



Submit by 21 January 2005

DARWIN INITIATIVE APPLICATION FOR GRANT ROUND 13 COMPETITION:STAGE 2

Please read the Guidance Notes before completing this form. Applications will be considered on the basis of information submitted on this form and you should give a full answer to each question. Please do not cross-refer to information in separate documents except where invited on this form. The space provided indicates the level of detail required. Please do not reduce the font size below 11pt or alter the paragraph spacing. Keep within word limits.

1. Name and address of organisation

Name: Professor Kevin J Gaston	Address: Biodiversity & Macroecology Group, Department of Animal & Plant Sciences, University of Sheffield, Sheffield S10 2TN, United Kingdom
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2. Project title (not exceeding 10 words)

CAPACITY BUILDING FOR BIODIVERSITY ASSESSMENTS DURING CLIMATE CHANGE
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3. Project dates, duration and total Darwin Initiative Grant requested

Proposed start date: 1.10.05	Duration of project: 3 years				
Darwin funding requested	Total	2005/06	2006/07	2007/08	2008/09
	£286,892	£59,452	£104,937	£78,806	£43,697

4. Define the purpose of the project in line with the logical framework

This project will provide a biodiversity monitoring scheme that, using ants as an indicator group, not only enables monitoring of diversity through time and space, but also contributes to capacity building and education at the secondary school level. Darwin Initiative support and UK expertise will be used to establish the project in the Western Cape, and then to encourage local partners to continue the project and to expand it to cover a larger region in South Africa using additional funding.

5. Principals in project. Please provide a one page CV for each of these named individuals

Details	Project Leader	Other UK personnel (working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Gaston		Chown
Forename (s)	Kevin John		Steven Loudon
Post held	Professor		Professor
Institution	University of Sheffield		University of Stellenbosch
Department	Animal & Plant Sciences		Centre for Invasion Biology
Telephone			
Fax			
Email			

6. Has your organisation received funding under the Darwin Initiative before? If so, give details

University of Sheffield received funding for the projects: **Round 5:** Bogs of Tomsk Province: inventory, assessment & Biodiversity Action Plan (involving administrator for this project); **Round 6:** Conserving the Rare & Endemic Flora of Iran (involving administrator for this project); **Round 7:** Conserving the Rare Flora of Central Argentina; **Round 7:** Invertebrate Diversity & Endemism at Gough Island (involving the two principal partners for this project); **Round 10:** Cross-border conservation strategies for Altai Mountains endemics (Russia, Mongolia, Kazakhstan) (involving UK principal partner & administrator for this project); **Round 12:** Building forensic capacity to reduce South Africa's illegal wildlife trade.

7. IF YOU ANSWERED NO TO QUESTION 6 describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)

Aims (50 words)	N/A
Activities (50 words)	N/A
Achievements (50 words)	N/A

8. Please list the overseas partners that will be involved in their project and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. What steps have been taken to ensure the benefits of the project will continue despite any staff changes in these organisations? Please provide written evidence of partnerships.

Prof. S.L. Chown & Ms. K. Mahood, DST Centre of Excellence for Invasion Biology, University of Stellenbosch, P. Bag X1, Matieland 7602, South Africa. The project has been jointly developed with these partners; they will coordinate field work and schools servicing in South Africa over the duration of the project, and will contribute to project development, data analysis and implementation. They will also be involved in continuing the work after completion of the Darwin-supported project. To make sure that the project meets local priorities, to date they have liaised closely with local role-players, including Western Cape Education Department, Department of Science & Technology, and other agencies. They will also provide staff support, facilities, office space, and some of the costs that are required for running the project at the South African end. The Board of the Centre of Excellence has agreed to the Centre's participation in this work and will thus see to the appointment of new staff to continue the work and to ensure continuity, should current staff elect to leave the organisation.

9. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities? Please include details of any contact with the government not already provided.

A process of consultation with Western Cape Education Department (WCED) began late in 2003 during the development phase of the proposal, with the goal of undertaking ant sampling as a collaborative venture with the extant Ellerman Resources Centre (then staffed by Mr J.P. Khanyile) and the nascent Centre for Invasion Biology (C-I-B). Mr T.G.R. Botha, at the Section of Curriculum Development for Further Education & Training, has indicated that the work will contribute to the National Curriculum Statement not only by stimulating young minds to explore South Africa's biodiversity, but also by providing access to Information & Communication Technology (ICT) which is not widely available (copy of letter attached). The proposed work contributes specifically to the knowledge areas of diversity, change and continuity in the National Curriculum Statement for Life Sciences in Grades 10-12, and specifically learning Outcome 2 in Grade 10 which includes "Biodiversity of Plants & Animals & their Conservation" (relevant sections of Statement attached; see also <http://curriculum.wcape.school.za/site/27/page/view/549>). During biology training workshops as part of the Lebone project run by the Dept. Zoology, the responses of biology teachers, from six local schools, to the idea of a distributed ant sampling scheme were also elicited: these were all enthusiastic and positive. This consultation process will be resumed in Feb 2005 as part of the C-I-B's Limbaco outreach programme, and will be broadened to include school principals as well as other members of the WCED, and will be targeted to specific schools in the Western Cape Area. Consultation with the South African Institute for Aquatic Biodiversity (SAIAB) has taken place (S.L. Chown with director, Prof. P. Skelton in Oct 2004). The SAIAB has extensive contact with schools in Eastern Cape province, and is keen to assist with implementation at one or two schools in the Grahamstown area (where SAIAB is based).

PROJECT DETAILS

10. Is this a new initiative or a development of existing work (funded through any source?) Are you aware of any other individuals/organisations carrying out similar work, or of any completed or existing Darwin Initiative projects relevant to your work? If so, please give details explaining similarities and differences and showing how results of your work will be additional to any similar work and what attempts have/will be made to co-operate with and learn lessons from such work for mutual benefits.

This is a new project. There are no organizations or individuals involved in work to identify and monitor ants for both biodiversity capacity building and long-term monitoring of invertebrate responses to climate change in South Africa. This work is unique in both its extent and scope. The work is being undertaken in collaboration with the Limbaco Outreach project of the C-I-B which has broad goals of understanding changes in biodiversity through space and time, and which will provide long-term continuity. There has been a previous Darwin Initiative supported project of a superficially similar kind in South Africa, related specifically to capacity building via botanic gardens (Education and Training Materials for South African Botanic Gardens – Round 6), but this work differs substantially from that project in terms of taxa, scope of work and institutions that will benefit.

11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD thematic programmes and/or cross-cutting themes (see Annex C for list and worked example) and rank the relevance of the project to these by indicating percentages. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

This project will assist South Africa in implementing the following Articles of the CBD:
Article 7 Identification and Monitoring (35%). Ants are key elements particularly of Fynbos ecosystems in the Cape Floristic Region especially because approximately 20% of the 6500 strictly Fynbos plant species are dependent on myrmecochory (ant assisted seed dispersal). They are thus associated with key evolutionary processes in the most floristically diverse region in Africa (and globally the smallest Floral Kingdom). This region is predicted to be affected substantially by climatic change over the next 50 years, and yet no invertebrate monitoring schemes are in place. It is also clear from South Africa's second report to the CBD that invertebrate monitoring and inventorying is poorly developed. This work will make a key contribution towards establishing a monitoring and inventory programme for an important group of insects, which are also widely agreed to be excellent indicators of the effects of landscape change.

Article 8 In situ Conservation (15%). This work will provide the information necessary for sustainable management of biodiversity outside and within protected areas (part of the sampling will be done in the Greater Cederberg Biodiversity Corridor) by making available spatially explicit and temporally extensive information on ants in the area of interest (Article 8c). It will also enable assessment of changes in the distribution of established alien species (such as Argentine ant), and arrival of new alien species by providing baseline information on ant assemblages at a variety of sites across many years, so enabling action to be taken in a timely fashion. Once again, South Africa's second report to the CBD makes it clear that there is little in the way of such assessment and monitoring work being undertaken for invertebrates (Article 8h).

Article 12 Research and Training (35%). The major element of this work is to build capacity, knowledge and interest in the field of invertebrate biodiversity, and to promote an appreciation of spatial and temporal variation in diversity and the implications of changes thereof for conservation. It therefore addresses education at the level of local communities and especially learners in whose hands the future of biodiversity will rest. The work aims to contribute not only to the formal education of learners, but also to their appreciation of the effects that landscape alteration can have on biodiversity and of the importance of sustainable use of the environment. Ant sampling, and communication regarding the differences in species and assemblages that are characteristic of different sites sampled by schools, using modern technology, will enable learners to understand the variation in diversity and develop an appreciation of the power of information and communication technology to make such knowledge more accessible. At the same time, the information collected will provide the basis for formal research into the distribution and assemblage structure of ants, and the way these are changing in response to a variable and changing environment in the Cape Floristic Region (which extends to the eastern Cape).

Article 16. Access to and Transfer of Technology, Article 17. Exchange of Information, Article 18.

Technical and Scientific Cooperation (15%). A major outcome of this work will be the provision of spatially explicit information and keys to ants that are accessible by computer either by CD or via the internet. These keys will be developed using digital imagery and will also be made available in hard copy. Schools will be able to compare their work across the area. The technology and information required for this work will be transferred between the UK and South Africa, and there will also be substantial exchange of scientific skills and information to ensure that sampling and analysis are set-up and done in such a way that South Africa derives maximum benefit from the commitment of resources and expertise both from the UK side and via its own investments.

Cross-cutting Theme. The project is cross-cutting in its approach in that it aims to make use of school learners to assist with a monitoring programme for biodiversity that will contribute to understanding of spatial and temporal variation in a poorly comprehended portion of South Africa's biodiversity. Thus, it simultaneously contributes to several Articles of the CBD as indicated above.

12. How does the work meet a clearly identifiable biodiversity need or priority defined by the host country? Please indicate how this work will fit in with National Biodiversity Strategies or Environmental Action Plans, if applicable.

The Framework Convention on Climate Change Country Studies Programme for South Africa identified major constraints in this regard, including: (i) Knowing how species are distributed in the matrix and how these distributions are changing. In South Africa, there is virtually no annual monitoring of biodiversity, with the exception of water bird counts and smaller-scale monitoring of selected taxa within individual protected areas; and (ii) Convincing ordinary, often poor, people to care about these issues and the future well-being of biodiversity. Many rural poor have other issues to contend with before worrying about biodiversity.

The South African National Environmental Management: Biodiversity Act (Act 10 of 2004) specifically requires that monitoring mechanisms and indicators are set in place to determine the conservation status of components of South Africa's biodiversity and negative or positive trends affecting the conservation of biodiversity (Section 49). The Act also requires that a monitoring system for alien and invasive species be set in place (Section 76). The South African National Biodiversity Institute (SANBI) established by the Act (Section 10) is mandated to monitor biodiversity in the country (Section 11), and has indicated that it will seek partnerships with various organizations to undertake this work. It has already done so via the collaborative ventures under the umbrella of the National Spatial Biodiversity Assessment (NSBA). The proposed project would contribute substantially to addressing these national goals, within a regional framework over a considerable period (envisaged life span of 10 years in total).

13. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country.

In developing countries, sustainable livelihoods are predicated, to a large extent, on appreciation by local communities of the importance of 'ecosystem services' and their long term maintenance. One way of developing such appreciation is to enable learners to come to grips with the biodiversity that lies at the heart of ecosystem service provision. Learners are not only recipients of such knowledge, but also act as effective upstream conduits of knowledge, being in a position to make parents and grandparents aware of the value of biodiversity and its link to sustainability of ecosystem services. Over the longer term an appreciation of spatial and temporal variation in biodiversity should translate into greater vision in terms of the sustainability requirements of landscape use, and the planning of such use. In consequence, local, regional and inter-regional activities aimed at improving sustainability of ecosystem service and conservation of key or threatened ecosystems are likely to be far easier to implement because the rationale underlying them is better understood in terms of the competing demands placed on landscapes and people for sustainable use of the local environment. A major component of this work is the involvement of learners in sampling of ants, a comparison of changes in ant assemblages over space and time, and a broader discussion of the role of ants in ecosystems which will catalyse an appreciation of biodiversity and sustainability issues as envisaged above.

14. What will be the impact of the work, and how will this be achieved? Please include details of how the results of the project will be disseminated and put into effect to achieve this impact.

The work will result in a spatially explicit, extensive and temporally replicated assessment of ant diversity and distributions across the Cape Floristic region that is based on capacity building in biodiversity assessments in school learners. The programme will be expanded to a broader region as it develops. As such it will provide the first, long-term spatially and temporally replicated biodiversity assessments for an

invertebrate group in the region. In addition, it will change substantially the view learners have of biodiversity and contribute to the development of their skills and their appreciation for the biodiversity foundation of ecosystem service provision. This impact will be achieved through an interactive programme of ant sampling including the sampling of a major transect across the Cederberg to obtain baseline information, and a distributed network of learner-based school sampling initiatives (10 initially). Specimens sampled from the transect and at schools' sites will be identified by project experts and site-specific keys will be drawn up in both electronic and hard copy form (some schools do not have access to power). Schools will be provided with an appropriate microscope (solar lighting based or digital) and with a pc (if they have access to power) that will enable cross-comparison of data as it is collected. Project staff will liaise with teachers and learners through a series of workshops and visits to schools to initialise the programme and to ensure its sound running. Project staff will undertake identifications and will verify those later made by trained teachers and in some cases learners. Data will be collated and will be analyzed for spatial patterns in diversity and this information will be compared with data on both vertebrate and plant distributions in the region and elsewhere. Spatially explicit information on invertebrates at large spatial scales is relatively uncommon with the exception of that for butterflies. Therefore, these data will prove useful for testing several key macroecological ideas. Both electronic data and specimens will be appropriately archived within the South African Biodiversity Information Framework (SABIF), the South African Environmental Observatory Network (SAEON), and Iziko Museums South Africa. Outcomes of the analysis will be disseminated as primary scientific papers, as well as in a user-friendly public format as information documents and pamphlets. In addition, basic visualizations of the distributions and richness of ants, along with the keys, will be made available to all schools (those participating and others) via the C-I-B homepage, as CD-Rom, or in hard copy (the information documents mentioned above as well as hard copy keys). Because a small amount of abiotic data (temperature data from i-button thermochron loggers placed at each site) will also be collected, this will also be made available to schools on a regular basis so that the changing environment in their sites of interest can be tracked. These data will be made available electronically and in distilled (trend graphs) hard copy format.

15. How will the work leave a lasting legacy in the host country or region?

This work will continue for the entire duration of the C-I-B, which is set to continue its work for 10 years (see www.sun.ac.za/cib). Thus, it will provide the only long-term spatially explicit assessment of invertebrate biodiversity in a region that is predicted to change rapidly as a consequence of climate change, invasion by alien species, and landscape alteration. Because the C-I-B will continue with the work beyond the lifespan of this Darwin project as part of its Limbaco outreach programme, it will have a legacy beyond the initially relatively short-term scope of the Darwin work. Moreover, the aim is to establish a programme that will eventually be absorbed into the overall framework of biodiversity monitoring in South Africa that will be developed as part of the National Environmental Management: Biodiversity Act through the SANBI. In other words, a monitoring programme that will be self sustaining beyond the 10-year framework envisaged by the Limbaco programme and the C-I-B monitoring work that will be undertaken. The data collected as part of this project will be made permanently available via SABIF and SAEON, thus contributing a legacy of biodiversity data. Clearly, some of the ant species will either be new to science or undescribed, and they will be catalogued and described as part of the work. It is envisaged that the programme will contribute to an interest in ant systematics in at least some learners and the C-I-B, which is a unit of Stellenbosch University, provides a career-pathing framework that would allow learners to proceed through a tertiary degree to a research-based systematics career.

16. Please give details of a clear exit strategy and state what steps have been taken to identify and address potential problems in achieving impact and legacy.

This project will provide the baseline for the longer term Limbaco programme that will be run by the C-I-B. Thus, at the end of this project, the UK project staff will hand the programme over to the C-I-B based South African staff who will continue with it for as long as the C-I-B continues (envisaged to run until 2013). As the programme develops there will be negotiation with the key South African institutions, especially SANBI, regarding the further continuation of this programme as a broader-scale monitoring one that is widely adopted. Potential problems in achieving impact and legacy revolve around the longer-term involvement of schools, the C-I-B, and SANBI. The commitment of the C-I-B to addressing biodiversity issues (and especially those associated with biological invasions), its successful appointment of a permanent staff member (K. Mahood) to run a biodiversity-based outreach programme, and the commitment of its core staff and team members (www.sun.ac.za/cib) to this programme suggest that this institution will not be a bottleneck.

Moreover, Stellenbosch University has identified the C-I-B as the core unit underlying its biodiversity and sustainable environment focus area and has committed substantial support to it. Early discussion with both the Western Cape Education Department and with teachers from appropriate schools suggests that there are likely to be minimal problems in this area too. Nonetheless, a series of meetings with Western Cape Education Department and potential partner schools will be held to ensure initial take-up. Ongoing participation will depend both on the extent to which this programme can contribute to the National Curriculum, and on the extent to which the outreach programme can also provide further education via school worksheets. To this end, the C-I-B, in collaboration with the Department of Botany & Zoology has solicited funds from a partner (the Ellerman Foundation) to support an additional science liaison officer that will contribute especially to teacher training in the formal curriculum, preparation of worksheets, and more standard, poster and information leaflet, based outreach. These funds are available for three years and the position will be advertised shortly. The likely further commitment by SANBI is something of an unknown, but the C-I-B has already begun negotiations for formal collaborations to assist SANBI in its commitments to the Biodiversity Act.

17. How will the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?

All material used and produced by the project will carry the Darwin logo and name. Vehicles used for the project as well as any hardware (microscopes, pcs) will carry the Darwin logo together with that of the C-I-B. In all media liaison (the C-I-B has appointed a media liaison officer (D. Pepler) who runs a television programme with access to 1.4 million viewers) the Darwin logo will be displayed as prominently as possible when this project is discussed. The Darwin name will be used in the acknowledgments in all scientific publications, and the logo and name will be used in all scientific and public presentations.

18. Will the project include training and development? Please indicate who the trainees will be and criteria for selection and that the level and content of training will be. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates (if known) of any training course. How will trainee outcomes be monitored after the end of the training?

The project will include training of two South African staff (K. Mahood and Ellerman Science Liaison Officer) as well as ten teachers, initially, at secondary schools. For teachers, the level of training will be technical and involve training regarding the correct techniques and design for sampling and curation of ants, the use of biological keys and specifically those for ants, the use of dissection microscopes (some schools presently have no microscopes at all), the basic use of computers, and visualization and electronic key software. All of the teachers will be from South Africa. The level of effectiveness will be assessed by field evaluation by project staff, by evaluation and during workshops at the C-I-B (skill in identifying predetermined samples; skill in microscope and pc use). Those trained will be in a position to train learners and this training will be verified on a regular basis. Where required, refresher training by project staff will be provided *in situ*. Training outcomes will be monitored by site visits by project staff and by follow-up workshops. For the South African project staff training will be highly technical and scientific. Skills in ant sampling design, implementation, curation, data analysis and identification will be verified by interaction with UK project staff and by consultation with various taxonomic experts in the case of identification. This training can also be passed on and the effectiveness of the training will be assessed after the training period by direct interaction with UK project staff and the principals in the project.

Teacher Training - Nov/05 (1 day), Apr/06 (2 days), Apr/07 (1 day), Oct/07 (1 day), June/08 (2 days); SA project Staff Training – Oct/05 (3 days), Dec/06 (3 days), Dec/07 (3 days), Aug/08 (5 days)

LOGICAL FRAMEWORK

19. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p> <p>Ant diversity monitored in Western Cape (WC) & strengthened monitoring capacity and education at secondary school level in region</p>	<p>New knowledge on dynamics of ant diversity in WC</p> <p>Biodiversity monitoring scheme functioning by yr 3</p> <p>Improved understanding of biodiversity amongst learners</p>	<p>South African partner institutional reports</p> <p>Peer-reviewed publications by project partners</p>	<p>Schools agreement and participation</p> <p>Continued enthusiasm of teachers & learners</p>
<p>Outputs</p> <p>Biodiversity monitoring programme established & functioning in 10 schools</p> <p>Trained teachers</p> <p>Baseline patterns of ant diversity established</p> <p>Lessons learned & best practice disseminated</p>	<p>Participation by schools and take up of keys</p> <p>Minimum of 10 staff trained by yr 3 in ant biodiversity assessment</p> <p>2 papers published in international scientific journals by end of yr 3</p> <p>Minimum of 1 radio broadcast, 2 popular articles published</p>	<p>Reports from schools to WC Education Department</p> <p>Reports from schools to WC Education Department</p> <p>Copies of publications sent to Darwin Initiative</p> <p>Copies of all publications & recordings sent to Darwin Initiative</p>	<p>Ongoing availability of taxonomic expertise</p> <p>Trained staff remain in participating schools</p> <p>N/A</p> <p>N/A</p>

Activities	Activity Milestones (Summary of Project Implementation Timetable)
Workshops	Yr 1: Planning workshop with project team to establish project, conduct detailed planning & coordination; Yr 1: Teacher information workshop; Yr 2: Teacher training workshop on sampling and implementation; Yr 2: Schools implementation visits; Yr 2: Progress & planning workshop with project team & stakeholders; Yr 3: Progress & planning workshop with project team & stakeholders; Yr 3: Second teacher information workshop; Yr 3: Teacher training workshop on interactions; Yr 3: Schools implementation and follow on visits
Sampling and identification programme	Yr 1: Major transects established by project staff, sampled & data extracted; Yr 1: Schools identified and participation agreed; Yr 1-3: School sampling established, samples sorted & data extracted; Yr 2-3: Continued sampling of transects & data extraction; Yr 2-3: electronic, image-based keys developed and tested; Yr 3: Monitoring programme and inter-school contacts established
Data analyses	Yr 1: Database system established and populated with test data; Yr 2-3: Database populated; data from sampling analysed; Yr 3: Analyses written up
Publicity material	Yr 1: 2 press releases, 1 radio broadcast; Yr 2: 2 popular articles, 2 press releases; Yr 3: 2 press releases and television coverage solicited, 2 papers submitted to international scientific journals

20. Provide a project implementation timetable that shows the key milestones in project activities.

Project implementation timetable		
Date	Financial year	Key milestones
	Apr-Mar 2005/6 Apr-Mar 2006/7 Apr-Mar 2007/8 Apr-Mar 2008/9	
Oct Oct Nov Nov Feb Mar	Apr-Mar 2005/6	2 press releases, 1 radio broadcast; Planning workshop with project team to establish project, conduct detailed planning & coordination; Schools identified and participation agreed; Teacher information workshop; Major transects established by project staff, sampled & data extracted;
Apr June Sept Oct Dec	Apr-Mar 2006/7	Teacher training workshop on sampling and implementation; Database system established and populated with test data; Schools implementation visits; Continued sampling of transects & data extraction; Progress & planning workshop with project team & stakeholders;
Feb Feb Mar		Electronic, image-based keys developed and tested; Continued sampling of transects & data extraction; School sampling established, samples sorted & data extracted;

Mar	Apr-Mar 2007/8	2 popular articles, 2 press releases;	
Apr		Second teacher information workshop	
July		Database populated; data from sampling analysed;	
Aug		Schools implementation and follow on visits;	
Sept		Electronic, image-based keys developed and tested;	
Oct		Teacher training workshop on keys;	
Dec		Progress & planning workshop with project team & stakeholders;	
Feb		Continued sampling of transects & data extraction;	
Mar		Monitoring programme and inter-school contacts established;	
Apr		Apr-Mar 2008/9	Schools follow on visits;
May			Solicitation of new school partners;
June			Teacher training workshop on interactions;
August	Analyses written up;		
August	2 press releases and television coverage solicited, 2 papers submitted to international scientific journals		
August	Hand-over workshop to South African implementing team;		
September	Completion of final report.		

21. Set out the project's measurable outputs using the separate list of output measures.

PROJECT OUTPUTS		
Year/Month	Standard output number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc.)
2005/Oct	15A/15B	National/local press releases issued in South Africa
2005/Oct	15C/15D	National/local press releases issued in UK
2005/Oct	14A	Planning workshop (3 days, 6 people)
2005/Nov	14A	Teacher information workshop (1 day, 14 people)
2005	8	12 weeks spent by UK project staff in host country
2005	23	c.£36101 (additional resources raised)
2006/Apr	14A	Teacher training workshop (2 days, 14 people)
2006/Dec	14A	Planning workshop (3 days, 6 people)
2006	8	26 weeks spent by UK project staff in host country
2006	23	c.£39737 (additional resources raised)
2007/Mar	15A/15B	National/local press releases issued in South Africa
2007/Mar	15C/15D	National/local press releases issued in UK
2007/Apr	14A	Teacher information workshop (1 day, 14 people)
2007/Oct	14A	Teacher training workshop (1 day, 16 people)
2007/Dec	14A	Planning workshop (3 day, 6 people)
2007	8	26 weeks spent by UK project staff in host country
2007	23	c.£39737 (additional resources raised)
2008/June	14A	Teacher training workshop (2 days, 15 people)
2008/Aug	12A	1 database to be handed over
2008/Aug	11B	2 papers submitted to international scientific journals
2008/Aug	14A	Hand-over workshop (5 days, 6 people)
2008/Aug	15A/15B	National/local press releases issued in South Africa
2008/Aug	15C/15D	National/local press releases issued in UK
2008	8	12 weeks spent by UK project staff in host country
2008	23	c.£24735 (additional resources raised)

MONITORING AND EVALUATION

22. Describe, referring to the Indicators in the Logical Framework, how the progress of the project will be monitored and evaluated, including towards delivery of its outputs and in terms of achieving its overall purpose. This should be during the lifetime of the project and at its conclusion. Please include information on how host country partners will be included in the monitoring and evaluation.

A Memorandum of Understanding will be prepared, to be signed by both partners, which will set out the project objectives and activities, and agree commitments and responsibilities on both sides. Communication by email will allow a continual dialogue between project participants, enabling efficient monitoring of the progress of the project, and evaluation against the defined objectives and milestones. Prof. Chown, the project co-ordinator at Stellenbosch University, will be the main point of contact between the UK and the host country, and will provide regular reports on activities and progress. Thus it should be possible to deal with any problems as they arise. Reciprocal visits will ensure careful planning and targeting of activities, and facilitate dialogue and work on project outputs as the project progresses.

Participation of schools will be monitored regularly by noting participation in workshops, extent of support during the school implementation visits, and nature and extent of data submissions following sampling. Monitoring will also take the form of noting the extent of retraining required at subsequent workshops, which will be an indication of time spent on this project between staff contacts (visits or workshops). Where necessary, additional training or assistance will be given to address any deficiencies detected via the monitoring. Learners will be assessed by their teachers based on improvement in subject fields in the curriculum, and by project staff based on ability to use microscopes and undertake straightforward sampling.

Efficacy of the biodiversity monitoring scheme will be established by comparison of schools collected data with basic transect data in terms of species accumulation curves and indicators such as numbers of singletons in data, Fisher's alpha and Chao's estimators. Assessments based on comparisons of relative abundance data will also be made (typically undercollection changes the shape of the abundance frequency distribution, as does repeated small-scale sampling). The transect survey data will be similarly assessed and compared with similar studies undertaken both in South Africa and elsewhere.

Monitoring of outputs will be via uptake of articles and press releases by the popular literature and media, and by the rate of progress through the scientific publishing process.