



Newsletter

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The Systematics ASSOCIATION

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From the President

Well—it is new Millenium (by some people's reckoning) and we all look forward to new developments in systematics. Wher ever they may take us I'm sure that members of the Systematics Association will be involved since we have so many younger members. As one of the first events that may discuss such issues the Association's next Biennial meeting will be held September 2001 (4th–7th September) and will be held at Imperial College, London University. It does not seem too early to announce this. Many people at Glasgow requested that it be held in London, which has both advantages and disadvantages. The advantages are obvious with the Natural History Museum just down the road and Kew Gardens just a tube ride away. But the disadvantages are principally that London is very expensive and crowded for accommodation. So it is not too early to begin looking around for funding. For many of you overseas who may be thinking of attending it is well worthwhile approaching your British Council Office. They have traditionally provided funds to supplement those from your host universities/museums. It is very possible that they may want a letter from the Association supporting your application. Of course we will be happy to provide this. Just let me or Chris Humphries (President Elect) know. Once again we will be running the bursary scheme and details of this will be announced later in the year.

Following on from this, nearly all details will be announced on the web site. Gordon Curry was sharp-eyed enough to spot that the address www.systass.org was available so that is where you will find our pages. The Glasgow University site is still active in the sense that should you go there you will be redirected. Now that we have our own site it is even more important that we find someone to update it, making sure that upcoming meetings are announced, recent publications advertised, details of grants and awards announced. We will be prepared to pay someone on a pro rata basis for a few hours every now and again. Clearly the person concerned would have to have some experience at HTML, although we can provide a

program that converts text directly to the language. Also, the entire front page of the web site needs redesigning to make it more up-to-date. So a little bit of design flare would be helpful. Would suit Ph.D. student! If you are interested please let me know. Naturally we would like someone who is prepared to do this for a year or so to maintain some continuity.

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From the Editor

In this, the first issue of the Systematics Newsletter of the year 2000—and some would say of the new century—we take a moment to look back at the original aims of the Association when it was founded over sixty years ago. With the kind permission of Nature, we reprint here the letter from the founders to that journal, and, in affect the manifesto for systematics based research in the twentieth century. Despite the revolutions in the biological sciences since that time (not least of all the discovery of DNA, the very stuff of heredity and selection) the aims of the first members of the Systematics Association are still relevant.

It is also a pleasure to include a report from the meeting at Addis Ababa University, "Ethiopia: a biodiversity challenge". Also included is a report of the first Young Systematists' Forum, which was held in December of last year. Robert Hirt has volunteered to organise the next one, scheduled for November of this year.

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Council News

From the Membership Secretary

We have had a sudden influx of 52 new members, 25 of which have joined as a result of attending the Biennial in Glasgow. It is also heartening to note that these come from a spread of 13 countries.

Dr. Geraldine Reid

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SA Grant Scheme

Information and application forms for the 2000/2001 round of the Systematics Association Grant Scheme will be available from October 1st from me or from the Systematics Association's web page:

<http://www.systass.org>

The closing date for the 2000/2001 grants is 31st December 2000.

Dr. Peter Hollingsworth

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Systematics Association Grants 1999/2000

The Systematics Association Grants and Awards subcommittee received 45 applications for the 1999/2000 round of funding. The total amount requested was £35043, somewhat higher than the £28179 requested from 41 applicants in 1998/99 and the £28100 requested from 39 applicants in 1997/98. As usual, the proposed projects covered a diverse array of taxonomic groups, disciplines and methodologies. Applications were received from 17 countries with 42% of the applicants from the UK (19). To allocate the £6000 of available funding, all of the projects were reviewed and ranked by a six strong committee comprising Richard Bateman (Natural History Museum, London), Gordon Curry (University of Glasgow), Pete Hollingsworth, chair, (Royal Botanic Garden Edinburgh), Tim Littlewood (Natural History Museum, London), Rod Page (University of Glasgow), and Paula Rudall (Royal Botanic Gardens Kew). Nine grants (20% of applicants) were approved by the Systematics Association Council, for funding totalling £6008 (17% of the total requested). The successful projects are:

Andrei Ostrovsky, £750. Phylogenetic systematics: theory and practice. St Petersburg State University, St Petersburg, Russia

Joseph Thorley, £750. Radcon—reconstructing the tree of life. University of Bristol, Bristol, UK

Constanze Paetel, £400. Radiation of coprophagous Scarabaeoidea. Institut für Systematische Zoologie, Berlin, Germany

Anna Bristow, £500. RNA interference in a chelicerate arthropod. Natural History Museum, London, UK

Richard Akromah, £800. Genetic resources of local vegetables. Plant Genetic Resource Centre, Bunso, Ghana

Paul Bates, £632. Bats of Myanmar. Harrison Institute, Sevenoaks, UK

Dessein Steven, £700. Development of Mactaxon. Laboratory of Plant Systematics, Heverlees, Belgium

Jane Pottas, £756. Molecular variation in *Fucus spiralis*. University College Scarborough, Scarborough, UK

Jonathan Todd, £720. Molecular and morphological species discrimination: developing a marine gastropod model system. Natural History Museum, London

Finally, please note that application forms for the 2000/2001 round of funding can be obtained from October 1st (from Pete Hollingsworth, Chair, Grants and Awards Subcommittee, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR, U.K.) or by downloading the form from the Associations' Website (<http://www.systass.org/>).

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News from Award Recipients

Petra de Block, Biosystematic study of *Tarenna* (Rubiaceae, Pavetteae) and its closest allies in Africa and Madagascar

Madagascar was described by Commerson as the naturalists' promised land. Its flora, with at least 10,000 species, is extremely rich and of an unusual diversity as well as highly endemic (> 80% of all species are endemic). The Rubiaceae are the second largest family of flowering plants present on the island: they are represented by 100 genera and 1000 species.

Unfortunately, they are very badly known. At the moment, not even a treatment at generic level exists so it is virtually impossible to identify Rubiaceae collections. The Rubiaceae family, and more specifically the tribe Pavetteae, was therefore chosen as the subject for a research project. This project has as aims the clarification of the generic delimitations within the tribe Pavetteae and the production of monographic treatments for all genera of the tribe represented on the island (7 genera, 100 species) and included a nine month visit to Madagascar. During this period all herbarium material in the herbaria TAN and TEF in Antananarivo was studied and field work was conducted.

During this field work (three months) resulted in the collection of 550 numbers were collected, 80% of which belong to the Rubiaceae. Special collections (alcohol, silica gel, wood, seeds) were made as often as possible. Material of all genera of the tribe Pavetteae was found: in total some 100 numbers representing 50 species (50% of total species number) were collected. It is this field work that was in part funded by a Systematics Association grant. More specifically, the financial support granted by the Systematics Association was used to provide a DEA (similar to



Masters degree) scholarship for a Malagasy botanist. In return for training and guidance for the DEA thesis this botanist provided assistance during field work. Tianjanahary Randriamboavonjy (Tiana), a student at the University of Antananarivo, was selected for the project. She learned how to collect and press plants and how to make special collections (e.g. silica gel or alcohol) and field notes. As DEA project we chose the study of the Malagasy representatives of the genus *Tricalysia*, another member of the Rubiaceae family. Tiana studied all herbarium material in TAN and TEF and recognized six species. She was trained in morphological and anatomical techniques and is even now writing up her DEA thesis. She is very enthusiastic about systematic research and hopes to continue her study outside her home country. It is important that Malagasy botanists are involved in the study of the rich flora of their homeland. For systematic research this is not often the case, since taxonomy is not taught in the Malagasy Universities. The grant provided by the Systematics Association not only helped me during my field work but also allowed a Malagasy student to continue her scientific education. Therefore, Tiana and myself thank the Systematics Association for its generosity.

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Milestones in Systematics in the 20th Century

As part of the 2001 Biennial meeting of the Systematics Association, we intend to host a symposium entitled 'Milestones in Systematics in the 20th Century'. Our intention is to document key advances in systematics, whether they are perceived as theoretical or technical breakthroughs, and chart their history and impact on what is now undertaken as routine in systematic studies.

Our initial idea has been to set out the meeting in a series of four broad topics: History, Theoretical advances, Technical Advances and Progress in Taxonomy (As an example, how has Angiosperm classification progressed?). We would welcome suggestions for topics to be included. If you have particular areas of advance that you see as of major significance over the last 100 years please drop either myself or Peter Forey a line (email: dmw@nhm.ac.uk or plf@nhm.ac.uk).

Dr. David Williams

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How we were born

It is 63 years since the Association was formed. Not all current members may be aware of how we came to be. Several have asked. So we include here a brief resume followed by the original 'Aims' which appeared in *Nature*. The history of the Association has been referred to in several texts dealing with the development of systematics in the twentieth century. But I have found the most informative and perceptive author is Mary (Polly) Windsor, an historian of science at the University of Toronto. I call on her work here (Windsor 1995 *History and Philosophy of Life Science*, 17: 227-252; in press *Biology and Philosophy*) but we are hoping that she will write something a little longer and more authoritative.

The impetus for the formation of the Association came from two botanists then working at the Royal Botanic Gardens Kew in the mid 1930's—William Turrill who went on to become the Director at Kew and, especially, John Gilmour who later became the Director of the Botanic Gardens in Cambridge. Both were trained as classical herbarium botanists who saw their role as describing species. For them, species were to be recognised on morphology imprinted on the herbarium sheet.

But Gilmour was uneasily aware of the wealth of experimental taxonomy that was going on around him. This consisted of experiments showing that genetically identical plants could be grown in different environments to give different morphologies. To him the species was becoming a problem and he came to think that it was probably unrealistic to think that we could ever discover the genealogical relationships between plants. He thought that classification, which was supposed to express this genealogical hierarchy, was really a human construct designed to express the morphological variation around him. This human construct was for Gilmour the Natural Classification. But the up and coming experimental taxonomists were coining all kinds of new descriptors for species—coenospecies, karyospecies etc. and they thought they held the key for finding genealogical relationships and expressing those in what they called a Natural Classification.

What particularly concerned Gilmour was that different biologists were using the same words such as species, genera to mean different things and he, quite rightly, realised that this is not good for communication among a general biological community, which frankly was not interested in taxonomy and classification.

Gilmour started a discussion group to try and clarify what words such as species and relationship meant, hoping to standardise the meanings. These discussion groups at first consisted of a few like-minded botanists. But he later invited a few zoologists such as Julian Huxley, who was then Director of the London Zoo and William Calman, a researcher working on crustaceans at the British Museum of Natural History. Unfortunately for Gilmour these zoologists believed that it was possible to discover genealogical relationships and that these relationships should be expressed in classification which they claimed was The Natural Classification. So not only was the species a problem but so was the meaning of Natural Classification: that is the relationship between phylogeny and taxonomy.

At that time the premier Society for taxonomy was



The Linnean Society of London. But in the 1930's the Linnean Society was going through one of its more conservative and, some might say, reactionary phases. The officers of the Linnean Society were not seen as those who would welcome open discussion on such matters as phylogeny and taxonomy.

And so a small band of people, centered on Gilmour, thought that it would be productive to form an association and seek as many views as possible. And on June 25th 1937, in the rooms of the Linnean Society about seventy people met and agreed to form an Association dedicated to discussing taxonomy and classification. They chose the rather cumbersome title: The Association for the Study of Systematics in relation to General Biology, later The Systematics Association. And they chose a non-taxonomist—Julian Huxley—as their first chairman. The following is the declaration of aims drawn up by this group, and published in *Nature* in 1937.

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Association for the Study of Systematics in Relation to General Biology

Nature 140, 163-164 (July 24th, 1937)

Editorial note: Reprinted with kind permission of *Nature*.

An opening meeting of the "Association for the Study of Systematics in Relation to General Biology" was held in the rooms of the Linnean Society (by kind permission of the president and council) on Friday, June 25. The chairman of the Association, Dr. Julian Huxley, presided over a gathering of seventy-four biologists.

In his introductory remarks, Dr. Huxley outlined the history of the Association. He said that the movement commenced with informal meetings in the autumn of 1936 between certain members of the staff of the Royal Botanic Gardens, Kew, and the John Innes Horticultural Institution at Merton. These led to the formation, on May 3, 1937, of a joint zoological and botanical "Committee on Systematics in Relation to General Biology". This committee eventually changed its title to the present form, and a council and seven committees were elected. The council at present consists of the following biologists: J. S. Huxley (chairman of the Association), H. W. Parker (zoological secretary), J. S. L. Gilmour (botanical secretary), W. T. Calman, G. S. Carter, M. B. Crane, C. D. Darlington, C. Diver, E. B. Ford, R. Ruggles Gates, H. Godwin, J. W. Gregor, M. A. C. Hinton, J. P. Norman, J. Ramsbottom, O. W. Richards, N. D. Riley, E. J. Salisbury, Miss B. Schafer, T. A. Sprague, W. B. Turrill, B. P. Uvarov, E. B. Worthington, Sir W. Wright-Smith.

Dr. Huxley then explained the aims of the Association, which may be summarized under the following heads:

(1) To examine the theoretical and historical bases and the practical aims of taxonomy, and especial-

ly the relation of phylogeny to cytogenetic and taxonomic data.

(2) To examine the criteria employed in defining species and other systematic categories in different groups and the possibility of obtaining greater uniformity in their usage.

(3) To consider how far in the light of cytogenetic, ecological, physiological, embryological, and palaeontological data, existing classification might require to be modified and new subsidiary terminology to be introduced. Further, to investigate the relation of any such subsidiary terminology to the International Rules of Nomenclature.

(4) To investigate the data and material already available, either taxonomic or bearing on taxonomy, with the view of correlating them with general biological principles and of establishing generalizations in comparative systematics.

(5) To press for the appointment of additional taxonomists and other biologists to the staffs of museums and other appropriate institutions.

(6) To arrange for research into the relative importance of the various factors, internal and external, operative in different groups in producing speciation and other evolutionary processes.

(7) To co-operate in the production or improvement of handbooks on British animals and plants and in the eventual publication of a British Fauna and Flora on uniform biological lines.

(8) To suggest useful lines of biological work to natural history societies and to amateurs and to assist in its co-ordination.

(9) To investigate the best methods of teaching systematics and field work in universities and schools.

(10) To stimulate discussion and to promote co-operation between workers in different branches of biology on problems of taxonomic interest.

The committees so far formed, together with the particular items of the aims of the Association with which they are concerned, are as follows:

(1) Taxonomic principles (items 1-3). Convener: Mr. J. S. L. Gilmour, Royal Botanic Gardens, Kew.

(2) Comparative systematics (item 4). Convener: Mr. J. R. Norman, British Museum (Natural History), Cromwell Road, S.W. 7.

(3) Research (item 6). Convener: Dr. W. B. Turrill, Royal Botanic Gardens, Kew.

(4) Handbooks (item 7). Conveners: Captain C. Diver, 40 Pembroke Square, W.8; Mr. M. B. Crane, John Innes Horticultural Institution, Merton, S.W. 19.

(5) Natural History Societies (item 8). Convener: Mr. H. W. Parker, British Museum (Natural History), Cromwell Road, S.W. 7.

(6) Education (item 9). Convener: Miss B. Schafer, John Innes Horticultural Institution, Merton, S.W. 19.

(7) Publications (other than handbooks). Convener: Dr. C. D. Darlington, John Innes Horticultural Institution, Merton, S.W. 19.

At the close of the meeting, fifty-three biologists, in addition to the existing council and committees, gave in their names as members. Any other biologists wishing to join the Association should send their names and addresses to one of the secretaries, stating in which particular committee they are interested. For the present there is no subscription or formal method of election.



Forthcoming Meetings

Taxonomy Today: Diversity & The Tree of Life 3rd - 5th July, 2000

An international conference sponsored by the Natural Environment Research Council

Three Symposium Sessions:
Key Innovations: past and present
Rate and Time in Phylogenetics
The Catalogue of Life: discovery, classification and information systems.

Taxonomy for Tomorrow: a policy forum.
Conference sponsored by NERC as part of the NERC Taxonomy Initiative, and hosted by the Centre for Plant Diversity & Systematics at The University of Reading.

Website:

http://www.reading.ac.uk/AcaDepts/sb/cpds/taxonomy_today.html

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2nd Young Systematists Forum, Natural History Museum, 30th November 2000

Studying historical relationships between living organisms and/or parts of their genomes (e.g. genes) represents arguably some of the most fascinating aspects of biology, investigations of interest on their own right but possibly even more interesting through creating fertile dialogues between diverse fields of biology. Never before so much data has been produced from so many diverse forms of life and new analytic methods developed allowing to further increase our knowledge of life's complex history, amazing diversity, and the subtleties of the evolutionary processes shaping this diversity. The Young Systematists Forum represents an informal setting for postgraduates to present their projects focusing either on the systematics of specific taxa and/or on methodological issues of phylogenetic inference and comparative biology. It will provide an opportunity for postgraduates to present their ideas to their peers in a relatively informal setting to promote discussion and support innovation. For further details contact:

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Meeting Reports

Young Systematists Forum 1999

On December the 1st, 1999, the first ever Young Systematists Forum was held in the Natural History Museum, London. The point of the forum was to allow PhD students working on systematic projects the chance to get together and exchange ideas, as well as providing a friendly environment in which to present their PhD research. The list of speakers was diverse and covered almost every conceivable area of systematics, with students from all over the UK and some from abroad.

A lot of speakers presented work based on molecular systematics, both of specific taxa and of large groups. These talks included a presentation by Vernon Hedge on the diversification of Eukaryotes, and how he plans to identify the branching patterns within the group. This sounds like a very interesting PhD with potentially important results. Patrick Hamilton spoke about the molecular phylogeny of trypanosomes, an economically important vertebrate parasite and Bryony Williams talked about the phylogeny of Microsporidia, another group of parasites. All these students had only just started their PhDs and did very interesting presentations, which I thought was very impressive. Other speakers talked about consensus between different phylogenies and the problems with phylogeny reconstruction. Roland Jenner, from the University of Amsterdam gave an interesting talk about the lack of consensus in metazoan phylogenies, and what might be causing this problem. Davide Pisani from Bristol University spoke about lack of congruence between molecular and morphological phylogenies of the lizard family Sceloporus and showed that consensus trees gave different phylogenies to total evidence trees, a very interesting result.

There were a number of "traditional" systematics talks, about the phylogenies of various groups. Gareth Dyke presented a paper about the phylogenetic position of Eocene bird fossils compared to modern birds. Neale Monks, who organised the conference, gave a talk on the cladistic phylogeny of heteromorph ammonites and how this phylogeny differed from traditional stratophenetic trees. Jovita Yesilyurt talked about the phylogeny of the fern *Doryopteris*, and showed some very picturesque slides of the ferns habitat which made most of the audience wish they were doing her fieldwork! Xavier Leroy, from University of Brest, talked about the phylogeny of the Brassicaceae, which sparked a good discussion about how closely related cauliflowers and broccoli were (the answer is very!). Grainni Ni Chonghaile talked about the molecular phylogeny of the woody bamboos, a group containing over 1000 species. Other talks veered away from more traditional systematics and showed how systematics could be related to other disciplines. Maria Chacon talked about how the molecular phylogeny of the bean might show where these plants were first domesticated, and how this would tie in with the archaeological record of bean domestication in South America. Carlos Laamonde presented a phylogeny for figs, their pollinator wasps and wasps that parasitised the pollinators. He showed that whilst the figs and



their pollinators had a closely linked phylogeny, the phylogeny of the parasitic wasps was not linked to either of the other two. This is interesting in terms of host parasite co-evolution patterns. Russell Seymour, from the University of Kent, talked about differentiating between subspecies of giraffe in Africa. He provided a very clear account of his morphometric analysis and discussed the implications of his work for the conservation of giraffe populations. Finally, Joe Thorley, from Bristol, demonstrated a new piece of software called "RadCon" which can be used to produce reduced consensus trees from a dataset. He discussed why reduced consensus is a useful type of consensus tree to use and then showed exactly how the program worked.

At the end of the day, a closing talk was made by Andrew Smith, who said how impressed he had been with the presentations. I'm sure that view was shared by most of the audience. Then the prize for best talk was presented. This was given to Russell Seymour for his Giraffe Morphometrics talk. All the audience seemed in agreement, and as far as I was concerned, anyone who can make a morphometric analysis that understandable definitely deserves a prize! Finally the day was wrapped up with a quick chat from Peter Forey and a few glasses of wine.

Overall the day was excellent. The atmosphere was good, and all the talks went down well, with most people getting useful questions from the audience after their talks. It also showed that systematics is a dynamic and interesting area, related to most other areas of biology and that a lot of "systematic" PhDs are very useful to other disciplines. Hopefully, another event like this will be run next year, and maybe it will turn out to be as successful as this one.

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Ethiopia: a biodiversity challenge Addis Ababa University, 2-4 February 2000

An international conference of the Biological Society of Ethiopia and the Linnean Society of London supported by the Systematics Association

Arriving in Addis Ababa, with its bright sunshine, perfect blue sky and cool air, all the months of planning and occasional doubt gave way to a sense of elation. As the jacaranda trees nodded a welcome in the breeze, our colleagues from Addis Ababa University greeted us with a cheery wave and a heartfelt handshake. We were back in Ethiopia.

On 2 February 2000, two years after the meeting's inception by Virginia Purchon (Linnean Society fellow and conference organiser), Dr Masresha Fetene (Secretary of the Biological Society of Ethiopia) welcomed some 300 delegates to the opening plenary session. The international conference Ethiopia: a biodiver-

sity challenge had begun.

With three lecture halls and a programme which included 68 presentations, 26 by international speakers from 17 countries, this was to be a fast, frantic but invigorating three days. There were 8 plenary lectures and 14 parallel sessions. The area behind the halls was choked with delegates during the coffee breaks, and the number attending for at least part of the week, is thought to have considerably exceeded 300. As I write, the final registration forms are being counted in Addis.

At the end of the first day, a reception organised by the Biological Society of Ethiopia was held at the conference hotel. This was a wonderful welcome for those who had travelled thousands of miles, and gave us a chance to meet and talk to members of the BSE. For me, as one of the organisers, it is difficult to distinguish one highlight from another. Perhaps, it was watching the animated discussions of 'old Ethiopia hands', returning after many years of absence. There was Derek Yalden (Manchester University, UK), veteran of many Ethiopian field surveys and expert on Ethiopian mammal diversity, in conversation with Afework Bekele, former student and senior lecturer in the Biology Department (AAU). There was Arthur Harrison, formerly of AAU and the University of Waterloo, Canada (now retired), an authority on Ethiopia's freshwater invertebrates, conversing with his former colleagues, including Seyoum Mengestou (AAU, Ethiopia), a specialist on Ethiopian zooplankton.

Perhaps too, it was fascinating watching the 'new hands' at work, in particular, those such as David Switzer (Ethiopian Wolf Conservation Programme) and PhD student Fiona Flintan (Cork University), who are just commencing their careers. One of the great arts of the conference attendee is successful wheeling and dealing—making new friends and finding new research colleagues, often in different disciplines. Frequently they offer a new slant to an old problem. To this end, as conference organisers, we had sought to be inclusive and at times eclectic rather than too specialised. We tried to have generalists such as Florence Navarro of the United Nations Development Programme (UNDP, Ethiopia), as well as specialists such as Patricia Moelman of the IUCN Equid Specialist Group, Tanzania and rodent expert Marco Corti (Universita di Roma, La Sapienza). We hoped to encourage debate and an exchange of information such as that observed between Solomon Yirga (AAU, Ethiopia) and Woody Cotterill (Biodiversity Foundation of Africa, Zimbabwe) on the merits and capabilities of different database systems. We wished to introduce those mainly concerned with conservation to those more focused on ecology, behaviour studies or systematics and vice versa. Perhaps symbolic of this was the talk of Jean-Pierre d'Huart, a conservationist specialising in East African wildlife and employed by WWF, Belgium, who gave a detailed presentation on the systematics of desert warthogs. If only all conservationists were so enlightened! We were also lucky in that we attracted delegates from outside the inner circle of biodiversity research. Individuals, such as Natasha Breed from BBC Bristol, currently filming and researching Ethiopian highland endemics, added much to the colour and variety of the intra- and apres- conference debates.

So, what of the presentations themselves? The aim



from the start had been to make this an integrated conference—a two-way learning process—an opportunity for expert and scientific beginner, from Ethiopia and abroad, to mix and match. It was to be an international meeting but one set in the context of annual meeting of a very active African society - the Biological Society of Ethiopia. As if to emphasise the importance of the two-way listening process, in the opening plenary lecture, Tewolde Berhan G/Egziabher (Environmental Protection Authority, Ethiopia) gave a thought provoking insight into the tensions that exist between western and developing nations concerning the Convention on Biological Diversity.

Subsequent parallel sessions looked at issues affecting forest conservation and zoological diversity. Topics ranged from forest genetic resources by Taye Bekele (Institute of Biodiversity Conservation and Research, Ethiopia) to the effects of disturbance on African forests. This latter talk by Jon Lovett (University of York, UK) was based on his extensive work in the forests of Tanzania. Stephen Spawls (Sanford English Community School, Ethiopia) gave a beautifully illustrated presentation on Ethiopian reptiles and Dror Hawlena (Ben Gurion University, Israel) looked at the effects of habitat fragmentation on lizard diversity based on his researches in the Negev desert.

Delegates, particularly those who have not had the opportunity to attend international conferences before, were introduced to new ideas on the dissemination and analysis of biodiversity information. The first of these presentations—by Rob Heijman—described the interactive computer systems of ETI, Amsterdam (Expert Centre for Taxonomic Identification, Netherlands). Currently CD-ROM based, they offer a new approach to the 'repatriation' of taxonomic information held in western institutions to those systematists and ecologists living and working in the tropics. Subsequently, Thomas Brooks (Zoological Museum, Copenhagen, Denmark) illustrated the versatility and conservation planning potential of the WORLDMAP computer programme. Using African bird, mammal and herpetological data, he showed the value of reviewing Ethiopia conservation priorities from a continental, rather than a purely national, perspective.

Conservation priorities in African birds was also an issue addressed by David Mutekanga (Birdlife International, Kenya). He was particularly concerned with the role of the local communities in the management of important bird areas. In general, conservation and community was addressed by a number of the delegates. Zelealem Tefera (DICE, University of Kent, UK) presented a case study of community based indigenous resource management systems in the conservation of biodiversity. Fiona Flintan looked at the 'genderisation' of conservation and Brook Lemma (Alemaya University of Agriculture, Ethiopia) at the specific issue of the disposal of household waste.

One of the great successes of systematic research in Ethiopia has been the 'Ethiopia Flora Project'. Launched in 1980, it has involved over 40 botanists from 12 countries. One of its founding fathers (if you can have a female father!). Dr Inga Hedberg (Uppsala University, Sweden) gave a plenary lecture on its history and progress. It is an example of international collaboration at its best. Today, researchers at the National

Herbarium, Addis Ababa, directed by Professor Sebsebe Demissew, work with colleagues worldwide. Inga Hedberg's talk was the first of a number directly related to the project. Others included, Ib Friis (University of Copenhagen, Denmark) on the diversity and endemism of Ethiopian flowering plants, Sally Bidgood (Royal Botanic Gardens Kew, UK) on new and interesting plants from western Ethiopia and Sue Edwards, Mirutse Giday and Tecklehaimanot Haileselassie (National Herbarium, Ethiopia) on the taxonomic diversity of dicotyledons in the flora of Ethiopia and Eritrea.

Discussions on the diversity of plants were not restricted to the wild taxa. Consideration was also given to cultivated plants and included presentations on home garden biodiversity (Zemed Asfaw, AAU, Ethiopia); agrobiodiversity loss in yams (Elizabeth Hildebrand, Washington University, USA); Sebsebe Demissew, AAU, Ethiopia and Paul Wilkins, Royal Botanic Gardens Kew, UK); archaeological observations on the Ethiopian pea (Ann Butler, Institute of Archaeology, UCL, UK); genetic variation in t'ef (Negussie Dana, Alemaya University of Agriculture, Ethiopia) and genetic erosion in sorghum diversity (Solomon Benor, Sirinka Research Centre, Ethiopia).

Another area of research of particular interest to systematists, ecologists and conservationists alike, are the highlands of Ethiopia. Several talks discussed different aspects of this subject. Erwin Beck (University of Bayreuth, Germany) looked at tropical alpine plant diversity, Zelealem Tefera and David Switzer discussed conservation issues relating to the endemic Ethiopian wolf, Robin Dunbar (Liverpool University, UK) looked at the impact of climate warming on the distribution of Gelada baboons in the mountains of northern Ethiopia, Bernard Nievergelt (University of Zurich-Irchel, Switzerland) explored the effect of habitat fragmentation on larger mammals in the Simien Mountains and Demel Teketay (AAU, Ethiopia) was concerned with the diversity of the soil seed flora of the dry-afro-montane regions. Claire Belsham (Zoological Society of London, UK) presented a poster on a biodiversity project in the central highlands. Derek Yalden analysed the diversity of Ethiopian mammals and the timing and evolution of endemicity whilst Derek Wildman (New York University) reviewed the zoogeographical relationship of Ethiopia and Arabia.

The work of Clifford Jolly (New York University, USA) and Larissa Swedell (Columbia University, USA) on the baboons of Awash National Park was as fascinating as it was meticulous. That said, once again I was glad that we conduct research on other primates and not vice versa. Graphs of testis length (or worse) against age, or histograms of male/female interactions within groups, could be rather soul destroying for some - rather bullish for others, I suppose!

On a less personal but perhaps more contentious note, the session 'systematics and conservation' sought amongst other things to explore the relationship between the two disciplines. Non controversial subjects, such as the millennium seed bank project (Tim Pearce, Royal Botanic Gardens Kew, UK) were interspersed with discussions on the role of Biodiversity Strategy and Action Plans (BSAPs) in the Convention on Biological Diversity (Roy Hagen, consultant, USA). In



my own talk, I discussed the need for conservation funding agencies, such as GEF, to include support for biodiversity expertise. Woody Cotterill (Bulawayo Museum, Zimbabwe) spoke on the same theme, stressing the value of zoological collections and herbaria and highlighting the present funding crisis. Lively discussions followed.

On Friday afternoon with the presentations completed (and I apologise to those speakers that I have omitted from the above review—it is a question of space not quality), the delegates met for the final workshop. Ten issues were identified for further discussion. These ranged from designing a mechanism to promote and co-ordinate Ethiopian/international scientific co-operation, to specific items addressing the conservation of the Ethiopian wolf. At 6.00 pm, it was all over—resolutions passed, 'thanks thanked' and hands shaken. Over, but not out, for the conference dinner was yet to come. Dr Masresha Fetene, Professor Sebesebe Demissew and Negusu Aklilu had organised a traditional dinner for some 100 guests. When the delegates had tucked into injera and wat, washed down with Ethiopian beer and delicious local red wine, Virginia Purchon was presented with flowers. She, in turn, presented Masresha Fetene with a Linnean Society decorated plate. Thanks were exchanged all round.

Perhaps at this moment, I too can drink a metaphorical toast of thanks to the Systematics Association on behalf of Virginia, myself and all the delegates for the Association's support, encouragement and trust in the project. So to, to the Linnean Society and in particular to the Programmes Committee, the Society's Executive Secretary John Marsden and Meetings Secretary Marquita Baird. Also to the British Council, Royal Society, the Department of International Development (DFID, London), the Swedish International Development Agency (SIDA) and to my own institution, the Harrison Institute, which underwrote many of the incidental (but nevertheless not insubstantial) costs. Finally it is time to reflect that there may be better places to hold a conference and there may be easier and more efficient co-organisers than the Biological Society of Ethiopia but frankly I haven't met them. On behalf of all the international delegates, thank you Dr Masresha Fetene and all in Ethiopia.

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