

Section 10: Joined-up thinking – institutional arrangements for environmental management

Co-ordinators: Liz Charter (Chief Wildlife & Conservation Officer, Isle of Man), and Farah Mukhida (Executive Director, Anguilla National Trust)

This section recognises that a joined-up approach is essential for sustainable development generally and conservation management in particular; it is built into at least three articles of the Convention on Biological Diversity. In pursuit of a joined-up approach, key questions include: how do key government and NGO players work together, engage with other stakeholders and manage their information base?

The section is in two parts. During the conference itself, for time-tabling reasons relating to the availability of the UK Minister for Biodiversity, Mr Huw Irranca-Davies, these two parts were separated by a session of reporting back on other sessions and the speech by the Minister. This material is reported in the following Section 11. However, we are pleased to note that the Minister's address alludes also to joined-up work.

Part 1: Joined-up government and government/NGO co-operation

Conservation organisations operate through partnerships with other organisations which share the same aim. Gina Ebanks-Petrie describes how the Department of the Environment, of which she is the Director, and the National Trust for the Cayman Islands work together. Liz Charter (Chief Wildlife and Conservation Officer of the Isle of Man Government) identifies significant legislation, government procedures, policies in the island *Strategic Plan* and tools such as the Memorandum of Understanding, which have assisted in getting the Isle of Man Government to develop a more joined up approach to the environment. Michael Gore provides a valuable insight into the role of a UKOT Governor in environmental issues. He emphasises that the extent to which a Governor gets involved in conservation depends on the individual. The link between good governance and good environmental practice gives a Governor a platform for involvement if he or she feels the situation warrants it.

Part 2: Information sharing

Alan Mills, a consultant who has worked in the South Atlantic as well as in the Caribbean, illustrates the value of GIS in information sharing on Ascension. GIS technology is adaptable and enables a joined-up approach through multi-layered mapping. Mike Pienkowski briefly explains the state of the UKOTCF web-database, which is being further developed. Colin Hindmarch introduces Marimar Villagarcia from the Canary Islands Marine Science Institute who is collaborating with all tropical and sub-tropical overseas entities of EU countries in the Net- BIOME project, along with UKOTCF and others. The first stage is information sharing but this is expected to lead to further bids for EU funds for joint research projects.



*From left: Liz Charter, Michael Gore, Farah Mukhida and Gina Ebanks-Petrie
(Photos of participants in this Section by Thomas Hadjikyriakou unless otherwise indicated)*

Framework Document: Joined-up thinking

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Cheesman, O., Charter, E. & Mukhida, F. 2010. Joined-up thinking. pp 326-329 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The concept of a joined-up approach is enshrined in key international agreements (such as the Convention on Biological Diversity) and lies at the heart of effective policy and action towards conservation, environmental management and sustainable development. The “joining up” may be within or between key institutions, or between such institutions and wider civil society. Exchange and management of technical or strategic information may be the focus, although more subtle aspects of institutional arrangements may ultimately be more important. In the context of environmental concerns in the UKOTs/CDs, “joining up” within UK Government, and amongst/between governmental and NGO bodies, has particular significance.

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Background

Because of the sheer number and diversity of organisations and individuals involved, effective conservation, environmental management and sustainable development rely on a “joined up” approach. Indeed, sustainable development can be seen, in itself, as a “joining up” of social, economic and environmental imperatives. The aims of a joined-up approach should include:

- to enhance communication and sharing of resources between stakeholders;
- to promote co-ordinated (integrated, holistic, interdisciplinary) working;
- to manage potentially conflicting priorities;
- to minimise duplication of effort;
- to maximise potential synergies.

A lynchpin of conservation and sustainable development, the Convention on Biological Diversity (CBD) makes numerous references to the need for a joined-up approach, at various levels. These include aspects of: co-operation between states, and

between states and international organisations (Article 5); integration of conservation and sustainable use into cross-sectoral plans and national decision making (Articles 6 and 10); conservation respecting local communities (Article 8), and; scientific co-operation (Articles 12 and 17-19). Indeed, it is in the very nature of Multilateral Environmental Agreements (MEAs), like the CBD, that co-operation between administrations and stakeholders is required for effective implementation. In the context of UKOTs, this is particularly relevant, given that responsibility for the Territories’ engagement with MEAs rests with the UK Government. Also in the context of UKOTs, the Environment Charters (cf. Section 2) represent a further important example of agreements that rely on a joining-up of UK Government, UKOT Governments, civil society organisations and other stakeholders for effective implementation.

The involvement of local communities amongst stakeholders extends the joined-up approach in this field to encompass aspects of environmental democracy and environmental justice. This also

involves a shift in emphasis towards “governance, rather than government”, implying “a shared responsibility for devising policy, for preparing management plans, for assessing the likelihood of meeting targets, and for auditing performance” (O’Riordan & Stoll-Kleeman 2002).

Exchange of information

Appropriate methods for disseminating information on environmental issues and the work of environmental bodies (e.g. through awareness-raising initiatives) represent important means of engaging a range of stakeholders. Such issues are considered further in the Section 7 *Raising Our Profile* and Section 3 *Environmental Education*, as well as being touched on to various degrees in other sessions.

In environmental management (as in other fields), the exchange of technical information is a key feature of the joined-up approach. The information involved might relate to baseline biodiversity data (including distribution of species and habitats), boundaries of protected areas, management planning arrangements, and so on. Electronic facilities for information management have revolutionised access to information and data sharing. The internet provides instant access to a wide range of resources (with a few attendant quality assurance problems), and e-mail provides a vehicle for rapid communication and exchange of documentation (with a few attendant problems of “information overload”). Specific tools, and tailored systems, such as those based on some form of Geographic Information System (GIS) have particular value for integrating various “layers” of information and making them simultaneously available to a wide range of users. Similarly, on-line databases provide a valuable means for sharing (and regularly up-dating) potentially large volumes of technical information.

The exchange of strategic information between organisations with common interests and objectives is an important aspect of any joined-up approach. Networks and partnerships of organisations have an important role to play in this respect. However, relationships between institutions invariably rely on relationships between key individuals. Turnover of staff (resulting from retirement, organisational restructuring or even misguided personnel policies) can break important links, and disrupt “institutional memory” of arrangements that worked well in the past. Clear “handover” procedures, involving writ-

ten summaries of arrangements and the rationale behind them, or (preferably) face-to-face briefings involving out-going and in-coming staff, and key contacts in partner organisations, can help to overcome this problem – but are sadly rare.

Institutional arrangements

Unfortunately, the structure of institutions, particularly large ones, and the ways in which they typically operate, tend to compartmentalise and disconnect key functions. Such arrangements inhibit, rather than promote, a joined-up approach. They can lead to a “fragmentation of responsibility”, where accountability for key tasks is unclear and important issues may be left without coverage. They may also encourage a “silo mentality”, where individual teams of workers become entirely fixed on their own departmental targets, and lose sight of the organisation’s overall objectives, so that co-ordination breaks down. Departments within the same institution, which should be working together towards a common goal, may even develop a culture of competition (e.g. for internal resources) rather than co-operation. The problem is only exacerbated when such institutions are required to work together in a coherent way, particularly where different types of organisations (public, private, governmental, non-governmental) are involved. In this case, obstacles may even include the lack of a common terminology with which to define the challenges faced and solutions required. The careful development of partnership agreements and Memoranda of Understanding (MoUs), by those who will be responsible for their implementation (rather than others within the respective organisations), is one way to help to forge constructive relationships and to foster mutual understanding.

The need for joined-up thinking can be thought of in terms of vertical and horizontal dimensions. The vertical dimension involves the need to link policy makers (at the top) to the individual citizen (at the bottom), via the various levels of government, policy advisors, regulators, implementing agencies, businesses, NGOs and community groups in between. The horizontal dimension involves the need to integrate the work of those various bodies that occupy a similar position in the vertical hierarchy, but who have responsibility for different aspects of the challenge, such as the various NGOs whose activities promote conservation, or the various government departments whose policies influence sustainable development. Problems associated

with the latter, for example, include the fact that environment and development departments may typically be represented at international talks, when it is finance and trade departments whose policies have most significance (Callway 2005).

Joined-up Government

The need for a joined-up approach to environmental management, sustainable development (and other issues) has been particularly emphasised within governments, where it is often synonymous with a “whole of government” approach, and with placing (for example) sustainable development “at the heart of government”. Unfortunately, governments (like other large organisations) often have long-established and inflexible internal arrangements and patterns of institutional behaviour that impede a joined-up approach (Kavanagh & Richards 2001).

Even if we confine our attention to issues relevant to environmental management, the relationship between the UK Government and the UK Overseas Territories and Crown Dependencies has long exemplified the problems associated with fragmentation of responsibility and a lack of horizontal integration. Multiple departments have responsibility for different geographical or thematic areas: Foreign & Commonwealth Office (FCO - policy lead on nearly all UK Overseas Territories, issues of good governance); Department for Environment, Food & Rural Affairs (Defra – Multilateral Environmental Agreements); Department for International Development (DFID – support of sustainable development); Ministry of Justice (MoJ - Crown Dependencies), Ministry of Defence (MoD – policy lead and governance of Cyprus Sovereign Base Areas, holder of major areas of Gibraltar); Department of Culture, Media & Sport (World Heritage Sites). For some years, the regular joint meetings between UK Government and the NGO community co-chaired by UKOTCF and FCO provided the main mechanism for joining up these various departments and other stakeholders in addressing conservation issues in and across the UK Overseas Territories and Crown Dependencies. Sadly, limitations in FCO have effectively ended these, although UKOTCF is attempting continuance.

In attempting to move towards a more joined-up approach in relation to conservation issues in general, the UK Government has formed an Inter-

Departmental Ministerial Group on biodiversity (IDMGb), which comprises Ministers from Defra, FCO and DFID, and the Chair of the Joint Nature Conservation Committee (JNCC). Established in 1997, the House of Commons Environmental Audit Committee is another mechanism by which the UK Parliament has attempted to encourage Government to “join up” its own approach to environmental management and sustainable development (Ross 2005). In its recent report on *Halting Biodiversity Loss* (HoC EAC 2008), the Committee called for the UK Government to “adopt a truly joined-up approach to environmental protection in the UKOTs and Crown Dependencies, by bringing together all relevant departments...and the governments of the UKOTs and Crown Dependencies” and to “make better use of [and expand membership of] the Inter-Departmental Group on biodiversity” in this respect. In its response to the Committee’s report, the UK Government (HoC EAC 2009) agreed that “more effective and better integrated support is needed for the UK’s Overseas Territories in order to halt the loss of their biodiversity”, noting that the IDMGb was paying particular attention to this issue and that it had asked JNCC to develop a Government strategy for biodiversity protection in the UK Overseas Territories. We look forward to hearing more at this conference, and to future opportunities for strengthening joined up government approaches, government-NGO co-operation (which seems to have declined over the last couple of years, while government has made internal efforts), and other strategic partnerships for advancing conservation in the UKOTs/CDs.

References

- Callway, R. (2005) Introduction: setting the scene. In *Governance for Sustainable Development – a foundation for the future* (eds G. Ayre & R. Callway), pp.3-13. Earthscan.
- HoC EAC [House of Commons Environmental Audit Committee] (2008) *Halting Biodiversity Loss* (13th Report of Session 2007-08) HC 743. The Stationery Office Ltd.
- HoC EAC [House of Commons Environmental Audit Committee] (2009) *Halting Biodiversity Loss: Government Response to the Committee’s Thirteenth Report of Session 2007-08* (2nd Special Report of Session 2008-09) HC 239. The Stationery Office Ltd.
- Kavanagh, D. & Richards, D. (2001) *Departmentalism and Joined-up Government*.

Parliamentary Affairs 54, 1-18.

O’Riordan, T. & Stoll-Kleeman, S. (2002)
Deliberate democracy and participatory
biodiversity. Chapter 5 in *Biodiversity,
Sustainability and Human Communities* (eds
T. O’Riordan & S. Stoll-Kleeman), pp.87-112.
Cambridge University Press.

Ross, A. (2005) The UK Approach to Delivering
Sustainable Development in Government: A
Case Study in Joined-Up Working. *Journal of
Environmental Law* 17, 27-49.

Possible framework for session discussions

Part 1 – *Joined-up government and government-
NGO co-operation* Delegates might like to con-
sider:

What particularly good examples of joined-up
government and government-NGO co-operation
are you aware of:

In your own Territory?

Elsewhere?

What particular failures of joined-up government
and government-NGO co-operation are you aware
of?

In your own Territory?

Elsewhere?

What are the main constraints to joined-up govern-
ment and government-NGO co-operation in your
own Territory?

Part 2 – *Information sharing*. Delegates might like
to consider:

What existing information-sharing resources have
you found particularly useful:

In your own Territory?

In relation to cross-Territory issues?

In relation to conservation, environmental manage-
ment and sustainable development issues in gen-
eral?

What information-sharing resources would you
like to see made available:

In your own Territory?

In relation to cross-Territory issues?

In relation to conservation, environmental manage-
ment and sustainable development issues in gen-
eral?

Government/NGO partnerships - successes and failures in Cayman

Gina Ebanks-Petrie (Director, Department of Environment, Cayman Islands Government)



(Photo:
Thomas Hadjikyriakou)

Ebanks-Petrie, G. 2010. Government/NGO partnerships - successes and failures in Cayman. pp 330-332 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

This presentation will examine the relationship between the Department of Environment (the Cayman Islands Government agency charged with conservation management and protection of the natural environment) and two environmental non-governmental organisations in the Cayman Islands: the National Trust for the Cayman Islands and the Central Caribbean Marine Institute. Successful strategies and mechanisms used to differentiate and coordinate roles and functions will be described and examples of projects and programmes successfully implemented will be provided. Problem areas will be identified and possible solutions offered.

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“Government/NGO Partnerships – successes and failures in Cayman” would be more correctly expressed as “Government/NGO Partnerships in Cayman – those which work well and those which don’t work so well”

Partnerships that work well

The National Trust for the Cayman Islands and the Cayman Islands Department of Environment work together extremely well, as I hope that many of you are seeing in this conference as well as elsewhere.



The National Trust for the Cayman Islands was established by Law in 1987. The Purposes of the Trust are:

- The preservation of the historic, natural and maritime heritage of the Islands;
- The conservation of lands, natural features and

submarine areas of beauty, historic or environmental importance;

- The protection of native flora and fauna.

The Cayman Islands Department of Environment was established in its current form in 1996. Its Mission is:

The Department of Environment works to promote and facilitate the conservation and sustainable use of the natural resources and environment of the Cayman Islands through various programmes and strategies.



How does the partnership between these two bodies work? A key is the Environmental Advisory Committee (EAC). Technically, this is a committee of the Trust Council as per Section J (1) of the Bye-Laws of the Trust. It is chaired by a Trust Council member. The members consist of National Trust Environmental Programs staff, the Director of the Blue Iguana Recovery Program, DoE staff

and other respected local scientists and naturalists.

The EAC Terms of Reference are:

- To advise the Trust on environmental issues in Cayman and to provide policy recommendations on the Trust's environmental programmes.
- To assist in defining environmentally important areas; prioritise parcels for acquisition and other protection measures.
- To review management policies and plans for all the Trust's environmental properties and provide input to Trust's Environmental Programmes Manager.
- To review major proposals from scientists overseas wishing to work collaboratively with the Trust.

The EAC's composition and reporting is set out as:

- The Committee shall be chaired by a member of the Trust Council.
- The Environmental Programmes Manager shall be the Secretary of the Committee.
- Other members of the Committee are selected by the Chairperson.
- All members of the Committee shall be members in good standing of the National Trust for the Cayman Islands.
- The Environmental Advisory Committee's recommendations shall be presented to the Trust's Executive Committee and/or Trust Council by the Chairman and/or Secretary as appropriate.

This framework leads to much effective co-operative effort. This is manifest in many ways, including major initiatives, such as the Blue Iguana Recovery Program and Cayman Wildlife Rescue.

DoE has successful partnerships with other NGOs. These include:

with Queen Elizabeth II Botanic Park:
Native Tree Nursery; Millennium Seedbank project;

with Cayman Islands Orchid Society:
Orchid Shade House;

with Cayman Wildlife Rescue:
Ironwood Forest campaign; Butterflies of the Cayman Islands.



Partnerships that we're working on...

The Central Caribbean Marine Institute was founded in 1998. Its mission was initially to conduct and facilitate research and education, and outreach that will sustain marine diversity for future generations. It recently added "conservation" to mission statement.

The issues that we need to address are:

- The Mission has never been clear, and there have been changes;
- Competition with long-established NGOs, like the National Trust, for government and local corporate funding.

Possible solutions are:

- Keep lines of communication open and honest;
- Establish mechanisms like MoU, DoE liaison and Research Application procedure.

Summary

Pre-requisites for functional Government/NGO partnerships:

- Constant, open and honest communication;
- Practical mechanisms to assist ;
- At least one, preferably both/all, of the partners need to care more about the result than the means.

There are major challenges that we need to address, and co-operative working is our best chance.. These challenges include:

Habitat Loss;





Coastal Erosion;



Hurricanes;



Visitor Impacts;



Coral Bleaching/Ocean Acidification (Climate Change);



Invasive Species.



“Unless someone like you, cares a whole awful lot.
Nothing is going to get better, it’s simply not.”
The Lorax, Dr. Seuss, 1971

Working together for biodiversity on the Isle of Man

Elizabeth Charter (Chief Wildlife & Conservation Officer, Isle of Man Government; and UKOTCF Council)



Charter, E. 2010. Working together for biodiversity on the Isle of Man. pp 333-342 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

This paper will review tools, arrangements and factors to enable joined up approaches to the management of the environment, and particularly nature conservation, on the Isle of Man. This will be based on my own experience since setting up a government conservation office in this Crown Dependency 11 years ago.

The paper covers:

Developing a joined up approach to resource management on land and in the sea within the Department of Agriculture Fisheries and Forestry,

Developing a joined up approach to management of the environment and conservation within the Manx government,

Joining up with non-government conservation organisations to bring greater conservation benefits,

Joining with others around the Irish Sea to bring a regional ecosystem approach to marine management and conservation,

Joining forces to provide the biological data to inform conservation policy, and

Joining up with HMG and research bodies to keep up to speed with hot issues and research findings.

This presentation highlights recent partnerships at the local and regional level and some of the small but effective actions taken in the early days of setting up the office.

There are many areas of this work which are still developing and where we could learn from other territories' experience.

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Joined-up government is an essential element of modernising governance and fundamental to pursuing sustainable development and effective conservation management.

This paper identifies some key tools which we have used on the Isle of Man to get consideration of biodiversity built into decision making. We acknowledge that we have a long way to go but offer these for use by other territories.

I will summarise some of the challenges and obstacles to a joined-up approach. I am sure there will be common themes with other territories.

The first challenge of introducing conservation considerations into the thinking of other government departments was location and lack of proximity to those we wished to influence. The Wildlife Office is in the Department of Agriculture, Fisheries and Forestry (DAFF). We are in a bull-shed behind a government farm, 11 miles across the Island from the Departmental headquarters and other government offices. Fiona Gell's paper (Section 6) will have given you some background about the Island and the Wildlife Office. Our main legislation is the Wildlife Act 1990. Since I established the Wildlife Office in 1998, we have designated 12 protected areas on land, including a Ramsar site, a National



Sign at the Ramsar Convention Wetland of International Importance at Curragh's

Nature Reserve and a bird sanctuary. These areas cover 3.5% of the Island.

At the UKOTCF conference in Bermuda in 2003, I spoke about the proposed departmental Conservation Strategy. We are still working towards this conservation strategy, and having this would greatly assist us in getting a consistent approach to biodiversity within the Department of Agriculture Fisheries and Forestry. Conservation policies have been ignored or open to challenge without this.

However, as Fiona Gell has explained in her paper, we are making great strides with the marine policy and effectively we do have an agreed marine conservation strategy.

This year, we are aiming to persuade the politicians to agree to the Island being party to the Convention on Biological Diversity in 2010.

The centre of government is the Chief Secretary's Office. The Chief Secretary is the head of Civil Service, and this body has responsibility for corporate governance and external affairs, among other things. So they are also responsible for joined-up working. This is the office we need to enlist in the run-up to the decision about signing up to the Convention on Biological Diversity (CBD).

By accident of the evolution of Manx Government Departments, the environmental responsibilities are scattered through at least four departments. Wildlife conservation is separate from pollution control and river quality monitoring. Manx National Heritage holds biological records and runs a Bird Observatory. Aspects of the marine environment

are a Department of Transport responsibility, as are flooding and watercourse management.



Painted Lady butterfly

These are some of the tools of joined up government from which I plan to select some examples:

- Legislation
- Cross-government committees
- Policies and plans
- Procedures
- IT and GIS
- Internal government partnerships
- Government/Non-Government Organisation partnerships

Legislation

In so far as one can legislate for joined-up-ness, our Wildlife Act says Government Departments have a duty to have regard for the environment "as far as is consistent with the discharge of their functions". We have had to remind departments of this duty at times.

Section 36 of the Wildlife Act 1990 is closely modeled on the UK Wildlife and Countryside Act 1981. I hope we can strengthen this to include a duty to "further biodiversity" for all public bodies and office holders. These words are from the Nature Conservation (Scotland) Act 2004 (which now embodies the CBD article committed to integrating biodiversity into plans, policies and strategies - see Annex II to this paper).

Of course these good words are effective only if there is awareness of this legislation. We have contemplated putting on a course about wildlife legislation for civil servants.

Cross –government committees

In 1995, our Minister, Phil Gawne, established the Sustainability Working Party, on which a senior officer from each department and board was represented. The Chief Secretary’s Office had a key role in co-ordinating and reporting. The aim was to have drawn up a sustainability strategy and build sustainability principles into all Government departments’ work. Sadly, at the end of last year, this was disbanded as it was failing to make progress. It failed largely because there was no mechanism for influencing government policies and because it had no dedicated officer or resources. This group has been replaced by the Climate Change and Energy team (with two full time officers).

Since attending the UKOTCF event in Westminster Hall in January, our Minister has had a new idea on how to improve Departments’ treatment of the environment – to bring in an Environmental Charter.

These are further examples of cross-government committees on the Island:

- Territorial Seas Committee
- Japanese knotweed working group (invasive plant)
- Marine pollution contingency planning committee
- Marine tourism committee.

Policies and plans

Our recently revised development plan is the *Isle of Man Strategic Plan, Towards a Sustainable Island*. We have been successful in strengthening policies for protection of local, national and internationally important species and habitats (see Annex 1).

A critical policy worthy of mention is General Policy 3:

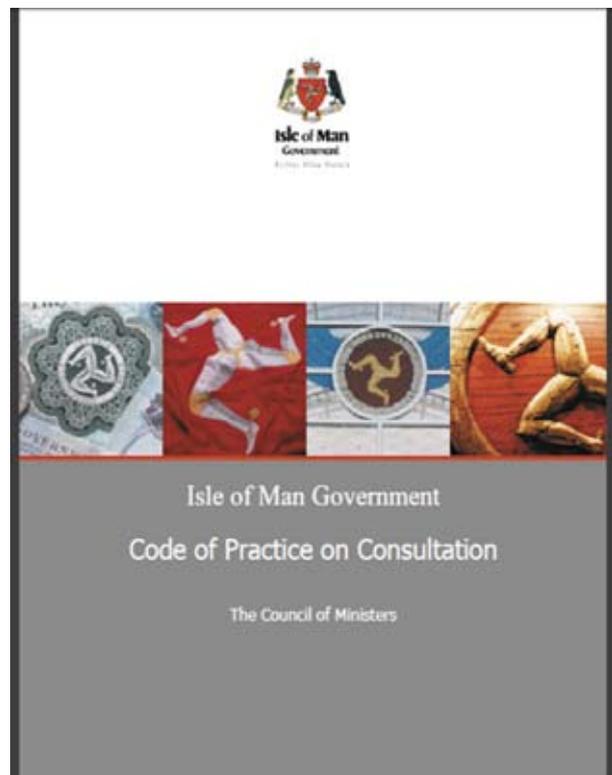
Development will not be permitted outside of those areas which are zoned for development on the appropriate Area Plan with the exception of: (g) development recognised to be of overriding national need in land use planning terms and for which there is no reasonable and acceptable alternative;

I would be interested to hear how other territories’ planning policies deal with “over-riding national need” and when it is invoked to the detriment of the environment.

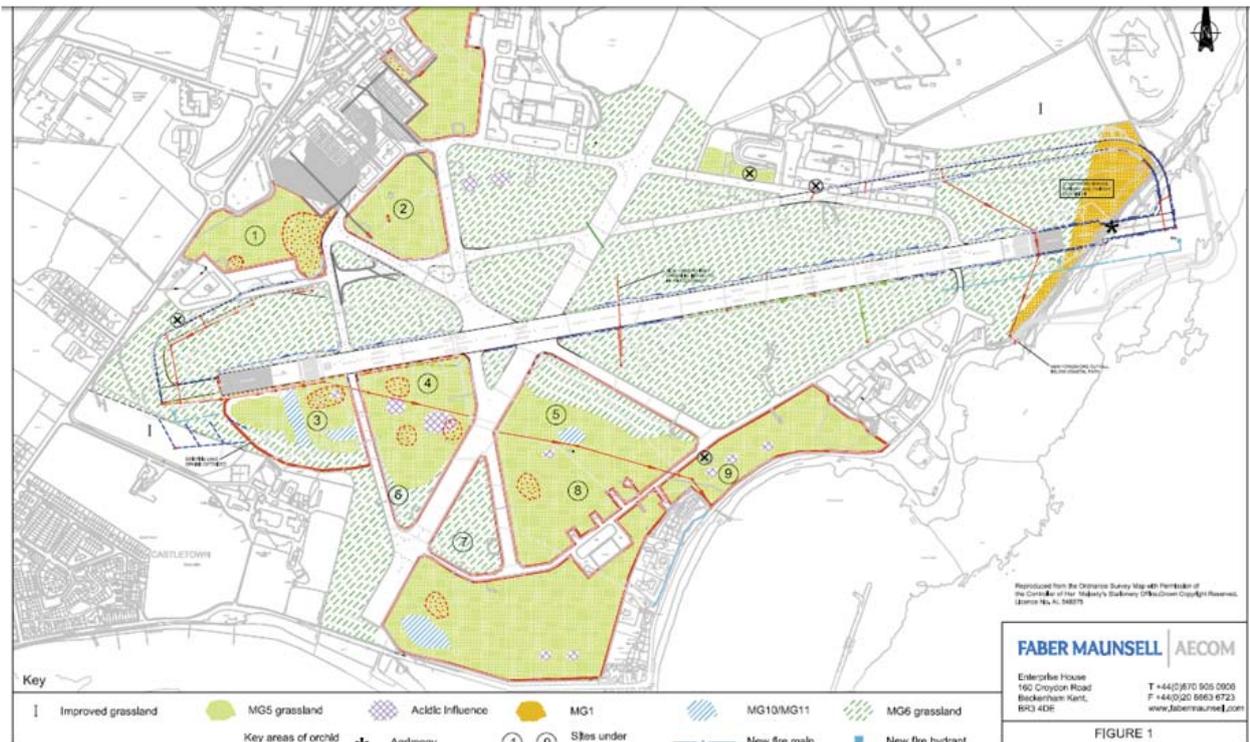
Procedures

Departments have to go to the Treasury to approve their budget for large capital projects. We have established a requirement for Departments to check whether the DAFF Wildlife Office has any comments on the proposals. This does not always mean that we can stop the development, but we have a say in how or where it happens. We need our recommendations to be taken into account at the earliest stage, when there is still a choice of sites. This means that, if there is any impact assessment or survey requirements, they can be budgeted for.

Government has now published a Code of Practice for public consultation (see Annex 4). If only there was a similar code for all internal government consultations.



The requirement for Environmental Impact Assessments (EIAs) is written into the Strategic Plan for certain listed types of development. From a wildlife point of view, it is often the sites not just the type of developments which should decide if an EIA is required. However, the Planning Office may ask for an “appropriate assessment” of the impacts of smaller developments on advice from us. I would be interested to hear how territories embed EIAs in their planning systems.



A planning issue: extension to the main runway at the Isle of Man Airport. The shadings on the map above relate to vegetation classification mapping. Below: an impression from the east of the extended runway.



At the moment we send the digitised boundaries for new protected sites to the departments which may need them. It would be more efficient if our government computer services provider could add the designations layer to everyone's mapping system. Then there will be no excuse for not knowing where protected sites are.

Distribution maps of invasives and scarce species can be an excellent tool to provide the persuasive facts to back up conservation arguments.

As part of the Marine Spatial Planning and Marine Protected Area projects, we need to establish a corporate mapping project for the marine environ-

IT and GIS

Our island-wide corporate mapping project and aerial photography have huge potential in assisting with joining-up government. Every government officer is able to have this on their PCs. In addition, DAFF have developed an integrated biological database on *Recorder* and digitised habitat maps for the whole island (*ARCView*).

An example of a map of upland wetlands produced by the integrated GIS system.



ment. It will be helpful for marine pollution contingency planning too.

How are other territories tackling the challenge of marine mapping with substantially larger territorial waters?

The value of GIS is something covered in another of the conference papers (later in this Section).

Cross departmental partnerships

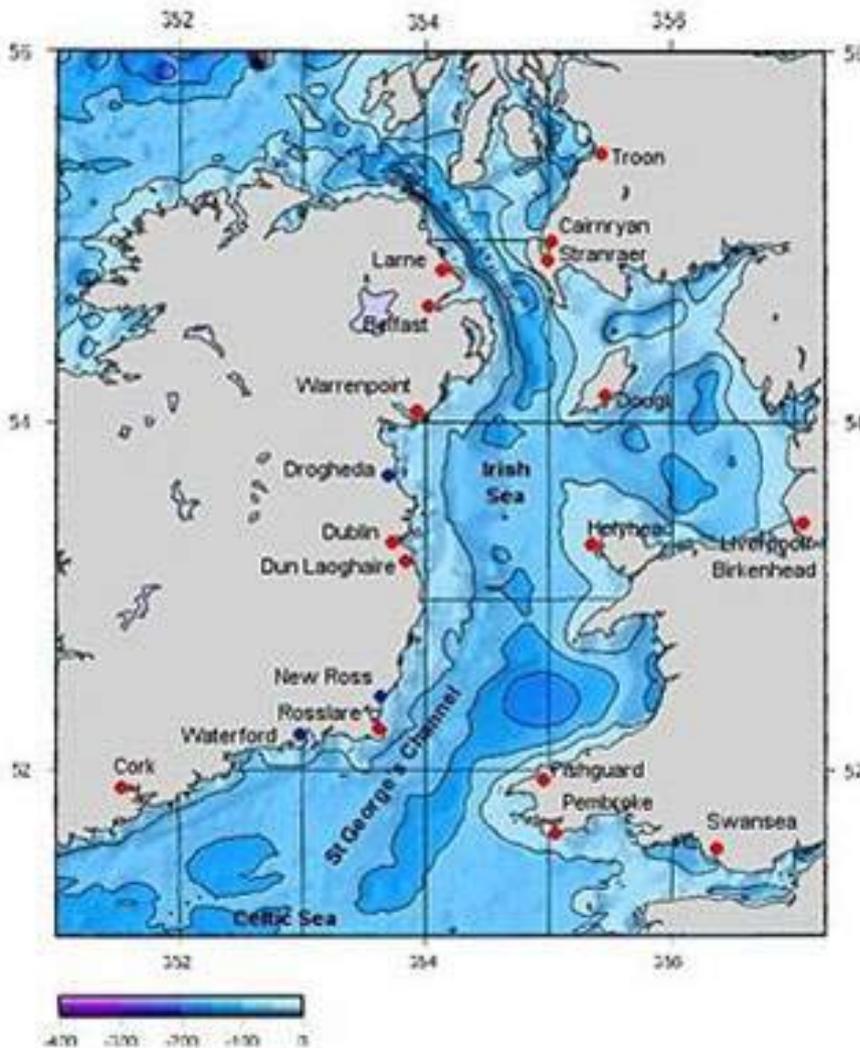
There are several examples of cross-department partnerships, including two particularly important ones: the watercourses officer partnership; and the marine spatial planning project. Others also include NGOs.

I would like to spend a little longer explaining the marine spatial planning project, which involves partnerships within the Isle of Man Government and extends to our neighbours around the Irish Sea.

Marine spatial planning (MSP) is the equivalent to the planning process on land but rather more difficult! It is a relatively new “science” and the UK Marine and Coastal Access Bill which is still being debated, will pave the way for MSP in the UK.

The coincidence of timing of various events and DAFF projects conspired to bring forward the project. The permission for the new runway extension into the sea was agreed. It needed infill material, and use of our own marine aggregates was proposed. There was considerable opposition to this proposal (not least from DAFF). However aggregates prospecting took place. (No extracting has yet been licensed.)

At the same time, we were invited to join an Irish Sea Project (which led to the establishment of the Irish Sea Regional Platform). This was bidding for inter-regional money from the EU, and this included a marine spatial planning work package. We were also developing our marine nature reserve project at this time.



The solution to the potential conflicts in the marine environment will be to develop a marine spatial plan. This requires a partnership of government departments.

DAFF brought together three other departments, the Planning Office of the Department of local Government and the Environment, the Ports and Harbours Division of the Department of Transport (who own the seabed), and Department of Trade and Industry (who deal with minerals and offshore energy).

The partnership agreement is laid out in a Memorandum of Understanding (MOU - see Annex 3). There are terms of reference for the steering group and clear reporting structures up to the Ministerial level. Now we are recruiting for a 3-year project officer, jointly funded by these departments.

The project will deliver a marine spatial planning document and revised legislation, both of which have been fully consulted on. It is an ambitious project and will require considerable management and joined-up support. It will be challenging, as applications to use the sea bed are likely to come in before the process is complete.



Orchids at airport

NGO/Government partnerships

An example of a government/NGO partnership is the *Wildflowers of Mann* project. *Wildflowers of Mann* was established as a result of a proposal from the Department of Tourism and Leisure. It began with the aim of raising awareness of native plants and growing them to enhance our countryside for visitors. Now, it covers rare plant propagation work, seed harvesting from key sites, selling seeds and establishing new species-rich grasslands. It has been running for 10 years. It is a partnership between Departments of Transport, Tourism and Agriculture, the Manx Wildlife Trust, the Manx National Heritage, the Friends of the Earth and the Manx National Farmers Union. This is also the subject of an MOU.

This is a situation when an MOU is helpful, but there are others where it is too weak an instrument. We have had an MOU with an aggregates company and the Manx Birdlife (bird NGO) since we established a worked-out gravel pit as a bird sanctuary. It was intended that we would work together for

the restoration of the gravel pit as a bird reserve. This did not prevent a waste site being proposed by the aggregates company in one corner and getting planning permission. An MOU cannot shore up weak legislation or other conflicting government policies.

We have very important relationships with the many wildlife NGOs. There is a symbiosis between government and NGOs, which needs to be maintained in balance. We can provide financial support for various projects which further conservation and add value to our work, but NGOs still need to be able to feel they can speak out and lobby government.

Some of our partnership funding is for surveys, data collection (whale and dolphin sightings) and research (basking shark tagging). These all provide valuable data to support our Department's land and marine management policies and planning decisions. Some NGOs also undertake the impact assessments and surveys of other Department's capital projects. This can be an uncomfortable location to sit in small places, when - in the virtual absence of outside funding bodies - NGOs are heavily dependent on government for their survival.



Chough

We used to have regular liaison meetings with individual organisations. The Minister recently set up a local Conservation Forum in order to consult NGOs at an early stage of policy development. A forum is easier to consult than a multitude of bodies. DAFF is increasingly open to NGO views and values the government/NGO partnership. We started by asking people to identify their conservation priorities. Becoming signatory to the CBD and designating a marine nature reserve were at the top of the list. We plan to use this as the forum for developing biodiversity strategies and plans should we be successful in getting support for signing the CBD.

Convention on Biological Diversity

The Conference Framework Document for joined-up government highlights the CBD and the important impetus this gives for integration. Meeting the requirements of being a CBD signatory and the Environmental Charter should both assist in our joined-up-ness. The three particular articles laying out what contracting parties shall do are:

- Article 6 (b): integrate biodiversity into sectoral and cross-sectoral plans, programmes and policies;
- Article 14 (1 and 2): introduce environmental impact assessment, to avoid and minimise adverse impacts (with public participation);
- Article 18 (1): promote international technical and scientific co-operation.

I see becoming party to the CBD as a major part of the solution to the Isle of Man's open seams. We are hoping to get agreement on signing up this year. This requires the formalisation of the duty to take account of biodiversity and building its consideration into all government plans, programmes and policies, just the kind of joined-upness we are seeking.

Challenges and obstacles

The challenges and obstacles to joined-upness include:

- Effectively explaining (to politicians and government officers, as well as the public) why biodiversity conservation is important;
- Mismatch of short-term nature of politics with the long term agenda for conservation;
- Identifying key people to influence and key people to take policies forward (key role of our political members and the Chief Secretary's Office);
- Fragmentation of environmental responsibility between departments (both in IOM and UK);
- Conservation sharing the same Department, budget and Minister as powerful economic sectors (agriculture and fisheries);
- Turnover of officers and lack of continuity this creates (in parts of IOM government and UK government, especially Defra). We suffer from frequent changes of politicians responsible for wildlife too (changing every 8-9 months currently).
- Lack of resources, particularly time (leading to poor consultation and weak cross-government

committees). (This has worsened considerably since the conference, with the 25% cut in revenue expected between 2010 and 2011.)

- Climate change and energy issues eclipsing biodiversity work, and the connection not being apparent;
- Economic crisis eclipsing environmental issues.

Conclusions

For successful statutory conservation, it is critical that the right people have the right information and advice at the right time. We need to get conservation information into the decision-making process as early as possible. Biological records need to be comprehensive, up to date, and accessible.



Lesser twayblade, newly found in 2009 after 128 years thought extinct on the Island (with Isle of Man coin as scale)

We need to work towards other government Departments taking responsibility for their impact on biodiversity. It cannot all be done by a small team of ecologists in a bull-shed (although soon to be joined-up with the rest of our Department in a new environmentally-sound office).

Biodiversity safeguards need to be written into legislation, procedures and policies. There needs to be effective and active processes for public involve-

ment and consultation.

We are always looking for examples of established best practice and learning from other places, especially other small places. Our government needs to be aware of the widely accepted best practice elsewhere. This is why coming to UKOTCF conferences is so valuable. So, on this final point, I will thank the Forum for inviting me, in my government capacity, to contribute to the conference.



Some examples of policies, clauses from legislation and partnership documents are annexed below.

Annex 1: from *The Isle of Man Strategic Plan - Towards a sustainable island*

Relevant environmental policies:

General Policy 3:

Development will not be permitted outside of those areas which are zoned for development on the appropriate Area Plan with the exception of:

- (g) development recognised to be of overriding national need in land use planning terms and

for which there is no reasonable and acceptable alternative; and

- (h) buildings or works required for interpretation of the countryside, its wildlife or heritage.

Environment Policy 1:

The countryside and its ecology will be protected for its own sake. For the purposes of this policy, the countryside comprises all land which is outside the settlements (defined in Appendix 3 at A.3.6) or which is not designated for future development on an Area Plan. Development which would adversely affect the countryside will not be permitted unless there is an over-riding national need in land use planning terms which outweighs the requirement to protect these areas and for which there is no reasonable and acceptable alternative.

Environment Policy 3:

Development will not be permitted where it would result in the unacceptable loss of or damage to woodland areas, especially ancient, natural and semi-natural woodlands, which have public amenity or conservation value.

Environment Policy 4:

Development will not be permitted which would adversely affect:

- (a) species and habitats of international importance:
 - (i) protected species of international importance or their habitats; or
 - (ii) proposed or designated Ramsar and Emerald Sites or other internationally important sites.
- (b) species and habitats of national importance:
 - (i) protected species of national importance or their habitats;
 - (ii) proposed or designated National Nature Reserves, or Areas of Special Scientific Interest; or
 - (iii) Marine Nature Reserves; or
 - (iv) National Trust Land.

- (c) species and habitats of local importance such as Wildlife Sites, local nature reserves, priority habitats or species identified in any Manx Biodiversity Action Plan which do not already benefit from statutory protection, Areas of Special Protection and Bird Sanctuaries and landscape features of importance to wild flora and fauna by reason of their continuous nature or function as a corridor between habitats.

Some areas to which this policy applies are identified as Areas of Ecological Importance or Interest on extant Local or Area Plans, but others, whose importance was not evident at the time of the adoption of the relevant Local or Area Plan, are not, particularly where that plan has been in place for many years. In these circumstances, the Department will seek site specific advice from the Department of Agriculture, Fisheries and Forestry if development proposals are brought forward.

Environment Policy 5:

In exceptional circumstances where development is allowed which could adversely affect a site recognised under Environmental Policy 4, conditions will be imposed and/or Planning Agreements sought to:

- (a) minimise disturbance;
- (b) conserve and manage its ecological interest as far as possible; and
- (c) where damage is unavoidable, provide new or replacement habitats so that the loss to the total ecological resource is mitigated.

Environment Policy 7:

Development which would cause demonstrable harm to a watercourse, wetland, pond or dub, and which could not be overcome by mitigation measures will not be permitted. Where development is proposed which would affect a watercourse, planning applications must comply with the following criteria:

- (a) all watercourses in the vicinity of the site must be identified on plans accompanying a planning application and include an adequate risk assessment to demonstrate that works will not cause long term deterioration in water quality;
- (b) details of pollution and alleviation measures must be submitted;
- (c) all engineering works proposed must be phased in an appropriate manner in order to avoid a reduction in water quality in any adjacent watercourse; and
- (d) development will not normally be allowed within 8 metres of any watercourse in order to protect the aquatic and bankside habitats and species.

Environment Policy 12:

New coastal defence works must not have an unacceptable impact on the character, appearance, ecology, archaeology or natural processes of the coastal environment.

Environment Policy 24:

Development which is likely to have a significant effect on the environment will be required:

- i) to be accompanied by an Environmental Impact Assessment in certain cases; and
- ii) to be accompanied by suitable supporting environmental information in all other cases.

Environment Policy 27:

The Department will seek to enhance the natural environment, including sites contaminated by former mine workings, along with other Government Departments, local communities, the private sector and all appropriate agencies in order to ensure the appropriate reclamation, water management, planting of appropriate tree species, the management of special habitats including aquatic habitats and the removal of eyesores.

The full document is available on the following link <http://www.gov.im/lib/docs/dlge/planning/plan/strategicplanfinalversiontoty.pdf>

Annex 2: Extracts from Laws

From *Wildlife Act 1990 (Isle of Man)*

36 Duty to have regard to environment etc.

(1) In regard to any functions of the Department which may affect the physical environment, the Department shall, so far as may be consistent with the proper discharge of such functions, endeavour to secure a reasonable balance between-

- (a) the promotion and maintenance of a stable and efficient agricultural industry; and
- (b) the conservation and enhancement of the natural beauty and amenity of the countryside, the protection of wildlife habitat, and the conservation of flora and fauna and geological or physiographical features of interest.

(2) Without prejudice to subsection (1), in the exercise of any functions which may affect the physical environment, a department, statutory board or local authority shall, so far as may be consistent with the proper discharge of those

functions, have regard to the matters specified in subsection (1)(b).

From *Nature Conservation (Scotland) Act 2004*

Section 1. Duty to further the conservation of biodiversity

(1) It is the duty of every public body and office-holder, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions.

(2) In complying with the duty imposed by subsection (1) a body or office-holder must have regard to—

- (a) any strategy designated under section 2(1), and
- (b) the United Nations Environmental Programme Convention on Biological Diversity of 5 June 1992 as amended from time to time (or any United Nations Convention replacing that Convention).

Found on website

http://www.opsi.gov.uk/legislation/scotland/acts2004/pdf/asp_20040006_en.pdf

Annex 3: Memorandum of Understanding headings

- Shared vision
- Roles of each organisation/party
- Objectives of the MOU
- What each organisation will bring to the MOU
- How often it will be discussed or reviewed.

A Memorandum of Understanding or MOU is a written agreement put in place to establish a clear understanding of how an arrangement will practically function and each party's role and responsibilities.

The MOU allows all involved to concretely see that they are agreeing to the same thing and to be a tangible reference to review should, heaven forbid, any troubles arise during the arrangement.

From <http://www.moutemplates.com>

This website includes a detailed list of aspects to include.

Annex 4: Joining-up the public and government requires good quality consultation.

Isle of Man Government Consultation code: http://www.gov.im/lib/docs/cso/consultations/code_of_practice_on_consultation_200.pdf

A Governor's role in environmental issues in a UK Overseas Territory

Michael Gore (former UKOT Governor; former Council Member of UKOTCF & Chairman of the Wider Caribbean Working Group; Wildlife Photographer)



Gore, M. 2010. A Governor's role in environmental issues in a UK Overseas Territory. pp 343-345 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

Until quite recently, environmental issues took a back seat so far as HMG was concerned. In the 1980s, the new Foreign Secretary, referring to his priorities, spoke of: dealing with the cold war, international obligations, Anglo-American relations, Europe.....“and less important subjects such as the environment.” As recently as the early 1990s, Governors about to be appointed to the Overseas Territories received no briefing on what was required of them with regard to environmental issues. That has to some degree changed largely as a result of efforts made by the UKOTCF in persuading the Foreign and Commonwealth Office that the Overseas Territories contain some of the most diverse and endangered species for which HMG is responsible, and the Governor is expected to take an active role in protecting the environment. But the instructions to Governors are still rather vague: the Governor and his FCO staff are responsible for security and good governance and one of his aims is to “improve the environment” of the Territory for which he is responsible. Rather a general instruction! HMG is, of course, primarily concerned with good governance and avoiding political problems in the territory which could adversely affect the well-being of the local people or create problems for HMG either internally or internationally.

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The UK Overseas Territories comprise a far more diverse range of habitats and species than is found in the United Kingdom itself. Covering a range of habitats from the Antarctic to sub-tropical and temperate climates, the variety is immense. And it really is the responsibility of Her Majesty's Government to ensure that everything is done to conserve and protect all that needs to be protected, both for the world as a whole and in particular for the people and for future generations of the Territories.

That said, Her Majesty's Government is not really able to do a great deal about it. Responsibility for environmental issues in the Overseas Territories has been evolved to the Governments of the individual territories.

The Governors for the Territories are responsible for overall supervision, to ensure good governance by the elected Ministers and representatives but, frankly, there is not really much that a Governor

can do to ensure, for example, that development of a site – a new hotel complex or a housing development – which should be left pristine does not go ahead. He can advise, but it is not in his power to stop it.

Much of course, rightly or wrongly, depends on an individual Governor's interest in conservation, wildlife, flora etc. A Governor who is personally dedicated to the conservation of nature – in the widest sense of the meaning – will inevitably take a closer interest in protecting the environment, and, although he cannot personally decide on issues affecting the environment of the Territory for which he is responsible, he can use his diplomatic skills – and Governors today all come through the ranks of HM Diplomatic Service - to persuade his local elected members and ministers to follow a conservation line. The same is, of course, true of Governors who have other interests – golf, fishing or whatever; naturally they will pursue their inter-

est and will almost certainly try to persuade the local government to act in the best interest of their pastime or hobby. This may not be strictly right, but I think it is inevitable.

Because I had been involved in environmental issues in a number of countries where I served - Malaysia, Korea, Uruguay, The Gambia, Kenya, Malawi, Liberia and the Bahamas - before I came to Cayman as Governor, I was well versed in the problems facing developing countries where a small number of enthusiasts were fighting to preserve their wildlife and natural habitats.

In my spare time, I had written books on the birds of Korea, Uruguay and The Gambia, and a general introduction to the National Parks and Reserves of Kenya. And I had been on the committee of environmental organisations in all these countries. So I came to Cayman with a strong background in the environment. I had visited all the Overseas Territories in the Caribbean, the Falklands and Antarctica, the Channel Islands, Gibraltar and the British Sovereign Bases in Cyprus, and had photographed mainly birds but also all groups of wildlife in each of them.

One of my first sorties into environmental protection in Cayman was to set up *The Governor's Fund for Nature* to raise money primarily to protect habitat. We purchased some building plots at Spotts, just outside Georgetown, and created a small bird sanctuary; I was greatly honoured when I was asked by the management committee if they could name it after me. The *Fund* contributed also to the cost of constructing the path across the mountain through the Mastic Reserve, the Visitor Centre at the Booby Ramsar site on Little Cayman and to several National Trust projects

Of course, all this can reflect against a Governor who is perhaps too keen on a particular subject. I recall, when I was Governor of these Islands, my good friend and long-time Member of the Legislative Assembly, Haig Bodden, speaking in the House in favour of some development project, said of me "The Governor is more interested in the birds than the people of these islands". A little unfair, but he was a politician making a point in a debate and we continued to remain friends. Indeed, it was my pleasure and honour to present him with the badge of a Member of the Most Excellent Order of the British Empire (MBE) shortly before he passed away in 1994.

That aside, a Governor can help the conservation lobby in his Territory. And much has happened in

the past 15 years or so. When I came to Cayman, there was no department responsible for environmental issues. "Environment" came under the Department of Agriculture and Public Works - not subjects which fall comfortably with environmental issues. Anyway, on the occasion of Earth Day 1993, we established the Department of the Environment. This now flourishes, and has flourished for the past 15 years, under the leadership of Gina Ebanks.

I suspect that the situation was not very different in most of the other Overseas Territories in the early 1990s. But today things are rather different, though it is often difficult to persuade the Overseas Territories Governments to focus on environmental issues; it is here that Governors have a major role to play. It is essential that Environmental Impact Assessments are carried out on all new developments to ensure that the development does not have a negative impact on the environment. And, whenever practical, all new construction should be sustainable, using renewable energy and energy-efficient appliances. One way a Governor can have a major impact is to ensure that governments do not ride roughshod over an Environmental Impact Assessment, as has happened in the past.

No Overseas Territory Government wants to be seen to be failing in its responsibility to protect the environment. But there are often many local constraints to be overcome. Not the least of these is finance. In these cash-strapped times, money is difficult to come by and local people are mostly only concerned with their own well-being in the short term. Things, like climate change, preserving an endangered species, establishing a wildlife reserve, are for the future and have no immediate bearing on the life of a local voter. And, as we all know, it is local voters caring about local issues which are of immediate concern to him or her, who politicians listen to - because, if they do not, they will not be re-elected. And this is no different in a small Overseas Territory than as it is in the United Kingdom or indeed any other large, free country. So what does HMG do to help Overseas Territories governments to deal with environmental issues? The British Department for Environment, Food and Rural Affairs (DEFRA) is the lead department in London on environmental issues in the Overseas Territories. And Governors are encouraged to emphasise the importance that Her Majesty's Government attaches to environmental issues in the Overseas Territories. Also, to signal the British Government's commitment to work with the Territories in their efforts to safeguard and protect their

natural environment; and to persuade the political leaders in each of the Territories to focus on the impact of climate change.

This last is a subject which few had focussed on when I retired as Governor in 1995, but today it is one of the most important issues which must be of concern to all the Overseas Territories. Most are low-lying and will (and I mean will, not may) be affected by rising sea-levels as the world temperature starts to rise and glaciers melt. Watching a programme on television the other evening, I was horrified to see a Peruvian guide pointing to a glacier as it is today and then pointing hundreds of feet lower down where he remembered it as a child.

Everyone attending this conference from outside Cayman will already have become aware of the devastation which would result from even a slight rising of the sea level in the Caribbean. It will have been obvious to all that most Caymanians live just a few feet above sea-level; the highest point on Grand Cayman – The Mountain – is just 70 feet high! Another example, even more extreme is the British Indian Ocean Territory, the Chagos Islands. These comprise more than 50 tiny coral islands, which provide an oasis for marine species, including more than 220 species of coral, 1000 species of fish, at least 33 different seabirds. and the largest coral atoll in the world. The Chagos Conservation Trust has pointed out that the archipelago is by far Britain's greatest area of marine biodiversity and has recommended that a conservation area should cover the whole archipelago. We would all support this, but the dry land of the archipelago will almost certainly disappear if the seas around it rise by just a few feet.

Indeed, climate change will have a huge impact on most Overseas Territories. It is probably this subject which will require Governors to become most involved. Living in small communities on idyllic islands, it is difficult for local people to be overly concerned about climate change *per se*, through rising sea-levels and more frequent and more devastating hurricanes may well concentrate minds in some territories. But few are likely to consider reducing their carbon footprints. They look at the damage being done to our planet's climate by the industrial nations and believe that they have little to offer in a way of reducing their input. Governors will, I know, be making the point that everyone must make an effort on this front; to quote Britain's largest supermarket "every little helps"!

Other speakers will be talking about the Overseas

Territories Environment Programme, a joint Foreign and Commonwealth Office and Department for International Development funded programme which was established in 2003 to help the Overseas Territories implement their Environment Charters, signed in 2001, and to fund a range of environmental projects. This programme is promoted by the Governor's office and here, in particular, the Governor can have a direct say in issues affecting the environment

Current funding of OTEP is £1 million per annum, split equally between the FCO and DFID. The Environment Charters were signed in 2001 and comprise a list of commitments by HMG and each of the Overseas Territory Governments to take forward to protect and safeguard the environment of the Overseas Territories. And the implementation of most, if not all, need to be brought up to date to include, in particular, climate change, to which there was little reference when the Charters were drafted in the 1990s. Some of the Territories do not have either the manpower or financial wherewithal to progress with this process and here the Governors have a major role to play, liaising with the Foreign and Commonwealth Office as well as partner organisations, including NGOs, to provide assistance.

I cannot finish without paying tribute to the Cayman Islands National Trust and to similar organisations in the other Territories. The Cayman Trust came into being in 1987 and, before the Department of the Environment was established, was the only voice to be heard supporting the protection of Cayman's natural and historic sites. I can say the same of similar voluntary organisations in the other Territories. During my ten years as Chairman of the Wider Caribbean Group of the UKOTCF, I had many dealings with these organisations in each of the Territories which came under the umbrella of the Wider Caribbean group. They continue to do sterling work, nudging governments to take action on conservation issues which civil servants are not able to do. For anyone who does not know, the Wider Caribbean name arose because it was convenient to include Bermuda in this group and Bermuda is a long way from the Caribbean – but it was convenient!

Well ladies and gentlemen, I hope that what I have said provides an insight into what a Governor can and cannot do in promoting the welfare of the environment in the Territory to which he is appointed. Thank you

Ascension Environmental Information Operations Utility (AEIOU): Integrated Information Management for Joined up Environmental Custodianship

Alan P. Mills & Edsel B. Daniel (consultants)



Mills, A.P. & Daniel, E.B. 2010. Ascension Environmental Information Operations Utility (AEIOU): Integrated Information Management for Joined up Environmental Custodianship. pp 346-354 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

Provision of timely information is key to decision making in resource assessment, environmental monitoring, management and planning, and underpins many of the guiding principles and commitments in the UKOT Environment Charters. Geographical Information Systems (GIS) are an appropriate technology to provide an integrative framework for data from diverse sources and types, and provide querying, analytical and presentational tools. However, GIS need significant start-up investment, organisation and technical knowledge to be successful. This paper shows how, through seed funding from OTEP for a particular application, on-island cooperation and international support, use of GIS technology is not out of reach of UKOT environmental management. Focusing on Ascension Island, but also drawing on experiences in British Virgin Islands, Anguilla and St Helena, it shows the components put in place to make the system function; a structured database, meta-database, user interface, educational webmap browser, support and protocols. As important, it shows how the approach to development (user needs identification, willingness to share information, establishing responsibilities for maintaining data, streamlining fieldwork recording, mapping protocols, multi-level training) helps embed the system in daily work routines. With the correct balance of inputs, GIS can aid not only mapping of single environmental factors (e.g. monitoring seabirds) but also facilitate joined-up management that ensures that the environment is considered closely in strategic planning and development application processes. Also, the paper reviews how AEIOU has evolved since its conception, with changes of staff, new data and potential applications, what lessons have been learned and how a continued debate is needed to keep abreast of the new environmental challenges and newer, more affordable technologies.

Keywords: GIS, UK Overseas Territories, Ascension Island, Information Management, Conservation, Environmental Management, Planning, Education.

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Introduction

Effective environmental management needs to be provided with timely and accurate information at all stages in the process. Good quality information is needed in terms of understanding one's resources

(both their extent and quality), in being able to monitor changes in populations and health, in managing limited resources to conserve and maintain those populations, protecting them by establishing jurisdictions and awareness-raising of environmental assets through education and the planning

process. In so many cases, this information can be spatially located, and geographical analysis aids evaluation and management decision making, so Geographical Information Systems (GIS) make a useful framework for its organisation and access.

Many UK Overseas Territories (UKOTs) make use of GIS in particular projects, and several are building national systems to manage land ownership, planning and infrastructure. There has been some hesitancy to adopt a widescale use of GIS in environmental management, as it is perceived as an expensive add-on (Tomlinson 2003) and technically out of the reach of agencies with stretched human capital (Mills *et al.* 2001). This paper seeks to show how, with planned interventions, the cost can be kept down and GIS can become central to environmental management - and help in joined-up decision-making across all environmental stakeholders and wider civil society. It shows how sharing of data and other resources can bring down costs and spread the burden.

Provision of timely information underpins many aspects of the Environment Charters, which contain a series of guiding principles and then agreed commitments by both the UK and the UKOT concerned. The following examples illustrate how GIS can assist Ascension with adopting these principles and meeting its commitments (Ascension Island Government 2001).

GIS can assist directly with improving the range, quality, and availability of baseline data for natural resources and biodiversity (Ascension's Commitment 7), and indirectly provide information for fora integrating views from government departments, representatives of local industry and commerce, environment and heritage organisations, and the Governor's Office (or Administrator's Office), individual environmental champions and other community representatives (Commitment 1). It can consolidate information for Environmental Impact Assessment and other assessment instruments (Commitment 4). It can provide jurisdiction maps for a protected areas policy and assist in mapping the extent of invasive species (Commitment 2). Information from built and green environment can be placed within the planning process (Commitment 5). Having quantitative and spatial information publicised through educational and other portals (websites, computer applications, newspaper articles) allows both open decision making (Commitment 5 again) and raising of public awareness (Commitment 9). Finally, the

information sets can be used to monitor and evaluate how effectively the Territory is meeting the principles of the Rio Declaration on Environment and Development and working towards meeting International Development Targets on the environment (Commitment 11).

Within the UK commitments, the application of GIS to environmental management in the Territory can also be supported, as the UK can help build capacity by seeding GIS planning and data collection (Commitment 1), build up the institutional capacity to manage information more effectively (Commitment 5) and, through conduits such as this paper at this conference and elsewhere, promote better cooperation and sharing of experience between UKOTs with similar problems and capital (Commitment 6).

GIS

Geographical Information Systems (GIS) provide environments in which to solve spatial problems, such as: determining what exists at some place; indicating where features of a particular place can be found; examining spatial conflicts; looking at changes in conditions and where they have effects. They are designed to capture geographical data from a variety of sources, store them efficiently and allow them to be queried, analysed and presented in several media, and provide the integrative framework within which all these data and tools can be managed effectively (Burrough 1998).

GIS needs five basic components to work properly, and attention needs to be given to all five to make the system functional.

1. Hardware – a platform on which GIS can sit; a suitable computer or network set-up, backup facilities and other peripherals to assist in inputting and outputting information; digitising tablets, scanners, plotters and printers. Global Positioning Systems (GPS) and Personal Digital Assistants (PDA) are also improving mobile GIS and integrating field data more simply.
2. Software – both a stable operating system and the specialist GIS software. There are a number of different types of packages available that suit different levels of usage, sophistication and functionality. They range from free “browsers” such as ArcExplorer, through a range of desktop and professional packages

(Arcview, MapInfo, Manifold, IDRISI, ArcInfo) into Internet Mapping and global systems such as Google Earth and Microsoft Virtual Earth. Specialist software for image processing, integrating survey data and converting GPS data are also available.

3. Data – no GIS can be effective without good quality, timely data and this can come from many sources: aerial photography or satellite images, existing paper maps, fieldwork, sketch maps, verbal reporting or detailed survey. The data should contain attributes: extra descriptive data for each feature which can be qualitative, quantitative and time-related.
4. Application – the GIS should have a specific use defined, rather than being an expensive data repository. A whole body of geographical knowledge, principles and models are available to assist the analysis and modelling of data.
5. People – an oft-neglected part of the equation, but consideration must be given to how people interact with the GIS. As well as expert analyst and GIS practitioners, there are data-inputters, data-owners, users of GIS and its outputs, and GIS trainers, management and support.

To put in place these components takes significant start up investment, a large degree of planning, organisation and good technical knowledge to choose appropriate structures and tools to address the problems. Often the return on investment will not occur for up to ten years or more (Tomlinson 2003). It needs a lot of strategic support from heads of department, and maybe a champion within the Executive or Legislative Council, not just to initialise the process, but to remain supportive throughout the development period.

Often the best approach is to think of stepwise progression; while having a long term vision to integrate all environmental information, focus on a few areas and perhaps have some single issue that you can use as a pilot development. With this, you can put in place the framework. However, do not overload it with applications, so you can test all the procedures, the networking and whether the product can be used. Then, widen the brief to cover a series of issues across all stakeholders; these can be pulled together incrementally and iteratively into the one system. Many GIS applications that environmental stakeholders have are similar, so can be categorised and tackled in generic ways.

From experience, these have been seen as:

1. Mapping existing datasets for visualisation – this is where the only action is to show a series of layers on one map. An example of this might be showing where the proposed and existing protected areas occur.
2. Mapping a single parameter – showing data from a monitoring database where the user has chosen a period of time and wants to view a particular subset of data, and symbolise it according to either category or some quantity. An example of this could be mapping the status (egg, chick, fledgling) of masked booby nests for November 2008.
3. Mapping multiple parameters – this is where you might want to compare a series of data over a chosen period of time. An example of this is to show the number of turtle tracks detected at beaches for each year between 1999 and 2009.
4. Local Area Analysis – this is where users are interested in all the resources, biodiversity and activity in a particular area, and the GIS can be used to “cookie-cut” the relevant information in that area for further visualisation, statistical analysis and output.

GIS in environmental management and on small islands are often developed on a project-by-project basis, but several major problems emerge. First, the consolidation of a lot of information is time consuming. Second, the maintenance of software and hardware for project GIS is expensive and often neglected, leading to no forward planning and an unused system that has archived the project’s findings but is not an active tool. Third, several agencies who have not had projects with GIS components cannot take advantage of the tools and data. And there is no sense of joined-up custodianship of information; that means data maintenance is expensive or ignored, and awareness of what information is available is low. Finally, any new project has to spend a lot of time searching for existing datasets, and results are locked away, fragmented across the Territory’s agencies or simply lost. In many cases duplications can occur and some projects may have to capture data themselves - which is also expensive, time consuming and prone to errors.

This kind of fragmented approach to GIS use is

difficult enough to manage for the largest and best resourced of organisations; conservation groups often have difficulty justifying the start-up expense. Putting start-up expense and fragmentation of data together on small islands, there appears to be a challenge to even start to think about using GIS as a tool, let alone widen the stakeholders and manage an enterprise style GIS.

With the support of seed funding from OTEP, the Ascension Environmental Information Operations Utility (AEIOU) was designed and developed to overcome fragmentary project-driven GIS, and provide an organised framework that supports targeted applications for Ascension Island Government (AIG), in particular the Conservation Department (CD). AIG was able to bring together information from a series of existing projects and invest in adequate software, hardware and training.

AEIOU - Formulation

AEIOU was designed to tackle each of the five major components of GIS listed above. The starting points were determining the applications. Surrounding the whole GIS was the detailing of how it would operate, both technically and within the existing work practices of the users.

Stakeholder collaboration

The key stakeholders identified were the CD, Health Department, Administrator's Office, Operational Services, Environmental Health, Technical Services and Two Boats School.

The Conservation Department, as lead agency, was instrumental in building support for the system amongst these agencies. Spending time with these agencies helped to understand existing work loadings, data-collection and priorities, essential in building suitable GIS to ensure it is not seen as a time consuming and expensive add-on, but integrated within daily working.

Presentations were given to AIG and meetings held with each agency to consider any potential applications, and what current data they collected. From these, fifty seven priority applications were identified, but of these, several could not be realised due to security issues, lack of resources or lack of proper conceptualisation by the stakeholders. Eventually, thirty four of these were created, most could be grouped into one of the four application categories described above.

Once the applications were decided on, the required datasets were identified, including in particular any monitoring databases which needed designing. Ian Fisher (RSPB) had helped AIG with creating a series of databases (not just birds, but hawksbill turtles and plants) which needed only a modicum of adaptation to ensure they were ready for the AEIOU interface (i.e. converting latitude and longitude to UTM coordinates, and creating a series of queries that could consolidate data into GIS-ready form). Several new databases were created to cope with the large quantities of green turtle nesting and land crab data.

A trawl of existing data was conducted on computers in stakeholder agencies, and staff were requested to explain their data collection process and methods. In some cases, piles of forms (paper format) were presented from lever arch files or filing cabinets, or directly from notebooks. These data were examined and, in several cases, transformed into digital GIS-ready format. Although basic principles of GIS data seem simple, many mistakes are made in its storage. It may look OK at first sight, but it may not be useful for performing quantitative summarisation or creating statistics, grouping features of similar types together, or for mapping. A significant part of the AEIOU development is centred on standardising the way data are entered and correctly formatted, and correcting spelling mistakes that routinely occur in spreadsheets.

Once all existing data were collected and catalogued, new datasets were sought. In particular, no complete topographical datasets had been completed, so a tranche of data were digitised from the 1:25 000 Department of Overseas Surveys Map by Geosense Ltd. Quickbird satellite imagery was purchased. From these datasets, several other datasets were derived, including the first comprehensive digitising of the Mexican thorn trees. Some data were collected by CD staff themselves. Although the monitoring of a cat eradication project was drawing to a close, the Conservation Department collected GPS locations of the cat baiting sites and tracked the series of walks they repeated to cover the whole island.

The datasets and Microsoft Access databases were put into the context of working arrangements by designing associated forms that were both practical for field survey routines and similar to the database interfaces for ease of entry. Training was given,

where necessary, in filling in forms in the field, GPS waypoint and track collection and entering data.

Hardware and software

Most GIS desktop application can run satisfactorily on good specification office machines; the need for very expensive workstations has long gone. The AEIOU project coincided with procurement for the Conservation Department generally, so hardware was purchased through AIG funds. A server was also purchased, as there were clear benefits from centralising data: namely distributing it amongst many users, rather than having it stand alone on a single desktop; making updates easier; and reducing duplication, as well as making storage more secure and easier to backup.

AEIOU was developed using ESRI's ArcView GIS 9.2 software. The major software purchase through the OTEP funding was a 3-seat concurrent license. A license manager was installed on the server while ArcView itself was installed on multiple desktops. While more expensive than single-user licenses, it allows software to be distributed across a large number of desktops and, as the name suggests, up to three people can use it at the same time. This meant that the server could supply all the Conservation Department networks and two workstations in the Technical Services Department, down the hallway, and the Environmental Health Department, across Georgetown. This also meant that other copies of ArcView already purchased could be redistributed. By sharing resources, the overall costs of software were kept to a minimum.

Metadatabase

The metadatabase is a central part of the system; metadata (information about data) in AEIOU comes in two forms. First, for each dataset, there is an XML file associated with it. This documents the dataset's descriptive information (abstract, purpose, title, responsibility), geographical information (projection, extent), its digital description (type of file, size) and attributes. Data from all the XMLs are combined into a single Access database, so that complete lists of available data can be given, as well as queries for the most recent data.

The other part of the metadatabase documents products or applications in the interface, and how monitoring databases and data layers interact with this information. Duplication of effort is

minimised, as metadata from the XML are automatically imported. The use of this metadatabase means that the GIS manager on island can add new applications and datasets to the AEIOU interface without coming back to the developers. The metadatabase can also be used by the GIS manager to control which datasets can be seen by general users (to allow separation of sensitive or private datasets from public view).

By establishing metadata in XML format using ArcView ArcCatalog, AIG are conforming closely with International Standards for metadata (ISO 19117). Establishing these during the project means that, with little adaptation, the AEIOU environmental information system can be transformed into an all encompassing territory-wide GIS.

Interfaces

Two interfaces were created: one a desktop system using ArcGIS, and the second a webmapping utility for children and the wider public to access.

The desktop application was built using ArcView, which offers a development environment for customising menus and tools within its standard interface. By creating a new menu and tools within the interface, new users can be guided quickly to the most useful and easier tools, while retaining the functionality of the bought software. A five item menu was created:

1. A management menu allows users to set up how they want to open the system and where to store files that they create.
2. Navigate map – some simple tools to zoom to a particular named place at a user-defined scale or zoom to the extent of the island. Although the wider range of zoom and pan tools are available, this is a useful function for people who do not know the geography of the island very well.
3. An 'Add Files to View' menu allows users to select data from the metadata catalogue and add them to the view. The use of the metadatabase means that users do not have to be concerned with file formats (which often need different handling inside the system). Instead the metadata picks up the file, decides how to add it to the view, and then draws with predetermined symbology and labelling (stored in ready made layer files). This simplifies both the process of adding data to a map and how to interact with it. This menu also allows a placename gazetteer of over 200 places (head-

lands, hills, settlements etc) to be mapped in a hierarchical fashion. You can also quickly remove any data from the map.

4. An Analyse menu allows users to conduct querying and analysis on the data in the view. This splits into two major themes, generic programmes to conduct single parameter mapping and local area analysis (LAA), as described above, but also an interface which allows users to select one of the 35 applications, choose different parameters, thresholds and options from drop-down menus and selections, then map their data very quickly. Simple tools to navigate the user towards such useful functions as recalculating the area of polygons, charting results, summarising data and renaming new layers are also accessed from here.
5. Within this analysis menu, you can also Output Results from your interface to a map layout with title, scale bar, logos, grids and legends, a process which is semi-automated. This means that good quality cartographical products can be achieved simply by non-specialists for inclusion in reports, powerpoints, brochures or posters.

The second portal is the AEIOU web-interface or Educational Webmap Browser, developed using Internet GIS technology (ASPMAP software) for the Two Boats students and teachers, and the general public. This requires a web browser (e.g., Internet Explorer) and offers an interface similar to Google Maps for viewing and querying the AEIOU datasets. This is currently a subset of existing AEIOU layers (e.g. roads, contours, beaches) and new layers generated from monitoring databases to show annual traffic accidents, bird colony numbers, turtle numbers by season, cetaceans sightings, and endemic plants.

The browser also has an archive of photos, taken by students and other individuals of various places on the island which can be maintained and updated by teachers and students. Users need few special skills to learn to use specialised GIS software. The Browser was installed at the Two Boats School and several teachers received training on how to utilise the Browser in their classes. The general public also can access and use the Browser on a computer at the Conservation Department, guided if needs be by the available online help.

Training

Training was conducted at a series of levels, as

certain products needed explanation to particular subgroups of stakeholders. At a basic level, seminars are supremely important to get the public and wider government staff interested in using maps, realising that the AEIOU resource exists, and publicising its potential.

Then a series of stakeholders who had expressed interest in learning about GIS and assisted in designing products were invited to attend both general GIS and ArcView training and specific training in using the AEIOU desktop interface. While the AEIOU can provide many tools for routine work, the project did not want to lose the opportunity to expand GIS knowledge on island and give some technical tips, so general training in GIS was also provided. On a one-on-one basis, and particularly with field staff, training in individual applications was given. This included ensuring field collection techniques were properly followed, GPS usage was satisfactory, data-entry was quality controlled, and standardising the output maps from the AEIOU. In particular, training at the Conservation Department focused on bird-nesting mapping, turtle-nesting counts and endemic plant-mapping, and in Environmental Health on rat baiting counts.

More detailed and extensive training for management and support was given to the GIS Manager (Conservation Officer) and Metadatabase Manager (Natasha Williams) and a couple of others, specifically on how to catalogue new datasets, system backup, the support to the AEIOU interfaces and how to manage the system steerage. Additionally, support training and awareness was given to the IT support for government (currently under contract to the local Cable and Wireless company).

For the AEIOU Educational Webmap Browser, Two Boats teachers, Years 10/11 students and Conservation staff received training. Both teachers and students were able to explore the data layers, and print out their own maps, showing areas of interest. A couple of teachers were given some administration background.

Protocols and Procedures

To clarify how the GIS will operate in a multi-user, multi-data provider environment, protocol and procedural documents were written including aims of the GIS, the terms of reference for any system steerage and management, standards for data handling, metadata, projection, and template documents for Memoranda of Understanding and

working with outside bodies. The scope also exists for protecting sensitive data and charging for data services to external agencies. User manuals for the desktop interface, metadatabase management, and webmap interface and network management were created and run through with relevant stakeholders.

These strands of activities were conducted in parallel and, in many cases, advancement could be made in some areas independent of activity elsewhere. That model is important for the running of the system itself, as it means that a lack of progress in one area does not generally impede other activities or a functioning system.

Approaches

The technical inputs, training and establishment of framework and protocols are not the only elements that make the system operate. As important is the approach to how a GIS is designed and implemented, ensuring a focus on real applications that take into account use of outputs from the GIS in daily workings. Looking for real uses of the GIS, such as the monthly maps of bird monitoring, the annual plant survey, total turtle tracks at each beach year-on-year, all help the users to focus carefully on good quality fieldwork, data entry and output. The GIS management and operation has tried to be integrated within the every-day work programme of the conservation staff.

To feed applications successfully with relevant data, developing the concept of resource sharing has been crucial. Some GIS look for a market or cost-recovery pricing structure on individual datasets between agencies, even intra-governmentally. The approach in Ascension is more bartering: that different agencies can share various datasets and gain other benefits in return. The reason a Road Traffic Accident (RTA) application exists in AEIOU is because the St Helena Police give the Conservation Department a copy of their visitors database to help the Department gauge usage of tourist sites (such as Green Mountain). In return, an RTA database was developed, and the GIS assisted the Police in persuading the Administrator to put up better signage at a dangerous intersection.

A useful by-product of AEIOU, but by no means the main purpose, is a consolidation, documentation and publication of the list of available data. This has been helpful for new projects, and visiting scientists, who can search the catalogue for exist-

ing data and, at the end of the project, integrate their findings with the overall GIS. A Memorandum of Understanding template helps to negotiate the arrangement for data-sharing with external parties. While there are still issues over how data can be exchanged, as AIG get used to being more open with their data, it is another useful step forward in information sharing.

Making these data accessible more widely is helping to raise awareness of the island's geography and environment. It was interesting that residents were fascinated by the historical sites on island, especially the way a 1922 map could be faded in and out over the top of the current topographic map. This matured into more use by the Conservation Department to demonstrate the changing status of creatures. Most successful has been the monthly maps sent round with monthly reports of bird nesting, but the extent and mapping of endemic plants is also conducted annually and maps of turtle nesting have been used in the annual reports. Several researchers have used and extended the databases to explore behaviours and habitats for turtles and land-crabs, and data from AEIOU is regularly used to train students on the University of Exeter's Conservation and Ecology MSc in GIS principles and application. Many applications have not been used, despite encouragement, training and having a strong purpose. The major reason for these failures has been a lack of strategic understanding of the need for space to gather data and how the results can integrate in daily and longer term decision making.

There have been several opportunities for the consultants to revisit the island, and this has given valuable feedback in which elements of the AEIOU have been used, what needed refinement and what could be dropped. The metadatabase has expanded slightly since the first visit, as researchers are developing new datasets, as well as the massive expansion done by Conservation Department's fieldworkers in all the biodiversity databases. These include particularly Jaqui Ellick's turtle database, Ray Benjamin's and Nathan Fowler's bird database, and Stedson Stroud's plant database. The plant database has also been redesigned with a view to integration with Kew's taxonomic database (BRAHMs).

These datasets, integrated by an on-island GIS, can be used by international agencies for summarising the information, but more data collection standardisation across the territories is needed. Martin Hamilton, at RBG Kew, has done much to help

this in plant collection, taxonomy, invasive species identification and habitats. Ways of looking at RSPB's connections to the World Bird Database should be encouraged, and standardising methods for turtle data collection (if you do not want to subscribe the expensive WIDECASST network) could continue, as long as local needs for data are respected.

Ascension can also take advantage of new initiatives, and ensure data are made available to project participants and any new data integrated with AEIOU. Most recently, the EU South Atlantic Invasive Species project has started to develop an incredible resource for Ascension, St Helena and the Falkland Islands in comprehensively mapping the distribution of plant species on a 1-km grid basis. Although this may sound a coarse scale, it gives a fantastic spatial pattern of endemic, native and invasive species. It is hoped the data can be integrated with AEIOU, continuing to apply the same principles that guided the original AEIOU project: that a set of data created for a particular purpose may have much wider application.

AEIOU is not only an environmental system, but is also available to the Technical Services Department, Environmental Health Services, and the Ports Authority (part of the Operational Services Department) have access to marine maps. The AEIOU data and interface should be giving Ascension a good forum for encouraging discussion.

The output maps are helping stakeholders demonstrate their work and environmental monitoring, but the potential of the system for more strategic planning is under-utilised at present. One application used was to determine some areas of land that could be fenced off as a donkey reserve; with measurements of area and perimeter (for fencing lengths) given. The initiative was dismissed but the GIS was useful in putting forward the proposal.

Experience and the Future

Ascension is not the only UKOT which has used this model, but it is the most developed towards conservation efforts.

The Anguilla Coastal Resource Assessment, Monitoring and Management (ACRAMAM) system (Erni *et al.* 2006) was more geared towards assessment of marine resource: coral reef, seagrass and soft coral extents. Planning was heavily involved

there in management and use of the system for offshore resource assessment.

In St Helena, the Legal, Lands and Planning Department (LLPD) were the central coordinators and, although conservation and natural resources are highly thought of, the St Helena Environmental Information System (SHEIS) has always been seen as a prototype for a wider national GIS, which is now being built by LLPD, despite refusal to fund from FCO and DFID. SHEIS is the best developed of these systems because of the enthusiasm and dynamism of its central coordinating team in Len Coleman, Ayla Phillips and high profile management by Gavin George. AEIOU is a much smaller system and their achievements on Ascension are more modest. But continued commitment by the Conservation Department staff over several years in all aspects of information management is producing a valuable archive of data, and good products. And the aspects of AEIOU, which may be under-utilised at the moment, are securely stored, structured and available if future conservation management and research moves in new directions.

This is not the only model. In the Cayman Islands, BVI and Bermuda, GIS has been strongly driven from the cadastre and planning regimes. The establishment of NGIS units (or their equivalents) gives the basic framework so that other, less intensive, applications (such as those in the environmental realm) have an easier route into services, but often on a cost-recovery basis. Smaller, less wealthy territories cannot necessarily operate on this model, and need to look at a more bartering, sharing form of cooperation to make GIS more inclusive and diversely applied.

In Montserrat, they also have an enthusiastic GIS manager, Lavern Rogers-Ryan, and several GIS projects in Conservation and Planning benefit from using GIS. Durrell Wildlife Conservation Trust, with RBG Gardens Kew and RSPB, among others, have been researching the biodiversity of the Centre Hills. Some progress has been made to make similarly styled databases that can link in with GIS for mapping monitoring trends. However, the development work needed for the over-arching framework and better conduits for distributing outputs has not had the on-island stakeholder support or the seed-funding which has been so useful in other cases. The Falkland Islands Government and Falklands Conservation are also taking the first tentative steps to unify information management for environmental management and planning.

In all these cases, although the five major components of data, software, hardware, people and applications remain the same, the method of organisation and the applications can vary in degree and range. The crucial factors are to be sensitive to the capacity of the territory stakeholders, and be appropriate to their immediate and future needs for information. Staff have changed in the period since implementation, and there has been some shifting of work priorities, most notably in the adaptation of the plants database to be more inclusive. But the data archive, documentation and wider awareness of GIS should help sustain its use for many years.

Conclusions

Ascension's AEIOU is by no means perfect and, for people who do not use GIS regularly, there is still a high level of awareness that needs to be kept alive - awareness that can drop if the system is not used and refresher training not given. However, this is no different from so many other skills, like chainsaw management, turtle DNA sampling, or plant management. And there are certain areas of AIG decision-making that ignores its existence, particularly in planning. For example, the recent proposal for a power station to have wind turbines would have benefited from local area analysis, documenting whether there were impacts on local bird and turtle nesting sites.

As important, it shows how the approach to development (user needs identification, willingness to share information, establishing responsibilities for maintaining data, streamlining fieldwork recording, mapping protocols, multi-level training) helps embed the system in daily working. There is a danger that GIS can be perceived as an expensive add-on which increases the pressure from an already difficult and diverse workload, and so gets ignored. Also, there is pressure on the central coordination to manage the system, and tools which minimise this effort are more effective. Having identifiable outputs in a set timetable also assists. In Ascension's case, the management is kept at a minimum and the major investment is in data collection and entry: tasks which were already essential in the work routine.

With the correct balance of inputs, GIS can aid not only mapping of single environmental factors (e.g. monitoring seabirds) but also facilitate joined-up

management that ensures that the environment is considered closely in strategic planning and development application processes.

Many lessons have been learnt. Some elements of AEIOU, despite the sensitivity, have proved too complicated or onerous for the small staff. And the level of outside stakeholder assistance has waned after each consultant input due to "other priorities". To sustain the system in the widest sense, proper steering is needed, both at the user/technical level and at a higher level within government. Both groups can define what the GIS should be used for and where to allocate resources within the existing procedures. And external partners, such as RSPB, can continue to integrate their own developments in information gathering and management with the wider GIS framework provided by AEIOU.

GIS in Ascension has not yet satisfied all the relevant commitments under the Environment Charter, nor is joined-up management using GIS routinely. But this is a long-term project, like any conservation effort, and needs to be incrementally and iteratively installed. It also needs a lot of patience and sustained commitment by both the local and international stakeholders. But already, AEIOU has shown that GIS can be used efficiently on these territories, provides an organised archive of valuable environmental and geographical analysis and a framework on which future information can be hung.

References

- Ascension Island Government 2001. *Environmental Charter; Ascension Island*. <http://www.ukotcf.org/pdf/charters/ascension.pdf>
- Burrough, P.A. 1998. *Principles of Geographic Information Systems*. Oxford University Press, 356pp.
- Erni, S., Francis, N., Mills, A.P., Daniel, E.B., Hodge, K. 2006. Anguilla Coastal Resource Assessment, Monitoring and Management Project (ACRAMAM). *3rd URISA Caribbean GIS conference, Bahamas, November 2006* (CD).
- Mills, A.P., Odutayo, M., Norris, R., & Lettsome, B. 2001. Sustainable Coastal Zone Information Management In Small Island Developing States - The Experiences Of The British Virgin Islands. *URISA First Caribbean GIS Conference, September 2001, Montego Bay Jamaica* (no pagination).
- Tomlinson, R. 2003. *Thinking about GIS: Geographic Information System Planning for Managers*. ESRI Press: Redlands, USA. 283pp.

Mechanisms for information/data sharing cross-Territory: UKOTCF database

Mike Pienkowski (UKOTCF Chairman)



Pienkowski, M. 2010. Mechanisms for information/data sharing cross-Territory: UKOTCF database. pp 355-357 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The various elements of the UKOTCF web-site and its integrated databases are outlined, and recent developments and some opportunities noted.

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Background to the presentation

Some talks are doomed never to happen.

As anyone who has organised a major conference will know well, it is very difficult for a conference organiser also to present a major presentation. Accordingly, the core conference organising team had avoided this in planning, although they did take on the co-ordination of some sessions. It had been planned originally that a colleague, not involved in the conference organisation, would give this presentation on the UKOTCF website and its expanded capabilities. Furthermore, he would have based in, in part, on interactions that he would have had with participants during the earlier parts of this conference. This was not to be, because our colleague had an accident just before the conference. I am pleased to say that a full recovery is expected, but not in time for him to attend the conference.

Frankly, the rest of our team have been too stretched to prepare a formal talk, because they are already working up to 20-hour days running the conference - again something that will be familiar to others who have run major conferences. So, our next plan was to give you a live demonstration of a few aspects, especially new ones, of the web-site; after all, that is how web-sites are best introduced. However, a short while ago, it turned out that our projection computer has stopped communicating with the internet - so that's off too.

So, with many apologies and against my better judgement, I am going to give a short presentation, after all. In this, I will try to outline the UKOTCF website, recent changes and others that we are planning. I have little doubt that, for the reasons

explained above concerning lack of preparation, it will be one of the worst talks in the conference (even though outsiders seem to rate our website pretty highly), but at least the talk will be short! We will try to fill it out in the proceedings.

www.ukotcf.org

One could view many websites, including ours, as having a range of functions. These include:

1. supplying information that changes only slowly, needing occasional up-dating;
2. drawing attention to announcements, news etc - which tends to be topical;
3. providing the opportunity to interact with colleagues;
4. allowing systematic searching for information on a particular topic whenever the information may have been lodged in the database.

This is not an exclusive list. Furthermore, often the same piece of information needs to be accessible in several of the above forms - initially as a topical announcement, possibly for further discussion, and certainly to be able in the long term to answer queries. We try progressively to improve the functionality of our already well used web-site to meet more of these needs, as resources allow.

In these changes, we have been both hindered by the changes in the internet service provider business, and encouraged to make improvements, while addressing these problems.

We have found that small internet service providers have tended to be the best at both hosting our site and providing the facilities which we need to run it. Unfortunately, the industry has been dominated

by take-overs resulting in ever larger companies, clearly interested in volume, rather than quality of service. The excellent small company which we originally used has been subject to four successive take-overs in the last 10 years. By two years ago, some crucial aspects of the system were effectively non-functional. We tried initially a solution using third-party technical intervention, but this was not satisfactory. Therefore, we decided to migrate our web-site to a new provider and re-write large parts of the underlying software to make this compatible with a better service. In doing this, we were constrained by:

- the need to keep the system available to users while the transfer and replacement occurred progressively; ideally the users should not even notice the change, except where there were enhancements;
- the availability of funding for those programming aspects that we needed to pay for
- the volunteer time availability of key UKOTCF personnel to guide the programmers.

We are very pleased to report that, by the time that the Proceedings are published, the transfer and reprogramming will be near completion. One relatively small element remains on the old server (accessible but not updateable) simply because we want to make some basic functional design improvements before implementing at some point in 2010.

In updating the website, we have deliberately avoided the dunning-down which has plagued so many websites lately, sadly including those of some government departments. One of these (which had better remain nameless) has filled its site, and particularly its home-page with ephemeral material at the cost of being able to access important reference material - some of which has actually been removed from the site altogether. It is not alone.

Although, to meet popular demand, we have added to the www.ukotcf.org home-page recent announcements (under “What’s New”) and, more recently, more general Recent News items, we have retained a brief paragraph about UKOTCF, a link to the OTEP pages (which UKOTCF hosts, by agreement with DFID and FCO) and - most crucially - a menu linking to the rest of the site. The first few, and several other main menu items fall into the category of reference material, which changes relatively slowly. These menu items include:

- UKOT Friends (the individual subscribers);
- About UKOTCF;

- The Territories;
- Environment Charters (including background, the Charters themselves; examples of strategies for implementation and their development; reviews of progress in implementation; etc);
- Member Organisations and Other Links (the latter being a current expansion);
- Contact Us.

Another group of main menu items relate to subjects which are initially topical but become reference items. These include:

- Conferences (which link initially to announcements and booking details, and later to reports and proceedings);
- Forum News (current and back issues; we are aiming to include earlier issues eventually);
- Annual Reports;
- Publications (there are a range of items that UKOTCF itself has published or made available on-line for others, such as a range of Management Plans; many are listed here; some others require a database search - see below);
- Announcements (this is where old What’s New items can be tracked down).

The Discussions main menu item links to discussion groups, aimed primarily at young people but open to all. Anyone can read the discussion but, to contribute, one needs to register through a simple procedure explained on the site. Some of the young people involved have established also linked social media sites, which are also linked from the discussions.

This Discussions section is one of a 3-part development relating to environmental education across the Territories, and resulting directly from a demand from participants in the Jersey Conference 2006. This generated a project proposal which received funding from OTEP.

The second of these three parts is also already active, a database of environmental education resources (see the notes on the UKOTCF Database below).

The third part consists of a “virtual tour” around the Territories. This is to meet the expressed needs both for people in one Territory to know more about natural and cultural heritage and environmental issues in others, and people in UK (and elsewhere) to know more about all. This is in progress (and will be completed by voluntary effort). At present, the pilot (or computer people

would probably call it the “beta-version)” for one territory is available at www.ukotcf.org/1_vTours/tourSelect.cfm. Although this appears to allow one to select any Territory, only the TCI pilot is available at present. Over coming months more will be added, the system checked, and a more accessible link will be added.

The UKOTCF Database is the main menu item which links to the database modules which allow structured searches. At present, there are the following modules, all but one of which have recently been structurally improved and for which data-entry continues:

- Environmental Education (see above; this means that teachers do not have to re-invent the wheel if they can find something here which can be modified for use in their Territory);
- Projects (which allows for project tracking at various stages from an idea looking for partners or funding, to reporting after completion; at present it is used mainly for projects from the funded stage onwards);
- Sites & Topics (allowing location of both site-specific information and of common topics across sites);
- Conservation Priorities (based originally on the views from Territories preceding the Environment Charters and, in some cases, updated around the time of the Charters, this module is the next - and last - to rewrite allowing further updating);
- General Information (anything that does not fit into the other existing modules).

There was previously, a Funding Sources module, but UKOTCF was never able to secure the resources to populate this. Such funding has now been supplied to JNCC, and UKOTCF has made this module inactive at present, to avoid confusion.

The final item on the main Menu to mention is the newly implemented Search facility. This is designed to search the “static” pages of the website (i.e. those which are not part of the UKOTCF Database described in the immediately preceding paragraphs). This search facility is, by definition, less structured than a search within the Database, but may be complementary to it.

As mentioned earlier, the OTEP pages are hosted on the UKOTCF website. In fact, although some of these pages are static, they use other aspects of the UKOTCF site, including the Announcements section to publicise the call for bids, and the Database to keep details of successful projects and record their outputs.

In this context, it is worth repeating the request to those running OTEP (and other projects) to make electronic copies of outputs (or links to these) available to UKOTCF. This will allow the OTEP pages to reflect more fully the productivity of the Programme, and also make results available more widely.

We should note also that the UKOTCF Database was a pioneer in the field of allowing wide input (in this case from the Territories, UKOTCF Member Organisations and others) of their material, with UKOTCF having a moderator role. With personnel turnover in many organisations, this facility is used less than it was, but we would welcome an increase in this. Please contact m@pienkowski.org or cquick@ukotcf.org if you wish to explore this.

UKOTCF will continue to expand both database modules and other aspects of the website as demand and resources indicate. The feedback at this conference and other situations is welcome.

The website and its contents are the result of work by a wide network of persons in UKOTCF and its Member and Associate organisations and other partners. For recent developments, I would like to acknowledge John Wheeler (web-designer), Ann Pienkowski (for Environmental Education across Territories) and Catherine Quick (many aspects).

Example page from pilot Virtual Tour

Linking with other (non-UK) territories - Introduction

Colin Hindmarch (UKOTCF)



Hindmarch, C. 2010. Linking with other (non-UK) territories - Introduction. p 358 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

As well as promoting and facilitating stronger links between the UKOTs, and between the Territories and the UK, UKOTCF has long sought to encourage the development of wider networks. A particular focus has been the “overseas entities” (mostly small islands, like the UKOTs) of European Union (EU) Member States other than the UK, and conservation co-ordinating bodies concerned with these. Such entities and co-ordinating bodies have, for example, often been represented at the conferences that UKOTCF has organised on a roughly 3-yearly basis.

This has been productive, both in sharing experience and in influencing European Union institutions in favour of environmental conservation in overseas entities of EU Member States. Much of this influencing has been achieved via the linking of UKOTCF, the Dutch Caribbean Nature Association (DCNA), French partners (linked by the French National Committee of IUCN) and others in the Bioverseas grouping. Amongst its other achievements, Bioverseas originally put to the European Commission the idea of support for the involvement of overseas entities in a voluntary version of the European Union’s Natura 2000 initiative; this is currently being pursued by the Commission as the BEST initiative.

A current collaborative initiative funded by the European Commission is NET-BIOME, a project to gather information on existing biodiversity research in tropical and sub-tropical overseas entities of EU Member States, and to help focus and encourage resourcing of future efforts in this area. The project broke new ground in being the first to embrace both Outermost Regions (overseas entities which are part of the EU Member State) and Overseas Countries and Territories (such as UKOTs). With such a range of cultures and previous approaches, there have been many challenges to overcome. In the following paper, some of the elements of NET-BIOME will be addressed in the context of looking to future developments.

Colin Hindmarch (UKOTCF), colinhindmarch@talktalk.net

Linking with other territories - NET-BIOME: Perspective from the Canary Islands

Marimar G. Villagarcia (Instituto Canario de Ciencias Marinas, Canary Islands, Spain)



(Photo: Ann Pienkowski)

Villagarcia, M.G. 2010. Linking with other territories - NET-BIOME: Perspective from the Canary Islands. pp 359-364 in *Making the Right Connections: a conference on conservation in UK Overseas Territories, Crown Dependencies and other small island communities, Grand Cayman 30th May to 5th June 2009* (ed. by M. Pienkowski, O. Cheesman, C. Quick & A. Pienkowski). UK Overseas Territories Conservation Forum, www.ukotcf.org

The EU approved in 2007 the ERA-NET project NET-BIOME, the only project in the programme relating to EU overseas entities, embracing most of the tropical and subtropical regions and territories of EU Member States. This initiative will provide the grounds for future collaborations between the partners, and with third parties. Currently, the project is mapping research activities, using a questionnaire addressed to organisations and teams involved in biodiversity projects to support sustainable development in these areas. The project is also collating information on biodiversity policy in the relevant regions and territories, and on how biodiversity work is funded. All this information will go into a database, which will allow the production of regional inventories and various reports; they will be the basis for developing joint strategies. Some expected outcomes are specific proposals for future collaboration, and the suggestion of a funding call for research bids to fill the gaps detected in the issue of tropical and subtropical biodiversity. A permanent forum to discuss tropical and subtropical biodiversity is also foreseen.

Some information on, and views from, the Canary Islands on the opportunities that the project has created are presented. Further information from all the relevant UK Territories is requested.

Marimar G. Villagarcia, Instituto Canario de Ciencias Marinas (ICCM), Regional Government of the Canary Islands, Spain. Marimar@iccm.rcanaria.es

NET-BIOME stands for: **NET**working tropical and subtropical **B**iodiversity research in the **OuterMost** regions and territories of **E**urope in support of sustainable development. It is contract no. 51872 in the ERA-NET initiative of the European Commission Framework VI Programme. It lasts for four years (March 2007 – February 2011). Its website is www.netbiome.org.

ERA-NET

European Research Area (ERA) comprises three concepts:

- creation of an “internal market“ in research (the free movement of knowledge, researchers

and technology)

- restructuring of European research (to improve the coordination of national research policies and activities)
- development of a European research policy (taking into account other national and EU policies).

(Those in Overseas Countries and Territories (OCTs) - including UKOTs - should remember that the Outermost Regions (ORs) are actually part of the European Union, and so EU policies apply directly to ORs.)

For some context, it is worth noting that coordination and integration of public research in the ERA operates at several levels:

- Political Level
 - Open methods of coordination
 - Mapping, references, etc.
 - Legislation
- Programme Level
 - ERA-NET
- Project Level
 - Framework VII Programme (FP7), or other funding schemes

Thus, ERA-NET:

1. Operates at the programme level linking policy and research projects;
2. Collects partner information on the chosen issue to facilitate collaboration;
3. Compares results, searching for joint research opportunities;
4. Identifies common priorities to suggest future EU calls or other alternatives.

In other words, the support from the European Commission under ERA-NET does not fund projects directly, but supports programme co-ordination - which should facilitate project funding.

ERA-NET project NET-BIOME

The Objective is to build a partnership between most ORs and OCTs of European Union Member States, for applied research on tropical and

subtropical biodiversity in support of sustainable development.

It recognises the need for coordination between the ORs and OCTs, and within a regional scope. It is the only ERA-NET project that is exclusively regional.

The NET-BIOME Partners include:

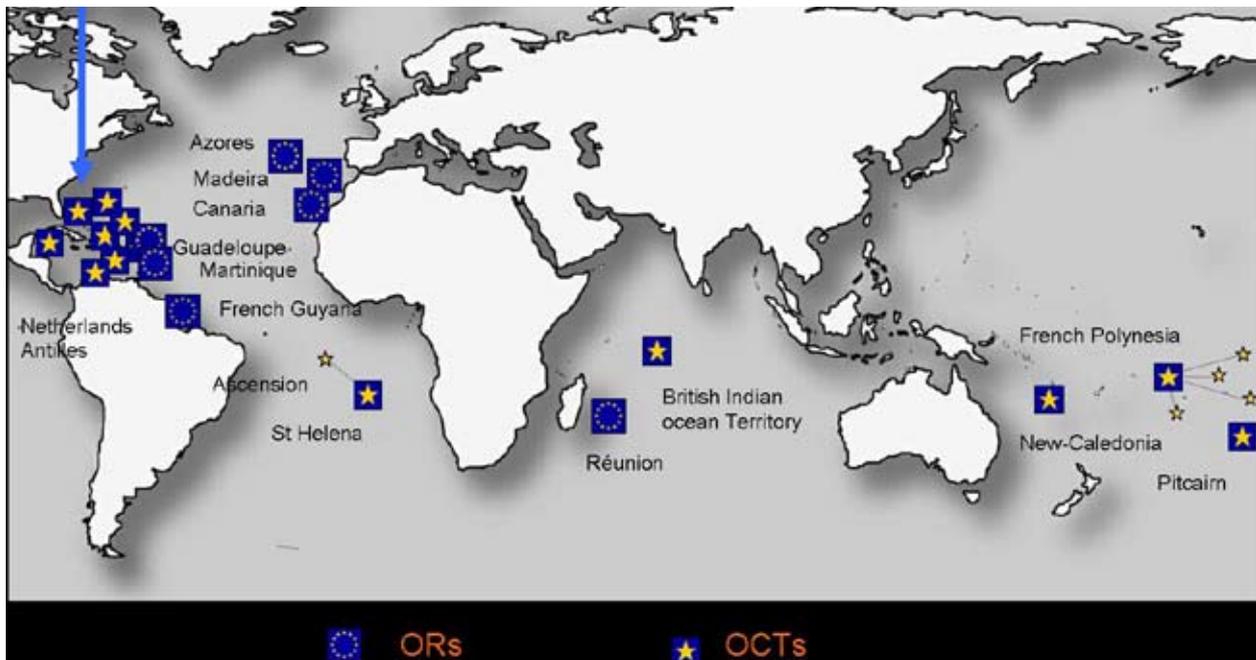
In the western Atlantic Ocean: the Netherlands Antilles, Guadeloupe, Martinique, French Guyane;

In the eastern Atlantic Ocean: Azores, Madeira, Canary Islands;

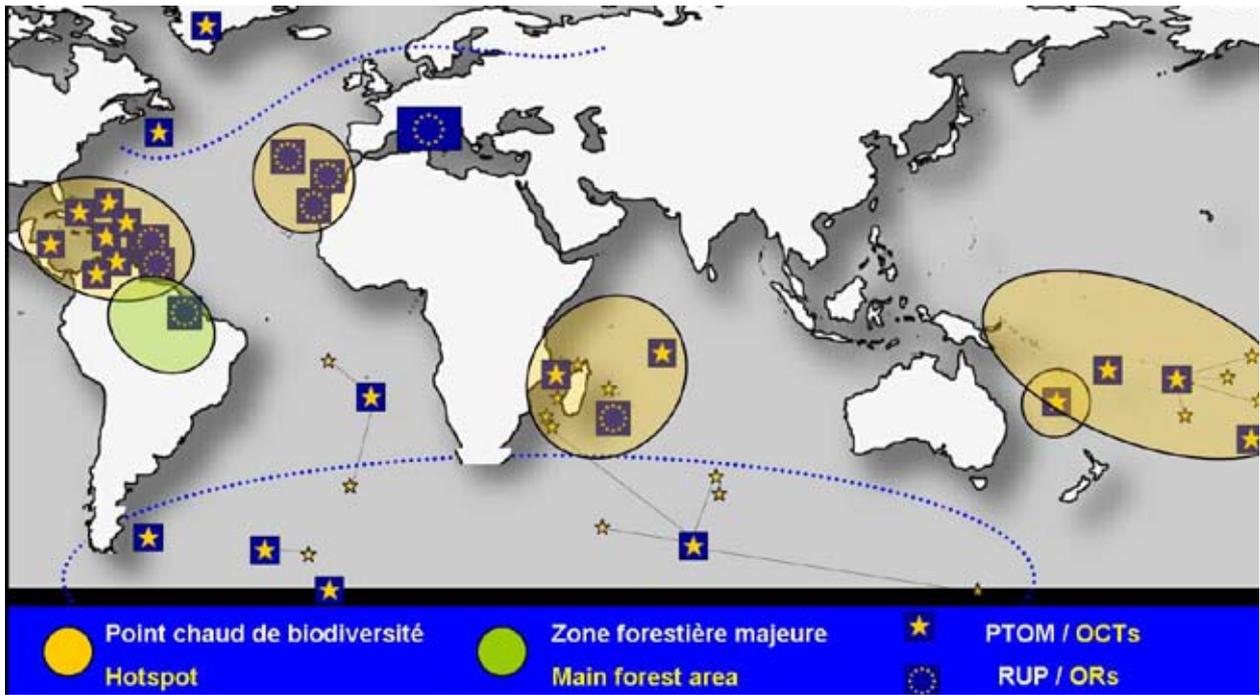
In the Pacific Ocean: New Caledonia, French Polynesia;

In the Indian Ocean: Reunion Island;

and, in several Oceans: UKOTCF acting as a linkage to some of the UK Overseas Territories (Anguilla, Turks & Caicos Islands, British Virgin Islands, Cayman Islands, Montserrat, Ascension Island, St Helena, British Indian Ocean Territory, Pitcairn Islands).



The Outermost Regions and Overseas Countries and Territories within the scope of the tropical and sub-tropical project. The arrow points to the five Caribbean UKOTs, whose names could not be fitted into the illustration: Anguilla, British Virgin Islands, Cayman Islands, Montserrat, Turks & Caicos Islands. Note that: Bermuda opts not to be classified as an OCT; Gibraltar is within the EU but is not an OR; Cyprus Sovereign Base Areas is not within the EU but matches its laws to the Republic of Cyprus which is in the EU. There are also some complications with other OCTs of other Member States.



ORs and OCTs of Europe: a great regional responsibility

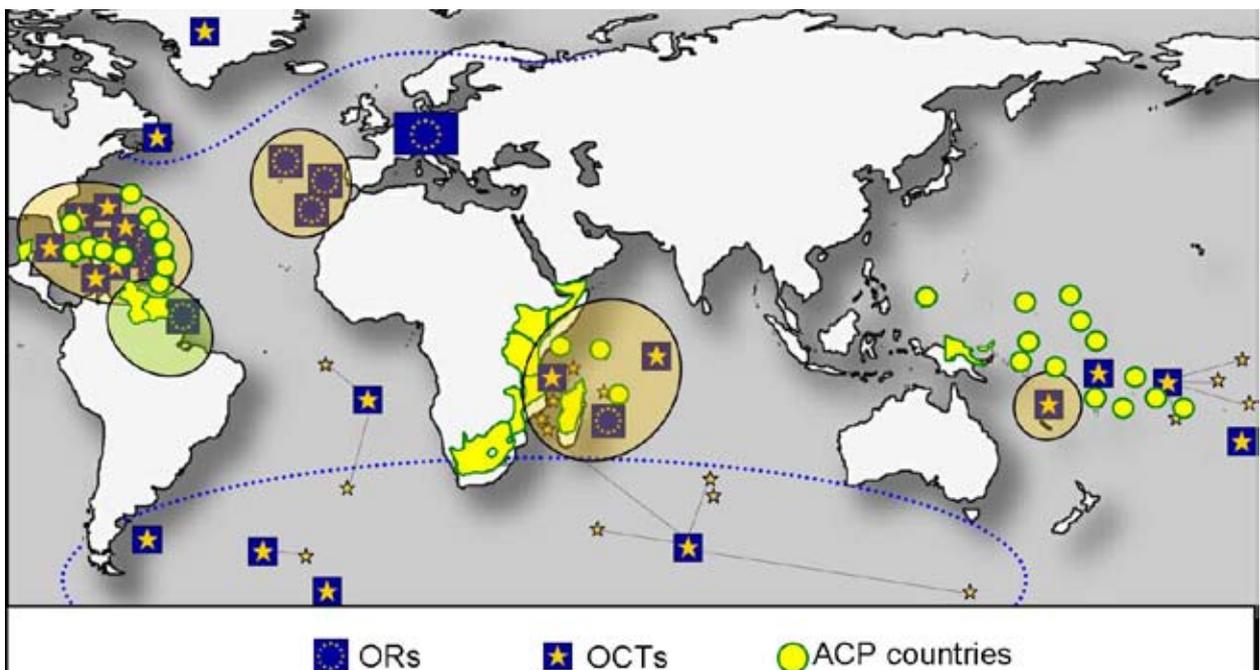
The ORs and OCTs are exceptionally rich in biodiversity. As one illustration (above), they are located in or adjacent to biodiversity hotspots and (shown by the dotted line) the biologically rich area of the southern oceans.

They are mainly islands, very fragile environmentally and threatened by climate change, invasive species, major natural disasters, human activities, etc (as we have seen earlier in this conference).

This represents a significant part of the world's

natural heritage. It also has considerable potential for the economic, social and cultural development of our regions and territories.

It is worth noting also the considerable potential for regional co-operation. The map below adds the ACP countries in the same regions as the ORs and OCTs within the scope of NET-BIOME. ACP (African, Caribbean, Pacific) countries are essentially those which formerly had constitutional links with EU Member States, and for which the EU has programmes of support, with some similarities to those for OCTs.



NET-BIOME activities

NET-BIOME aims to:

1. Link tropical and subtropical biodiversity policy plans to promote future collaborative projects;
2. Collect partner information into a database on tropical and subtropical biodiversity to support sustainable development;
3. Make an inventory including reports for each partner, extracting information from the database and comparing results to reach jointly needed strategies;
4. Agree common priorities to choose for a future EU call, and create a permanent forum.

The main approaches to implementation are:

1. To collate information on each partner's research:
 - Who, where, in what and how is funded to carry out biodiversity research in your OR/OCT?
 - Do you cooperate with other regions, countries or territories?
 - What gaps do you think that need to be filled in biodiversity research in your OR/OCT?
 - What facilities, infrastructures, human resources are available at each OR/OCT?

Questionnaires have been sent to different entities, to collect information on biodiversity research at organisation, team and project levels; I hope you have received it.

2. To know each partner's policy for funding biodiversity research locally:
 - Does your OR/OCT have a specific policy for biodiversity? If not, how is biodiversity funded locally?
 - What are the main barriers for cooperation? Which prioritised research areas are funded locally? Identification of good practices. Potential for interdisciplinary work?

Questionnaires sent to policy makers in charge of environment for each partner OR/OCT.

3. Mixing policies and objectives in a jointly developed strategy, leading to the development of joint activities (facilities, infrastructures, human experts, courses, EU call for projects, forum)

4. Develop synergies with the EU. (This is part of Work Package 6, being co-ordinated by UKOTCF, and has already involved visits to Brussels to meet four different Directorates-General to present the project. The "kick-off" meeting to establish most of the programme for this WP6 is 16-19 June in the Canary Islands.
5. The project is co-ordinated by three Boards, Executive, Governing and Advisory.



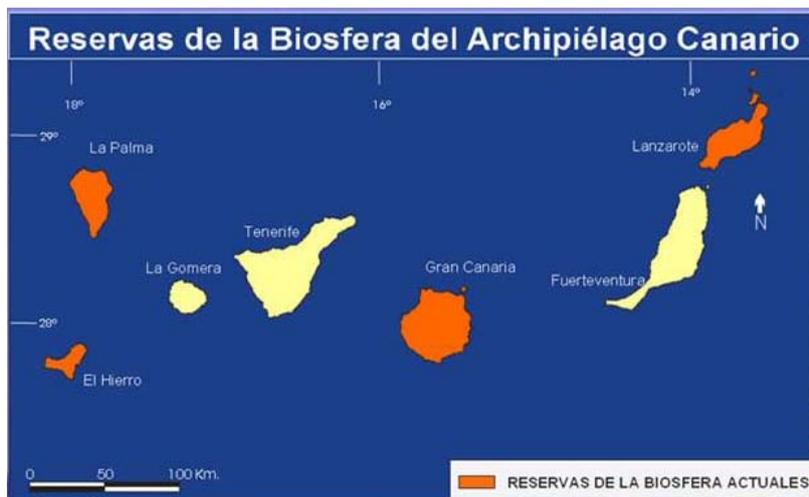
The Executive Board

The Canary Islands

I would now like to say a little about the Canary Islands. These are an Autonomous Region, of which there are a total of 17 in Spain. The area is 7447 km², and the human population is 2 million. The Region is only 1.5% of the total area of Spain, and has 280 inhabitants per km² (the 8th highest density in the country). There are 10 million tourist visitors per year.

The islands are bounded by the co-ordinates: 27°38' N - 29°24' N; 18°09' W - 13° 19' W. The distance to the coast of mainland Spain is 1000 km.





The Canary Islands archipelago has four Biosphere Reserves.

The Canaries are volcanic islands, with the highest peak at 3718m. They are subtropical, with a mild climate, due to the NE trade winds. They are in the proximity of the upwelling area off the African coast, leading to rich pelagic fisheries. The ocean water is colder than expected, because of the south-bound Canary Current. There are Saharan dust episodes crossing the Atlantic (known as *Calima* - see satellite image below), leading to health issues).



In terms of biodiversity, the Canary Islands hold 17,893 recorded species, of which 3,736 are endemic. 12,661 are terrestrial (T) and 5,231 marine (M).

Fauna include: 7,939 Arthropods (6,843 T & 1,096 M) (5,668 of these are Insects); 1,416 Molluscs (246 T & 1,170 M); and 840 Vertebrates (including 686 fish and 19 reptiles).

Flora include 50% of the endemic taxa of vascular flora in Spain. There are: 1935 known species of vascular plants (>511 are endemic): 63 of ferns (2 endemic); 468 algae (30 endemic); 1294 lichen

(26 endemic); 464 bryophytes (10 endemic); and 1634 fungi (100 endemic).

Two species have recovery plans: *Gallotia simonyi machadoi*; and



Chlamydotis undulata fuertaventurae; and 12 species have conservation programmes (including *Fringilla teydea*).



70 spp. of flora and 17 spp. of fauna are in danger of extinction; a further 1 of flora and 6 of fauna

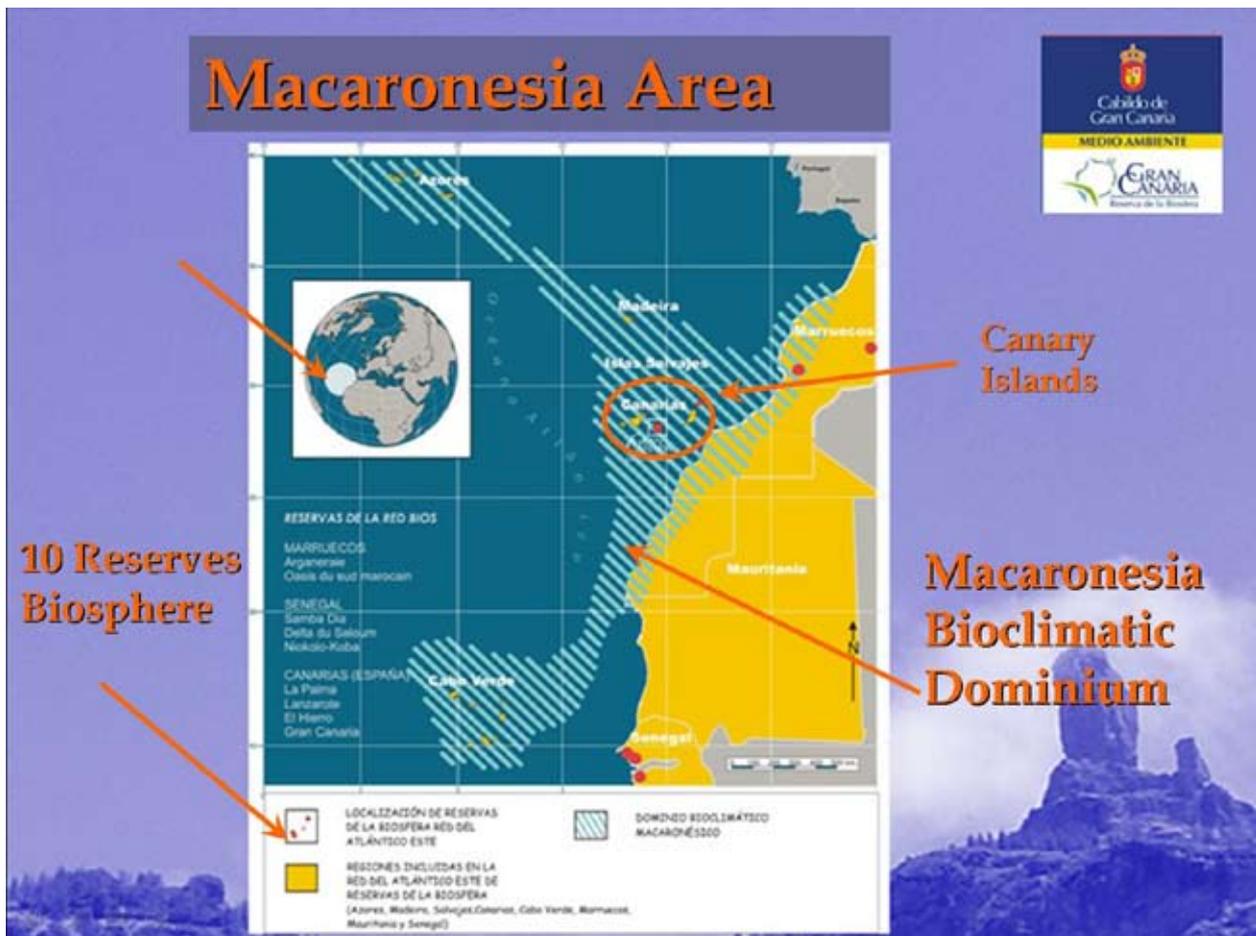
sensitive to habitat alteration; 16 of fauna Vulnerable; and 61 of fauna of special interest. Invasive species include 1434 spp. of flora and fauna.

Why NET-BIOME is important for the Canary Islands

NET-BIOME provides a mechanism to project to the outside the biodiversity values of the region(s) as a European value. Many ORs and OCTs together have greater value than individually. We become a global perspective, and hence have a better presence worldwide.

We can use this global value to obtain help in our local, regional or territorial responsibilities. Each region or territory is responsible for caring about its biodiversity, including conservation, promotion and research studies. However, if we coordinate among ourselves, we will give it an added value.

In the same way you have a UKOT linkage through the UKOTCF, it is also vital to coordinate with other countries to enhance our joint presence internationally. We believe it is a projection from the regions and territories outwards; we need to be visible to be recognised!



In the Canaries, we are already benefitting from collaborations within the Macaronesian biogeographic region, in several cases with EU support.

One such example is CLIMARCOST (EU code: Interreg III-B (05/MAC/2.3/A1)). This involves a whole range of aspects:

- Deployment of meteorological/oceanographic buoys
- Sensors and land meteorological stations
- Monitoring of climatic and oceanographic conditions
- Trajectory prediction modelling

This has many applications, including:

- environmental;
- search & rescue operations;
- Sea state forecast;
- etc.

Our regional vision needs to spread to wider areas, and then internationally. Physical and biogeographical parameters can be used as indicators of environment changes.

NET-BIOME research survey

Finally, returning to our original theme, we would appreciate your collaboration with us in the NET-BIOME collection of information.

We know that the questionnaire was exhaustive (and exhausting), but it had to cover all partners' situations. We decided to do only one to researchers to get all the information needed throughout the project, rather than a number of smaller requests. We kindly request your continued participation; it is important to show the amount of work that is carried out in the ORs and OCTs and to encourage support for further needs.



Discussion

We are grateful to Steve Cheeseman for taking a note of this session. These notes have been consolidated below into the structure that they fell most naturally.

Information Management Tools and Databases

Alan Mills had suggested that information management tools should be of use to various agencies, in an integrated manner for all users, but with a simplified interface developed for non-specialist users. In the light of the number of systems being used in UKOTs, the question was posed as to whether there is a capacity for cross-support using shared expertise. It was felt that this would be a good way forward. What would help would be regular or planned opportunities (such as a workshop or conference) where data and ideas could be exchanged.

Modelling was mentioned as a tool for specialist tasks, but this might be something which many UKOTs currently did not have either the human or financial resources to deal with. However, its value, for example regarding sea-level rise, was acknowledged. However, any modelling system would need good original data, and this might also be lacking for many UKOTs.

A particular point was made about the paucity of information on insects, both baseline data and surveys. Some studies had been done. For example the Darwin Initiative project work from 2000 onwards in TCI, which UKOTCF had managed, had included insect survey, but only four weeks of intensive work. This information was available on the UKOTCF website.

There was also masses of data locked away in museums, but resources were needed to make this information available. Therefore, two elements of work were needed, collating and making accessible existing information, and also new surveys. It was agreed that this was a very important area, and funding for this work should be sought.

A request was also made that an inventory of existing databases for the UKOTs should be compiled, as these could also provide a basis for further research, and would fit well within the UKOTCF web-database approach.

Pooling expertise – widening the partnership and opportunities through NET-BIOME

The NET-BIOME project was another important development geared towards sharing information, as well as investigating joint fund-raising. In this regard, it was asked whether NET-BIOME was likely to be in a position to make a contribution to the Conference of the Parties for the Convention on Biodiversity in 2010. This is something which NET-BIOME will be discussing.

Several questions were asked of the database which NET-BIOME is developing. There were some concerns about how up-to-date the information was, and a general feeling of uncertainty about the value of entering data. Some people had experienced problems with the website, and needed assurance that this had been sorted out before they tried to enter further data. NET-BIOME representatives explained that they too had been concerned about this, and the matter had already been addressed. This would be followed up further with the NET-BIOME website manager.

It was explained that staffing problems had caused these difficulties, but these had been rectified. The point was made that this was a ground-breaking project and, like all such new initiatives involving many partners, there had been teething problems. However, this project had real prospects of obtaining more and longer term funding for UKOTs (and other OCTs and ORs), and should therefore be supported. Participants were encouraged to support and contribute to the database.

It was agreed that the NET-BIOME concept is very good, but would benefit from some clarification of its purposes. Those seeking further clarification were initially referred back to the presentation by Marimar Villagarcia, but one purpose noted was that it joined all OCTs and ORs together, with the aim of securing funding from various sources to support needed biodiversity research. In answer to a follow-up question about whether NET-BIOME would be able to fund individual projects in UKOTs, it was explained that NET-BIOME's initial purpose was to create a working group with a long life, and it did indeed involve a leap of faith, and there were difficulties to overcome. However, it presented a real opportunity for long-term funding, and should be supported.

A question was raised on the representation from the UKOTs in steering the NET-BIOME project. In answer, reference was made to the articles on the project in *Forum News*. To summarise these, it was explained that this project had been initiated by the French ORs, bringing in other ORs. They had found, at a very late stage, that they could expand it to include the OCTs. UKOTCF had been approached, and had advised the project to approach the UKOTs individually. However, the EU deadlines had not allowed this, and the project had asked UKOTCF to provide that link. This was not ideal, and UKOTCF was reluctant to accept, as it expected criticism - which it has certainly received. However, if UKOTCF had not been prepared to do this, then UKOTs would have been excluded. The choice was not between using UKOTCF or the UKOTs directly, but between using UKOTCF or having no potential involvement of the UKOTs. It was the only option at the time to get UKOTs involved in this important project. Throughout, UKOTCF has tried to make the links to the UKOTs work, for example through contacts with UKOTA, involvement (at their suggestion) of Gerard Gray from Montserrat on the NET-BIOME Advisory Board, many communication from UKOTCF and as many requests for input as was thought reasonable to impose on busy people in the UKOTs.



Participants in this discussion session