Checklist of plant species of the coastal fynbos and rocky headlands, south of George, South Africa

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Keywords: checklist, coastal fynbos, endemics, phytogeography, rocky headlands, South Africa, Western Cape

ABSTRACT

A checklist of vascular plants and cryptograms was compiled for the fynbos and rocky headland communities of the coastal region south of George. The area studied is a 12 km stretch of steep sandstone cliffs forming alternating bays and headlands situated between Glentana and Wilderness. The plant communities of the natural vegetation inhabiting the coastline are a mixture of coastal thicket, riparian thicket, fynbos and rocky headland types. The extent of natural vegetation has been reduced by the spread of agricultural land and urban development and is under further threat from the spread of naturalised alien invader species, particularly Acacia cyclops. This checklist records the occurrence of 271 taxa including 16 alien species (6% of taxa). Of the flowering plant species recorded, 6% were regional or local endemics.

INTRODUCTION

The study area is a 12 km section of coastline south of George extending from Rooiklip, southeast of Pacaltsdorp, to Ghwanobaaai, 3 km east of Glentana (see Hoare et al. 2000 for details). It includes a band of vegetation within 500 m of the high tide mark on steep sandstone cliffs which form alternating bays and headlands. The plant communities of the natural vegetation along the coastline are a mixture of coastal thicket, riparian thicket, fynbos and rocky headland types. The study was confined to the fynbos and rocky headland vegetation. Riparian thicket, dune thicket, dense alien stands and agricultural lands were not sampled. Rainfall along this section of coastline occurs throughout the year, but with three distinct peaks in spring, summer and autumn (Hoare et al. 2000). Because of its close proximity to the sea, vegetation structure and composition are greatly influenced by oceanic winds. The extent of the natural vegetation has been reduced by the spread of agricultural land and urban activities and is under further threat from the spread of naturalised alien species, particularly Acacia cyclops.

METHODS

Fieldwork was done in all four seasons of the year to cover as many flowering times as possible. Voucher specimens of most taxa were deposited in the National Herbarium, Pretoria, and additional taxa listed were obtained from sight records made during the course of fieldwork. The herbarium collection at PRE was consulted to obtain records of plant species previously collected in the study area, and these were added to the checklist.

RESULTS

The checklist lists 271 taxa comprising nine lichen species, three bryophytes, three pteridophytes, two gymnosperms, 56 monocotyledons and 198 dicotyledons (Table 1). The most commonly represented angiosperm families (Table 2) are Asteraceae (15% of species), Poaceae (7%), Cyperaceae (6%), Fabaceae (6%), Mesembryanthemaceae (5%), Ericaceae (5%) and Crassulaceae (4%). The genera with the most species are Erica (11), Crassula (11), Aspalathus (8) and Helichrysum (6). Ficinia, Lam...
TABLE 1.—Number of families, genera and species recorded in the vegetation of the coast south of George

| Family               | No. genera | No. spp. | Indigenous spp. | Naturalised alien spp. |
|----------------------|------------|----------|-----------------|-----------------------|
| Lichens              | 4          | 9        | 0               | 0                     |
| Bryophytes           | 3          | 3        | 3               | 0                     |
| Pteridophytes        | 3          | 3        | 3               | 0                     |
| Gymnosperms          | 1          | 1        | 0               | 2                     |
| Angiosperms          |            |          |                 |                       |
| Dicotyledons         | 52         | 107      | 187             | 11                    |
| Monocotyledons       | 10         | 41       | 53              | 3                     |
| Total                | 69         | 159      | 255             | 16                    |

pranthus, Phylica and Hermannia were each represented by five species.

All of the 20 largest genera listed for the Cape flora by Bond & Goldblatt (1984) are represented in this coastal area, as are 13 of the 15 largest families. Of the 16 alien species recorded, Acacia cyclops was by far the most abundant.

Some 230 flowering plant species were classified according to phytogeographical range and affinity (Table 3). It was found that 35% are endemic to the Fynbos Biome and 7% are regional (southern Cape) endemics and one was a local endemic—Silene vlokii, which has a restricted range from Herold's Bay to Glentana.

DISCUSSION

Asteraceous Coastal Fynbos is defined as having high asteraceous and non-ericaceous ericoid cover and often high grass cover (Cowling 1992). Phylica, Passerina, Agathosma (and other Diosmiae), Aspalathus, Restio and Cliffortia are listed as dominant genera in this vegetation type (Cowling 1992), a view which is consistent with what was found in the study area (Hoare et al. 2000).

A comparison of the flora of the study area with those of the Goukamma Nature Reserve (Table 4) shows that the number of species and genera in the present study area is comparatively high in relation to its size, especially considering that not all vegetation types were sampled. Goukamma Nature Reserve is a larger area but with fewer species, indicating that there is lower diversity in the Dune Fynbos and thicket vegetation of that region compared with the communities along the rocky shore and promontories of this study area. This coastal region therefore has a surprisingly high diversity for such a small area, probably due to its abundance of microhabitats. Further studies encompassing the non-fynbos vegetation types should be carried out to contribute to the knowledge of this relatively understudied and poorly conserved region.

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CHECKLIST

Taxa are arranged alphabetically, and author citations follow Brummitt & Powell (1992). Except for site records, collectors’ names and numbers follow the author citation; specimens are housed at PRE. Naturalised alien species are marked with an asterisk *. Abbreviations for collectors’ names: Bo, P. Bohnen; Da, G. Davidson; Th, M.F. Thompson; V, J.E. Victor; VFC, C.M. Van Wyk, A. Fellingham & M. O’Callaghan; V&H, J.E. Victor & D.B. Hoare; Wi, I.J.M. Williams.

LICHENS

Cladonia aggregata (Sw.) Nyl., V 327
Cladonia
Chasmanthia sp., V 328
chlorphlaea (Floerke) Spreng., V 325
Cocciferae sp., V 326
confusa R.Sant., V 324
coniocrea (Floerke) Spreng., V 326
Cycnoropsus sp., V 545
Teloschistes flavicans (Sw.) V

FUNARIACEAE

Funaria hygrometrica

PHYLLOGONIACEAE

Usnea rubicunda

ADIANTHESES

Cheilanthes hirta Sw. var. hirta, V 367

ASPLENIACEAE

Asplenium rutifolium (P.J.Bergius) Kunc, V 351, 366

SCHIZAEACEAE

Schizaea pectinata (P.J.Bergius) Kunze, V 512, 519

GYMNOSPERMS

Pinus
*pinisetae Aiton
*radiata D.Don

ANGIOSPERMS: MONOCOTYLEDONS

ASPHODELACEAE

Anthericum coopen Baker, V 561, V&H 43

CYPERACEAE

Ficinia
albitans Nees, V&H 83
cf gracilis (Poir.) Schrad., V 259, 321, 329, 359
laciniata (Thunb) Nees, Da 33719
nigrescens (Schrad.) J Raynal, V 246, 285, V&H 68
repsis (Nees) Kunth, V 292
Fuirena hirsuta (P.J.Bergius) P.L.Forbes, V 396
Isolepis tenuissima (Nees) Kunth, V 288
Marricus
congestus (Vahl) C.B Clarke, V 557
thunbergii (Vahl) Schrad., V 282
Pycreus polystachyos (Roth) Beauv. var. polystachyos, V 287
Schoenoplectus paniculatus (Wahlenb.) C.B Clarke, Da 33726
Tetrapoa
bolusi C.B Clarke, VFC 234
compressa Tarrill, V 246, V&H 40
cuspidata (Roth) C.B Clarke, V 242, V&H 78
microstachys (Vahl) Pfeffer, V 309, 316, 333
Trinontopus capensis (Steud.) Harv., V 289

HYACINTHACEAE

Lachenalia bulbifera (Cyr.) Engl., VFC 170
Ornithogalum sp

HYPOXIDACEAE

Empodium sp., V 207
Spiloxene trifurcillata (Nel) Fourc., V 335

IRIDACEAE

Bahana fourcadei G.J.Lewis, V 349
Bobartia aphylia (L.f.) Ker Gawl., V 307, 540, V&H 47
Chasmanthe aethiopica (L.) N.E.Br., VFC 171
Freesia
alba (G.L.Mey.) Gumbleton
leichtlinii Klatt, V 296
Gladiolus floribundus Jacq. subsp. floribundus, Th 609
Hesperantha falcula (L.f.) Ker Gawl., V 213
Miranthus alpoecaroides (L.) Rothm., V 558
Tritonopsis antholyza (Poir.) Goldblatt, V 495

JUNCACEAE

Junceus
acutus L. subsp. leopoldia (Pari.) Snug., V 345
dregeanus Kunth, V 286, 534

ORCHIDACEAE

Dispers capensis (L.) Sw. var. capensis, V 238
Herschelaiant hians (L.f.) Rauschert, V 529, 533

POACEAE

Cynodon dactylon
* Lolium perenne
Eragrostis

DICOTYLEDONS

ACANTHACEAE
Hypoestes aristata (Vahl) Roem. & Schult. var. thimorum Bulkwill, V 341

AIZOACEAE
Tetragonia
fruticosa L., V 273
decumbens Mill.
spicata L.f. var. spicata, V 338
virgata Schlr., V&H 42

ANACARDIACEAE
Rhus
crenata Thunb., V 302
glaucia Thunb., VFC 177
lucida L. forma lucida, V 208

APICACEAE
Centella virgata (L.f.) Drade, V 319

APOCYNACEAE
Asphodelus marginatus Decne.
Sarcostemma viminale (L.) R.Br.
ASTERACEAE
Arctotis prostrata (Salish.) Britten, VFC 185
Athanasia trifurcata (L.) L., V 509
Athrixia capensis Ker Gawl., V 541
Bergera armata (Vahl) Drake, V 531
Caryophyllaceae
Chrysanthemoides moniltiera (L.) Norl. subsp. pisifera (L.) Norl., V 526
Cineraria britannica Hutch. & R.A.Dyer, V&H 39, 71
Cynara capitata (Thunb.) Less., V 58
Disparago kraussii Sch. Bip., V 502, V&H 58
Elytrypappus rhinocerotis (L.) Less., V 548
Erythrocephalus africansus L., V 244, V&H 33
Felicia
amoena (Sch.Bip.) Levyns, subsp. latifolia Gras, V 536
filifolia (Vent.) Burt Daisy, subsp. bodkinii (Compton) Gras, V 300
Gazania rigens (L.) Gaertn. var. uniflora (L.) Rößler, V 294, V&H 75
Gerbera serrata (Thunb.) D. Rice, V 239; V&H 66
Helichrysum
 anomalum Less., V 240, 514
asperum (Thunb.) Hilliard & B.L.Burtt var. glabrum Hilliard, V 532
cymosum (L.) D. Don subsp. cymosum, VFC 227
felimum Less., V 322
odoratissimum (L.) Sweet, V 564
teretifolium (L.) D. Don, V 235
Metalasia
acuta Karis, V 217
pungens D. Don, V 247, V&H 52, 54b
Oedera
capensis (L.) D. Rice, V 236
imbicata Lam., V 267
Othonna carnosa Less., var. carnosa, V 370
Plecostachys serpyllifolia (Berg.) Hilliard & B.L. Burtt, V 301
Printzia polifolia (L.) H. Hutch., V 323
Rethania
calycina (L.) L'Hér. subsp. calycina, V 364
pungens L'Her. subsp. pungens, V 501
Senecio
angulus L., V 348
deltoides Less., VFC 183
ilicifolius L., V 508
Stoebe
microphylla DC., V 357; V&H 72, 82
plumosa (L.) Thunb., V 304
Syncarpha
canescent (L.) B.Nord.
paniculata (L.) B.Nord.
Tarchonanthus camphoratus L., V 34; V&H 44
Ursinia
heterodonta (DC.) N.E.Br., V 252, 528
saxatilis N.E.Br., V&H 34, 527
BRASSICACEAE
Heliotheca subulata DC., V 334, 527
CAMPANULACEAE
Lightfootia
divaricata H. Bæk var. debilis (Sond.) Adamson, VFC 95
fasciculata (L.,f.) A. DC., V 500
CARYOPHYLLACEAE
Silene vlokii Mass., V 864
*Spergula arvensis L., V 214
CELASTRACEAE
Cassine papillosa (Hochst.) Kuntze
Perocteletus tricuspidatus (Lam.) Sond., V 299
Putterickia pyracantha (L.) Szyszyl., V 549
CHENOPODIACEAE
Sarcocornia natalensis (Eng. -Sternb.) A.J.Scott var. natalensis
CONVOLVULACEAE
Falkia repens L.f., V 281
CRASSULACEAE
Adromischus caryophyllaceus (Burm.f.) Lem., V 532; V&H 37
Crassula
arupurpurea (Haw.) Druce, var. arupurpurea, V&H 38
bipinata Haw., VFC 169
decumbens Thunb. var. brachyphylla (Adamson) Toikken, V 215
lactea Soland., V 344
nudicaulis L. var. nudicaulis, V 553
orbicularis L., V 297
rubricaulis Eckl. & Zeyh., V 343
rupestris Thunb. subsp. rupestris, V 551
soutii Schinland subsp. sphaerocephala Toikken, V 223
subulata L. var. fastigata (Schinland) Toikken, V 382
DROSERACEAE
Drosera sp., V 318
EBENACEAE
Diospyros
dichophylla (Gand.) De Winter, V 209
lycoideas Desf. subsp. lycoides, V&H 49
Elaeae
crispa (Thunb.) Gaertn. subsp. crispa, V 368
natalensis A.D. subsp. obovata F. White, V&H 41
ERIOCAEAE
Baeria eriocidae L., V 543
Eryca
canaliculata Andr., V 212
discolor Andr. var. discolor, V 233, 293
formosa Thunb., V 243, 323, 355; V&H 25, 46
geranioides Thunb. var. glandulosa, V 555; V&H 48
hispida L. var. hispida, V 258, 356
imbicata L., V 354
pelata Andr., V&H 26
speciosa Andr., V 241
triceps Link, V 559
versicolor Wendl., sp. & V&H 24
Salaxis australis (Thunb.) G.Don, V 258, 530
EUPHORBIEACEAE
Cluita
alaternoides L. var. brevifolia Sond.
Saxa Sond., VFC 218
Euphorbia cf. catesbeiana N.E.Br., V 272
FABACEAE
Acacia
*cyclus G.Don, V 360
*mearnsii De Wild., V 257; V&H 54a
Amphilathae fourcades Compton, V 358
Aspalathus
alopecurus Benth., V 353; V&H 56
asperagoides L. subsp. asperagoides, V&H 21
asperagoides L. subsp. rubro-fusca (Eckl. & Zeyh.) R. Duhligen, V 331
ciliaris L., V 526, V 544
florifera R. Duhligen, V 248
kougaeensis (R. Duhligen) R. Duhligen, V 266; V&H 22
lancifolia P.J. Bergius subsp. lancifolia, V&H 55
migra L.
Indigofera heterophylla Thunb., V 271; V&H 59, 77
*Lotus subflorosus Lag., V 505
Rhynchosia
capensis (Burm.) Schinz, V 315
ciliata (Thunb.) Schinz
*Vicia sativa L., V 381, 560
FUMARICACEAE
*Fumaria muralis Koch subsp. muralis, V 211
GENTIANACEAE
Chromia baccifera L., V 336
GERANIACEAE
Pelargonium
candicans Spreng., V 280
capitatum (L.) L’Her., V&H 74
caucalifoilium Jacq. subsp. convolvulifolium (Kunth) J.J.A.van der Walt, V 538
fruticosum (Cav.) Wild., V 311
LAMIACEAE
Stachys graciliflora Presl, VFC 164
LAURACEAE
Cassyytha citrifolia Nees, V 227; V&H 76
LOBELIACEAE
Lobelia
bicolor Sims, V&H 61
coronopapila L., V 255, 537
erinus L., V 520
tomentosa L.
Monopis undentata (Dryand.) E.Wimm. subsp. undentata, V 515
MALVACEAE
Anisodonica scabrosa (L.) Bates, V 279
Hibiscus seathiius (L.) var. ovatus Harv., V&H 57
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MESEMBRYANTHEMACEAE
- Carpobrotus deliciosus (L. Bolus) L. Bolus, V 305
- edulis (L.) L. Bolus, V 210
- Delosperma edwardsiae (Kensit) L. Bolus, V 219, 550, V&H 79
- Dysphya crassifolium (L.) L. Bolus, V 268
- Drosanthemum brevifolium (Aiton) Schwantes, V 222
- Lampranthus conspicuus (Haw.) N. E. Br., V 260, V&H 64
- Conophytum bilobum (Marloth) N. E. Br., VFC 176
- Ruschia tenella (Haw.) Schwantes, V 220
- MYRICACEAE
- Myrica quercifolia L.
- MYRTACEAE
- ♦Leptospermum laevigatum (Caertn.) F. Muell, V 264
- OLEACEAE
- Olea exasperata Jacq.
- OXALIDACEAE
- Oxalis spp., V 310, 224
- PLANTAGINACEAE
- *Plantago lanceolata L., V 525
- PLUMBAGINACEAE
- Limonium scabrum (Thunb.) Kunze var. scabrum, V&H 60
- POLYGALACEAE
- Muralitia ericoides (Burm.f.) Steud., V 499
- Polygala frutcosa P. J. Bergius, V 295
- microlopha P. J. Bergius var. gracilis Levyns, V 314
- myrtifolia L., V 346
- PRIMULACEAE
- *Anagallis arvensis L., V 291, 519
- PROTEACEAE
- *Hakea sericea Schrad., V 361
- Protea neriifolia R. Br., V 237
- Leucadendron salignum P. J. Bergius, V 263
- RANUNCULACEAE
- Knowltonia vesicatoria (L. f.) Sims subsp. grossa H. Rasm., V 340
- RHAMNACEAE
- Phyllica axillaris Lam. var. axillaris, VFC 174
- var. martima Pillans, VFC 228
- confusa Pillans, V&H 50
- purpurea Sond. var. pearsonii Pillans, V 245
- strigulosa Sond., V&H 29
- SANTALACEAE
- Colpoon compressum P. J. Bergius, V 229, 342
- Thesidium fragile (Thunb.) Sond.
- SCROPHULARIACEAE
- Graderia scabra (L.) Bentham, Bo 8157
- Phyllopodium rusti (Rolfe) Hilliard, V 284
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