

DAVIS EXPEDITION FUND

REPORT ON EXPEDITION/PROJECT

Expedition/Project Title: Ascension Island.....

Travel Dates: 04/02/2007 - 16/02/2007.....

Location: Ascension Island.....

Group Members: Alan Gray, Paul Robinson.....

Aims: This study aimed to provide up to date island wide botanical information and in so doing provide information for the effective conservation of native species on the island.

OUTCOME (not less than 300 words):-

Introduction

Ascension Island (97 km²) is a volcanic island situated in the South Atlantic Ocean (7° 57'S, 14° 22'W). Its closest neighbour is St Helena some 1127 km to the south. Approximately 1 million years old (Nielson & Sibbett, 1996), Ascension has evolved a distinctive biodiversity which in common with many other oceanic islands is under threat from introduced species. The last assessment of the endemic vascular flora of Ascension concluded that of the 10 endemic species, 4 were extinct, the principal reason for extinction and threats to survivors are 19th century introductions of exotic species (Cronk, 1980; Gray et al., 2005). Introductions continue; recent introductions include *Prosopis juliflora* and *Heliotropium curassavicum* (Gray et al., 2005).

Field studies on the flora of Ascension have been sporadic and there is no authoritative plant checklist for Ascension. A lack of basic biological and ecological information on native species means great uncertainty of the best and most effective ways to conserve native species. This study aimed to provide up to date island wide botanical information and in so doing provide information for the effective conservation of native species on the island.

Methods

Information is most lacking for certain groups namely Poaceae, Cyperaceae and Cryptograms on Ascension. This expedition concentrated on Poaceae and Cyperaceae since there is already a cryptogrammic collection located in the Royal Botanic Gardens Edinburgh (RBGE) herbarium. The majority of the 1 km² were visited and a collection of all Poaceae and Cyperaceae encountered was made. Of the two endemic Poaceae, *Sporobolus durus* Brogn. (presumed extinct) was searched for,

but as *Sporobolus caespitosus* Kunth is of conservation concern regarded as Vulnerable under IUCN guidelines and the distribution of this species is well known (Gray et al 2005), *S. caespitosus* was not included in this survey. Permission for collecting material was sought and granted by Ascension Island Conservation. Once determinations have been made specimens will be donated to the RBGE where previous Edinburgh University Expedition material is located (Gray et al., 2000). Mapping was done using GPS and will be implemented in a GIS environment at a later date. The presence of species was related to the 3 vegetation zones of Stüder (see Duffey 1964) which are illustrated in Figure 1 and are designated as follows:

- Zone 1: Dry area below 300m with lava fields and low craters.
- Zone 2: Region between 300 m and 600 m below the cloud layer of Green Mountain.
- Zone 3: Region of mist from 600 m to 850m where richest vegetation is concentrated.

(Note: Stüder's zones are delimited in Duffey (1964) by 330 m and 660 m contours but have been modified here for convenience).

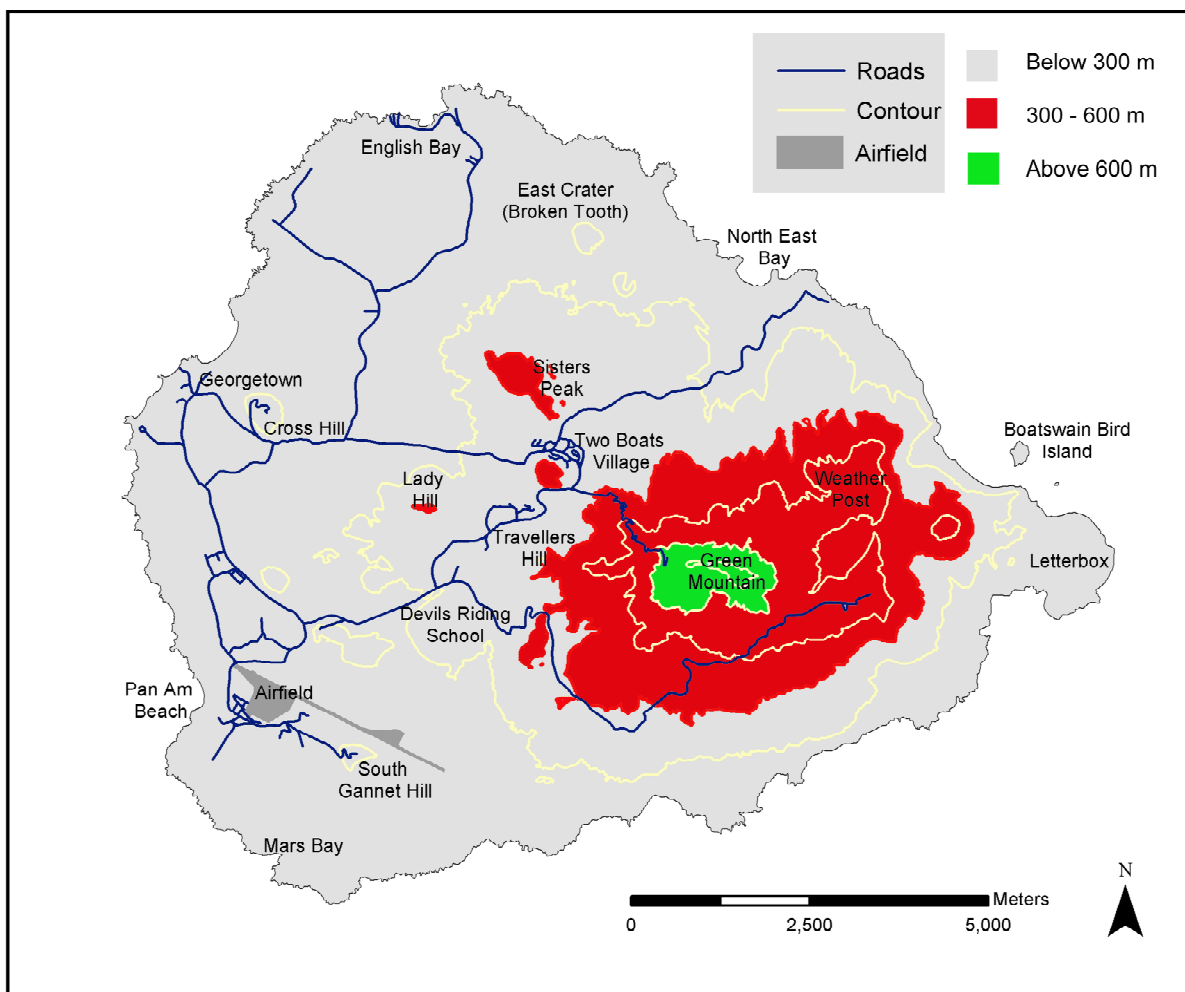


Figure 1: Altitudinal vegetation zones modified from Stüder (see Duffey 1964). Zone 1 (grey shading): below 300 m, Zone 2: between 300 m and 600 m, zone 3: 600 m to 850 m.

Results

Table 1 shows the number of species from the families Cyperaceae and Poaceae that were recorded in each of the vegetation zones. Both families show an increase in the number of species found from lower to higher altitude. This is partly due to the greater amount of precipitation higher altitudes receive but also to the greater number of species that have been introduced to higher altitudes.

Table 2 lists all the Cyperaceae and Poaceae species that have been recorded on Ascension to date including those that were collected in 2007. Species recorded from this survey are indicated in the last column and shown in bold, an indication as to which zones they are present in is also given. Table 2 indicates that seventeen species of Poaceae and eight species of Cyperaceae were collected in 2007. However, a number of specimens still await determination there could therefore be further additions to this list. The list in Table 2 also still contains a number of records that may be either errors or synonyms for other names; these require further examination with reference to herbarium specimens at RBGE and Kew.

Table 1: number of species from the families Cyperaceae and Poaceae recorded in each of the 3 vegetation zones

Family	Below 330m	330 - 660 m	660 - 850 m
Cyperaceae	3	3	5
Poaceae	6	15	11

This expedition recorded one new species to the Ascension plant list a *Scirpus* sp. from the family Cyperaceae found on the weather side of Green Mountain on Elliot's Path. A collection was also made of a *Carex* sp. found at the head of Breackneck Valley, this species was recoded by a previous survey in 2003 but no collection was made at that time.

A further notable species collected was *Ophioglossum* sp. (Ophioglossaceae) found near to the old NASA site by the side of the road leading to the installation; this was originally found by the Ascension Island Conservation Officer Stedson Stroud in 2006. Duffey (1964) was the last person to record *Ophioglossum* in 1958 (as *O. vulgatum* L.) but further examination of the material is needed before a determination can be made.

Table 2: Species of Cyperaceae and Poaceae from Ascension Island collected in 2007 (bold font) and those recorded previous to 2007 (normal font).
Species shown in red are new or notable records, ** indicates native species.

Species	Family	Below 330m	330 - 660 m	660 - 850 m	Notes	Collected 2007
<i>Chlorocyperus polystachyos</i> (Rottb.) Rikli	Cyperaceae			P	= <i>Cyperus polystachyos</i> Rottb.	Y
** <i>Cyperus appendiculatus</i> Kunth	Cyperaceae	P	P		Frequent in suitable habitat dry areas and Mountain	Y
<i>Cyperus brevifolius</i> (Rottb.) Hassk.	Cyperaceae			P	Frequent on Mountain	Y
<i>Cyperus cyperoides</i> Kuntze	Cyperaceae	P	P		Frequent in drier areas	Y
<i>Cyperus distans</i> L.f.	Cyperaceae	U	U	U	Could be synonymous with <i>C. polystachyos</i> if <i>C. distans</i> Beyr. ex Kunth	N
<i>Cyperus haspan</i> L.	Cyperaceae	U	U	U	Synonym for <i>C. umbellatus</i> ?	N
<i>Cyperus umbellatus</i> (Vahl) Benth.	Cyperaceae			P	Rare	Y
<i>Fimbristylis glomerata</i> (Retz.) Nees.	Cyperaceae	P	P		Widespread and increasing in drier areas particularly Grazing Valley, Airhead and NASA	Y
Carex sp.	Cyperaceae			P	Local in Breackneck Valley	Y
Scirpus sp.	Cyperaceae			P	Rare on Elliot's Path	Y
<i>Aristida congesta</i> Roem. & Schult.	Poaceae	U	U	U	Confusion with <i>A. adscensionis</i> ?	N
** <i>Aristida adscensionis</i> L.	Poaceae	P	P		Widespread	Y
Bamboo sp	Poaceae			P	Dominant on Mountain summit	Y
<i>Briza minor</i> L.	Poaceae	U	U	U	Rare	N
<i>Cenchrus sp.</i> L.	Poaceae	P	P		Occasional in drier areas and Two Boats	Y
<i>Chloris virgata</i> Sw.	Poaceae	P	P		Occasional in drier areas	Y
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae		P	P	Occasional	Y
<i>Dactyloctenium aegyptium</i> P.Beauv.	Poaceae		P	P	Rare?	Y
<i>Dichanthium aristatum</i> (Poir) C. E. Hubbard	Poaceae	U	U	U	may be a synonym	N
** <i>Digitaria ciliaris</i> (Retz.) Koeler	Poaceae		P	P	= <i>Panicum sanguinale</i> , <i>Panicum ciliare</i> and <i>Panicum sanguinale</i> var. <i>ciliare</i> (Retz.) Vasey	Y
<i>Eleusine indica</i> (L.) Gaertner	Poaceae		P		Occasional	Y
<i>Eragrostis tenella</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae	P	P		Occasional in drier areas	Y
<i>Eriochloa procera</i> (Retz.) C.E.Hubb.	Poaceae	U	U	U		Y
<i>Heteropogon contortus</i> (L.) Roem. & Schult.	Poaceae	U	U	U		N
<i>Hyparrhenia hirta</i> (L.) Stapf	Poaceae	P	P		Frequent in drier areas especially NASA road	Y
<i>Melinis minutiflora</i> P.Beauv.	Poaceae		P	P	Dominant grass at mid altitudes spreading up Mountain	Y
<i>Panicum laxum</i> Sw.	Poaceae	U	U	U		?
<i>Panicum maximum</i> Jacq.	Poaceae			P	Occasional on Mountain <i>Urochloa maxima</i> (Jacq.) R.D.Webster	Y
<i>Panicum molle</i> Sw.	Poaceae	U	U	U	<i>Brachiaria mollis</i> (Sw.) Parodi and <i>Urochloa mollis</i> (Sw.) Morrone & Zuloaga	?
<i>Panicum muticum</i> Forssk.	Poaceae	U	U	U	<i>Urochloa mutica</i> (Forssk.) T.Q.Nguyen and <i>Brachiaria mutica</i> (Forssk.) Stapf	?

Table 2 continued

Species	Family	Below 330m	330 - 660 m	660 - 850 m	Notes	Collected 2007
<i>Panicum plicatum</i> Roxb.	Poaceae	U	U	U	<i>Panicum asperatum</i> Kunth?	?
<i>Paspalum commersonii</i> Lam.	Poaceae	U	U	U		N
<i>Paspalum conjugatum</i> P.J.Bergius	Poaceae		P	P	<i>Frequent on Mountain</i>	Y
<i>Paspalum dilatatum</i> Poir.	Poaceae	U	U	U	<i>Digitaria dilatata</i> (Poir.) H.J.Coste	N
<i>Paspalum polystachyon</i> (Sw.) Kuntze	Poaceae	U	U	U	<i>Saccharum polystachyon</i> Sw. and <i>Syllepis polystachya</i> (Sw.) E.Fourn. ex Hack.	N
<i>Paspalum scrobiculatum</i> L.	Poaceae		P	P	Abundant on Mountain	Y
<i>Plagiochloa oblitera</i> (Hemsl.) Adamson & Sprague	Poaceae	U	U	U	<i>Rare</i>	N
<i>Poa annua</i> L.	Poaceae			P	<i>Rare</i>	N
<i>Polypogon strictus</i> Nees	Poaceae	U	U	U	<i>Polypogon tenuis</i> Brongn.	?
<i>Setaria verticillata</i> (L.) P.Beauv.	Poaceae	P	P		Occasional in drier areas	Y
<i>Sporobolus africanus</i> (Poir.) Robyns & Tournay	Poaceae		P	P	Abundant grass in many areas especially Mountain	Y
<i>Sporobolus indicus</i> R.Br.	Poaceae	U	U	U	Possible error for <i>S. africanus</i> ?	N
<i>Stenotaphrum secundatum</i> (Walter) Kuntze	Poaceae		P	P	<i>Rare?</i>	Y
<i>Vulpia bromoides</i> (L.) Gray	Poaceae		P?		Occasional	N
Additional Species of Note						
**<i>Ophioglossum</i> sp.	Ophioglossaceae		P		Found by the road near the old NASA site, recorded by Stedson Stroud in 2006 still present 2007	

Discussion

This was the third botanical survey in recent times (Gray et al 2000 and Gray et al 2005) and another species has been added to the list giving a total of four new species since 1998. It is likely that further species will be found in future botanical surveys due to the sporadic history of botany on the Island and the continuing introduction of species to the island. However once the present collection has been fully determined this will represent a significant step towards completion of checklist for Ascension.

It is noteworthy that the *Ophioglossum* sp. not seen since 1958 was collected in 2007. Given the patchy nature of botanical recording on Ascension this represents a significant find and may offer some hope of finding endemic species that are currently regarded as extinct particularly *Anogramma ascensionis* W.J. Hooker. which was also last recorded in 1958.

Conclusion

This expedition has recorded a total of 17 species of Poaceae and 8 species of Cyperaceae with further specimens awaiting determination. Significantly one new Cyperaceae a *Scirpus* sp. has been added to the Ascension plant list and a native species (*Ophioglossum* sp.) was collected which has not been seen for nearly 50 years.

References

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Acknowledgements

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