beach (picture above) and inwater monitoring by local partners is underway in all UKOTs (there is no nesting in Bermuda). This has been supported by methodological protocols drafted specifically for TCOT and the provision of tagging equipment by TCOT and WIDECAST.

Genetics sampling is underway in all UKOTs. This has been supported by equipment and sampling datasheets from TCOT.

Turtle fishermen and other members of the community, have been involved in the process at every opportunity (below).

Collaborating Turtle Fisherman Tony Lettsome (BVI)

James Gumbs gives Anguilla National Report.

Training and Capacity Building
An active network among biodiversity professionals dealing with turtles in the UKOTs has been created.

As part of each field visit *ad hoc* training has been provided.

In August/September 2002, a TCOT Training workshop was held in Grand Cayman with 24 delegates (1 from each of Anguilla, Bermuda, BVI, Montserrat; 2 from TCI; 12 from CI; 4 TCOT Personnel; and 1 WIDECAST representative). This ran for 5 days with national reports (above), theoretical and hands-on sessions dealing with nesting and inwater monitoring, nest excavations, in-water capture (below), measuring, tagging and genetic sampling. Training was also given in the administration and design of socio-economic questionnaires as well as fund-raising. Proceedings have been produced and distributed.

Jasmine Parker (TCI) and Sue Ranger (left) during in-water sampling training at the TCOT Workshop, Grand Cayman, August 2002

TCOT team has supported demand-led grant application writing with partners in Anguilla, BVI and Cayman.

We have supported the publication of three manuscripts by TCOT partners in *the Marine Turtle Newsletter*.

TCOT submitted a successful bid to the FCO Environment Fund on behalf of all 5 Caribbean UKOTs to fund the participation of one representative fieldworker from each UKOT in the Bermuda Turtle Project Training Course in August 2003.

Information Exchange/Awareness Raising
A project website has been established which allows key documents to be downloaded in pdf.

Two press releases have been circulated and numerous articles have appeared in the UK and UK Overseas Territories.

An e-mail discussion list has been instituted.

A comprehensive Bibliography of Marine Turtles in the Overseas Territories has been assembled.

An awareness leaflet '*Marine turtles & tourism: How you can help'* has been produced as part of the TCOT initiative, with additional support from UK marine turtle species 'champion', Cheltenham & Gloucester. This leaflet is being distributed to tourism centres in all UKOTs.

A diver participation survey programme, Caribbean Turtlewatch has been designed and is underway in all UKOTs (top of next page).

TCOT personnel have contributed to outreach initiatives wherever possible (bottom of next page).

Information regarding the TCOT project has been outlined at numerous UK conferences as well as the 22nd International Sea Turtle Symposium, Miami, April 2003; 23rd International Sea Turtle Symposium, Kuala Lumpur, March 2003 and the UKOTCF Conference, Bermuda, March 2003.

Caribbean Turtlewatch materials

As part of the reporting of the TCOT workshop in the Cayman Islands, two resource CDs have been produced which include all powerpoint presentations from the workshop, a range of fund-raising resources, a photograph library, TCOT Bibliography and scientific papers, as well as several International Sea Turtle Symposium proceedings, monitoring protocols and datasheets.

"Turtle Day" at BVI Environment Summer School

For more information on the project please see our website (http://www.seaturtle.org/mtrg/projects/tcot/) or contact the team on: info@tcot.seaturtle.org

Acknowledgements

We are grateful to the organisers and sponsors of the UKOTCF Conference for the invitation and support to present the project to such a diverse audience. Many thanks to all of our many colleagues and friends in the Caribbean Overseas Territories who have thus far made TCOT a gratifying success.

Hawksbill
IUCN: Critically Endangered
Foraging and nesting in UKOTs

Green turtle
Foraging and nesting
IUCN: Endangered

Loggerhead
Nesting and foraging
IUCN: Endangered

Leatherback
Nesting and foraging
IUCN: Critically Endangered

OVERSEAS TERRITORY	LEGAL DIRECTED FISHERY	NESTING				FORAGING			
		Ei	Cm	Dc	Cc	Ei	Cm	Dc	Cc
Anguilla	*Moratorium*	✶	✶	✶		✶	✶	✶	✶
Bermuda					✶	✶	✶	✶	✶
British Virgin Islands	◆	✶	✶	✶		✶	✶	✶	✶
Cayman Islands	◆	✶	✶	✶	✶	✶	✶	✶	✶
Montserrat	◆	✶	✶	✶		✶	✶	✶	✶
Turks and Caicos	◆	✶	✶		✶	✶	✶		

KEY

✶ nesting/foraging population present

◆ legal directed marine turtle fishery

Ei: hawksbill turtle *Eretmochelys imbricata*

Cm: green turtle *Chelonia mydas*

Dc: leatherback turtle *Dermochelys coriacea*

Cc: loggerhead turtle *Caretta caretta*

A community-based management plan for the ormer *Haliotis tuberculata* (L.) in Jersey, Channel Islands

Andrew Syvret, Société Jersiaise

Syvret, A. 2003. A community-based management plan for the ormer *Haliotis tuberculata* (L.) in Jersey, Channel Islands. pp 184-189 in *A Sense of Direction: a conference on conservation in UK Overseas Territories and other small island communities* (ed. M. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The gastropod mollusc *Haliotis tuberculata* reaches the northern limit of its distribution in the English Channel Islands. Consequently, the organism is an important component of the region's marine biodiversity. Known locally as the ormer, it is a much prized and extremely valuable seafood. *H. tuberculata* has been culturally significant in the Islands for many centuries and artisanal fisheries have been managed since the late 19th century. Historical records provide evidence of wide variations in ormer abundance due to both climatic influence and exploitation of wild populations. More recently a pathogen has damaged Jersey stocks and a moratorium on gathering was enforced in 1999. Following evidence of stock recovery the fishery was reopened in late 2002 under new regulations.

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Jersey, the largest of the English Channel Islands, situated in the corner of the Golfe Normano-Breton, experiences one of the largest tidal ranges in the world, up to 12 metres over spring tide periods. As a consequence of the Island's varied topography - cliffs on the north coast and gently sloping shores on the south - combined with a constellation of outlying islets, reefs and sand banks, the Bailiwick of Jersey actually doubles in area with each low tide. The expanses of rocky shore found around the Island and on its offshore reefs are of international importance and in 2000 32sqkm of intertidal habitat on the SE Coast (right) have been designated as a Ramsar Wetland of International Importance.

Additionally, the Island's shores experience a wide range of wave exposure, from Atlantic facing west coast storm beaches to a sheltered east coast protected by Normandy's Cotentin Peninsula. The surrounding tidal conditions produce a relatively enclosed anticlockwise tidal circulation enhancing recruitment of many marine species with planktonic early life stages. As the last part of the Channel Island archipelago to be cut off from continental Europe at the end of the last ice age, Jersey's coastal waters are relatively shallow and thus preferentially warm in summer, or cool in winter.

Biogeographically the Channel Islands are extremely important. Marine biodiversity is enhanced given their position on the boundary between the warm Lusitanean ecosystem to the south and the

cool Boreal to the north. Many species are at either the northern or southern limits of their range in the Channel Islands. It has been hypothesised that such limit-of-range populations contain unique alleles or a combination of alleles arisen though genetic adaptation to local, more extreme environmental conditions than core populations. Our habitats and species assemblages are therefore key candidates for survey in several monitoring programmes investigating global climate change.

A large-scale threat to intertidal habitats is land reclamation (above). In 1995 a reef previously identified as one of the most biologically diverse found around Jersey was buried under waste from the Island's burgeoning construction industry. Further threats include nutrient-rich run off entering shallow enclosed embayments and over exploitation of small-scale fisheries.

Unsurprisingly, the intertidal habitats surrounding Jersey have long been important to its human population (below). Low water fishing is a very

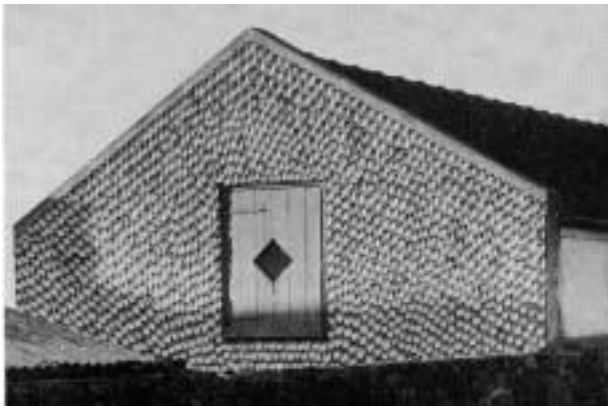
significant aspect of local culture and collecting seafood at low tide is today enthusiastically undertaken by a relatively small but vocal sector of the

community. As one would expect, seafood is an important component in local diets (above).

One particular organism however occupies pride of place in the hearts, minds and appetites of Channel Island low water fishermen (and women) – the ormer *Haliotis tuberculata* (below). While the

Jersey cow or Royal potato and the Guernsey tomato may be well known across the world, to many locals the ormer quietly plays an equal part in Island cultures. Indeed it is difficult to overstate the emotional investment many low water fishermen have in this most highly revered mollusc. Fisheries have existed since prehistoric times, ormer shells have been found in middens near Neolithic passage graves.

The picture below shows a gentleman gathering



ormers at low tide in Jersey during the 1950s. The photograph above illustrates a local dwelling adorned with ormer shells. As well as yielding valuable flesh, ormer shells have long been exported for use as furniture and musical instrument inlays. Here is one of London's celebrated pearly queens with buttons made from Channel Island ormer shells. In 1859 a visitor to the Channel

Islands wrote "*The principal use to which the shell now appears to be put to in the Channel Islands is to frighten away small birds from the standing corn, two or three of them being strung together and suspended from a stick so as to make a clatter when moved by the wind*."

The European ormer (top of next column), the only abalone commercially fished in Europe, reaches the northern limit of its range in the English Channel Islands; in fact Alderney has the most northerly wild population in the world. An extremely valuable seafood, they are highly sought after wherever

they are found, fetching prices of up to £5 per animal. Introduced to Ireland for aquaculture purposes in 1976, further trials currently in progress on the south coast of Britain are yielding encouraging results. Attempts at small-scale culture of ormers in the Channel Islands have so far resulted in only modest success.

Although Channel Island ormer populations are at the northern extreme of the species distribution, it is widely acknowledged that they are most abundant there – testament to the suitability and extent of Channel Island intertidal and sub littoral habitats. Herbivores, successful *H. tuberculata* populations are closely linked to a regular supply of drifting seaweed carried by tidal movements. They are normally discovered clinging to the underside of boulders or in crevices among bedrock, such spots affording a firm foothold allowing for resistance of predators and wave surge. Natural predators include conger eels, octopus, crabs, lobsters and starfish. Mortality in later life can also occur as the shell is weakened by the growth of boring worms or sea sponges. Ormers are almost always found submerged, in pools at mid-shore level down to ten metres below the low water mark. Tagging work has shown that although mobile, ormers move slowly and in one study thirty two per cent of marked ormers did not move over a period of one year. Of those that did move, the average distance travelled was just 6.7 metres.

Either male or female for the duration of its life, an ormer reproduces with peak summer sea temperatures, usually in August or September. Interestingly, evidence suggests that Channel Island ormers spawn in sequence, first around Jersey, followed by more northerly populations in Sark, Herm and Guernsey as sea temperatures increase with the passage of summer. Alderney ormers broadcast their eggs and sperm to the mercy of the ocean currents last. Highly fecund, a fully-grown

ormer (above) may release in excess of six million eggs, which are slightly heavier than water. Approximately twelve hours after fertilisation, hatched ormer larvae swim actively as part of the plankton for four to five days. During this period the early shell develops and the animal gradually sinks to the seabed where, if it settles upon a suitable substrate, it attaches and begins to feed immediately. Settlement is understood to be influenced by physical, chemical or biochemical cues associated with adult ormers, leading to an extremely restricted dispersal of larvae. Rasping with a radula, they feed particularly on a distinctive encrusting pink algae commonly found in rock pools and on submerged rock in shallow water. Mortality among larval ormers at this stage is extremely high due to predation, but also as a result of prevailing weather conditions; with strong offshore winds they are blown away from suitable settlement sites. Conversely, with onshore winds they are driven ashore and favourable recruitment is aided. It is not surprising therefore that it is widely accepted that ormers spawn over slack neap tide periods when the weather is calm, ensuring that as many larvae as possible settle on areas of sea bed providing the best chance of survival.

Growth is slow in the Channel Islands at approximately 15mm per year and most takes place between August and January, with animals reaching a shell length of approximately 45mm in a minimum of three years. Age can be determined from annual growth marks borne by the shell, not unlike the rings found in the trunk of a tree. Animals of both sexes are all mature by 70mm in length. Ormers can reach at least 130mm in length and are known to live up to 15 years.

Historically ormers appear to have been remarkably abundant. Records from the 19th Century suggest that the annual Channel Island take was well in excess of 100 tonnes, with individual gatherers regularly returning with catches of several hundred ormers after each low tide. There have however been dramatic fluctuations in the health of ormer populations in association with prolonged periods of low sea temperature. Major declines in abundance are recorded in the 1890s, 1920s and more recently after a record breaking cold spell in 1963. Temperatures between 8.5 and 9.5°C approximate the long-term (two months plus) lethal limit for *H. tuberculata.*

Given the Channel Island appetite for ormers, it is unsurprising that regulation of the fishery has taken place since 1876. Guernsey were the first to introduce a ban on the sale of ormers below a minimum size limit of 3 inches across the broadest part of the shell combined with a closed season from the beginning of May to the end of August each year. Jersey followed suit shortly after, but evidently over-fishing combined with the earlier mentioned climatic influence on the health of ormer populations was perceived as a major threat to the continued survival of the animal on our shores. Writing from the Jersey Marine Biology Station in 1897 in his plea for reform of the Island's fishing laws James Hornell wrote of "our dead ormer fisheries". It seems the decline of ormer populations continued, and in 1899 both Jersey and Guernsey authorities further strengthened fisheries regulations: altering them to control not simply the sale of ormers, but their shoreline harvest and further extending the closed season.

Things appear to have settled down again with the advent of the 20th Century and the next significant episode in the history of Channel Island ormer fisheries take place in 1924 when the results of field surveys commissioned by the States of Guernsey prompted both Islands to close their fisheries for a period of two years.

From then until the early 1960s *H. tuberculata* populations and ormer fishermen appear to have fared quite well with no significant events recorded. The exceptionally cold winter of 1963 however was a major threat to the continued existence of ormers in the British Isles. Anecdotal records reveal that moribund and rotting dead ormers were found in great numbers around all of the Channel Islands and it was to take two decades for stocks to recover to anywhere near their previous levels.

Before this could happen though another major threat to the health of *H. tuberculata* stocks had to be dealt with. The advent of SCUBA technology

meant that previously inaccessible ormers were now open to exploitation and a complete ban on harvesting using any form of breathing apparatus was promptly introduced in both the Bailiwicks of Jersey and Guernsey. Although diver harvesting was permitted in a small area of the South Coast of Guernsey until the end of 1973, when a further two-year moratorium on ormer fishing by any method was declared across the entire Channel Island archipelago. After the fishery was reopened in 1976, the 3-inch minimum size was increased and amended to 80mm and for a short time regulations were harmonious throughout the Channel Islands. However, subsequent adjustments to closed seasons meant that ormer harvest regimes soon varied at least a little from bailiwick to bailiwick - Jersey and Guernsey having of course long celebrated their differences.

The next significant change in regulation did not come about until 1995 when things moved on dramatically and both Bailiwick authorities passed legislation controlling the possession of fresh ormers rather than their harvest or sale. It is fair to say that this change came about largely due to the difficulties experienced in enforcing the earlier regulations, combined with a welcome increase in abundance of ormers around Channel Island coasts and a consequent growth in fishing activity. A series of relatively mild winters and exceptionally warm sea temperatures in 1989 and 1990 apparently providing a boost to numbers. After more than two decades of relatively poor catches, low water fishermen were once again returning with reasonably full baskets. While the ormer bonanza of the previous century was long past, in the mid-nineties twenty to thirty ormers per fishable tide was considered a fair catch by most gatherers.

Then, sadly in the summer of 1999 another period of significant mortality was reported among sub littoral ormer populations in Jersey. This was not entirely unexpected because the same phenomena had been recorded among French populations. Mortality had been observed to move progressively north from Biscay in 1996, rounding Cap Finisterre in 1997 and reaching the North Coast of Brittany in 1998. Early dive surveys suggested that as many as 66% of ormers had been killed off by a mystery pathogen. Wisely, the States of Jersey decided to close the fishery to protect all remaining healthy ormers from exploitation. Only those molluscs living below the low water mark appeared to suffer the ill effects of a pathogen subsequently identified as a relative of *Vibrio carchariae*, known to have historically affected Japanese abalone. Interestingly, the disease does not appear to have spread to the other Channel Islands. This is perhaps because the waters north of Jersey tend to be deeper, thus cooler and the *V. carchariae* sp. in question does not appear to function at sea temperatures below 18°C. Hence, climatic processes were potentially influencing the health of Channel Island ormer populations once again, albeit this time indirectly.

Somewhat perversely this unfortunate episode has actually had its advantages, further focusing public attention on this valuable component of Jersey culture and biodiversity. The ban on fishing was almost universally supported and afforded the Island's authorities a welcome opportunity to further improve the ormer's conservation. When the fishery was reopened in Autumn 2003 (right), the closed season was lengthened by one month to afford any late spawners further protection and the minimum legal size was simultaneously increased to 90mm (below). Size limits in

Guernsey and France remain at 80mm. Additionally; the absence of ormers from Jersey diets has dramatically improved the appetite among locals for information about their ecology and appropriate management. For example, as a result of publicity and tactful explanation, low water fishermen are now more willing to make the effort to return boulders to their original position when hunting ormers, thus avoiding negative and un-necessary habitat disturbance (above). Education naturally plays an important role in ensuring sustainable ormer fisheries continue to be a valuable feature of local life and much effort is expended trying to improve understanding within local and immigrant communities in Jersey (below).

- Harvesting may take place in season on the first day of each new or full moon and the three following days (Two following days in Guernsey)
- Possession of fresh ormers is permitted on the first day of each new or full moon and the three following days onboard a vessel, or five days on dry land
- No person is permitted to export an ormer that is not a fresh ormer
- Frozen ormers may be possessed at any time in Jersey (it is illegal to freeze ormers in Guernsey)

To summarise, the regulations controlling Channel Island ormer fisheries have evolved with great community involvement and interest over the past 125 years or so. No conventional management plan exists per se, but, driven almost equally by ecological necessity and perceived community requirements, current conservation regulations in Jersey are as follows:

- Minimum size - 90mm (80mm in the Bailiwick of Guernsey and France)
- No bag limit in either Jersey or Guernsey (A limit of 20 ormers per day per fisherman exists in France)
- Harvesting may take place from 1 October to 30 April (From 1 January to 30 April in Guernsey)

Introduction to the forthcoming review of potential new Wetlands of International Importance (under the Ramsar Convention) in the UK and the UK Overseas Territories

Mike Pienkowski, UK Overseas Territories Conservation Forum and David Stroud, Joint Nature Conservation Committee

Pienkowski, M. & Stroud, D. 2003. Introduction to the forthcoming review of potential new Wetlands of International Importance (under the Ramsar Convention) in the UK and the UK Overseas Territories. pp 190-194 in *A Sense of Direction: a conference on conservation in UK Overseas Territories and other small island communities* (ed. M. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The Ramsar Convention has proven very useful in many aspects of taking forward conservation. One major component of this concerns conservation of sites. UK Government is committed to a review of what further sites should be designated and the needs of designated sites, both in UK and the UK Overseas Territories. The plans for this work, by JNCC in the UK and coordinated by the Forum in the UKOTs, is outlined.

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Introduction: Eighth Conference of the Parties to the Convention

For several reasons, it is timely to review the relationship of the Ramsar Convention on Wetlands in relation to the UK Overseas Territories. This Convention is proving useful in many respects in the UKOTs, and has guidelines and other resources which may be of further use. In the last few years, often following facilitation by the Forum, those UKOTs and Crown Dependencies not previously included in UK's ratification of the Convention have opted to join (except British Antarctic Territory, which is covered by the Antarctic Treaty). With technical help from the Forum and JNCC, several sites have been designated in the UKOTs and a Crown Dependency, and others are under consideration.

The Eighth Conference of the Parties (i.e. the nations which have joined, with NGOs – including the Forum – and other bodies as observers) met in Valencia, Spain, in November 2002. This was attended by 119 countries. There was a significant focus on problems of small island states and overseas territories, including a specific Resolution concerned with Pacific islands. There was also a major emphasis on implementation of the strategic framework for site selection.

Other key decisions at Ramsar CoP8 were:

- The problems of invasive and non-native species, especially on islands. This is one of the primary threats to global biodiversity. The CoP adopted and encouraged application of guidance previously adopted by the Convention on Biological Diversity and other multilateral environmental agreements.
- The adoption of revised Management Planning guidance
- New site selection guidance for peatlands, coral reefs, wet grasslands, temporary pools and mangroves. Amongst many other important features, these also recommend the extension of coral reef Ramsar sites into deep water sufficient to include the surrounding reef structure which is essential to the maintenance of the system.
- Guidance on water resources management
- Communication, Education and Public Awareness – the adoption of a strategy for 2002-2005

- The adoption of guiding principles for including cultural issues in Ramsar site management

More strategic approaches to identifying national networks of Ramsar sites

The Convention's "Vision for the List" is:
"To develop and maintain an international network of wetlands which are important for the conservation of global biodiversity and for sustaining human life through the ecological and hydrological functions they perform"

This international network is to be:
"built from coherent and comprehensive networks of Ramsar sites established within the territory of each Contracting Party"

In order to move towards a fully coherent and comprehensive site network, the CoP recommended the following national approach:

- a national wetland inventory – this gives a basis for the choice of sites
- at least identification of potential Ramsar sites (a directory of important wetlands)
- a strategy and priorities for future designations (very few countries appear to have these, and most designations continue to be made on a seemingly *ad hoc* basis)

CoP8 Resolution 10 calls on Contracting Parties to:

- Renew their efforts to apply the Strategic Framework
- Establish (as a priority) a strategy and priorities for further designations, and report on progress by December 2003
- Establish national designation targets (number and area of sites), within a global target of a further 250 sites and 55 million hectares by CoP9 in 2005.

The UK Ramsar network

UK has 158 Ramsar sites, which is an impressive total in global terms. These include 144 in Great Britain & Northern Ireland – but only patchy coverage in UK Overseas Territories and Crown Dependencies, where application of the Convention effectively started much later than in Great Britain & Northern Ireland.

Some problems remain in the list within GB & NI. In particular:

- some important wetland types and sites are not included
- the network has a bird bias, and citations (and thus conservation objectives) on some GB & NI sites focus on birds to exclusion of habitat interests (or other wetland species).

The UK has made a commitment in its UK National Report to CoP8 to review its national series. UK Government (in conjunction with the National Ramsar Committee, which brings together officials and NGOs, including both the Forum and JNCC) aim to complete review to report to CoP9 (November 2005). UK intends to complete this in parallel with a six-yearly update of Ramsar Information Sheets (RISs), which is also due for UK.

Priorities have been established for this review. A high priority is placed on:

- designation of wetland types and wetland species unique or endemic to Contracting Party, or
- where a country holds high proportion of global extent/population
- selection of wetland types under-represented in global Ramsar list (including peatlands, wet grasslands, sea-grass beds, mangroves and coral reefs).

UK Overseas Territories review

The UKOTs are generally small in both area and human population to share the cost of conservation work. However, they support biodiversity of much greater global significance than UK territory falling within the larger Great Britain and Northern Ireland. UKOT wetlands are of global significance for:

- Endemic species and races
- Coral reefs
- Mangroves
- Sea-grass beds.

Therefore, there is the opportunity to make major contribution here.

For the last few years, the Forum has been discussing the ways to facilitate progression on this, with JNCC and the Department of the Environment, Food & Rural Affairs (Defra, which with its predecessors provides the UK Government's lead

department on Ramsar). JNCC is co-ordinating a review of Ramsar sites in Great Britain and Northern Ireland. Defra has published its intention to contract the Forum to undertake the complementary review in UKOTs, but this contract has not yet been placed. Nevertheless, it would be negligent to miss the opportunity to consult UKOTs (and Crown Dependencies) at this Conference.

Accordingly, the following material is an initial summary review of the present position. Anyone with corrections or additional material is requested to contact pienkowski@cix.co.uk. (Defra has since indicated that it has discovered that its internal procedures do not now allow it to place the contract it announced without a tender process, which is now underway. Therefore active work on this review has had to be suspended. However, the review will have to take place in some form and be completed in 2004; therefore, information is still welcome.)

Territory	Ramsar sites designated	Ramsar sites in progress	Other Ramsar sites proposed	List of identified sites known to need updating
Anguilla	0		5	Y
Bermuda	7		4	Y
British Virgin Islands	1		2	Y
Cayman Islands	1		2	Y
Montserrat	0		0	Y
Turks and Caicos Islands	1		0	Y
Ascension	0		0	Y
British Antarctic Territory	0		0	
Falkland Islands	2	2	1	
St Helena	0		0	Y
South Georgia and the South Sandwich Islands	0		0	Y
Tristan da Cunha	0		0	Y
British Indian Ocean Territory	1		1	
Pitcairn Islands	0		3	
Cyprus Sovereign Base Areas	0	1		
Gibraltar	0		1	
Bailiwick of Guernsey	0	1		Y
Bailiwick of Jersey	1		1	Y
Isle of Man	0			Y

The first Table lists the totals of Ramsar sites which have been designated to date in the UKOTs and the Crown Dependencies, together with the number of sites known to be in progress to designation. (Since the Bermuda Conference, the site in the Cyprus Sovereign Base Area has been designated.)

This Table indicates also the totals of other Ramsar sites proposed. However, this list of proposed sites is now many years old and, in some cases, based on survey information from the 1980s or earlier. Whilst a great deal of survey is still needed in most Territories on many taxa, much has been done in recent years. This is one reason for the review. The final column of the Table indicates those Territories for which it is known that the list of proposed sites needs updating, but this comment may apply also to some of the others.

An important aspect of the review will be the need to assess coverage of the global priority ecosystyems across the geographical spread of the UKOTs and Crown Dependencies, as well as coverage of endemic and other important populations of plants and animals.

The second Table (on the next page) is a first summary of the occurrence of these features in each of the UKOTs and Crown Dependencies. The

Table indicates also those features which are included to some extent in an already designated site. This does not necessarily indicate that coverage is adequate for that aspect in the Territory concerned.

It is anticipated that all these aspects will be investigated further in the full review, and information is welcome.

CoP8 Resolution 10 calls on Contracting Parties to:

- Collaborate in designating international networks for migratory species
- Update and improve information on the many (almost 50%) designated Ramsar sites for which this is missing – using the revised Information Sheet on Ramsar Wetlands (CoP8 Resolution 13).

The third Table (at bottom of page) lists already designated sites in the UKOTs and Crown Dependencies, with their areas and dates of designation. Also indicated is whether their Ramsar Information Sheets are known to have been updated or need updating and/or further information.

Territory **P** = present in Territory **D** = included to some extent in a site	Coral reefs	Man-groves	Sea-grass beds	Wet grass-lands	Peat-lands	Unique wetland types and endemic species
WIDER CARIBBEAN						
Anguilla	**P**	**P**	**P**			**P**
Bermuda	**P**	**PD**	**P**			**PD**
British Virgin Islands	**P**	**P**	**P**			**PD**
Cayman Islands						**PD**
Montserrat						**P**
Turks and Caicos Islands	**PD**	**PD**	**PD**			**PD**
SOUTH ATLANTIC						
Ascension						**P**
British Antarctic Territory						**P**
Falkland Islands				**PD**	**P**	**PD**
St Helena						**P**
South Georgia and the South Sandwich Islands				**P**	**P**	**P**
Tristan da Cunha				**P**	**P**	**P**
INDIAN OCEAN						
British Indian Ocean Territory	**PD**	**P**	**P**			**P**
PACIFIC						
Pitcairn Islands	**P**					**P**
EUROPE						
Cyprus Sovereign Base Areas						
Gibraltar						
Bailiwick of Guernsey				**P**		
Bailiwick of Jersey				**P**		
Isle of Man				**P**		

Name	**Territory**	**Area (ha)**	**Date designated**	**Updated RIS**
North, Middle and East Caicos Islands	Turks & Caicos	58617.00	27/06/1990	2002
Booby Pond and Rookery	Cayman Islands	82.00	21/09/1994	needed
Warwick Pond	Bermuda	2.30	10/05/1999	needed
Somerset Long Bay Pond	Bermuda	1.10	10/05/1999	needed
Hungry Bay Mangrove Swamp	Bermuda	2.01	10/05/1999	needed
Pembroke Marsh East	Bermuda	7.82	10/05/1999	needed
Paget Marsh	Bermuda	11.35	10/05/1999	needed
Lover`s Lake Nature Reserve	Bermuda	2.10	10/05/1999	needed
Spittal Pond	Bermuda	9.53	10/05/1999	needed
Western Salt Ponds of Anegada	British Virgin Islands	1071.00	10/05/1999	needed
South East Coast of Jersey, Channel Islands	Jersey	3210.50	25/09/2000	
Diego Garcia	British Indian Ocean Territory	35424.05	28/02/2001	
Sea Lion Island	Falkland Islands	1000.00	24/09/2001	
Bertha's Beach	Falkland Islands	4000.00	24/09/2001	

NAME	COUNTRY	AREA (HA)	MANAGEMENT
North, Middle & East Caicos Is	**Turks & Caicos**	**58617.00**	**Plan in place /work starting – see this session**
Booby Pond and Rookery	**Cayman Islands**	**82.00**	**Management in place**
Warwick Pond	**Bermuda**	**2.30**	See next session!
Somerset Long Bay Pond	**Bermuda**	**1.10**	
Hungry Bay Mangrove Swamp	**Bermuda**	**2.01**	
Pembroke Marsh East	**Bermuda**	**7.82**	
Paget Marsh	**Bermuda**	**11.35**	
Lover`s Lake Nature Reserve	**Bermuda**	**2.10**	
Spittal Pond	**Bermuda**	**9.53**	
Western Salt Ponds of Anegada	**British Virgin Islands**	**1071.00**	**Management being developed**
South East Coast of Jersey	**Jersey**	**3210.50**	
Diego Garcia	**Br Indian Ocean Terr**	**35424.05**	
Sea Lion Island	**Falkland Islands**	**1000.00**	
Bertha's Beach	**Falkland Islands**	**4000.00**	

CoP8 Resolution 10 calls on Contracting Parties to:

- Treat designation only as a start, and to
- Establish management planning and monitoring at all sites, and
- Fully report changes in ecological character (Article 3.2)
- Recognise the importance of a full Ramsar site network for maintaining wetland values and functions so as to combat poverty.

The fourth Table (above) indicates the known state of management planning for the Ramsar Wetlands of International Importance which have been designated to date. Once again, this information is a first summary and is likely to be incomplete. Additional information would be welcome.

The presentation from Turks & Caicos National Trust, the Forum and CABI in this session address one site, and management is in place too at the site in the Cayman Islands. Management is being developed at the BVI site, and a plan is being developed for the new site in the Cyprus Sovereign Base Areas.

Some of the Bermuda Ramsar sites and other wetlands in Bermuda provide the venues and subjects of the field workshops in this session. Consideration of Ramsar status, information and management form part of these exercises.

The Ramsar Convention on wetlands

Ramsar