06/113

UNDP/GEF Project for the Conservation and Sustainable Use of the Biodiversity of the Soqotra Archipelago, Republic of Yemen

Darwin Initiative (UK) Project for a Biodiversity Inventory of the Soqotra Archipelago

RBGE Biodiversity Training Programme
Wed 15 Sep - Mon 11 Oct 1999

Final Report on Assignment

Diccon Alexander
Research consultant at the Royal Botanic Garden Edinburgh and Natural History Museum London

29 Oct 1999

Overview of Assignment:

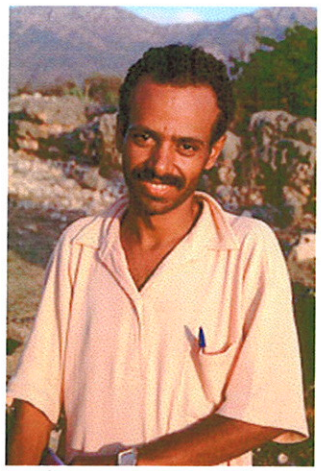
To transfer expertise from the UK to Yemen through a targetted biodiversity training programme for GEF Soqotra project staff, funded jointly by Darwin Initiative (UK) and UNDP/ GEF, and based at the Royal Botanic Garden Edinburgh, Scotland, UK.

Summary of Tasks:

Diccon Alexander, research consultant at the Natural History Museum, London, co-ordinated a three-week biodiversity training programme based at the Royal Botanic Garden Edinburgh (RBGE), with excursions to other locations within the UK. A total of 27 other trainers were involved in the programme, from RBGE, Natural History Museum London, RSPB, BirdLife International, Cambridge University, and various institutions in the West of Scotland. Trainers provided under the Darwin Initiative (UK) project were: RBGE botanists Anthony Miller and Dr Roger Hyam, RBGE associate ethnologist/ linguist Dr Miranda Morris, and BirdLife International associate Richard Porter.

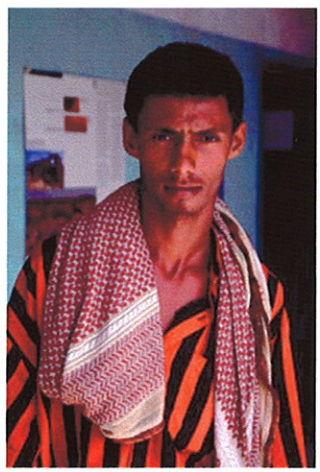
The trainees were GEF project members Nadim Mohammed Abdullah Talib, Ahmad Said Sulaiman, and Ahmad Issa Ali Affrar, accompanied by english teacher Richard Boggs. The programme consolidated and expanded extensive field training already given to this group in the Soqotra Archipelago. It covered a wide range of biodiversity-related issues, including plant diversity, plant identification, bird and marine diversity, biogeography, nomenclature, taxonomy, herbarium curation, library curation, databasing, publications, conservation, habitat restoration, overgrazing and ecotourism. Field trips included private guided tours of some of Scotland's premier nature reserves.

Trainees:



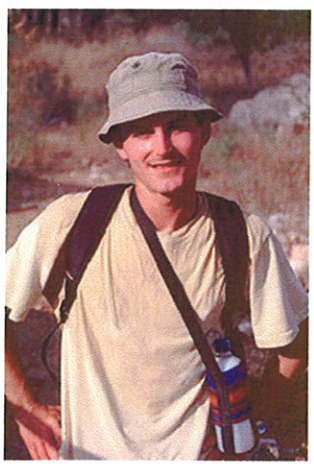
Nadim Mohammed Abdullah Talib (NT)

Ahmad Said Sulaiman (AS)



Ahmad Issa Ali Affrar (AA)

Chief trainers:



Diccon Alexander (DA)

Richard Boggs (RB)

Schedule of Activities:

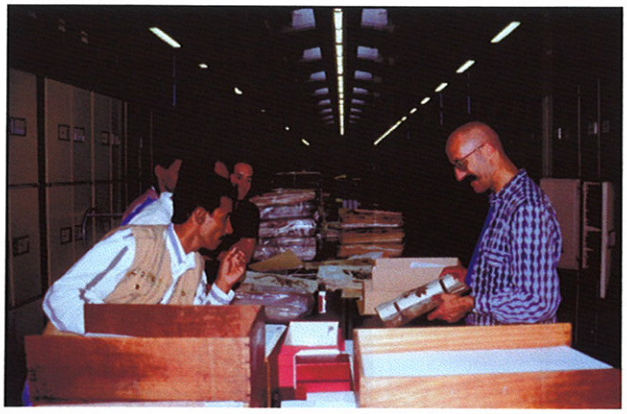
Assignment schedule (based at RBGE)

Date	Activity	Trainer
Wed 15 Sep		
17.00	**Arrival in UK** DA met AA, AS, NT, and RB from Yemenia flight to Gatwick. Train to Victoria, Underground to Ladbroke Grove, settle in.	--
Overnight	DA's apartment	
Thu 16 Sep		
Morning	**Orientation**	--
13.00	**Visit to Natural History Museum**, London (BM), Life Galleries	DA/ RB
14.00	**Tour of Entomology Department**	Phil Ackery
15.15	**Tour of Botany Department**	Roy Vickery
16.00	**Tour of Life Galleries**	NHM staff/RB
Overnight	DA's apartment	
Fri 17 Sep		
Morning	**Shopping and cultural visits**	--
15.00	**Train departs from London Kings Cross -** DA, RB, AA, AS and NT	--
19.00	**Train arrives in Edinburgh**, - taxi to apartment, settle in.	--
Overnight	Castlewynd North apartment	
Sat 18 Sep		
Morning	**Orientation**	--
Afternoon	**Visit to National Museum of Scotland**, Edinburgh. Cultural artefacts and good exhibition of natural history.	DA/ RB
Overnight	Castlewynd North apartment	
Sun 19 Sep		
Morning	**Field trip to Deep Sea World**, Scotland's National Aquarium, by train across the Forth Bridge. Reconstruction of diverse marine environments in a 112m long underwater tunnel; hand feeding of fish by divers; piranha feed; UK's largest collection of frogs and toads.	DA/ RB
Afternoon	**Field trip to Dynamic Earth**, by taxi. New exhibition explaining how the earth's geology and biodiversity has evolved through time; good representation of the evolution of land plants, ecology, habitat diversity.	DA/ RB
Overnight	Castlewynd North apartment	
Mon 20 Sep		
09.00	**RBGE lecture: Plant families:** Introduction to the world's five kingdoms of plant and animal diversity	DA/ RB
13.00	Lunch	
14.00	**RBGE lecture: Plant families:** Pteridophtes (ferns, horsetails, clubmosses)	DA/ RB
Overnight	Castlewynd North apartment	

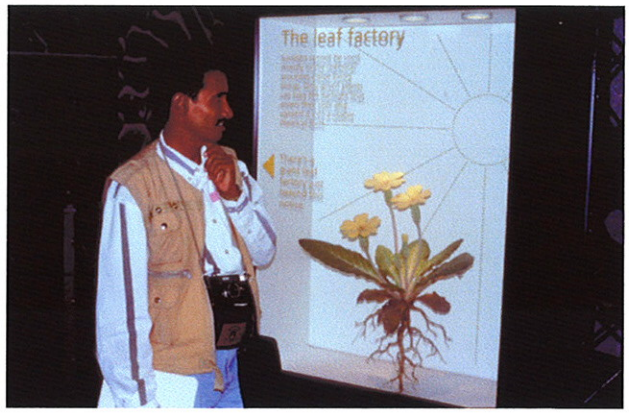
Tue 21 Sep		
09.00	**RBGE lecture: Plant families:** Labiatae (mint family)	DA/ RB
13.00	Lunch	
14.00	**RBGE tour:** Tour of herbarium: introduction to herbarium curation; inter-institutional loans; databasing; "type" concept.	Dr Mark Watson/ DA/ RB
16.00	**RBGE workshop:** Plant specimen mounting stage I	Rita Calder/ RB
Overnight	Castlewynd North apartment	
Wed 22 Sep		
09.00	**RBGE lecture: Plant families:** Compositae (sunflower family)	DA/ RB
13.00	Lunch	
14.00	**RBGE workshop:** Identification keys and field guides; floristic and monographic research.	Dr Roger Hyam/ RB
Overnight	Castlewynd North apartment	
Thu 23 Sep		
09.00	**RBGE lecture: Plant families:** Graminae, Cyperaceae, Juncaceae (grasses, sedges and rushes).	Dr Roger Hyam/ RB
13.00	Lunch	
14.00	**RBGE workshop:** Databasing; PANDORA taxonomic database.	Dr Roger Hyam/ RB
Overnight	Castlewynd North apartment	
Fri 24 Sep		
09.00	**RBGE lecture: Plant families:** Acanthaceae (sea holly family)	DA/ RB
13.00	Lunch	
14.00	**RBGE workshop:** Taxonomic nomenclature; naming plant species; "type" concept; law of priority.	DA/ RB
Overnight	Castlewynd North apartment	
Sat 25 Sep		
Morning	**Field trip to Dawyk Botanic Garden**, one of RBGE's three specialist gardens in the Borders, southern Scotland, by RBGE minibus. Workshop tour of major plant groups, families and species.	Anthony Miller/ Dr Roger Hyam/ DA/ RB
Lunch	Lunch at Kirkbride House, generously provided by Fi Martynoga of the Carrifran Wildwood project	
Afternoon	**Field Trip to Carrifran Wildwood project**, Dumfriesshire. Guided tour of site by project staff; ecological restoration of native woodland in overgrazed and deforested area of southern Scottish uplands.	As above + Dr Crinan Alexander/ Fi Martynoga
Overnight	Castlewynd North apartment	
Sun 26 Sep		
All day	**Shopping and cultural visits in Edinburgh.**	
Overnight	Castlewynd North apartment	
Mon 27 Sep		
09.00	**RBGE lecture: Plant families:** Euphorbiaceae (spurge family), including tour of glasshouses.	DA/ RB
11.30	**RBGE lecture:** Plant conservation in Scotland - Scottish Rare Plant Project, environmental protection, habitat management and restoration.	Phil Lusby/ DA/ RB
13.00	Lunch	
14.00	**RBGE tour:** Tour of the Royal Botanic Garden Edinburgh by senior curator – public areas, tree nursery, and research collection.	David Patterson/ DA/ RB
Overnight	Castlewynd North apartment	

Tue 28 Sep		
09.00	**RBGE lecture: Plant families:** Petaloid monocots (including lily, orchid and iris families).	Dr Roger Hyam/ RB
13.00	Lunch	
14.00	**RBGE lecture:** Plant taxonomy – current research methods, molecular techniques, revisions etc.	Dr Roger Hyam/ RB
15.00	**RBGE tour:** Tour of library by Chief Librarian – library database, arabian book collection, botanical illustration archive.	Jane Hutcheon/ DA/ RB
16.00	**RBGE workshop:** Plant specimen mounting stage II	Rita Calder/ RB
Overnight	Castlewynd North apartment	
Wed 29 Sep		
09.00	**RBGE lecture: Plant families:** Leguminosae (pea family), including tour of glasshouses.	DA/ RB
13.00	Lunch	
14.00	**RBGE lecture: Plant families:** Leguminosae – cont.	DA/ RB
15.00	**RBGE lecture: Biogeography** – continental drift, disjunct distribution, speciation, adaptive radiation, relict species.	Anthony Miller/ DA/ RB
Overnight	Castlewynd North apartment	
Thu 30 Sep		
09.00	**RBGE lecture: Plant families:** Asclepiadaceae (milikweed and wax plant family), including tour of glasshouses.	DA/ RB
13.00	Lunch	
14.00	**Field trip to Vane Farm Nature Reserve**, by RBGE minibus – guided tour of Scotland's premier bird reserve, run by the Royal Society for the Protection of Birds. Guided tour by head of Reserve and Scottish Natural Heritage staff – bird identification, migration, and conservation, habitat restoration and management.	Ken Shaw/ Keith Morton/ Anthony Miller/ DA/ RB
Overnight	Castlewynd North apartment	
Fri 1 Oct		
09.00	**RBGE Lecture: Plant families:** Burseraceae (frankincense and myrrh family), Capparaceae (caper family), and Cruciferae (mustard family).	Anthony Miller/ RB
13.00	Lunch	
14.00	**RBGE workshop:** Publication of new species – new *Cadaba* sp. from Killisen collected by project team in March 1999.	Anthony Miller/ RB
16.00	**Final Examination:** Evaluation of all aspects of the training programme so far (see appendix)	DA/ RB
Overnight	Castlewynd North apartment	
Sat 2 Oct		
Morning	**Field trip to Aberlady Nature Reserve**, on coast to east of Edinburgh, by RBGE minibus– important SSSI (Site of Special Scientific Interest), containing good representation of Scotland's coastal flora and fauna.	Dr Toby Pennington/ V. Plana/ DA/ RB
Lunch	Typical British fish and chips.	
Afternoon	**Field trip to Seacliff beach** – good representation of marine algae (seaweed) and closest vantage point to Bas Rock, a prime site for nesting sea birds in Scotland.	As above.
Overnight	Castlewynd North apartment	

Images of Training Programme (courtesy of Richard Boggs)

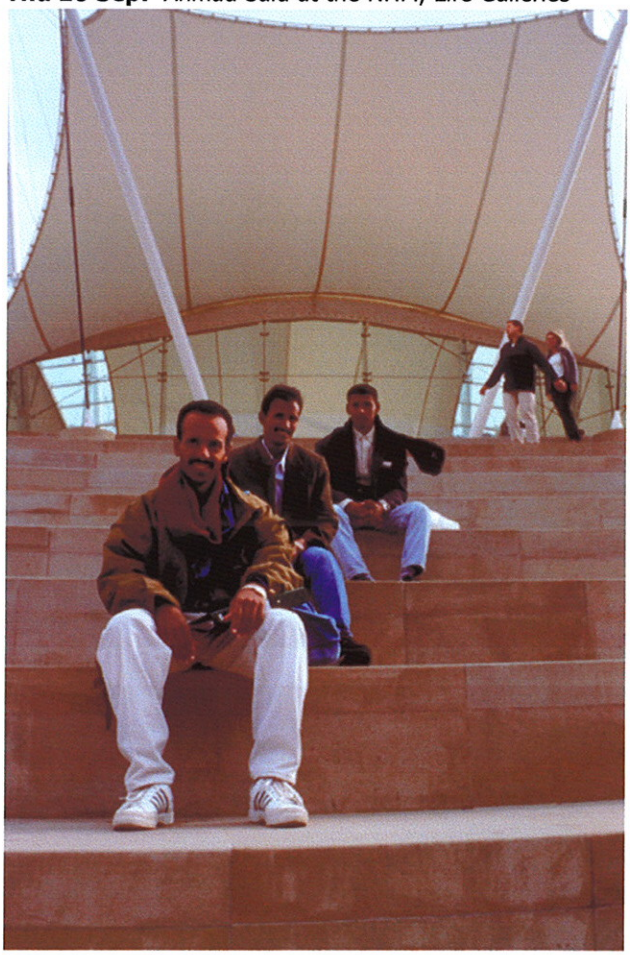


Thu 16 Sep: Natural History Museum, Botany Dept.

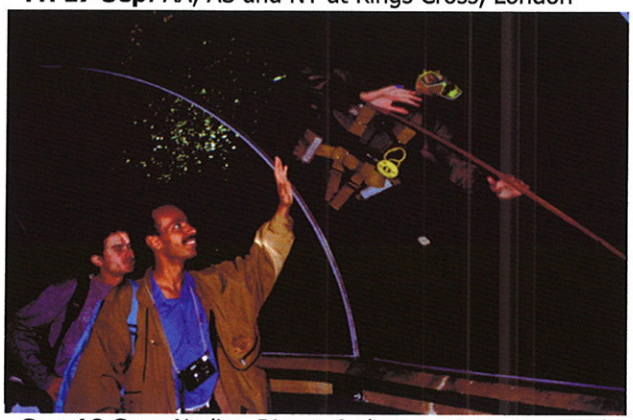


Thu 16 Sep: Ahmad Said at the NHM, Life Galleries

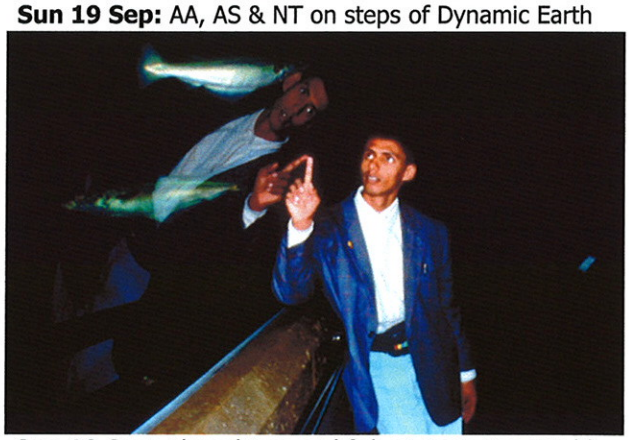
Fri 17 Sep: AA, AS and NT at Kings Cross, London



Sun 19 Sep: AA, AS & NT on steps of Dynamic Earth

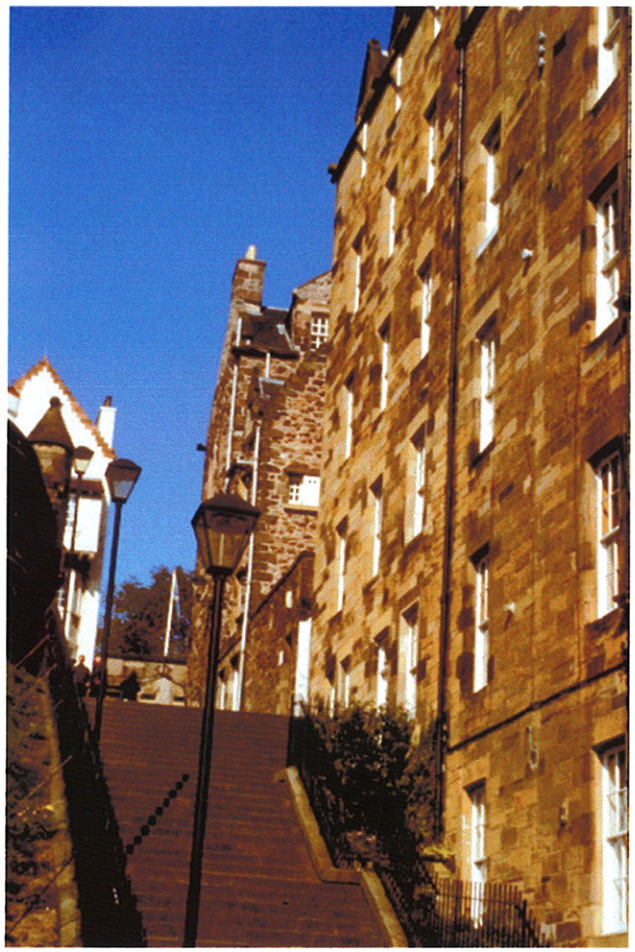


Sun 19 Sep: Nadim, Diccon & diver at Deep Sea World



Sun 19 Sep: Ahmad Issa and fish at Deep Sea World

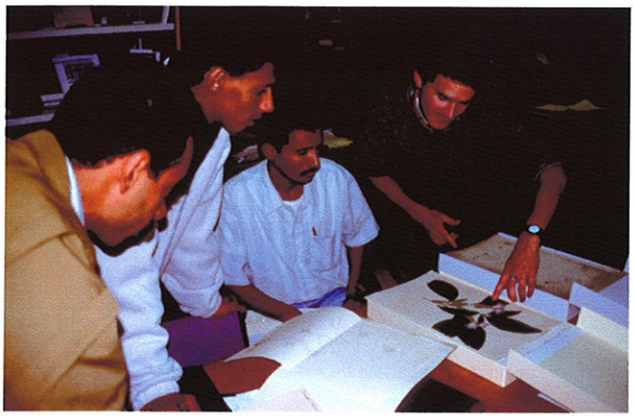
Sun 19 Sep: Field trip to Deep Sea World: AA, AS , & NT in front of the Forth Bridge



Sun 26 Sep: Castlewynd North apartment, overlooking Edinburgh Castle

Mon 27 Sep: Typical RBGE tour: Research collection in glasshouses

Tue 28 Sep: Typical RBGE workshop: Plant specimen mounting stage II



Tue 28 Sep: RBGE tour of library – examining archive Of botanical illustration

Wed 29 Sep: Typical RBGE lecture – this time a Plant Families session on Leguminosae (pea family)

Sat 25 Sep: Field trip to Dawyk Botanic Garden.
L to R: Anthony Miller, Ahmad Said, Nadim, Roger Hyam, Ahmad Issa, Richard Boggs and Diccon Alexander.

Sat 25 Sep: Nadim and Ahmad Issa at Dawyk, with Autumn Crocus (*Crocus speciosus*)

Sat 25 Sep: Identification workshop at Dawyk Botanic Garden with trainers Anthony Miller and Diccon Alexander

Sat 25 Sep: Field trip to Carrifran Wildwood project: Anthony Miller with Ahmad Said and Ahmad Issa.

Sat 25 Sep: Field trip to Carrifran Wildwood project – workshop by project member Fi Martynoga

Thu 30 Sep: Tour of glasshouses

Mon 27 Sep: Ahmad Issa studying seedlings in the research glasshouse

Post Assignment Schedule (based in Western Scotland)

Sun 3 Oct		
10.30	**Train departs Edinburgh** – RB, AA, AS, NT.	--
14.40	**Train arrives Tyndrum** – party met by Dr Miranda Morris (MM) and Dr Hugh Morris in two cars	--
15.00	**Visit to Glencoe Nature Centre**, run by National Trust for Scotland – lecture, discussion and field demonstrations by Dr Derrick Warner (ecologist) RB - "Dr Warner gave a brief history of Glencoe, emphasizing the limited financial resources with which the project began. He emphasized that it involved the conservation of a man-made habitat. There followed discussion about grazing, and the effects of a ban on grazing on biodiversity. It was a surprise for the team to hear someone advocate controlled grazing, rather than a total ban in certain areas. "After the discussion we went into the field to compare two sections of land – one section grazed traditionally, the second from which grazing animals had been excluded. "Finally we travelled to a hillside where the goal has been reforestation – not through tree planting but through the exclusion of grazing sheep. Dr Warner also showed how the public apparently had free access to the site, but through the control of pathways their access was actually quite restricted."	Dr Derrick Warner/ MM/RB
19.00	Discussion, writing up of day's work at Drimnin.	
Overnight	MM's cottage at Drimnin.	
Mon 4 Oct		
09.00	**Boat to Tobermory, Island of Mull**, captained by Andy Jackson.	MM/ RB
09.30	**Visit to Hebridean Whale and Dolphin Trust** – guided by Dr Chris Parsons, Sara Clark and Alison Gill	MM/ RB + others
12.00	**Visit to Old Byre, Dervaig** by minibus (driven by Richard Atkinson), guided by Mrs Bradley – geology, botany, wildlife, culture of island community of Mull; explanatory video. RB – "The team travelled by boat to the island of Mull, and visited the Hebridean Whale and Dolphin Trust. In his talk Dr Parsons emphasized how the centre ran on a small budget, aimed to involve local communities in conservation, and targetted visitors who came to the gift shop to raise awareness of conservation issues. "The team were involved in a discussion of environmental threats to dolphins, and used CD-Roms that the centre provides for educational purposes. Those working in the centre expressed interest in establishing links with the marine team on Soqotra. "There was a brief visit to the Old Byre – again the team could see a small, local centre focus on ecotourism and local culture."	Mrs Bradley/ MM/ RB
13.00	**Pub lunch**	
14.00	**Visit to local reforestation project**, guided by Dr Alan Wright – single-handed project of reforestation and livestock exclusion. RB – "In the afternoon Dr Alan Wright personally showed us the hillside which he has planted with native species of trees, and discussed threats to planted saplings and ways of excluding livestock."	Dr Wright/ MM/ RB
17.00	**Boat back to Drimnin**	
19.00	Discussion, writing up of day's work at Drimnin.	
Overnight	MM's cottage at Drimnin.	

Tue 5 Oct		
09.00	**Boat to Ardnamurchan Peninsula,** captained by Andy Jackson.	
10.00	**Visit to Glenmore Natural History Centre**, guided by Michael MacGregor (ecologist/ photographer)	Michael MacGregor/ MM/ RB
11.30	**Visit to sites of Rhododendron control**, by car, guided by Martin Calver RB – "There was again a very full programme. It began with a boat journey to Ardnamurchan Peninsula, with stops to watch dolphins, colonies of seals, and inspect the intensive fish farms of the loch. "We were given a personal tour of Glenmore Natural History Centre, with its opportunities for birdwatching, exploring habitat, and "fun activities" involving recent technology as a means to learn about local ecology. "Nearby were sites of *Rhododendron* control – the team saw the effects of an exotic species going wild, and the drastic effects that had on the area's biodiversity."	Martin Calver/ MM/ RB
13.00	Lunch at Glenmore	
14.00	**Boat to Drumbuidhe** via fish farm	
15.00	**Visit to traditional croft** owned by Martin Calver - using modern solar, wind and water power; livestock and reindeer exclusion for cultivation.	Martin Calver/ MM/ RB
16.00	**Visit Scottish Woodland Trust project** - woodland regeneration, guided by Dr Matt Wilson (ecologist and fisheries expert) RB – "In the afternoon we again travelled by boat to the home of a Scottish surgeon who delighted us with alternative technology – from a radio powered by the turn of a handle, to solar, wind and water power for electricity generation. On walking back to Drimnin we again saw a reforestation project through the exclusion of livestock, and later saw stags calling to each other from the mountain tops, as it was the mating season."	Dr Matt Wilson/ MM/ RB
19.00	Discussion, writing up of day's work at Drimnin.	
Overnight	MM's cottage at Drimnin.	

Wed 6 Oct		
09.00	**Visit to Drimnin to see sheepdogs working sheep,** separating out ewes and lambs, guided by Tim Barnes. RB – "The team were treated to the sight of a shepherd, Tim Barnes, use sheepdogs to control a herd of about a thousand sheep. We then had an opportunity to discuss a wide range of sheep farming issues, from health control (we saw the sheep being dipped) to raven as predators. This visit will porbably be the Soqotris' most memorable."	Tim Barnes/ MM/ RB
11.00	**Visit to Drimnin to see Nubian goats**, small flock on working small-holding, guided by Dr Rory Putnam (ecologist). RB – "This was followed by a visit to Dr Rory Putnam and his Swiss goats. He explained daily routines, health issues and the folly of EEC legislation – his goats can produce up to 2 gallons of milk (maximum daily yield per goat) but by EEC law he is forbidden to sell it, or even give it away for human consumption!"	Dr Rory Putnam/ MM/ RB
13.00	Lunch at Drimnin	
14.00	**Free time** and discussion and writing up of notes	
16.30	**Car via ferry to Fort William**	
17.42	**Train to Edinburgh**	
22.20	**Arrive Edinburgh**	
Overnight	Bed and Breakfast near the RBGE. **Conclusion** RB – "Through the 4 day programme the team were exposed to a wide range of conservation issues, and saw small, individual centres provide a living for local people through ecotourism. The team also left with a sense of the economic benefits of ecotourism: on the island of Mull with its 2500 residents, marine-based tours brought a direct tourist revenue of £65,000 per annum and an indirect revenue of £3 million."	
Thu 7 Oct		
09.30	**Train departs Edinburgh**, change at Peterborough	
14.21	**Train arrives Cambridge**, taxi to BirdLife International	
15.00	**Visit to BirdLife International**, guided by Richard Porter – bird conservation, patterns of speciation and migration, threats to bird communities on Soqotra.	Richard Porter/ RB
Overnight	Youth Hostel	
Fri 8 Oct		
Morning	**Visit to University of Cambridge**, biology department, guided by Oliver Morris; lecture by Oliver's colleague at the New Museum on insects and their reproduction, and wetland ecosystems	Oliver Morris/ RB
	Shopping and cultural visits	
Lunch	In Cambridge	
Afternoon	**Train to London Kings Cross**, taxi to Barnes, SW London	
Overnight	RB's friend's apartment	
Sat 9 Oct		
All day	**Shopping and cultural visits in London**	
Overnight	RB's friend's apartment	
Sun 10 Oct		
Morning	**Visit to the Royal Botanic Gardens Kew**, SW London – tour of glasshouses and outside garden, joined by DA.	DA/ RB
Lunch	Pub lunch	
Afternoon	Car to Barnes to prepare for departure	
18.00	**Departure from UK** – Yemenia flight from Gatwick.	

Evaluation of Trainees' Performance and Achievements

Ahmad Issa Ali Affrar

Ahmad Issa showed great personal commitment to the course throughout. He worked well both within the group and independently. He seemed determined to fully understand the content of the course, which was often challenging in terms of language and concept, and seemed to steadily gain in confidence over the three weeks. The marked improvement in his performance may largely be due to a significant and rapid improvement in his English; his comprehension and spoken English by the end was very good. This was also reflected in his impressive mark in the final examination.

Ahmad Said Sulaiman

Ahmad Said's general performance was good. His level of concentration was usually excellent and he seemed determined to get as much out of the course as possible. He was very good in engaging with the various trainers over the three weeks, particularly those involved with bird conservation and land management. Perhaps one factor which held him back slightly was his standard of English: his comprehension was good but his spoken English sometimes limited his full participation in discussions. This was despite the fact that he always has a great deal to offer. With better English I am sure his good final examination mark would have been excellent.

Nadim Mohammed Abdullah Talib

Nadim worked well throughout the course and contributed a great deal both professionally and personally. His attention to lectures, workshops and field trips was always excellent and he was a good example to his fellow trainees. He showed initiative and maturity in his attitude to the work, often questioning subjects deeply. His performance would suggest he would be an excellent candidate for further training, such as a Masters in Botany/ Natural Resource Management either in the UK or elsewhere. His standard of English was excellent and like his colleagues it improved dramatically over his relatively short time in the UK. As expected his final examination mark was excellent.

Appendix

Final examination paper

RBGE BIODIVERSITY TRAINING COURSE

FINAL EXAMINATION 31 September 1999

Name .....

WHICH FAMILY?

Use these families:

a) Compositae	b) Euphorbiaceae	c) Labiatae
d) Cruciferae	e) Graminae	f) Burseraceae
g) Leguminosae	h) Asclepiadaceae	i) Acanthaceae
j) Cyperaceae		

1) This family often has bacteria in its roots which get nitrogen from the air in the soil. Its leaves are often compound and pinnate.
Family name: _____

2) This family is the biggest in the world - it has the most species.It has a head of flowers called a capitulum.
Family name: _____

3) This family looks like grasses. We know they are not grasses because they have a triangular stem.
Family name: _____

4) This family usually has square stems. The stems and leaves are often fragrant. The flowers are irregular and bilabiate.
Family name: _____

5) This family is important for food. Rice and wheat are from this family.
Family name: _____

6)Plants in this family often have a milky latex in their stems. There is one important species on the island of Abd al Kuri.
Family name: _____

7) The leaves of this family are always alternate. The flower is regular with 4 petals, 4 sepals and 6 stamens.
Family name: _____

8) The flowers of this family have an extra part called a corona. The fruit is a pair of follicles, often with only one follicle fully grown.
Family name: _____

9) These plants usually have aromatic resins. There are two genera on Socotra: one has bisexual flowers and the other is dioecious.
Family name: _____

10) The flowers of this family are often covered with bracts. The seeds often have hooks.
Family name: _____

CLASSIFICATION

You know *Leucas hagghierensis* from Socotra.
Complete the information on the table

Kingdom	(1)_____?
Division	Tracheophytes
Subdivision	Spermatophytes
Class	(2)_____?
Subclass	(3)_____?
Order	Lamiales
Family	(4)_____?
Genus	(5)_____?
Species	hagghierensis

NAME THE FAMILY

Name the family which each species is from:

eg *Leucas virgata* Labiatae

1) *Acacia tortilis* _____

2) *Boswellia ameero* _____

3) *Croton socotranus* _____

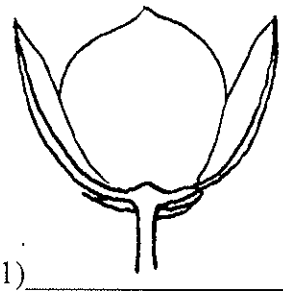
4) *Launaea massauensis* _____

5) *Juncus socotranus* _____

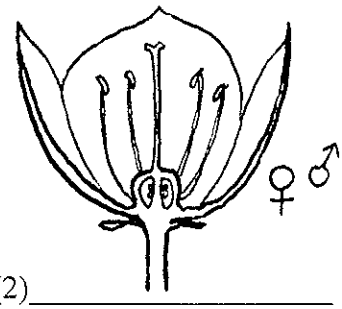
THE SEXUALITY OF FLOWERS

Label each diagram with one word.

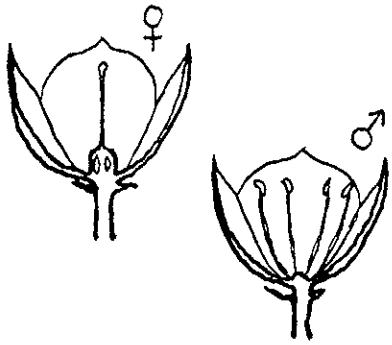
a) bisexual b) unisexual c) non-sexual (or sterile)



(1)_____



(2)_____

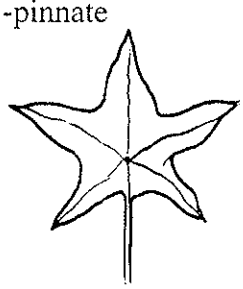


(3)_____

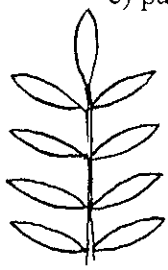
LEAF SHAPE

Label the diagrams with these words:

a) 1-pinnate b) 2-pinnate c) palmate



(1)_____



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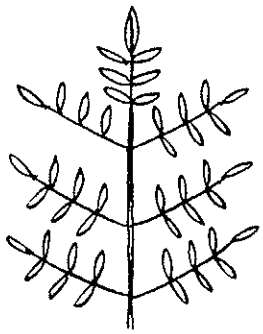
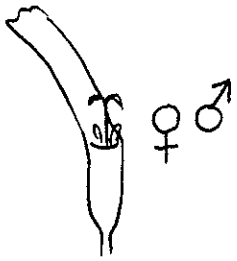


(3)_____

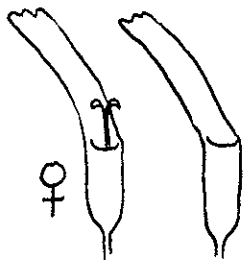
COMPOSITAE: TYPES OF FLORET

Label the diagrams with these words:

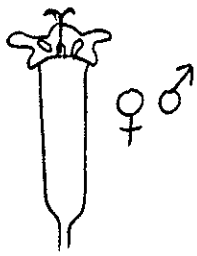
a) tubular b) ligulate c) ray



(1)_____



(2)_____

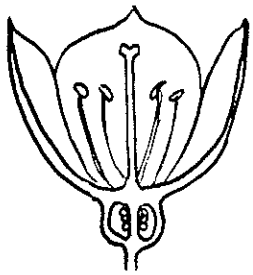


(3)_____

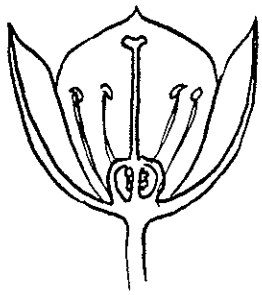
THE OVARY

Label the diagrams with these words:

a) ovary superior b) ovary inferior



(1)_____

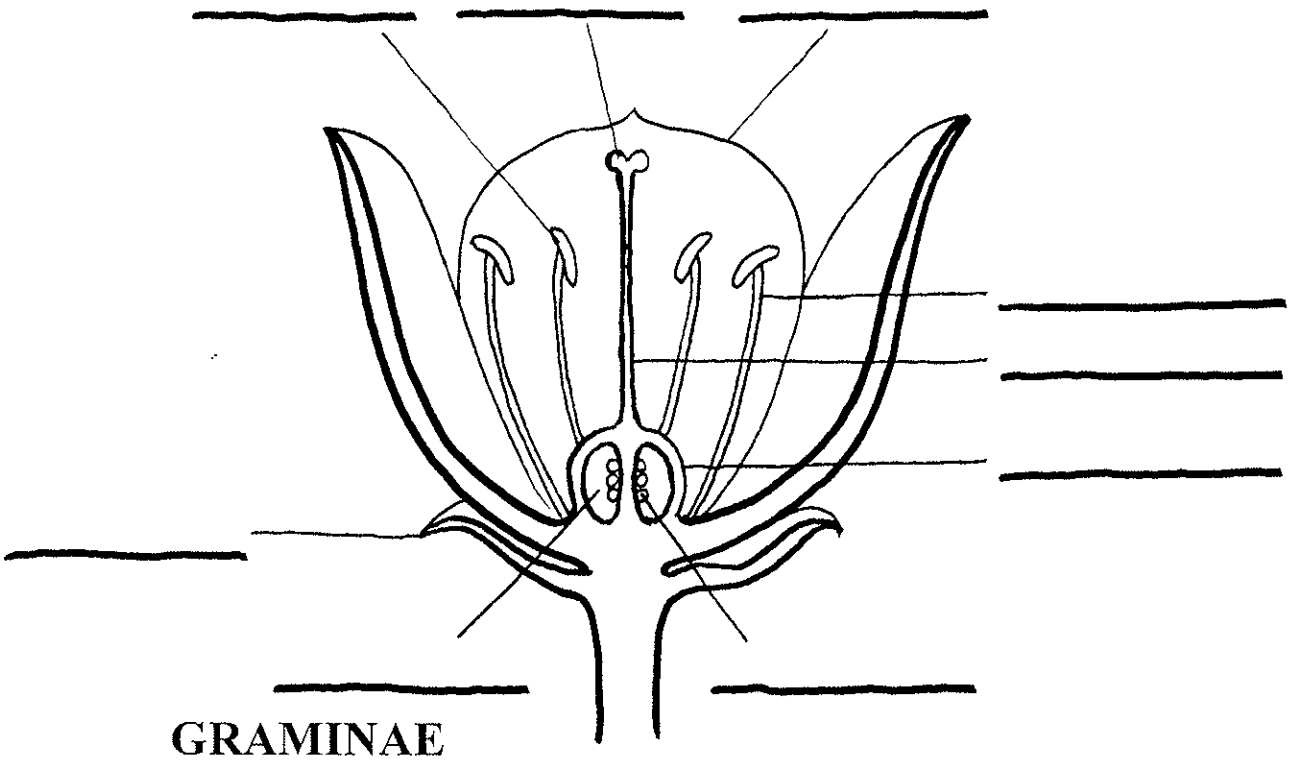


(2)_____

PARTS OF A FLOWER

1) Write the names of the parts of this flower.
Use these words:

a) anther
b) ovary
c) style
d) petal
e) sepal
f) carpel
f) stamen
g) ovule
h) filament
i) stigma



GRAMINAE

Name the parts of this grass.
Use these words:

a) inflorescence
b) sheath
c) spikelet
d) blade

TRUE OR FALSE?

If the statement is true write True.
If the statement is false write False. Then correct the wrong words.

Example:
Unisexual flowers have both male and female parts on one flower.
False Not unisexual. Bisexual flowers.....

1) Ferns reproduce by seeds.

_____

2) *Phoenix dactylifera* (the date palm) is monoecious.

_____

3) *Dracaena cinnabari* is a monocot

_____

4) In petaloid monocots we use the word tepal for sepals only, not the petals.

_____

5) A bulb stores food for a plant to use the next year.

_____

6)The flower parts of monocots are in multiples of three (eg 3 petals, 6 petals etc).

_____

7) A disjunct species has other closely related species growing near.

_____

8) Conifers are angiosperms.

_____

9) All spermatophytes produce seeds.

_____

10) The type specimen is usually the first specimen found. Botanists use it to describe the new species.

_____