

**ENVIRONMENTAL STATEMENT
VOLUME 4 –A10.3 PAST AND PRESENT VEGETATION COMMUNITIES
TABLE OF CONTENTS**

A10.3	PAST AND PRESENT VEGETATION COMMUNITIES	10.3-1
10.1	INTRODUCTION	10.3-1
10.2	PAST VEGETATION	10.3-1
10.3	PRESENT VEGETATION	10.3-2

A10.3 PAST AND PRESENT VEGETATION COMMUNITIES

10.1 Introduction

A current assessment of the vegetation is necessary in order to fully assess the potential impact of the scheme on the vegetation and its associated fauna. However, this assessment cannot be done in isolation without an understanding of previously described vegetation structure, past and present. This is needed in order to understand the changes that are taking place (dynamic process of re-vegetation) and have taken place historically (what species are still present and what has been lost) and help to develop mitigation strategies in favour of the indigenous species.

The vegetation of St Helena is almost entirely anthropogenic. It bears little correspondence with the past and as such for most people it is easier to accept that the current vegetation is natural (and most appropriate for the landscape) than it is to imagine what the Island once looked like prior to human activity. “The past vegetation has been replaced by browsing, grazing, erosion, cutting for timber and fuel, the introduction of non-native plants and clearance for cultivation, plantation forestry and pasture” (Cronk, 1984). With the result that St Helena has one of the rarest floras in the world (of 59 species), lost 9 out of 10 of its endemic birds and likely many invertebrates.

As in the past, the present plant distribution is strongly influenced by the physical features of the Island: the large range in temperature, humidity and rainfall which vary altitudinally and the variable rocks, soils, and slope. In addition, different rates of erosion and different land use practices during the destruction of the natural vegetation have further influenced and complicated plant distribution patterns (Cronk, 1984). It will be these same influences that will govern what species can be successfully planted (or sown) into areas where the level of impact and situation are such that it is appropriate to do so.

10.2 Past Vegetation

The most comprehensive study of the past vegetation of St Helena was produced by Quentin Cronk in his 1984 thesis “The Historical & Evolutionary Development of the Plants of St Helena”. His re-construction of the past vegetation is derived from analysis of principal components using hypothetical distributions based on historical records of all the indigenous plants together with extensive field knowledge. Cronk grouped the vegetational assemblages into roughly seven main types. Of these four are relevant to this study.

10.2.1 Dry Gumwood Woodland (c. 300-500m)

Gumwood woodland would once have occupied approximately 27% of the Island. Dry Gumwood woodland would have comprised: Gumwood, *Commidendrum robustum*; Bastard Gumwood, *Commidendrum rotundifolium*; Rosemary, *Phylica polifolia*; St Helena Tuft-sedge, *Bulbostylis lichtensteiniana*; and Thatching Rush, *Scirpus nodosus*. St Helena Goosefoot, *Chenopodium heleniana*, ferns *Cheilanthes multifida* and Sticky fern, *Hypolepis rugulosa* were also present together with Scrubwood, *Commidendrum rugosum*.

10.2.2 Ebony-Gumwood Thicket (c. 100 -500m)

Ebony/Gumwood thicket could have occupied 24% of the Island in dry rocky areas, primarily on the western side of the island where ebony could compete with gumwood. The shrubby vegetation was dominated by Ebony, *Trochetiopsis melanoxyton* in the north and dwarf Ebony, *Trochetiopsis ebenus* in the south and *Commidendrum robustum* but also present were: *Commidendrum rugosum*, Old Father Live-forever, *Pelargonium cotyledonis*; St Helena Plantain, *Plantago robusta*; Hair grass, *Eragrostis saxatilis*; St Helena Tuft-sedge, *Bulbostylis lichtensteiniana* and *Cheilanthes multifida*. Other associated species would have included the extinct *Heliotropium pannifolium*, Barn Fern, *Asplenium haughtoni*; Tea Plant, *Frankenia portulacifolia*, St Helena Rosemary, *Phyllica polifolia* and *Bulbostylis neglecta*.

10.2.3 Scrubwood Scrub (c1-350m)

A low shrubby Scrubwood scrub of drought and wind tolerant species may have covered 19% of the island, primarily where on-shore winds rising against the land produced condensation. The main species were *Commidendrum rugosum* and *Frankenia portulacifolia*; Boxwood, *Melissia begoniifolia* and *Bulbostylis lichtensteiniana*. Associated species included the annual fern *Ophioglossum polyphyllum*, Boneseed, *Osteospermum sanctae-helenae*; Old Father Live-forever, *Pelargonium cotyledonis*; Hogweed, *Commicarpus helenae*; *Suaeda fruticosa*; Dwarf Ebony, *Trochetiopsis ebenus* and Ebony, *Trochetiopsis melanoxyton* (extinct).

10.2.4 Saline Semi-Desert (c. 0-250m and up to over 300m on Prosperous Bay Plain).

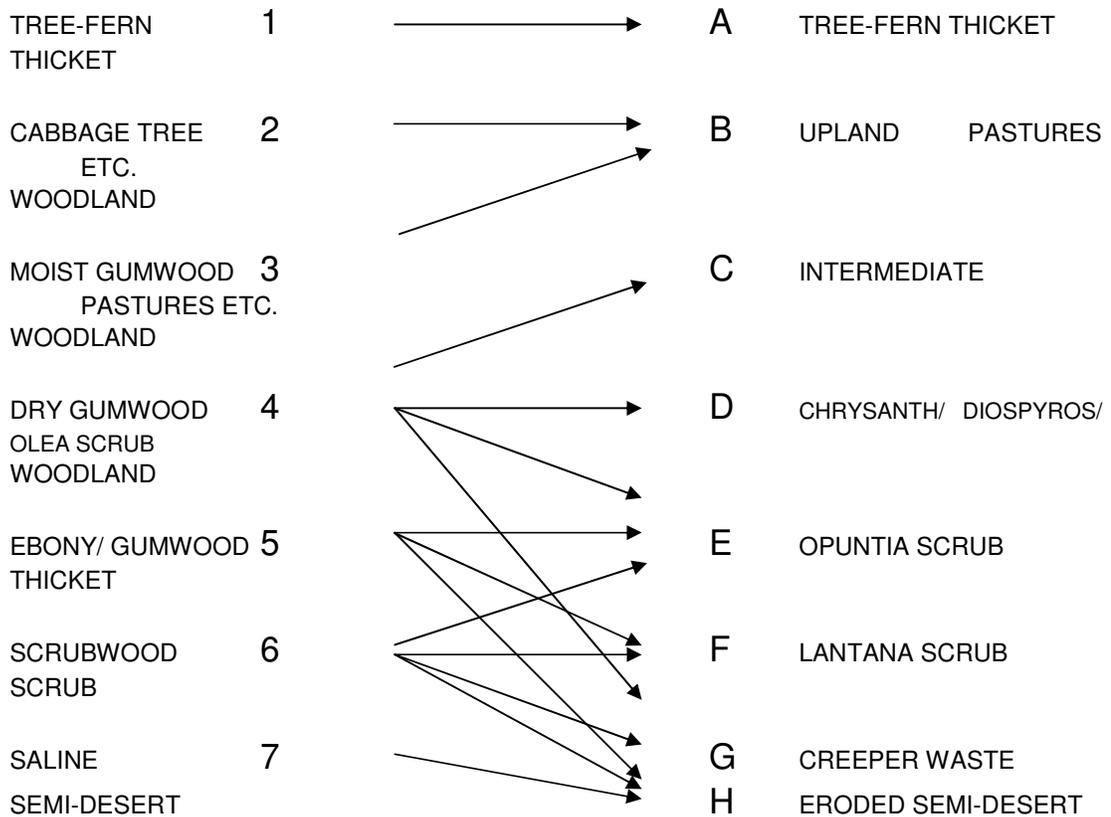
Saline semi-desert may well have covered 6% of the Island's area. In very dry areas and on level ground like Prosperous Bay Plain evaporation exceeds precipitation and the salinity of the soil is very high. The main species that survived in these areas were halophytic species such as Samphire, *Suaeda fruticosa* and Babies Toes, *Hydrodea cryptantha*. Other species included *Frankenia portulacifolia*; Salad Plant, *Hypertelis acida*; French Grass, *Euphorbia heleniana*; and *Osteospermum sanctae-helenae*. Associated species would have included *Commidendrum rugosum* and *Ophioglossum polyphyllum*. *Commicarpus helenae*; Camel's foot creeper, *Ipomoea pes-caprae* and *Tribulus cistoides* may also have been present (Ashmole and Ashmole, 2000).

10.3 Present vegetation

Cronk (1984) suggested eight vegetation groupings as follows:

- A) Tree-fern Thicket
- B) Pasture, Woodland and Cultivations of the Uplands
- C) Pasture, Woodland and Cultivations of the Intermediate Elevations
- D) Chrysanthemoides-Diospyros Scrub
- E) Opuntia Scrub
- F) Lantana Scrub
- G) Creeper Waste
- H) Semi Desert

A summary of the changes in vegetation structure are given in the diagram below, reproduced from Cronk (1984) and updated with information from Ashmole & Ashmole (2000).



Of these the scheme will cut across or fall within six of the present vegetation types (which correspond to four of the historical ones) as follows:

- C) Intermediate Pasture, Woodlands & Cultivations
- D) Chrysanthmoides-Diospyros-Olea Scrub
- E) Opuntia Scrub
- F) Lantana Scrub
- G) Creeper Waste
- H) Eroded Desert

Ashmole, P & Ashmole M in their book *St Helena and Ascension: a Natural History* (2000) expand on Cronk's vegetation zones, these are added to the list of associated species along with established species from the EIA team's own field experience.

10.3.1 Vegetation Type C - Pasture, Woodland and Cultivations of the Intermediate Elevations

Low productivity grassland at Longwood, Woody Ridge and Man & Horse (c.430-530m) replaced the original dry gumwood woodland.

The main species associated with the grassland are: *Pennisetum clandestinum*; Wire Grass, *Cynodon dactylon*, *Digitaria ciliaris*, *Ulex europeaus*, *Opuntia spp*, Bull grass,

Lantana camara, *Helichrysum bracteatum*, *Dichondra repens*, *Ulex europaeus*, *Ageratum conzyoides*.

These drier and relatively level grasslands are now the primary habitat for the St Helena Wirebird.

Woodlands have resulted from programmes of erosion control in the Crown Wastes that has primarily involved the planting of: a variety of species of *Acacia* (*A. longifolia*) and *Eucalyptus lehmannii*. Other species associated are: *Acacia melanoxylon*, *Pinus pinaster*, *Juniperus bermudiana*, *Olea africana*, *Schinus terebinthifolius*, *Schinus molle*, *Pittosporum undulatum*, *Harpephyllum caffrum*, *Eleaodendron capense*.

Small areas of land are under arable cultivation, including Longwood. Weeds associated with cultivation are: *Sonchus oleraceae*, *Oxalis corniculata*, *Cynodon dactylon*, *Bromus willenowii*, *Cyperus rotundus*, *Cyperus esculentus*, *Raphanus raphanistrum*.

10.3.2 Vegetation Type D - *Chrysanthemoides-Diospyros- Olea Scrub*

Main species include: *Chrysanthemoides monolifera*, *Diospyros pallens*, *Olea Africana*, *Sporobolus africanus*

Assoc spp. *Ageratum conzyoides*, *Lantana camara*, *Schinus terebinthifolius*, *Cynodon dactylon*, *Helichrysum bracteatum*, *Juniperus bermudiana*.

Increasing regeneration of this type of scrub is being witnessed, particularly in a band across the northeast to southeast of the Island. Larger trees, such as *Juniperus* and *Schinus terebinthifolius* can be found in higher elevations within this habitat but also *Schinus terebinthifolius* often chokes the valley bottoms, making them impenetrable in parts.

10.3.3 Vegetation Type E - *Opuntia Scrub*

Main spp. *Opunia vulgaris*, *Opuntia colchinilifera*, *Lantana camara*, *Asclepias rotundifolia*, *Vulpia bromoides*, *Ageratum conzyoides*

Assoc. spp. *Helichrysum bracteatum*, *Sporobolus africanus*, *Conzya bonariensis*, *Agaves sp.*

Often develops close to the top of cliffs. In the 1970s *Cactoblastis cactorum* was introduced as a biological control agent for *Opuntia*. Whilst of limited success Prickly pear has been reduced in some areas, particularly in areas such as Half Tree Hollow where housing has increased.

10.3.4 Vegetation Type F - *Lantana Scrub*

Main spp. *Lantana camara*, *Opuntia sp*, *Ageratum conzyoides*, *Atriplex semibaccata*, *Sporobolus africanus*, *Nicotiana glauca*, *Cyperus polystachyus*

Assoc spp. *Sueada fruticosa*, *Helichrysum bracteatum*, *Schinus molle*, *Aberia caffra*, *Cotula coronopifolia*, *Conzya bonariensis*, *Cynodon dactylon*, *Malva parvifolia*, *Solanum*

sodomaeum, *Chrysanthemoides monolifera*, *Clutya pulchella*, *Pittosporum undulatum*, *Furcraea gigantean*.

Lantana has been on the decline in some places. It has been the target of what seems to be a fairly successful biological control programme, it is further impacted by the more recent pest, Jacaranda bug which did so much damage to the gumwoods at Peak Dale in the early 1990s. Increased competition from other species now that grazing pressure has reduced could also be affecting them (Ashmole & Ashmole, 2000).

10.3.5 Vegetation Type G - Creeper Waste (c.325-425m)

The Creeper waste is most extensive in the east of the Island, where mats of the introduced creeper *Carpobrotus edulis* are spreading over large expanses of relatively level, somewhat saline and heavily eroded land. Extending from Horse Point to Prosperous Bay Plain to Boxwood Hill and Little Stone Top, it has created a very dramatic and wholly artificial habitat that would once been Gumwood woodland (part of the Great Wood) in the higher areas and Scrubwood scrub lower down: the main habitats for the endemic Giant Ground Beetle and Giant Earwig, both believed to be extinct, not having been found alive after extensive searches since the mid 1960s. Introduced mice and the large centipede *Scoropendra morsitans* are common and probably important predators of the endemic invertebrates. Surface stone and rock collection over the centuries to the present day has further degraded the habitat, removing refuges for a variety of invertebrates, including the Giant Ground Beetle.

Main spp. *Carpobrotus edulis*, *Lantana camara*, *Helichrysum bracteatum*, *Diospyros pallens*

10.3.6 Vegetation Type H - Eroded Semi Desert (c.0 -250m)

Assoc spp. *Sueada fruticosa*, *Eragrostis cilianensis*, *Mesembryanthemum crystallinum*, *Hydrodea cryptantha*, *Nicotiana glauca*, *Ophioglossum polyphyllum*, *Osteospermum sanctae-helenae*, *Euphorbia heleniana*, *Atriplex semibaccata*, *Catharanthus roseus*, *Tribulus cistoides*, *Chenopodium murale*, *Ageratum conzyoides*, *Argemone mexicana*, *Portulaca oleraceae*

Prosperous Bay Plain is considered by the Ashmoles (Ashmole & Ashmole, 2000) as a unique type semi-desert habitat. One of the largest areas of level ground, it was formed some eight and a half million years ago from basalt and then trachyandesite lava from the vents of the northeastern flanks of the Southwest volcano. In the area of Prosperous Bay Plain the lava was prevented from reaching the sea by older rocks. Climatic change and weathering have created an arid dusty plain, flanked by higher ridges and Fisher's Valley and largely saturated with mineral salts which in ancient times had been the site of seabird colonies.

10.3.7 Cliffs

Coastal and inland cliffs have provided important refuges, for those native species that could cope, to survive the depredations of goats. As such isolated, and often small cliff sites provide almost the only examples of semi-natural habitat outside of the Peaks and merit recognition for their importance to conservation. Grazing pressure is now reduced,

although rabbits are still evident as significant browsers, and many cliff sites are proving to be important sites for regeneration of native species including the Scrubwood, Salad Plant, Tea Plant, Old Father Live-forever and St Helena Plantain. In addition, “the eastern and southern cliffs are influenced by condensation as the wind rise over the land, and as a result often have (considerable) lichen (communities) growing on them” (Ashmole & Ashmole, 2000).