L. Mucina

Figure 14.27 AZd 3 Cape Seashore Vegetation: Dune cordons in De Mond Nature Reserve near Arniston (Western Cape), close to Cape Agulhas (the southernmost point of the African continent). The dominant grasses are *Thinopyrum distichum* and *Ehrharta villosa* var. *maxima* and the yellow-flowered daisy is *Didelta carnosa* var. *tomentosa*.

Agulhas, proposed Garden Route and Greater Addo Elephant National Parks as well as the Rocher Pan, Cape Columbine, Dassen Island, Wolvengat, Kleinmond, Walker Bay, De Mond (Ramsar site), De Hoop, Kleinjongensfontein, Geelkrans, Robberg, (all Western Cape), and Cape St Francis, Cape Recife, Joan Muir, Gxulu, Cape Henderson, Kwelera and Bosbokstrand Nature Reserves (all Eastern Cape). A number of private conservation areas such as Donkin Bay, Robben Island, Rein's Coastal Reserve and Tharfield Nature Reserve protect other considerable portions of the Cape Seashore Vegetation. Only about 1.7% has been transformed, mainly by urban development.

Remark Extensive dunefields are found at De Hoop, Cape St Francis, Gamtoos, Alexandria and Boknes along this coastal stretch (Tinley 1985, Young 1987, Talbot & Bate 1991).

References Muir (1929), Dyer (1937), Martin & Noel (1960), Comins (1962), Boucher (1972, 1977, 1978, 1986, 1987, 1989, 1992, 1993, 1994, 1995, 1997, 1998a, b, c, e, 1999a–e), Heydorn (1975), Boucher & Jarman (1977), Boucher & Le Roux (1981), Taylor & Morris (1981), Van Rooyen (1981), Lubke & Avis (1982a, b, 1988, 2000), Lubke (1983), Boucher et al. (1986), La Cock (1986), McLachlan et al. (1987), Young (1987), Avis (1989, 1992, 1995), Lubke & De Villiers (1991), Parker-Nance et al. (1991), Talbot & Bate (1991), Bate & Dobkins (1992), Turner (1992), Boucher & Le Roux (1993), Taylor & Boucher (1993), Boucher & Rode (1995a, b, 1999), Britton & Jackelman (1995), Lubke et al. (1995, 1997), Gray (1997), Hertling (1997), Hertling & Lubke (1999a, b), Hesp & McLachlan (2000), Hoare et al. (2000), Ripley (2001), Barker et al. (2002).

AZd 4 Subtropical Seashore Vegetation

Dune Pioneers (Weisser 1978). A34 Strandveld p.p. (Acocks 1988). VT 4 Dune Thicket p.p. (Low & Rebelo 1996).

Distribution Eastern Cape and KwaZulu-Natal Provinces: Beaches, coastal dunes, dune slacks and coastal cliffs of the subtropical coasts of the Indian Ocean (from northeast of Kei Mouth in the Eastern Cape to the Mozambique border), the region includes South East, Transkei and KwaZulu-Natal coasts (*sensu* Tinley 1985, Lubke et al. 1997).

Vegetation & Landscape Features Open, grassy, herbaceous and to some extent also dwarf-shrubby, often dominated by a single species of pioneer character. Various plant communities reflect the age of the substrate and the natural disturbance regime (moving dunes), distance from the upper tidal mark and the exposure of dune slopes (leeward versus seaward).

Geology, Soils & Hydrology Recent coastal sandy sediments forming beaches and dunes, exposed to reworking by relentless wind and sea storms.

Climate Rainfall can occur any time during the year but with more in summer in the western part of the area (Kei Mouth region), with a pronounced summer precipitation peak along most of the northern coastal stretch. Overall MAP more than 1 000 mm. MAT of 20.3°C is indicative of a subtropical thermal regime. No frost occurs in the region. Very intensive solar irradiation enhanced by reflected albedo from the white dunes and the sea.

Important Taxa **Dunes & beaches**: Succulent Shrubs: *Phylohydrax carnosa* (d), *Scaevola plumieri* (d), *S. sericea*. Herbaceous Climbers: *Ipomoea pes-caprae* (d), *I. wightii*. Herbs: *Canavalia rosea* (d), *Gazania rigens* (d), *Chironia decumbens*, *Dasispermum suffruticosum*, *Gladiolus gueinzii*, *Helichrysum praecinctum*, *Launaea sarmentosa*, *Phyllopodium cuneifolium*, *Silene primuliflora*, *Tephrosia purpurea* subsp. *canescens*,

W.S Matthews

Figure 14.28 AZd 4 Subtropical Seashore Vegetation: *Scaevola plumieri* (Goodeniaceae) is a typical subtropical dune element forming dense populations from Maputaland (this view) as far west as Arniston (Western Cape).

Zaluzianskya maritima. Geophytic Herb: *Trachyandra divaricata*. Succulent Herb: *Arctotheca populifolia* (d). Graminoids: *Ficinia nodosa* (d), *Juncus kraussii* subsp. *kraussii* (d), *Sporobolus virginicus* (d), *Cyperus crassifolius*, *Imperata cylindrica*, *Stipagrostis zeyheri* subsp. *barbata*. **Cliffs**: Succulent Shrub: *Chenolea diffusa* (d). Herbs: *Chironia decumbens*, *Gazania rigens*. Succulent Herb: *Carpobrotus dimidiatus*. Graminoid: *Ficinia lateralis*.

Conservation Least threatened. Target 20%. Some 30% statutorily conserved in the Greater St Lucia Wetland Park as well as in the Richards Bay, Umlalazi, Amathikulu and Beachwood Mangroves Nature Reserves (all KwaZulu-Natal) and in the Mkambati Nature Reserve and Dwesa-Cwebe Wildlife Reserve & Marine Sanctuary (both Eastern Cape). Almost 10% already transformed by urban (largely tourism) development.

Remarks The tropical coastal elements increase along the south-north gradient. The subtropical beaches and young dune systems of KwaZulu-Natal stand out through the occurrence of tropical floristic elements (*Canavalia, Phylohydrax, Ipomoea, Scaevola*).

S.M. Proches

Figure 14.29 AZs 1 Algoa Dune Strandveld: Low strandveld thicket dominated by *Tetragonia decumbens* (Aizoaceae) and *Dimorphotheca fruticosa* (Asteraceae) on Bird Island in Algoa Bay near Port Elizabeth (Eastern Cape), supporting a large colony of jackass penguins (*Spheniscus demersus*).

References Edwards (1967), Moll & Pierce (1975), Campbell (1976), Weisser & Marques (1979), Donnelly & Pammenter (1983), Weisser & Müller (1983), Lubke et al. (1995, 1997), Hertling & Lubke (1999a, b), Smith (2001), Barker et al. (2002), L. Mucina (unpublished data).

Eastern Strandveld

AZs 1 Algoa Dune Strandveld

VT 34a Dense Strandveld Scrub p.p. (Acocks 1953). *Pterocelastrus tricuspidatus* Bushclumps, Dune Woodland (Taylor & Morris 1981). Subtropical Transitional Thicket p.p., *Cassine aethiopica-Cussonia thyrsiflora* South-East Dune Thicket (Cowling 1984). Dune Scrub and Thicket p.p. (Lubke & Van Wijk 1988). LR 4 Dune Thicket p.p. (Low & Rebelo 1996). STEP Algoa Dune Thicket, STEP Colcester Strandveld (Vlok & Euston-Brown 2002, Vlok et al. 2003).

Distribution Eastern Cape Province: Narrow coastal strip along the Indian Ocean seaboard from the mouth of the Tsitsikamma River to the Sundays River mouth.

Vegetation & Landscape Features Tall (up to 5 m) dense thickets on dunes mainly outside the influence of salt spray, dominated by stunted trees, shrubs (often armed with spines and thorns), abundant lianas and sparse herbaceous and grassy undergrowth.

Geology, Soils & Hydrology Aeolian dune sands of the Schelm Hoek Formation of the Algoa Group.

Climate Nonseasonal precipitation regime, with MAP approximately 680 mm, of which about 300 mm falls in summer (October–March) and 350 mm in winter (April–September). The mean daily maximum and minimum temperatures are 25.1°Cand 8.3°C for February and July, respectively. See also climate diagram for AZs 1 Algoa Dune Strandveld (Figure 14.3).

Important Taxa (^{S}Stunted shrubby forms of trees) Succulent Tree: *Aloe africana* (d). Succulent Shrubs: *Cotyledon velutina*, *Lycium cinereum*, *Zygophyllum morgsana*. Tall Shrubs: *Azima tetracantha* (d), *Brachylaena discolor*^{S} (d), *Chrysanthemoides monilifera* (d), *Cussonia thyrsiflora*^{S} (d), *Euclea racemosa* subsp. *racemosa*^{S} (d), *Maytenus procumbens* (d), *Mystroxylon aethiopicum*^{S} (d), *Pterocelastrus tricuspidatus*^{S} (d), *Rhus crenata* (d), *Schotia afra* var. *afra*^{S} (d), *Scutia myrtina*^{S} (d), *Sideroxylon inerme*^{S} (d), *Tarchonanthus littoralis*^{S} (d), *Canthium spinosum*^{S}, *Cassine peragua*^{S}, *Dovyalis rotundifolia*^{S}, *Euclea natalensis*^{S}, *E. racemosa* subsp. *macrophylla*, *Grewia occidentalis*, *Gymnosporia buxifolia*, *G. capitata*, *Nylandtia spinosa*, *Olea exasperata*, *Putterlickia pyracantha*, *Rhus glauca*, *R. pterota*, *Zanthoxylum capense*^{S}. Low Shrubs: *Carissa bispinosa* (d), *Dimorphotheca fruticosa*, *Pelargonium suburbanum* subsp. *suburbanum*, *Robsonodendron maritimum*. Succulent Woody Climber: *Sarcostemma viminale*. Woody Climbers: *Rhoicissus digitata* (d), *Asparagus retrofractus*, *Solanum africanum*. Herbaceous Climbers: *Cynanchum natalitium* (d), *C. ellipticum*, *C. obtusifolium*, *Secamone alpini*. Succulent Herb: *Sansevieria hyacinthoides*. Graminoids: *Brachiaria chusqueoides* (d), *Panicum deustum*.

Endemic Taxa Succulent Shrub: *Cotyledon adscendens*. Tall Shrubs: *Gymnosporia elliptica*, *Rapanea gilliana*. Herb: *Lobelia zwartkopensis*. Geophytic Herb: *Brunsvigia litoralis*.

Conservation Least threatened. Target 20%. About 4% statutorily conserved in the Greater Addo Elephant National Park, Cape Recife, Sardinia Bay, The Island, Kromme River Mouth, Gamtoos River Mouth, Huisklip, Cape St Francis and Seal Point Nature Reserves as well as in the private Upe and Rebelsrus Nature Reserves, Thyspunt Natural Heritage Site and in the Seaview Game Park. More than 10% already transformed for cultivation, urban development and road building. Some of the dune systems suffer heavy infestation by *Acacia cyclops* and *A. saligna*, which are now being removed by the local Working for Water activities. Erosion very low (63%) and moderate (10%).

Remarks The structure and dynamics of this vegetation unit are similar to those of the thickets of FS 9 Groot Brak Dune Strandveld (see chapter on Fynbos in this book). However, the present unit differs from the latter in having a richer assemblage of woody species. It is somewhat surprising that forest vegetation is not dominant in this seemingly suitable climatic regime. This is probably because the substrate consists of aeo-