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SUBMISSIONS RECEIVED BY THE SECRETARIAT CONCERNING IDENTIFICATION, MONITORING AND ASSESSMENT OF BIOLOGICAL DIVERSITY

(Submissions have been reproduced as received by the Secretariat)

CONTENT

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information on the forest and biodiversity in China and it can be referred to in China's Biodiversty Country Study .

VI. Background material on incentive measures for promoting conservation and sustainable use of biological diversity

We in China synchronise the environmental impact assessment with the engineering reconstruction. The guideline of Comprehensive Plan, Positive Conservation, Scientific Management and Sustainable Use has been worked out in the 1990's. China is a developing country, and in most of its regions, the local people to make living by means of biodiversity resources and it is increasingly urgent to be resolved for how to coordinate the biodiversty conservation and resources sustainable use. For the purpose of coordinating the conservation of biodiversity and sustainable development, we are posed to take the following measures:

1. Establishment of biodiversity management and conservation & development areas

In the regions around the nature reserve areas there are to set up biodiversity management and conservation & development pilot programmes which aims at the sustainable use and conservation of biodiversity, to undertake land programming, arrange the industry, agriculture and mineral production and facilitate the local government and masses to actively participate in the biodiversity conservation cause.

2. Establishment of regional economic demonstrative mode for co-ordination of biodiversity conservation and sustainable development

As a developing country, China's investment in the nature reserve areas is limited, therefore, the economic development of the areas near the nature reserve areas will be facilitated by the demonstration of the pilot programmes.

3. Establishment of Demonstrative Nature reserve Areas

Select several conservation areas that have representative implications and make careful plan of them, enhance its management to make out concrete effects for the eventually spreading of its experience.

VII. On knowledge, innovations and practices of indigenous and local communities

China is composed of various and colourful ethnic cultures. Many minority nationalities believe in their primitive religions which hold that everything in this physical world has its own spirit, and they worship the mountain, water, forest and physical things. To cite examples, the Tibetans settling in the Northwest of Sichuan province believes in their Bon religion and they hang the streamers with scriptures on it in the trees, the Ha'ni nationality and the Dai nationality also worship the trees and enshrine them. In the areas where the Dai, Miao, Buyi, Li nationalities dwell, the "holy woods" can be seen all around and the plants and animals as well as the scenery are well preserved. The Tong nationality opens up a little area for the oxen to browse in the woods and the little area is enclosed and the oxen are prevented from entering the woods to destroy the young tress. In this way the contradiction between the forestry and grazing is solved and the forest ecological system is thus protected.

VIII. On the background material on identification , monitoring and assessment of biodiversity

China is now engaged in the construction of project of biodiversity data base and information

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network capacity building. The implementation of this project will greatly facilitate the progress of biodiversity monitoring , assessment and identification in China. By now, China National Environmental Protection Agency has built more than 2,000 environmental monitoring stations and it is also undergoing an ecological monitoring research. China Sciences Academy is right now engaged in the projects of China' Ecological Research Network (CERN) and Biodiversity Research and Information Management (BEIM). To date, the Ministry of Forestry of China has set up the Forest Resources Management Centre, and it is planed to establish a comprehensive forest information centre on this base, and this centre is to deal with all the data related to the forest and wild animals. The Agricultural Ministry of China has its own agricultural environmental monitoring network, and the State Oceanic Administration has also set up the Maritime Ecological Information Network.

1. Medidas (incentivos) para promover la conservación y utilización sostenible de la diversidad biológica.

En relación a este punto, la solicitud de la Secretaría alude a lo establecido en el artículo 11 del Convenio sobre la Diversidad Biológica que hace referencia específica a medidas -normas jurídicas, políticas, programas u otros- que pudieran eventualmente actuar como INCENTIVOS para la conservación de la diversidad biológica y la utilización sostenible de sus componentes.

- Un incentivo (indirecto) para la conservación de la diversidad biológica y la utilización sostenible de sus componentes que se implementó a mediados de 1995 en Lima, lo constituyó un programa de capacitación en legislación ambiental dirigido a funcionarios públicos -de oficinas con competencias ambientales- y del sector privado -de empresas auditoras en materia de EIA's.

2. Identificación, monitoreo y evaluación de la diversidad biológica.

- En relación a este punto, el Instituto Nacional de Recursos Naturales (INRENA) se encuentra trabajando desde hace algún tiempo (aprox. dos años) en la implementación de una base de datos sobre la diversidad biológica del país.

Por iniciativa del Ministerio de Agricultura y el Instituto Nacional [illegible] (INDECOPI), se ha conformado un Grupo de Trabajo [illegible] 3) para realizar un inventario y establecer un registro nacional sobre recursos genéticos silvestres y domesticados.

- Esta próximo a implementarse un registro de variedades protegidas -por derechos de obtentor- que permitirá la identificación de variedades vegetales sujetas a este sistema.

- En 1995 La Comisión Nacional de Recursos Fitogenéticos elaboró un Informe Nacional sobre Recursos Fitogenéticos, específicamente para recursos del sector agrícola/alimentario, para su presentación en la Conferencia Internacional de la FAO sobre Recursos Fitogenéticos.

3. Conocimientos, innovaciones y prácticas de comunidades indígenas y locales.

- En Febrero de 1996, por iniciativa del Ministerio de Agricultura y el INDECOPI se formaron Grupos de Trabajo multisectoriales para abordar los temas de acceso a recursos genéticos y la protección de conocimientos innovaciones y prácticas de comunidades indígenas y locales.

El Grupo de Trabajo 1, trabajará el tema de la organización interna de las comunidades y los mecanismos que utilizan -o podrían establecerse- para compartir los beneficios generados colectivamente por el aprovechamiento de la diversidad biológica.

El Grupo de Trabajo 4, establecerá los mecanismos jurídicos que garanticen una distribución justa y equitativa al interior y entre las comunidades de los beneficios que se deriven del aprovechamiento de sus conocimientos, innovaciones y prácticas asociadas a recursos genéticos.

A nivel de actividades de bioprospección en tierras de comunidades indígenas y locales al aprovechamiento de plantas medicinales, se están proponiendo alternativas contractuales como contratos de "know-how" que garanticen el objetivo de garantizar la propiedad colectiva de las comunidades -específicamente los conocimientos, innovaciones y prácticas relativos a la diversidad biológica.

4. Derechos de propiedad intelectual

- En el contexto de lo señalado anteriormente referido, el Grupo de Trabajo 4 analizará la implementación de un Registro Especial de conocimientos, innovaciones y prácticas de pueblos indígenas, y evaluará la posibilidad de

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SOUTH AFRICA

Biodiversity

From: Karl Naude[SMTP:nat_kn@OZONE.PWV.GOV.ZA]
Sent: Monday, March 18, 1996 7:42 AM
To: biodiv@mtl.net
Subject: Convention on Biological Diversity - Secretariat

Mr Juma,

Re: Request for written contributions and information on:

a. The Conservation and sustainable use of Marine and coastal biological diversity
b. Intellectual property rights
c. Transfer and development of technology under the CBD
d. Information on Forests and biological diversity.

Re: Background material
a. Knowledge, innovations and practices of indigenous and local communities
b. Incentive measures for promoting conservation and sustainable use of biological diversity
c. Identification, monitoring and assessment of biological diversity

Re: Guidelines of the review of the effectiveness of the financial mechanism of the CBD.

Unfortunately South Africa is not yet in a position to make a meaningful contribution with regard to the above mentioned requests.

South Africa is currently in the process of developing a strategy for the implementation of the Convention on Biological Diversity (CBD). As soon as this process is under way and the appropriate and responsible organisations have been identified, we would submit the information you requested (Target date, 31 August 1996).

Yours sincerely
Kallie Naude
Assistant Director
Department of Environmental Affairs and Tourism

UNITED KINGDOM

Department of the Environment

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Romney House
43 Marsham Street
London SW1P 3PY

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GTN Code 276

Your ref

Our ref

Date

CBD / UNEP

DATE: MAR 26 1996

SEEN BY: CB

ACTION BY: CJ 15 March 1996

COPY TO:

FILE: Chrono (letter only)

Calestous Juma Esq
Executive Secretary
Biodiversity Convention Secretariat
World Trade Centre
413 St Jacques Street
Office 630
Montreal, Quebec
CANADA H2Y 1N9

Dear Calestous,

IDENTIFICATION, MONITORING AND ASSESSMENT OF BIOLOGICAL DIVERSITY

Thank you for your letter of 18 January asking for views and additional information regarding the paper you are preparing on Article 7.

The UK's Biodiversity Steering Group, comprising representatives of all major sectors, including industry, NGOs and research institutions, has recently considered action needed under Article 7. Their report published in September 1995 gave advice to the UK Government and the attached extracts may be useful information for your study. The UK Government will respond to the report's conclusions shortly.

Chapter 3 of the report (Annex A) on information and data represents a comprehensive analysis of what the UK needs to do to implement Article 7. A "three-pronged" approach is recommended to improve the quality and accessibility of data and biological recording. This would make maximum use of existing data, develop a nationally based information system by stages and develop a locally based biodiversity information system. Annex B assess the costs of such an approach. I should also draw your attention to Annex C (attached) of my letter to you on coastal and marine biodiversity, which summarises action under Article 7 in that area.

Yours sincerely,

pp Tim Unwin

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P F UNWIN
Head of Environment Protection International

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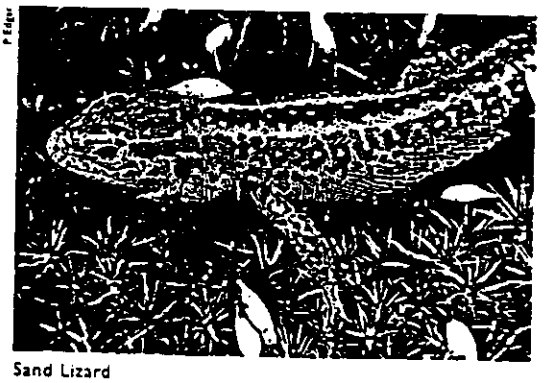
[illegible]

[illegible]

3.1 We are fortunate in the United Kingdom that relatively large amounts of data are collected on biodiversity. But much of this is not readily available in a form that assists decisions on the management of species populations or the direction of land-use change. We need to improve the collection, organisation and co-ordination of biological information and data. The opportunity to do this now arises with the need to establish a monitoring programme to measure progress in achieving national and local biodiversity targets. There is also the requirement to monitor progress on the implementation of Directives and Conventions.

3.2 The European dimension is increasingly important with the establishment of the European Environment Agency and its Nature Conservation Topic Centre. The programmes of these organisations are currently being developed. Emphasis is already being placed on the collection and storage of standardised biological data.

3.3 The need to identify important components of biodiversity and for data collection and monitoring under the Biodiversity Convention provides a framework into which requirements from a number of EC Directives and other Conventions fit. The box explains the requirements of Article 7 of the Convention. Table 2 shows the commitment to collect data and information relevant to biodiversity under various EC Directives and the Biodiversity Convention itself. Table 3 shows the current status of monitoring and surveillance for the main groups of species on the long list.



P Edgar

Sand Lizard

ARTICLE 7 OF THE CONVENTION

The starting point for an examination of current practices and future needs is the text of the Convention on Biological Diversity. Article 7 states that each contracting party shall, as far as possible and as appropriate, for the purposes of in situ conservation, ex situ conservation, and the sustainable use of components of biological diversity undertake the following :-

- identify the components of biological diversity important for conservation and sustainable use;
- monitor through sampling and other techniques the components of biological diversity paying particular attention to those requiring urgent conservation measures and those offering the greatest potential for sustainable use;
- identify processes and categories of activities which have, or are likely to have, a significant adverse impact on the conservation and sustainable use of biological diversity and monitor their effects through sampling and other techniques;
- maintain and organise by any mechanism, data derived from identification and monitoring activities relevant to the above measures.

In the identification of biological diversity regard should be given to:-

- ecosystems and habitats:-
  - containing high diversity, large numbers of endemic or threatened species, or wilderness;
  - required by migratory species;
  - of social, economic, cultural or scientific importance;
  - that are representative, unique or associated with key evolutionary or other biological processes;
- species and communities that are:-
  - threatened;
  - wild relatives of domesticated or cultivated species;
  - of medicinal, agricultural or other economic value;
  - of social, scientific or cultural importance;
  - important for research into the conservation and sustainable use of biodiversity, such as indicator species;
- described genomes and genes of social, scientific or economic importance.

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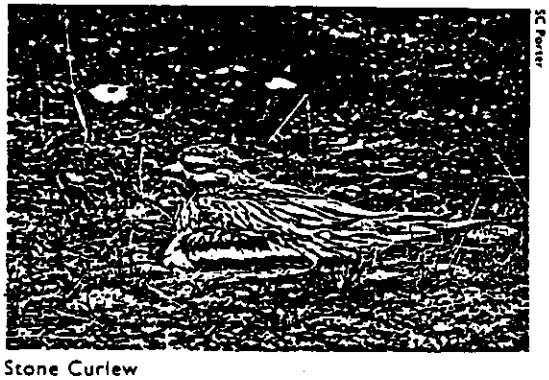
Table 2: THE INTERRELATIONSHIP BETWEEN THE REQUIREMENTS TO COLLECT DATA AND INFORMATION RELEVANT TO BIODIVERSITY UNDER VARIOUS EC DIRECTIVES AND INTERNATIONAL CONVENTIONS

Requirement for data and information	EC Birds Directive	EC Habitats Directive	Ramsar Convention	Bonn Convention	Bern Convention	Agricultural Regulations	Water Directives	Forestry Regulations	Fishing Regulations	Biodiversity Convention
Requirement to gather information on:	Wild birds	Habitats and species	Wetlands and species	Migratory species	Threatened habitats	Agricultural practices	Pollution levels	Forestry practices	Yield and population of fish	All components of biodiversity
Maintain and organise data	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Requirement to monitor	Bird population levels	Habitats and species	Wetland and species	Migratory species	Threatened habitats	Various	Water quality	Air pollution effects on forests	Various	All components of biodiversity
Collect information on designated sites for conservation of biological diversity	SPAs	SACs	Wetland sites						Yes	
Data on sustainable use of biodiversity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data to quantify threats to biodiversity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Corncrake

Bittern

Capercaillie



Stone Curlew

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Table 3: CURRENT MONITORING OF SPECIES ON THE BIODIVERSITY 'LONG LIST'

Group	No. species currently on list	No. species currently with 'biodiversity' action plans	Vagrant species	No. species mainly in wider countryside	No. species mainly on SSSI or reserves	No. species found both in wider countryside and SSSI/reserves	No. species lacking adequate status assessment[1]	No. species with some form of assessment programme in place[2]	No. species which action plans exist or are being considered[3]
Algae (exc. stoneworts)	18	0	0	11	3	4	13	5	0
Fungi	21	4	0	unknown	unknown	unknown	unknown	unknown	6
Lichens	81	7	0	19	37	18	26	44	6
Liverworts	32	5	0	10	11	10	1	30	0
Mosses	79	6	0	27	24	26	20	52	6
Stoneworts	13	1	0	1	7	2	4	9	0
Vascular plants	230	28*	0	70	88	71	9	185	35
Ants	5	3	0	0	1	2	1	4	0*
Bees	19	1	0	5	4	9	0	18	1
Beetles	72	12	0	7	19	42	19	50	3
Butterflies	25	6	0	1	3	21	0	0	25
Caddis Flies	2	0	0	0	0	2	2	0	0
Crickets/Grasshoppers	7	1	0	0	1	5	2	2	3
Dragonflies	7	1	0	0	0	6	2	5	0
Two-winged flies	54	3	0	2	22	28	32	22	0
Mayfly	1	0	0	1	0	0	1	0	0
Millipedes	7	0	0	0	1	6	2	5	0
Molluscs	45	11	0	9	7	29	28	15	2
Moths	122	3	0	27	39	53	11	103	8
Other invertebrates	40	4	0	17	6	16	23	13	4
Spiders	44	0	0	1	24	17	0	42	2
Stonefly	1	0	0	1	0	0	1	0	0
True Bugs	5	0	0	0	2	3	4	0	1
Wasps	7	0	0	2	3	1	1	5	1
Amphibians	7	2	0	5	2	0	0	5	2
Birds	200	9	3	103	16	77	15	140	43
Fish	25	4	0	10	0	11	1	16	6
Mammals	66	9	17	44	2	2	17	24	7
Reptiles	10	1	3	5	1	1	0	5	5
TOTAL	1,245	116*	23	378	323	454	235	799	166

* The 6 Euphrasia species are covered by one action plan

[1] species poorly known and without current systematic assessment schemes

[2] species for which there are assessment programmes in place

[3] species subject to species action plans, or which are soon to begin. Detailed monitoring assessments are included as part of the plan

3.4 *Biodiversity:The UK Action Plan* explained that the Biodiversity Steering Group would include in its remit overseeing the working group already established following the May 1993 seminar on biodiversity organised by JNCC and DOE. The work of the group would be designed:-

- to improve the accessibility and co-ordination of existing biological datasets;
- to provide common standards for future recording; and
- to examine the feasibility in due course of a single UK Biota database.


P Wakely

Killarney Fern

3.5 In the time available, it has not been possible to validate Table 3 fully. However, the Table does indicate that important groups of species are not covered by the more rigorous forms of surveillance and monitoring included in the last two columns. The proposed Focus Groups we describe in Chapter 6 should be asked as a priority to give consideration to this issue. In doing so, attention needs to be given to the high costs of formal monitoring systems and the lengthy periods before the results can feed into action. There will be the need to prioritise and to consider cost effective approaches including sampling, the identification of groups of indicator species in category one (ie lacking adequate status assessment) which figure significantly on the middle list (see Annex F), and then the possibility of filling major gaps in the long list.

DATA REQUIREMENTS

3.6 The concept of biodiversity, and of national action plans within the framework of the international Convention, has given a focus to a large amount of statutory and voluntary work which has long been continuing and growing. As well as Article 7 of the Convention and the European dimension explained earlier, important aspects are Britain's own Wildlife and Countryside Act, with its schedules of protected species, the EU's Birds and Habitats Directives and many international Conventions -particularly Ramsar, Bonn and Bern. The statutory nature conservation agencies set up under the Environment Protection Act 1990 and the Natural Heritage (Scotland) Act 1991 have a specific duty to protect and enhance nature conservation and are operating major programmes. *Biodiversity:The UK Action Plan*, itself, established broad objectives, set out in the "59 steps", some of which are being carried forward by the work of the Steering Group.

3.7 Data and information are essential if broad aims, specific objectives and precise targets are to be achieved. We need to know where we start from, and what is changing, in order to understand what is causing the change, whether we need or can prevent the change, and to evaluate any remedial action we might take. Programmes, such as the EC Directives and the UK Action Plan, increasingly embody requirements for structured monitoring in which:-

- a baseline is established;
- there is regular and systematic recording to detect change or progress towards specific targets; and
- the reasons for change, particularly undesirable change, are then studied in order to inform action.

Questions of data availability and resources will often make it necessary to compromise, eg by undertaking monitoring of progress towards targets on a less than ideal basis, for example by recording the occurrence of a species in ten kilometre or smaller squares rather than more complete population details.

3.8 In addition, there is a need for broader surveillance which will allow important new trends to be identified, studied and, where appropriate, action taken through operational programmes. An example is the decline of many farmland birds which, while still having large populations, have reduced in numbers by as much as 50% over the last decade.

3.9 The quality, ease of access and relevance of the information available may greatly influence the quality of decision taken. The UK has a large volume of data (estimated at over 60 million species records), but there are important gaps. A growing focus on habitats has exposed a shortage of aggregate data and information on habitats in the UK and EU. A first priority is to improve the accessibility and co-ordination of what we already possess. We recommend mobilising this data applying the principles of information management. Examples of this approach are the IUCN advice on global biodiversity assessment, and the work of the Co-ordinating Commission for Biological Recording (CCBR). The statutory conservation agencies, through the JNCC, and the Biological Records Centre of ITE are the two main focuses of this work, and are already moving in the recommended direction. The local dimension is also crucial.

Sandbowl Snail

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RECENT DECLINES IN COMMON FARMLAND BIRD SPECIES IN THE UK

The British Trust for Ornithology's Common Birds Census (CBC) has measured population fluctuations among common species since the early 1960s. It provides an example of how broadly based surveillance can identify important new trends. Fieldwork is carried out by skilled volunteers and covers farmland and woodland habitats using a census method which identifies territorial birds. The CBC provides an estimate of annual change in the size of UK populations of common bird species. In 1994 censuses of the bird populations of 87 farmland plots and 113 plots of other habitats were used to estimate changes.

The declines among farmland birds have been striking as is shown in the table. The declines appear to be driven by the loss of spring-sown cereals and crop rotations, the intensification of grassland management, and the increased use of chemical pesticides; further work is required for a better understanding of these factors and their effects upon birds.

Species	% decline in numbers in 25 years; 1969-1994. Source BTO CBC 'farmland Index'
tree sparrow	-89
grey partridge	-82
corn bunting	-80a
turtle dove	-77
bullfinch	-76
spotted flycatcher	-73
song thrush	-73
lapwing	-62
reed bunting	-61
skylark	-58
linnet	-52

a Note that corn bunting is now so rare that it is found on too few CBC farmland plots to construct a 'farmland' index. Instead CBC plots from all habitats have been used to calculate the decline.

The need for improved information on population trends is reflected in the recent introduction of the Breeding Bird Survey which is jointly supported by BTO, JNCC and RSPB. It is a volunteer-based survey which sets out to increase the coverage of regions, habitats and species over existing schemes, including the CBC, using a formal sampling strategy. Survey methods are simple and efficient, and volunteers record details of both the birds they encounter and the habitats they live in. The new survey provides tremendous potential to identify population declines at a UK or finer level, to provide pointers as to likely causes and either suggest remedial action or identify the need for targeted research.

3.10 The information needed to support the different kinds of decision required by the UK Action Plan is derived from many different data sources held by many different organisations. Examples of areas where information support is required include:-

- selecting species and habitats for action plans;
- establishing targets for them;
- deciding where to direct effort to achieve the targets;
- assessing the effectiveness of action plans; and
- deciding what to do at specific locations.

3.11 Information management requires taking a systems approach. The same data will be needed by many people, and much of the information will be re-used many times. The ideal is to record, check and store once and access many times for many purposes.

3.12 The steps needed to make our existing information sources more usable and to provide for integrated expansion are:-

- identifying priority datasets for our purposes and indexing the sources;
- establishing standards to ensure that the system works technically, that the information is managed consistently, and that the information is relevant to the needs of customers whether policy makers or those directly concerned with operations;
- capturing accurate data, validating it, storing it securely and keeping a careful record of changes made (in producing managed datasets with such features as version control and "life histories" of the entities recorded);
- generating aggregate information from the original data and ensuring its validity, security and version control;
- avoiding duplication of effort and errors in copying data so that, ideally, each dataset is managed to agreed standards by a single known individual or organisation and made available to others who have a legitimate use for it;

providing access on appropriate terms in order to avoid duplication and ensure consistency;
establishing an appropriate charging regime (which could include an absence of charges on a mutual "knock for knock basis" by co-operating organisations);
making appropriate arrangements for copyright and other aspects of Intellectual Property Rights (IPR);
conforming to the Environmental Information Regulations.

3.13 At the technical level, the approach recommended below - a disseminated system with potential for electronic networking - is well within the state of the art and does not require massive centralised facilities using experimental designs and equipment.

3.14 At the operational level - service to customers - the risk is of creating something which works but is not useful. Our approach is based on serving policy objectives, including in particular monitoring the progress towards the targets set out in this report and our obligations under UK statute, EC Directives and International Conventions. We start from the use already being made of biological data, and the plans and intentions of many relevant organisations for incremental development. The preferred approach is to establish a basic model of the relevant features (a data model), and to fill in sections of the model as operations require.


P Wakely

Early Gentian

3.15 Because of the efforts of dedicated amateurs and, increasingly, statutory organisations, the UK has an exceptionally rich resource of biological data and information. But there are important gaps which it will be slow and expensive to fill, and a significant period is needed before new sets of records can demonstrate changes over time. An important need is to assess the accuracy, reliability and relevance of existing datasets which often reflect individual enthusiasms or past organisational priorities.

3.16 We have therefore tried to address what is practicable in the short term with constrained resources. A key concept is to squeeze every possible ounce of meaning and value from the present bank of data, and from established programmes for recording at planned intervals (time series monitoring).

We therefore have in mind the approach outlined above working within a framework which is filled in as required. We are setting out on what should be a long term continuous process to monitor UK biodiversity for the purpose of maintaining, and if possible increasing, that biodiversity.

3.17 Two major elements in this process are analysed below:-
the feasibility of a UK Biodiversity Database (UKBD) based upon a staged approach; and
giving primary focus to national and local targets, and giving careful consideration to the best use of existing systems. Monitoring a large number of species is potentially expensive and inevitably slow to bear fruit if new systems have to be developed.

3.18 The UKBD is recommended as the mechanism which will achieve:-

"the accessibility and co-ordination of existing biological data, and provide common standards for future recording" (Biodiversity: The UK Action Plan - paragraph 10.40).

3.19 Any UKBD should involve a network of co-operating organisations who have each agreed to operate to agreed standards, and accept responsibility for maintaining and providing access to the sets of data which they have collected.

3.20 Most problems are concerned with the human, organisational and financial aspects of the system. Not the least of these will be the development of a culture in which individuals and organisations accept the benefits of the maximum degree of data exchange. The concept of custodianship of datasets is critical to the success of a co-operative system and will need careful development under clear Government guidance. However, we start from a dangerous decline in the resourcing of this work at both local and national levels. The local records centre network is not uniformally resourced, and at present centres are closing or barely ticking over. Many of the major national voluntary and statutory organisations are experiencing reduced funding and, in the case of the public sector, are subject to a general freeze on running costs and cuts in those costs in some organisations.

3.21 The heart of a UKBD will be data on habitats, species, protected areas and the status of these entities under international conventions, EC Directives and domestic legislation. The key organisations concerned with this area

are the statutory nature conservation agencies and their Joint Committee together with ITE, and in particular the Biological Records Centre, which is part-funded by the JNCC. Organisations such as the British Trust for Ornithology, Butterfly Conservation and other specialist non-Governmental organisations focus on particular species. The Wildlife Trusts and local records centres focus on local and regional needs. The UK is fortunate in still possessing a significant number of individuals who contribute vital data as a result of their enthusiasm for nature.

3.22 The marine area is seen as increasingly important to conservation. The Southampton Oceanography Centre, MAFF, SOAEFD, the Aberdeen and Plymouth Marine Laboratories, ITE and the Marine Conservation Society all hold important data sets, while the JNCC's Marine Nature Conservation Review and Coastal Directories Project are currently improving the baseline data and classification system. NERC's British Oceanographic Data Centre, working on behalf of the EU, have put together a directory of marine environmental data held by UK agencies. This complements a PC based directory, produced by the same group, of some 462 marine environmental datasets held by UK laboratories and readily accessible to both policy makers and scientists.

3.23 Beyond this core area, important datasets are held by various Government departments and statutory organisations. Prominent amongst these are MAFF, particularly through ADAS, and the National Rivers Authority - soon to be part of the Environment Agency.

3.24 As the circle widens, work on biodiversity interfaces with the work carried out particularly by NERC on major processes such as climatic change and atmospheric and marine systems. However, it would be impracticable to try to start by embracing this wider territory. Development of the UKBD should focus on the heartland described above. The wider field should be taken into account, but probably on the basis of specific data transfer provision rather than full compliance with UKBD standards.

3.25 Local centres for data lie at the centre of an effective system. In particular, local data and information are needed to produce Local Biodiversity Action Plans. Local and regional centres both serve the locality and provide information needed for the national picture - the UKBD.

3.26 We gave consideration to funding a fairly uniform network of local records centres on the model which operates successfully in most of the country. However, on reflection we decided to recommend that in each area - to be defined locally - a consortium should be developed by the leading organisations involved. A more centralised approach would be very costly; would displace existing local resourcing, and would risk reducing local commitment and the relevance of the centres. There is, however, a need for an organisation, or group of organisations, to drive forward work at the local level.

3.27 Where local records centres exist they should be the centre of the network. In other cases the local wildlife trust might be the focus. In all cases the wholehearted co-operation of local authorities is essential, because of the support many of them give to local records centres, and the data they generate or collect, and the use they make of biodiversity data for planning and other purposes. The statutory nature conservation agencies are already providing resources to some centres, but continued local Government funding is critical.


Reed Beds

The National Level

3.28 At the national level we see a network of organisations which co-operate voluntarily. The key concept will be "custodianship". Organisations owning relevant datasets will agree to maintain and develop these sets and to conform with the agreed standards and protocols of the network. There would need to be a focus for the network. If this is to work effectively, it should be provided by one organisation. This should be the JNCC with advisory machinery representing other major players. This is because of JNCC's expertise, its large number of datasets and planned developments, and its long standing involvement with the Biological Records Centre. A small full time headquarters will be required to mastermind the project, to develop standards and to plan and monitor the progress of the UKBD.

The Initial Stage

3.29 A crucial early stage in developing the UKBD is the creation of a regularly updated directory of datasets and other key information. An important option is to develop this simple text directory into a more technical meta database giving full details of the technical characteristics of the entries. This role should include:-

- assessing the quality of data;
- encouraging improvements, and
- resisting both duplication and redundancy.

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3.30 An important contribution can be made at both national and local levels by maximising the use of the Recorder software system for recording species and their geographical locations. The system, developed by the statutory nature conservation agencies and the Wildlife Trusts, can be used by individual volunteers or local centres and allows data from appropriately designed surveys to be available in an electronic form which is easy to collate nationally. The package includes aids to standardisation such as a species dictionary. The value of the system to individuals and small organisations would be increased if it could be loaded with appropriate national information, such as species of conservation concern or action plans, and could therefore provide both feedback and context for local work.

Sma' Glen

RECORDER

Recorder is a computer application aimed at people and organisations collecting or collating site based observations of terrestrial and freshwater species. The Recorder project is managed by the Joint Nature Conservation Committee, and the Countryside Council for Wales, the Department of the Environment (Northern Ireland), English Nature, Scottish Natural Heritage and the Wildlife Trusts.
This sample printout illustrates four features of Recorder which would help a locally based organisation meet Biodiversity Action Plan information needs. The printout is from a copy of Recorder used to collate dragonfly data for North East England.

RECORDER	**Demonstration**	**Friday 15 October 1993**
Cordulegaster boltonii (Donovan, 1807)	**Odonata Cordulegasteridae**	

Golden-ringed dragonfly
'Large, black and yellow hawker dragonfly. Breeds in acidic streams and, sometimes, lakes and ponds on heaths and moorland, but a very strong flier which can occur far from breeding areas. Common in the west of Britain, especially in south-west England, Wales, Cumbria and north-west Scotland, also more locally in the Midlands and much of the Pennines. Rather scarce in the east and absent from the south-east except for isolated heathland colonies.

Status	**Region**[2]
Local	Northern England
Common	Wales
Common	Scotland
Local	Great Britain

Site[3]	**Grid ref**	**Date**	**Source of record**
Close House	NZ1265	10 July 1981	Ball, Dr S G[4]
Coister Cleugh	NY99	13 July 1973	Long, Dr A G
Shull	NZ0833	02 July 1955	Anon (1955)
Shull	NZ0833	07 June 1947	Anon (1947)
Newton Hall-Pity Me	NZ2745	1961	Heslop-Harrison, J

[1] **Nationally supplied information on species.**
Recorder contains a dictionary of 36,000 terrestrial and freshwater species typically providing information on status, biology and distribution.

[2] **Nationally supplied status and facilities to add local species status.**
National status information provided as part of Recorder can be compared with assessments of local status made by the user. This comparison is one of the steps recommended during Local Biodiversity Action Plan construction.

[3] **Facilities to add site based species records.**
With appropriate data, the package allows the comparison of status of species across suites of sites. This is an important operation when identifying and planning action for locally important species. Around 350 copies of Recorder are in use and capturing a significant proportion of locally generated species data. Users are spread across local records centres, county wildlife trusts, the statutory conservation agencies, the National Trust, several National Parks, individuals and a variety of natural history societies.

[4] **Support for national data collection.**
The application helps users produce highly checked data on the location of species in a consistent electronic format. This has already made the collation of national data sets more efficient for some species groups, and is used by some national species recording schemes.

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3.31 The Countryside Information System, developed for DOE by ITE to display the results of the Countryside Surveys, is a valuable tool in presenting data which can be set out on a grid of one kilometre squares. Data may include, for example, ecological characteristics, land use, species distributions, altitude, soils, administrative areas and designations. This facility allows broad patterns of these data to be displayed and compared at a national level. The system is designed to provide easy, flexible access to data and a particular feature is the ability to extract information for any configuration of one kilometre squares. CIS provides a standard format for the exchange and dissemination of information, and it contains a catalogue of available datasets.

3.32 Standards are once more the key here. Custodians of information have a range of tools to assist access to their most used datasets eg; CIS, UKDMAP and in the near future the facilities of the emerging Internet. Datasets need to be documented if they are to be used and interpreted easily. With appropriate standards a dataset could be captured in Recorder, collated nationally and subsets published in CIS or UKDMAP. So long as data are geographically referenced (by use of the national grid, latitude and longitude or other information which can be turned into co-ordinates), it can be presented and analysed by the CIS (or a Geographical Information System (GIS)). Particular attention needs to be paid to the requirement of people or organisations with limited competent skills through "user friendly" programs and "front ends" which assist the ordinary user.

High Brown Fritillary

COUNTRYSIDE INFORMATION SYSTEM

The Countryside Information System (CIS) was commissioned by the Department of Environment to provide policy advisers, planners and researchers with an easy and flexible means of accessing a wide range of information on the environment. The CIS can help meet biodiversity commitments in two principal ways:-

- by helping the exchange and linking of information about patterns of biodiversity and environmental impacts.

The CIS is currently being used by a wide range of users ranging from Government departments and local authorities to universities and wildlife non-governmental organisations. In addition to land cover and vegetation data from the Countryside Survey 1990, new information is currently being made available on the system including Ordnance Survey topography and geographical reference data, designated areas and the distribution of farm types in England and Wales. Additional information on birds, flowering plants, invertebrates, soils and climate are expected to be available in 1996.

- by providing a tool for publishing the results of national surveys and monitoring exercises and by promoting the use of common standards of data analysis and presentation.

The CIS is a Windows-based software package which can store, analyse and present maps, tables and graphs for any data that can be summarised for one kilometre squares on the National Grid of Great Britain. It now includes a catalogue which provides detailed information on the system's available data and suppliers.

3.33 Standards lie at the heart of a UKBD. They fall into three areas:-

- biodiversity standards.
- information standards;
- technology standards;

3.34 **Biodiversity standards** relate to the content of the databases - species dictionaries, habitat classifications, standardised scales for assessing the status of species and habitats, criteria for identifying species under threat, etc.

3.35 **Information standards** relate to such matters as definitions of the types of information needed, the structuring of these types for effective management in a database and version control.

3.36 **Technology standards** relate to the workings of the information technology. For example, communication between modern databases can be achieved by specifying that they all use, or at least can be accessed through, Structured Query Language (SQL). Similarly, there need to be standards for communications on the network. It is likely that these would involve the use of the Internet.

3.37 Work to develop standards is in hand in both the voluntary and statutory sectors. We have begun the major task of mapping this activity and encouraging filling gaps. If appropriate standards are conformed to, data can be recorded, stored and transmitted in a variety of ways extending from paper and post through the exchange of computer prints or floppy disks and electronic networks. The degree of electronic sophistication depends on costs and benefits.

3.38 An important aspect of the Environmental Information Regulations 1992, (implementing EC Directive 90/313/EEC on the freedom of access to information on the environment), is that public sector holders of relevant data have both an obligation to provide access (with reasonable charges) and to ensure that the data is accurate.


P Wakely
Starfruit

3.39 We consider that the objective should be to provide the most open possible access compatible with these policies and with the need to provide an incentive to data custodians to perform their fairly onerous duties. In some cases, custodians will themselves have strong interests in obtaining data from others and one could think of a "knock for knock" approach. In other cases, perhaps the more commercially orientated public bodies and the private sector, the key datasets are almost by-products of their main activities and they need relatively little reciprocity from other custodians.

3.40 Data providers have had to live with this situation for some time. In the environmental field, ITE, for example, have different rules of access and charging for those who co-operate in exchanges of data, bona-fide researchers and those seeking to use data for commercial purposes. Collaborators or researchers may often be charged only handling costs of data. Access can be controlled through various procedural and electronic devices which, at a cost, provide "gateways" ensuring that rules for access and charging are applied.

3.41 The importance of intellectual property in the biodiversity area has recently been emphasised by the Co-ordinating Committee for Biological Recording (CCBR) and others when analysing the Environmental Information Regulations. A crude summary is that recorders of data and organisations collating datasets acquire Intellectual Property Rights which may pass to their estate. These issues have not yet been tested in the courts and various practical steps are being taken to gain clearance for the use of data, but it is necessary to recognise that this is laborious, time consuming and not without risk of expensive legal judgements.

3.42 We consider that a UK Biodiversity Database (UKBD) would be an important tool for carrying forward the Biodiversity Action Plan and other commitments under UK and EC legislation and international conventions. At relatively little cost, it would add considerable value to the high volume of existing and planned data.

3.43 The UKBD would be a cost effective way to set standards, improve access and encourage greater use of the existing and planned sources of data and information.

3.44 The UKBD is best thought of as a network of collaborating organisations conforming to an agreed overall design and IT, information management and conservation standards. The work programme could be developed through stages which each involved a product of value in its own right.

3.45 An effective network would require a small management centre, essentially concerned with negotiating standards and participation, which should be based on the JNCC. Contributing organisations would become "custodians". This would involve an undertaking to maintain specified datasets to UKBD standards and to make them available on agreed terms of access and payment.

3.46 The local level is crucial both as a provider of data and a user of that data. It is particularly important to encourage a healthy local sector against a background of decreasing resources and closing local record centres.

3.47 Both national and local custodians may need a financial incentive to participate in the UKBD network. While many custodians in national organisations concerned with biodiversity would expect to benefit, others might find themselves in a one-sided relationship in which they provided more than they used.

3.48 There are intricate questions of charging, rights of access and intellectual property rights which need to be addressed as an early priority.

3.49 We have focused on improving access to existing or planned datasets of importance to biodiversity. We noted, however, that knowledge was limited on important species and habitats, and in particular that programmes of systematic surveillance or formal time series monitoring have limited coverage. Further consideration should be given to this issue, and to any necessary supporting research by the implementation machinery proposed in Chapter 6.

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