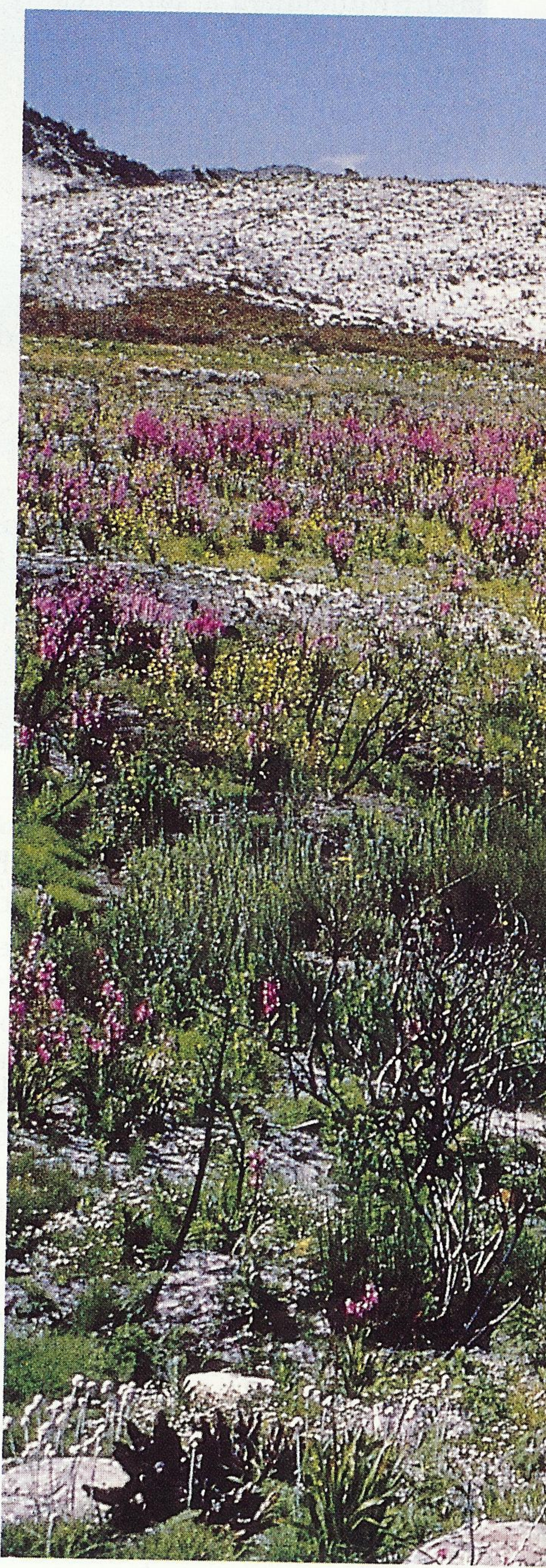


Following the devastating fire of March 1991, 59 orchid species were observed in this southernmost part of the Kogelberg State Forest and the adjacent coastal plains.

Below: Marshy area in the mountains behind Betty's Bay.

Photo: W. R. Liltved



BETTY'S BAY FIRE STIMULATES RICH DISPLAY OF ORCHIDS

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The mountains and coastal plains in the vicinity of Betty's Bay, situated on Cape Hangklip approximately 60 km southeast of Cape Town, are widely known for their remarkable plant diversity and high degree of endemism (plants that occur only in a specific area). Families such as Ericaceae (153 species), Restionaceae (71),

Proteaceae (76) and Bruniaceae (22) are especially well represented within the Betty's Bay area. The mountainous parts of Cape Hangklip fall within the boundaries of the Kogelberg State Forest and are therefore protected to some degree. The entire Kogelberg State Forest has been closed to the public for decades to prevent disturbance

of its ecology. Recently, this conservation area has become threatened by the planned Palmiet River scheme, which ultimately would have a devastating effect on this fragile ecosystem. In addition, the varied plant communities of the coastal plains are threatened by housing development.

The Orchidaceae are well





The rare orchid *Evotella rubiginosa* (previously known as *Corycium rubiginosum*) in situ.

Photo: W. R. Liltved

represented in the mountains behind Betty's Bay as well as in adjacent coastal plains, although accurate figures are available only for the Kogelberg State Forest as a whole (Boucher 1977). In his survey of plant species, Boucher lists 53 currently recognized species of orchid,

rendering the Orchidaceae the ninth largest plant family in the area. Owing to the devastating lightning generated fire which ravaged the area during March 1991, an extraordinary number of orchid species were induced to flower. During the preceding spring/summer we observed a

total of 59 species within 16 genera, among them 18 species not recorded by Boucher. Our own study area comprised the slopes behind the Harold Porter Botanical Garden, Leopards Kloof, the slopes and summit of the Platberg (916 m), the mountains north of Kleinmond, as well as the coastal plains near the Palmiet River Bridge and between Betty's Bay and Hangklip.

In addition, two obscure species (*Disa brevipedata* and *Corycium bifidum*) which were recorded from the area decades ago and have not been seen since, may suddenly reappear after a fire. We estimate over 75 species to occur in the area. This number is lower than that recorded from the Cape Peninsula (Lewis 1950). However, the Cape Peninsula is significantly larger than the Kogelberg State Forest and several of the orchid species listed by Lewis may have since disappeared due to habitat destruction.

The phenomenon in which fire induces geophytes to flower has long since been recognized and documented, although its mechanisms are not fully understood. It has been suggested, that the heat of the fire, the chemical effects of the ash and certain gases (e.g. ethylene), and the destruction of the surrounding vegetation, reducing competition, may play an important role. While the flowering of the majority of orchids is merely enhanced through burning, others bloom exclusively during the first year after a veld fire. The flowering of others is unrelated to the effects of burning. Furthermore, there is evidence that some species show a peak in flowering during the second year after a fire, with the number of flowering individuals decreasing successively thereafter.

The species observed by us are listed in the accompanying table. Several are considered rare or endangered, such as *Ceratandra venosa* (= *Evota venosa*),



Disperis paludosa, one of the more common species of orchid that occurs in mountain marshes. Photo: W. R. Liltved

Evotella rubiginosa (= *Corycium rubiginosum*), *Pachites bodkinii*, *Satyrium foliosum* and *Satyridium rostratum*. One species of *Disa* (*D. sp.*, Liltved s.n.) from the summit of the Platberg could not be identified and may prove to be undescribed. Most of these rare species are usually seen flowering only during the first year after fire which accounts for their rather sporadic appearance. While we have sight records of many species, collections of vouchers were made in some cases and deposited in the Compton Herbarium or the Bolus Herbarium.

References

- Boucher, C. (1977). A provisional check list of flowering plants and ferns in the Cape Hangklip area. *Journal of South African Botany* **43**, 57-80.
- Lewis, G.J. (1950). Orchidaceae. In: Adamson, R.S. & Salter, T.M. (eds): *The flora of the Cape Peninsula*. Juta, Cape Town.

List of orchid species observed

Abbreviations in brackets give the habitat and the abundance: fs . . . fynbos slopes, fp . . . high altitude fynbos near mountain peaks, r . . . rock flushes, str . . . stream banks, m . . . marsh, c . . . coastal plains and dunes; A . . . abundant, O . . . occasional to rare, L . . . very local. The currently recognized nomenclature used in *Wild orchids of southern Africa* by J. Stewart, (Macmillan, Johannesburg, 1982) is used throughout. Where this differs from the name used in this book it is given in square brackets.

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|---|--|--|
| <i>Acrolophia micrantha</i> (Lindl.) Schltr. & Bol. (c; O) | <i>D. tenuifolia</i> Sw. [<i>D. patens</i> (L. f.) Thunb.] (fs, m; O) | <i>M. bracteata</i> (Sw.) Dur. & Schinz (fs; A) |
| <i>Bonatea speciosa</i> (L. f.) Willd. (c; A) | <i>D. pillansii</i> Bol. (m, r; O) | <i>M. cernua</i> (Thunb.) Dur. & Schinz (m; L) |
| <i>Ceratandra atrata</i> (L.) Dur. & Schinz (fs, c; O) | <i>D. racemosa</i> L. f. (m; O-A) | <i>M. conferta</i> (Bol.) Krzl. (c, fs; L) |
| <i>C. bicolor</i> Sond. ex Bol. [<i>Evota bicolor</i> (Sond. ex Drege) Rolfe] (fs, m; O) | <i>D. tenuicornis</i> Bol. (fs; O) | <i>M. densiflora</i> Lindl. (fs; O) |
| <i>C. venosa</i> (Lindl.) Schltr. [<i>Evota venosa</i> (Lindl.) Schelpe] (fs; L) | <i>D. tripetaloides</i> (L. f.) N.E. Br. (str; A) | <i>M. ophrydea</i> Lindl. (fs, m; A) |
| <i>Corycium bicolorum</i> (Thunb.) Sw. (c; L) | <i>D. richardiana</i> (r; O) | <i>M. pygmaea</i> (Bol.) Dur. & Schinz (fs; O) |
| <i>C. carnosum</i> (Lindl.) Rolfe (fs, m; O) | <i>D. uniflora</i> Berg. (str, r; O-A) | <i>M. rufescens</i> (Thunb.) Lindl. (fs; L) |
| <i>C. excisum</i> Lindl. (c; L) | <i>D. sp.</i> (Liltved s.n., voucher in BOL) | <i>M. sabulosa</i> (Bol.) Krzl. (c, fs; O) |
| <i>Disa atricapilla</i> (Lindl.) Bol. (str; L) | <i>Disperis paludosa</i> Harv. (m; O) | <i>Pachites bodkinii</i> Bol. (fs; O) |
| <i>D. bivalvata</i> (L. f.) Dur. & Schinz (m; A) | <i>Eulophia aculeata</i> (L. f.) Spreng. (fs; L) | <i>Pterygodium acutifolium</i> Lindl. (m; A) |
| <i>D. bodkinii</i> Bol. (fp; L) | <i>Evotella rubiginosa</i> (Sond. ex Bol.) Kurzweil & Linder [<i>Corycium rubiginosum</i> (Sond.) Rolfe] (fs; O) | <i>P. caffrum</i> (L.) Sw. (m; O-A) |
| <i>D. cornuta</i> (L.) Sw. (fs; O) | <i>Herschelianthe graminifolia</i> (Ker-Gawl.) Rauschert [<i>Herschelia graminifolia</i> (Spreng.) Dur. & Schinz] (fs; O) | <i>P. catholicum</i> (L.) Sw. (fs; L) |
| <i>D. cylindrica</i> (Thunb.) Sw. (m; O) | <i>Holothrix cernua</i> (Burm. f.) Schelpe (c, fs; O) | <i>Satyridium rostratum</i> Lindl. (fp, m; O) |
| <i>D. draconis</i> (L.f.) Sw. (fs; L) | <i>H. villosa</i> Lindl. <i>villosa</i> (str; O) | <i>Satyrium bicallosum</i> Thunb. (fs, c; A) |
| <i>D. fasciata</i> Lindl. (fs; O) | <i>Monadenia atrorubens</i> (Schltr.) Rolfe (fs, c; L) | <i>S. bracteatum</i> (L. f.) Thunb. (m; O) |
| <i>D. ferruginea</i> (Thunb.) Sw. (fs; O) | <i>M. bolusiana</i> (Schltr.) Rolfe (fs, fp; O) | <i>S. carneum</i> R. Br. (c; A) |
| <i>D. glandulosa</i> Lindl. (r; L) | | <i>S. foliosum</i> Sw. (fp; L) |
| <i>D. lineata</i> Bol. (fs; O) | | <i>S. humile</i> Lindl. (fs; O) |
| <i>D. obtusa</i> Lindl. ssp. <i>hottentotica</i> Linder (m; O-A) | | <i>S. lupulinum</i> Lindl. (fs; O) |
| | | <i>S. odorum</i> Sond. (under bushes; O) |
| | | <i>S. retusum</i> Lindl. (fs, m; O-A) |
| | | <i>S. stenopetalum</i> Lindl. (m; L) |
| | | <i>Schizodium obliquum</i> Lindl. ssp. <i>obliquum</i> (fs; L) |