

Protea L. 1753

Originally Linnaeus (starting in 1737) typified the genus *Protea* the Silvertree. Inexplicably Linnaeus assigned the King Protea to the genus *Leucadendron*. It was only in 1771 that Linnaeus changed his mind and sunk both genera into one and replaced the Silvertree with the King Protea as the type for the genus.

Exactly why Linnaeus made the original mistake (after all *Leucadendron* means White Tree and is thought to refer to the Silvertree) is unclear. However, it is clear that he recognized and was embarrassed by this oversight. In his early works (*Hortus Cliffortianus*), he waxed lyrical about the Silvertree: “This tree most shining and splendid of all plants” and “yes like Proteus himself extremely variable and different.” However, in 1771 he noted: “I note with much pleasure that the Leucadendrons are connected generically with the Proteas.” It was only in 1809 that Richard Salisbury again split the genera: he put the Silvertree into *Protea* and the King Protea into *Scolymocephala* (thistle-head). In 1810 Robert Brown put the Silvertree into *Leucadendron* for the first time, and the King Protea into *Protea*. In both cases it is Robert Brown’s generic names that have been conserved and are in use today.

Protea cynaroides (L.) L. 1753,
King Protea
Koningsuikerbos

Other Common Names: Artichoke-flower Erodendrum, Big Protea, Giant Protea, Kings, Mountain-rose Sugarbush, Suikerroos, *Konigsprotea*, *Aprilprotea*, *Bergroos*, *Grootsuikerkan*, *Reuseprotea*, *Reussuikerbos*, *Waboomprotea*, *Waterprotea*, *Watersuikerkan*, *Indlungi* (Xhosa), *Isindhunge* (Swati), *Isindhlungu* (Swati), *Isigalaba* (Zulu), *Isiqwane* (Xhosa), *Izadlung*, *King Pink*, *King Red*, *Mini King*.

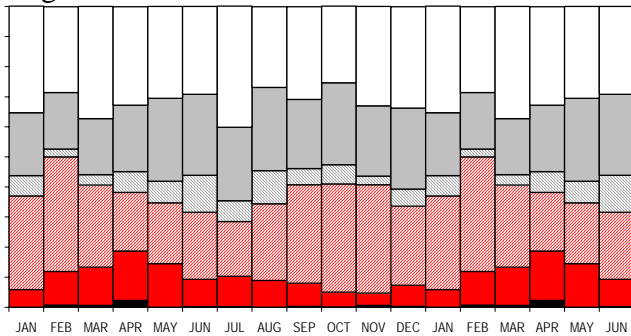
Other Scientific Names: *cyclophylla* (Gand.) Gand. & Schinz., *cynaraeflorum* Salisb. ex Knight 1809, *eriolepis* (Gand.) Gand. & Schinz., *petiolata* Buek. ex Meisn., *woodwardii* Endl.

8678 Records

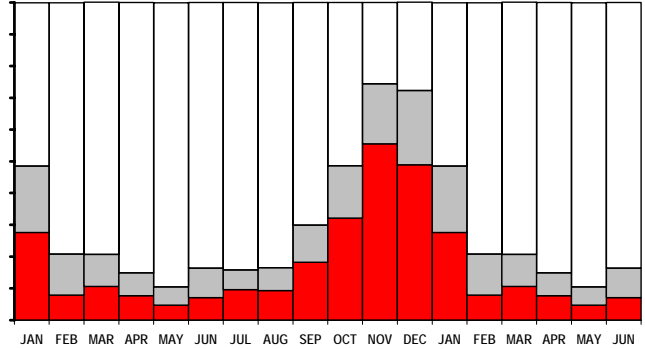
Population (8483 records): 7% Common, 62% Frequent, 30% Rare, 0.1% Extinct.

Dispersion (7309 records): 74% variable, 17% clumped, 7% widespread, 1% evenly distributed.

Flowering (8481 records with: Jan 785, Feb 685, Mar 824, Apr 651, May 653, Jun 506, Jul 566, Aug 537, Sep 996, Oct 923, Nov 687, Dec 668): Buds from Aug to Jun; Flowering, Peak Flowering and Over not significant; Fruit from Apr to Jan; Nothing from all year round. Peak levels at 53% in Feb. Historically recorded as flowering from all year round. Curiously, most buds never flower, but presumably abort or revert to growth.



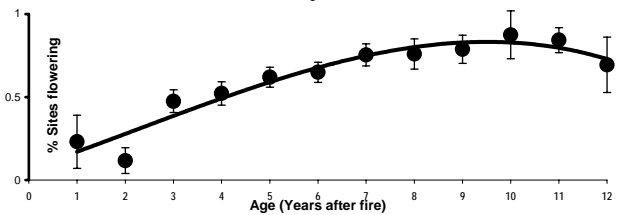
Growth (8348 records with: Jan 774, Feb 680, Mar 824, Apr 636, May 633, Jun 482, Jul 550, Aug 525, Sep 972, Oct 922, Nov 687, Dec 663): Much from Oct to Jan; Rare from Dec to Jan; None from all year round. Peak levels at 74% in Nov.



Seedlings (3532 records): Absent in 93%: fewer seedlings than prefire adults in 90 cases, and more in 41 cases. Seedlings found all year round (Jan: 13, Feb: 6, Mar: 14, Apr: 7, May: 13, Jun: 16, Jul: 12, Aug: 8, Sep: 9, Oct: 10, Nov: 10, Dec: 13).

Fire Survival (766 records): 92% resprouted from underground boles, 4% escaped fires in fire-safe areas, 2% survived by seedlings only, 1% resprouted from aerial trunks, 1% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 4 years, and 100% recorded at 18 years.



Height (8541 records): 4% 0-0.2 m tall, 89% 0.2-1 m tall, 7% 1-2 m tall, 0.2% 2-5 m tall.

Pollinators (33 records): 42% birds, 30% beetles, 15% bees or wasps, 9% flies, 3% none observed.

Detailed Pollinators (18 records): Cape Sugarbird (11), Orange-breasted Sunbird (2), Honey Bee (2), Great Protea Beetle (2), Malachite Sunbird.

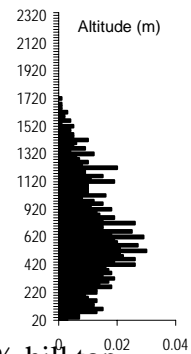
Habitat:

Distance to Ocean (8262 records): 87% inland - further than 2 km from coast.

Altitude (8265 records): 20 - 1760 m; 380 *lq* - 600 *med* - 860 *uq*m.

Landform (8184 records): 71% deep soil, 23% shallow soil, 5% rocky outcrops.

Slope (8179 records): 45% steep incline, 40% gentle incline, 8% hill top, 4% platform, 2% cliff, 1% valley bottom.



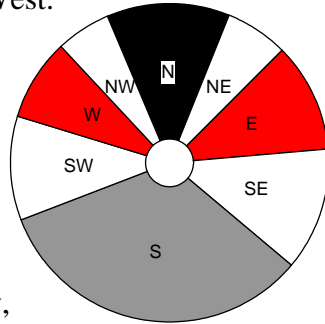
Aspect (7280 records): 45% South, 20% East, 18% North, 17% West.

Soil Type (8162 records):
56% sandy,
24% loamy,
9% peaty,
6% rocky,
5% gravelly,
1% clayey.

Soil Colour (8125 records): 60% grey, 17% black, 17% brown, 5% white.

Geology (8119 records): 95% sandstone, 3% shale.

Vegetation (8230 records): 97% shrubland, 1% grassland.



Conservation Status and Threat:

Red Data List Status: Least Concern.
Occurrence (Fynbos): 41 499 km² with 25% conserved and 18% lost; Occupancy: 4 715 km² with 48% conserved and 11% lost. Fragmentation index: 4 %.

Nature Reserves (8265 records): 66% in nature reserves - well conserved.

Habitat destruction (8038 records): 96% extensive natural habitat, 2% islands, 1% naturally linear habitats.

Alien Invasive Species (7979 records): 50% none, 35% *Pinus*, 7% *Hakea*, 7% Fabaceae (chiefly alien *Acacia*).

Alien Density (7967 records): 50% alien-free, 43% sparse, 6% abundant, 1% dense.

Cultivation & Utilization:

Picking (5318 records): 99% no sign of picking, 1% lightly picked, 0.3% severely picked.

Cultivation Status: Plantings - 146 records (2%), Augmentations - 6 records (0.07%), Escapes - 3 records (0.03%).

Witch's Broom Infestation: 114 records (1%).

Atlassers Notes:

Plant Habit:

All gangly plants (BMJ96072101); Very tall on account of inter-growth with other restios (CVV95040904); All remarkably tall - response to competition in dense scrub (DFJ99032901); One plant 2.5-3.0 m high (DOA93041001); Tall & spindly because of thick growth round them (JAT95052601); Height remarkable (PVR92122601); Largest I have ever seen (VCH99120803); I would never have believed it could be so tall and numerous (VJK94080705);

Typically a very short plant in this area widespread but never very common (NAH96022404);

Colour forms:

White (KHA99051901, OUTY0012204); Pure white (PVR93041706); Cream/white (LYM99032801 + 2); Yellow/cream (LYM99040809); Unusual form with lemon yellow bracts (NAH92062001); One cream-coloured plant (SHR96021701); Pink and white (VJK93022104+5); Pure white about to open and pink in full bloom (VJK94080710); Deep red

(WMP95123008); **One plant differed - bracts deep pink/ red (?)**

Variation

Garden-Route variant (AGR91120715); Incredibly large heads (AGR91122606);

Predation and parasitism

Cones all eaten / broken off (AGR94082819); Cleared off by baboons in bud stage! (AGR95040105); Bushes had been broken up (baboons?) (APE92081603); Picking by baboons biting the buds off (GNI95012105); Baboons picking buds (looking for stem borers as they do not eat the buds) (GNI95080902); Picking done by baboons no flowerheads left pick the buds - should be in full flower now in a young stage and eat part of it - most proteas are damaged in this way - only found heads with seeds in Rooiwaterspruit again (GNIY0120502); Picking done by baboons biting off the flowerheads - no old flowerheads found (GNIY1032910); Severe picking by baboons no old flowerheads bushes damaged by baboons when removing flowerheads (GNIY1032911); Severe picking by baboons - no seedheads were found (GNIY1032915); Baboon damage to buds (LYM98022804); Cones often destroyed by baboons (NAH92062102); Baboons have broken off all flowerheads (OUT98013106);

Apart from fire damage many plants (re-sprouting shoots) have been eaten down to ground level by a type of borer (CVV95021204);

Some branches torn off - all from one plant (APE92060610); Often damaged: broken branch sites (MAJ92011501);

Picking - stems gnawed through (TLEY0050603); Picking - stem gnawed through droppings of small animal beside plant (TLEY0050604);

Old leaves extensively grazed (WIJ97101205); Infected with fungus (AMMY0010903); Many in this area are very small and have red spots on their leaves - perhaps a fungus (GCS99021002);

Flowering

Aborted buds on nearly all plants (PVR95022304); Many with aborted buds (TLE95051305, TLE95052103); Flowerbud but then changed into leaves (VCH98092601);

In spectacular flowering condition! About 30 flowers on some 5-6 plants: colour grey & pink. Plants in peak condition! Growing in quite moist shady area (WMP98041102);

Recruitment

Lots of young plants - good recruitment at last fire (AGR92022703); Large numbers of young plants - many more times than adults obviously a good recruitment event! (AGRY2010501); Seedlings with cotyledons outnumbering resprouters (AKS93050105); Many young (AKS93073103); There were many seedlings (AVZ93112302); Most are young plants / seedlings (CNR95051701); Mixture of resprouters and small plants growing from seed (DJL93121301); Good number of small plants scattered over plot (FBH95072202); Seedlings only found in places where boles completely killed - ie not resprouting (JID93092001); In one place

where killed by fire a number of young plants were evident (JID93110101); A few young plants - not resprouting - seen (LYM94110102); Many young (OUT95092314); Young plants also seen (TLE94022003); Quite old veld but some young plants present (TLE95043003);

Mortality

Some killed by fire! (AGRY3100113); 1 died, rest resprouted (AWA95081603); Many adults 3 - 5 height killed by fire (OUTY0091501); Burnt - no resprouting (SMR98042905);

Some dead - appears to be from old age (OUT95060301);

All Plants Look Near Dead (CNR95051001);

Witches Broom:

About 5% infected (NAHY0040801); 80% Infected (NAHY0070301);

Misc.

Being Picked Illegally! (VJK97090406);
Ants present (MCG96032402, SHS93032301, WEL95030403, WEL95030501);

Confusing Species: Utterly distinct: the only *Protea* with a long leaf stalk, also a resprouter with huge heads. One record of mistaken for *P. eximia*.

Records of identification queries = 105.

Records of corrected identification queries = 1.

Variation and Taxonomy: Add.

Distribution: Add.

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Protea lorea R.Br. Thong-leaf Sugarbush

Other Common Names: Pine-leaf
Erodendrum, *Sneeugrondprotea*.

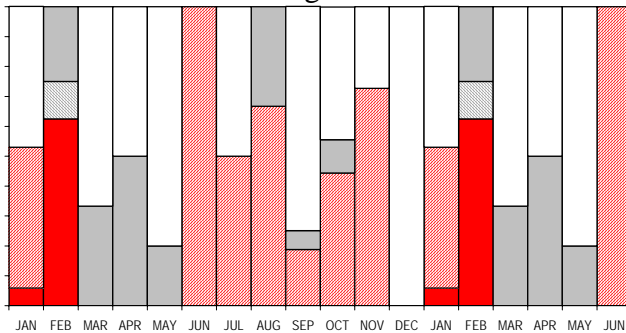
Other Scientific Names: *aulax* Hibb ex Meisn,
coronata Curt ex Steudel, *pinifolium* Salisb.
ex Knight 1809.

91 Records

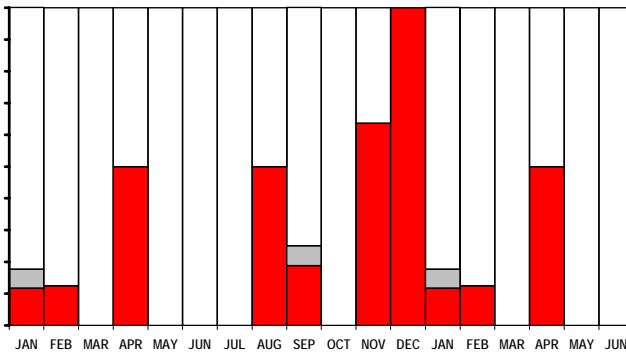
Population (86 records): 24% Common,
40% Frequent, 36% Rare.

Dispersion (73 records): 59% clumped,
40% variable, 1% evenly distributed.

Flowering (87 records with: Jan 17, Feb 8, Mar 3, Apr 2, May 5, Jun 1, Jul 2, Aug 6, Sep 16, Oct 9, Nov 11, Dec 7): Buds from Jan, Jun to Aug and Oct to Nov; Flowering from Feb; Peak Flowering not recorded; Over not significant; Fruit from Feb to May and Aug; Nothing from Jan, Mar to Jul and Sep to Dec. Peak levels at 75% in Feb. Historically recorded as flowering from Jan to Feb.



Growth (85 records with: Jan 17, Feb 8, Mar 3, Apr 2, May 5, Jun 1, Jul 2, Aug 6, Sep 16, Oct 7, Nov 11, Dec 7): Much from Apr, Aug and Nov to Dec; Rare not significant; None from Jan to Nov. Peak levels at 100% in Dec.



Seedlings (23 records): All without any seedlings present.

Fire Survival (16 records): 94% resprouted from underground boles, 6% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 2 years, 50% estimated at 2-3 years, and 100% recorded at 5 years.



Height (87 records): 76% 0-0.2 m tall,
24% 0.2-1 m tall.

Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (89 records): 100% inland - further than 2 km from coast.

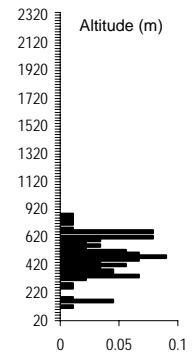
Altitude (89 records): 100 - 780 m; 360 *lq* - 460 *med* - 520 *uq*m.

Landform

(85 records): 93% deep soil, 6% shallow soil, 1% rocky outcrops.

Slope (89 records): 49% gentle incline, 38% steep incline, 6% hill top, 3% cliff, 2% platform, 1% valley bottom.

Aspect (83 records): 60% South, 18% West, 11% East, 10% North.

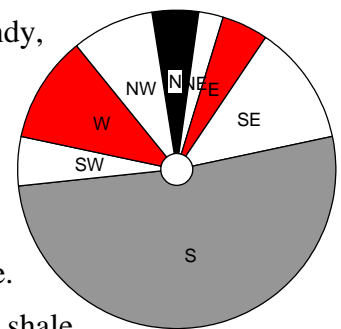


Soil Type (84 records): 46% loamy, 30% sandy, 17% clayey, 6% gravelly, 1% peaty.

Soil Colour (85 records): 60% brown, 32% grey, 4% yellow, 2% black, 2% orange.

Geology (84 records): 62% sandstone, 30% shale, 8% granite.

Vegetation (84 records): 100% shrubland.



Conservation Status and Threat:

Red Data List Status: Near Threatened D2(ii). Occurrence (Fynbos): 3 660 km² with 31% conserved and 22% lost; Occupancy: 82 km² with 28% conserved and 14% lost. Fragmentation index: 1%.

Nature Reserves (89 records): 52% in nature reserves - well conserved.

Habitat destruction (84 records): 98% extensive natural habitat, 2% naturally linear habitats.

Alien Invasive Species (80 records): 48% *Pinus*, 39% none, 8% *Hakea*, 6% Fabaceae (chiefly alien *Acacia*).

Alien Density (80 records): 39% alien-free, 55% sparse, 6% abundant.

Cultivation & Utilization:

Picking (51 records): 100% no sign of picking.
Cultivation Status: No noted cultivation.

Atlassers Notes:

As you can see the bud develops very slowly - 3 months and not near maturity (VJK93110701);

Appears to flower more prolifically here judging by last years flowers (VJK93112003);

2 dead plants seen - no signs of resprouting yet no seedlings seen yet one seedhead open seen (AGR91100603);

Confusing Species: None noted, but problems with *P. scorzoneriifolia* were anticipated.

However, it is only usually noticed when in flower, greatly facilitating identification. When flower- or seedheads not present its mimicry to restios is remarkable and it is only noticed in cuttings and denuded areas. Records of identification queries = 5.

Variation and Taxonomy: None recorded or noted.

Distribution: Add.

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***Protea cryophila* Bolus**
Snowball Protea
Sneeublom

Other Common Names: Giant-snowball Protea, Snow Protea, Snow-flower Sugarbush, *Sneebal*, *Sneeuprotea*, *Sneesuikerkan*.

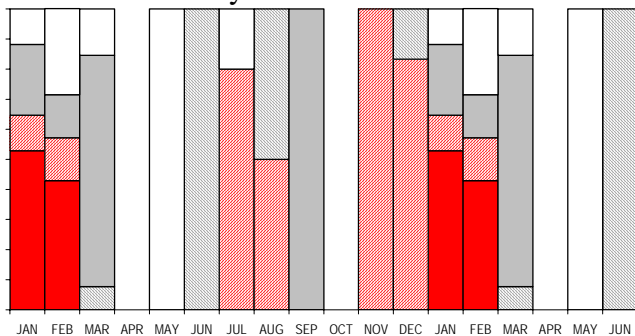
Other Scientific Names: *chionantha* Bolus.

58 Records

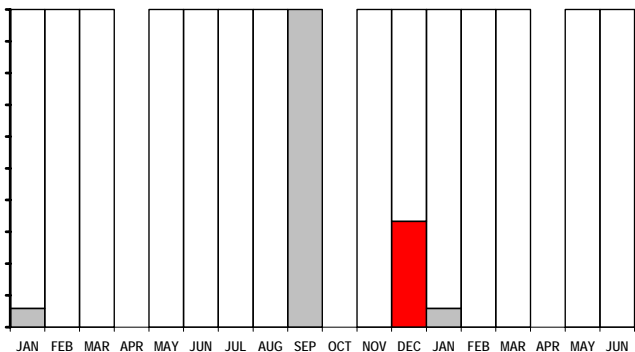
Population (57 records): 11% Common, 56% Frequent, 32% Rare, 2% Extinct.

Dispersion (46 records): 63% variable, 20% clumped, 13% evenly distributed, 4% widespread.

Flowering (57 records with: Jan 17, Feb 7, Mar 13, Apr 0, May 3, Jun 2, Jul 5, Aug 2, Sep 1, Oct 0, Nov 1, Dec 6): Buds from Jul to Aug and Nov to Dec; Flowering from Jan to Feb; Peak Flowering not recorded; Over from Jun and Aug; Fruit from Jan, Mar and Sep; Nothing from Feb, May and Jul. Peak levels at 65% in Jan. Historically recorded as flowering from Jan to Mar, even Apr, peaking in Feb. Although buds are reputed to take 12 months to form flowerheads, this was not detected, with flowerheads only noted from July onwards.



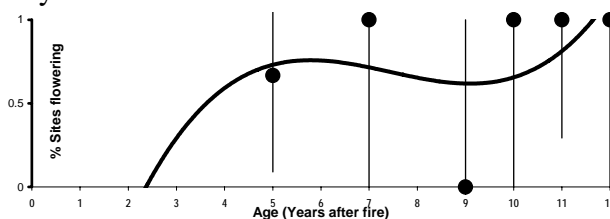
Growth (53 records with: Jan 17, Feb 4, Mar 13, Apr 0, May 3, Jun 2, Jul 5, Aug 1, Sep 1, Oct 0, Nov 1, Dec 6): Much from Dec; Rare from Sep; None from all year round. Peak levels unreliable at 33% in Dec.



Seedlings (27 records): Absent in 85%; more seedlings than prefire adults in 2 cases. Seedlings found in Mar (2).

Fire Survival (6 records): 67% survived by seedlings only, 33% resprouted from underground boles.

Age to first flowering: First flowers recorded at 5 years (no data from younger veld), 50% estimated at 4 years, and 100% recorded at 7 years.



Height (56 records): 29% 0-0.2 m tall, 70% 0.2-1 m tall, 2% 1-2 m tall.

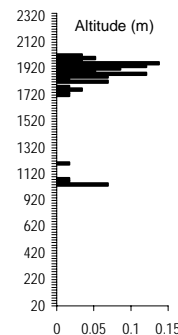
Pollinators (2 records): 50% mammals, 50% beetles.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (57 records): 100% inland - further than 2 km from coast.

Altitude (57 records): 920 - 1920 m; 1700 *lq* - 1780 *med* - 1820 *uq*m.



Landform (54 records): 54% shallow soil, 24% rocky outcrops, 22% deep soil.

Slope (57 records): 42% steep incline, 26% gentle incline, 12% hill top, 12% platform, 4% cliff, 4% valley bottom.

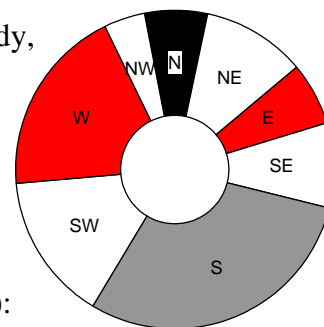
Aspect (46 records): 39% South, 30% West, 17% East, 13% North.

Soil Type (54 records): 50% rocky, 41% sandy, 6% gravelly, 4% loamy.

Soil Colour (54 records): 70% grey, 24% brown, 6% white.

Geology (56 records): 93% sandstone, 7% shale.

Vegetation (54 records): 98% shrubland, 2% grassland.



Conservation Status and Threat:

Red Data List Status: Near Threatened D2(i,ii).

Occurrence (Fynbos): 79 km² with 89% conserved and 3% lost; **Occupancy:** 43 km² with 99% conserved and 0% lost. **Fragmentation index:** 48%.

Nature Reserves (57 records): 100% in nature reserves - well conserved.

Habitat destruction (54 records): 98% extensive natural habitat, 2% naturally linear habitats.

Alien Invasive Species (51 records): 98% none, 2% *Pinus*.

Alien Density (51 records): 98% alien-free, 2% sparse.

Cultivation & Utilization:

Picking (29 records): 100% no sign of picking.

Cultivation Status: Plantings - 1 record (2%).

Witch's Broom Infestation: 1 record (2%).

Atlassers Notes:

Flowering:

No adults plants with flowers this year - all last years cones (NAH99021301); Last year (1992) it had in excess of 30 flowerheads this year there were only 4 (NGW93081301); From the whole Langberg / Shadow Peak area many had flowered last year but had no buds or flowers this year - climate? (WIJ99013008); Less than 10% of plants were in flower or bud - a few were in cone from previous years (WIJY0012903);

Regeneration:

Some seedlings (single stem) some destroyed by fire with no resprouting (WIJ95020412);

The well known Welbedacht plant:

Is a planted specimen 2m in diameter near graveyard (formerly in wire cage) (AKS94091305); One (1.5x1.5m in size) fenced in and covered over with wire netting

(JAT92080103); Lots of dead leaves in middle of plant (LYM96021001); Although we discussed this single plant with a local who lived at Welbedacht he had no idea whether it had been planted there or not (NGW93081301);

Mortality:

Only 1 dead plant seen (AGR99032806);

Almost 1/2 plants dead! (AGR99032810);

Population sizes:

Over 50 plants counted, many of them very small (JAT97012502); Counted 10 plants (JIDY0012903); About 30 young plants (<5 years) (NAH99021301); 200 or 300 plants growing on N and S slopes (WIJ98031211);

Confusing Species: None noted.

Records of identification queries = 1.

Variation and Taxonomy: None recorded or noted other than that the insides of the involucre bracts vary from dull ivory to deep pink in colour.

Distribution: Add.

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Protea pruinosa Rourke

Frosted Sugarbush

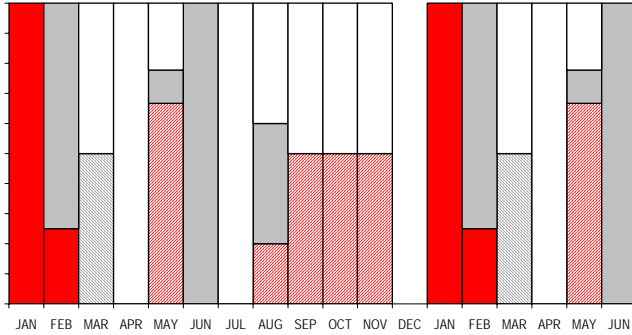
Other Common Names: None known.
Other Scientific Names: *None*.

39 Records

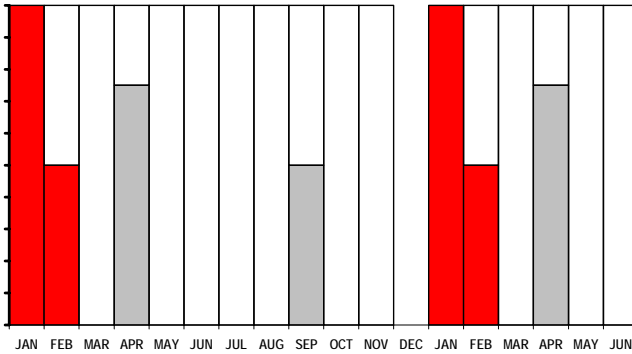
Population (39 records): 5% Common, 56% Frequent, 38% Rare.

Dispersion (33 records): 52% variable, 42% clumped, 6% evenly distributed.

Flowering (36 records with: Jan 1, Feb 4, Mar 2, Apr 1, May 9, Jun 1, Jul 1, Aug 5, Sep 2, Oct 8, Nov 2, Dec 0): Buds from May and Aug to Nov; Flowering from Jan to Feb; Peak Flowering not recorded; Over from Mar; Fruit from Feb, Jun and Aug; Nothing from Mar to May and Jul to Nov. Peak levels unreliable at 100% in Jan. Historically recorded as flowering from Jan to Feb, with a few in Mar. Data support the long period (over 10 months) for buds to develop.



Growth (37 records with: Jan 1, Feb 4, Mar 1, Apr 4, May 9, Jun 1, Jul 1, Aug 5, Sep 2, Oct 7, Nov 2, Dec 0): Much from Jan to Feb; Rare from Apr and Sep; None from Feb to Nov. Peak levels unreliable at 100% in Jan.



Seedlings (12 records): Absent in 67%: fewer seedlings than prefire adults in 1 case, and more in 1 case. Seedlings found in Apr and Oct.

Fire Survival (4 records): 75% survived by seedlings only, 25% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 4 years, 50% estimated at 4 years, and 100% recorded at 4 years.



Height (39 records): 77% 0-0.2 m tall, 23% 0.2-1 m tall.

Pollinators: No data.

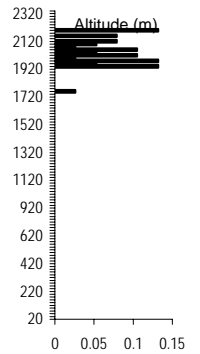
Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (38 records):

100% inland - further than 2 km from coast.

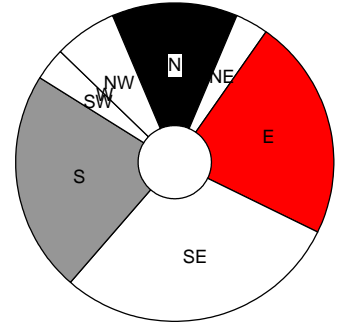
Altitude (38 records): 1640 - 2100 m; 1860_{lq} - 1920_{med} - 1940_{uq} m.



Landform (38 records): 58% shallow soil, 39% deep soil, 3% rocky outcrops.

Slope (38 records): 45% steep incline, 37% gentle incline, 18% hill top.

Aspect (31 records): 42% South, 37% East, 16% North, 5% West.



Soil Type (38 records):

50% sandy, 29% loamy, 18% rocky, 3% gravelly.

Soil Colour (38 records): 50% brown, 37% grey, 11% black, 3% yellow.

Geology (38 records): 97% sandstone, 3% shale.

Vegetation (37 records): 97% shrubland, 3% grassland.

Conservation Status and Threat:

Red Data List Status: Endangered

B1a(i,ii)b(v)+2a(i,ii)b(v).

Occurrence (Fynbos): 368 km² with 50% conserved and 1% lost; **Occupancy:** 26 km² with 90% conserved and 0% lost.

Fragmentation index: 6%.

Nature Reserves (38 records): 97% in nature reserves - well conserved.

Habitat destruction (36 records):

100% extensive natural habitat.

Alien Invasive Species (34 records):

100% none.

Alien Density (34 records): 100% alien-free.

Cultivation & Utilization:

Picking (27 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Atlasers Notes:

We did not see the plants that were shown to us last time, but saw three fire survivors and lots of young plants (AWA99052001); Plenty of young but an alarming number dead/dying! Unlike the previous plot at sh1924 m where all the plants seem healthy (AWA99052002); About 10% dead presumably from drought (NAHY1060302); About 10 dead plants seen - but also 30% of this small population consists of young plants (NAHY5111801);

Confusing Species: None noted.
Records of identification queries = 1.

Variation and Taxonomy: None noted.

Distribution: Add.

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Protea scabriuscula Phill.
Hoary Sugarbush

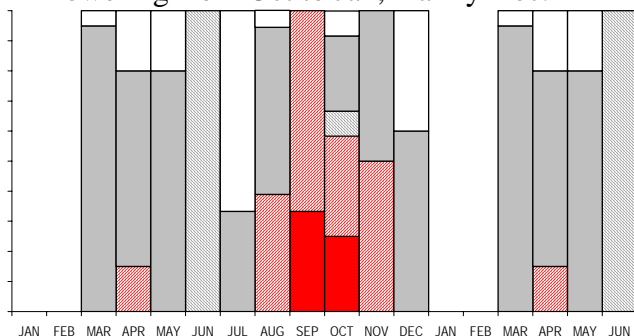
Other Common Names: None known.
Other Scientific Names: *montana* Schl.

93 Records

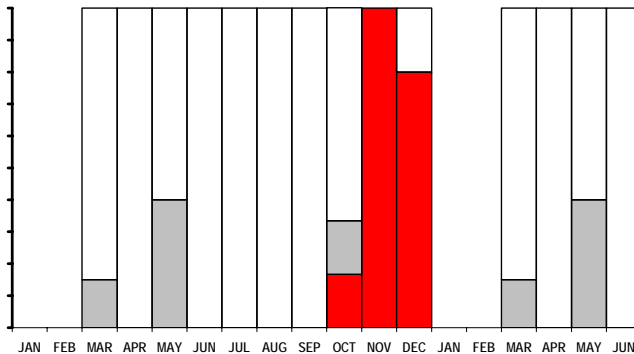
Population (93 records): 13% Common, 55% Frequent, 32% Rare.

Dispersion (80 records): 74% variable, 26% clumped.

Flowering (92 records with: Jan 0, Feb 0, Mar 20, Apr 20, May 5, Jun 1, Jul 3, Aug 18, Sep 6, Oct 12, Nov 2, Dec 5): Buds from Aug to Nov; Flowering from Sep to Oct; Peak Flowering not recorded; Over from Jun; Fruit from Mar to Aug and Oct to Dec; Nothing from Apr to Jul and Dec. Peak levels at 100% in Sep. Historically recorded as flowering from Oct to Jan, mainly Dec.



Growth (92 records with: Jan 0, Feb 0, Mar 20, Apr 20, May 5, Jun 1, Jul 3, Aug 18, Sep 6, Oct 12, Nov 2, Dec 5): Much from Nov to Dec; Rare from May; None from Dec to Oct. Peak levels unreliable at 100% in Nov.



Seedlings (18 records): Absent in 89%; fewer seedlings than prefire adults in 1 case. Seedlings found in Jun.

Fire Survival (6 records): 100% resprouted from underground boles.

Age to first flowering: First flowers recorded at 2 years, 50% estimated at 2 years, and 100% recorded at 2 years.



Height (92 records): 78% 0-0.2 m tall, 22% 0.2-1 m tall.

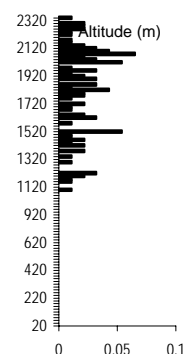
Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (93 records): 100% inland - further than 2 km from coast.

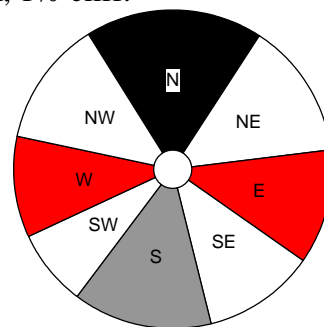
Altitude (93 records): 980 - 2260 m; 1400 *lq* - 1720 *med* - 1920 *uq*m.



Landform (92 records): 51% deep soil, 48% shallow soil, 1% rocky outcrops.

Slope (92 records): 55% steep incline, 34% gentle incline, 4% hill top, 3% platform, 2% valley bottom, 1% cliff.

Aspect (78 records): 31% North, 25% East, 23% South, 21% West.



Soil Type (91 records): 41% sandy, 25% rocky, 14% loamy, 14% gravelly, 5% clayey.

Soil Colour (89 records): 49% grey, 29% brown, 8% white, 8% orange, 3% yellow, 2% black.

Geology (91 records): 66% sandstone, 34% shale.

Vegetation (92 records): 95% shrubland, 5% grassland.

Conservation Status and Threat:

Red Data List Status: Least Concern.

Occurrence (Fynbos): 1 563 km² with 3% conserved and 14% lost; **Occupancy:** 103 km² with 18% conserved and 5% lost. **Fragmentation index:** 5%.

Nature Reserves (93 records): 19% in nature reserves - inadequately conserved.

Habitat destruction (91 records): 95% extensive natural habitat, 4% naturally linear habitats, 1% islands.

Alien Invasive Species (90 records): 91% none, 9% *Pinus*.

Alien Density (90 records): 91% alien-free, 9% sparse.

Cultivation & Utilization:

Picking (54 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 1 record (1%).

Atlassers Notes: None.

Confusing Species: Easily confused with *P. scolopendriifolia* (75% of corrected queries): the non-sprouting habit is not easy to see as the plant branches very close to the ground and accumulates soil around the stems. Also confused with *P. piscina*, but this is a

resprouter with a much narrower, scabrous leaf.

Records of identification queries = 12.

Records of corrected identification queries = 4.

Variation and Taxonomy: None noted.

Distribution: Add.

INCLUDEPICTURE

"C:\\temp\\atlas\\PRSSCL_m.jpg" *

MERGEFORMAT \d

Protea scolopendriifolia (Salisb. ex Kn.) Rourke
Hart's-tongue-fern Sugarbush

Other Common Names: Hearts-tongue-leaf
 Erodendrum, *Tongblaarsuikerkan*.

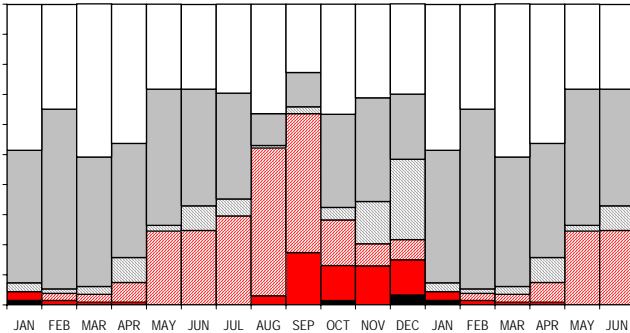
Other Scientific Names: *scolopendrina* St
Lager, *scolopendrium* RBr 1810.

1284 Records

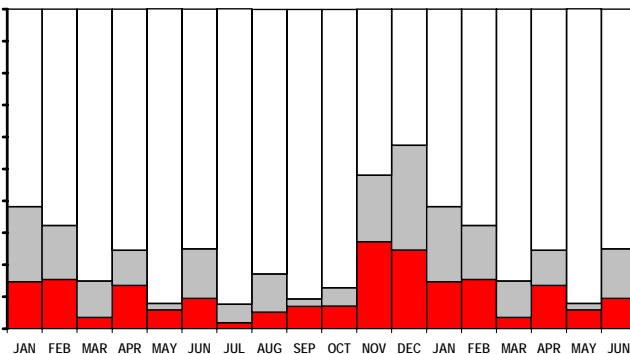
Population (1275 records): 0.5% Abundant,
 16% Common, 54% Frequent, 28% Rare,
 0.5% Extinct.

Dispersion (1110 records): 63% variable,
 29% clumped, 6% widespread, 2% evenly
 distributed.

Flowering (1262 records with: Jan 68, Feb 132,
 Mar 116, Apr 108, May 53, Jun 85, Jul 54,
 Aug 132, Sep 132, Oct 145, Nov 177, Dec
 60): Buds from May to Sep; Flowering and
 Peak Flowering not significant – peaking in
 Sep to Dec at between 10 and 20%; Over
 from Dec; Fruit from Oct to Jul; Nothing
 from all year round. Peak levels at 66% in
 Sep. Historically recorded as flowering from
 Sep to Dec.



Growth (1246 records with: Jan 68, Feb 130,
 Mar 114, Apr 110, May 51, Jun 84, Jul 53,
 Aug 134, Sep 128, Oct 140, Nov 173, Dec
 61): Much from Nov to Dec; Rare from Nov
 to Jan; None from all year round. Peak levels
 at 57% in Dec.

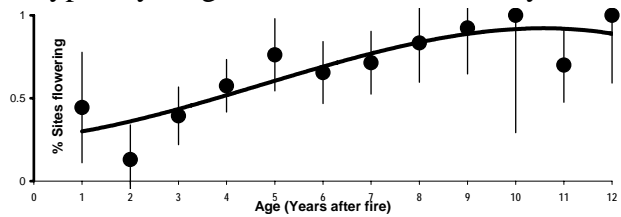


Seedlings (430 records): Absent in 93%: fewer
 seedlings than prefire adults in 14 cases, and
 more in 2 cases. Seedlings found in Mar (2),
 Aug (7), Oct (3) and Nov (4).

Fire Survival (117 records): 95% resprouted
 from underground boles, 3% escaped fires in
 fire-safe areas, 2% eliminated from the area
 by fires.

Age to first flowering: First flowers recorded
 at 1 years, 50% estimated at 3-4 years, and

100% recorded at 10 years, but peak levels
 typically range from 67-100% after 7 years.



Height (1270 records): 76% 0-0.2 m tall,
 24% 0.2-1 m tall.

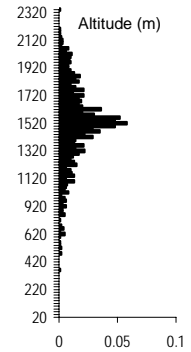
Pollinators (4 records): 50% mammals,
 25% bees or wasps, 25% other pollinators.

Detailed Pollinators (1 record): Wasp
 (unspecified).

Habitat:

Distance to Ocean (1262
 records): 100% inland -
 further than 2 km from
 coast.

Altitude (1262 records): 340 -
 2240 m; 1240 *lq* - 1420 *med* -
 1520 *uq*m.

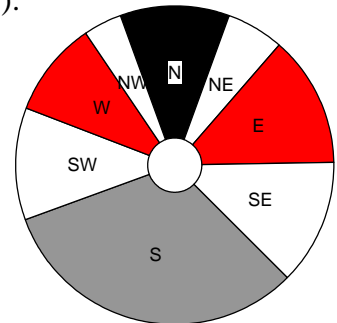


Landform (1260 records):
 58% deep soil, 38% shallow
 soil, 4% rocky outcrops.

Slope (1258 records): 45% steep
 incline, 39% gentle incline,
 9% hill top, 5% platform, 1% cliff,
 1% valley bottom.

Aspect (1103 records):

44% South,
 22% East,
 18% West,
 16% North.



Soil Type (1254

records):
 40% sandy,
 28% loamy,
 16% gravelly,
 11% rocky,
 4% clayey.

Soil Colour (1250 records): 51% brown,
 36% grey, 4% black, 4% orange, 2% white,
 2% yellow.

Geology (1228 records): 77% sandstone,
 21% shale, 2% granite.

Vegetation (1255 records): 98% shrubland,
 2% grassland.

Conservation Status and Threat:

Red Data List Status: Least Concern.

Occurrence (Fynbos): 17 595 km² with 26%
 conserved and 9% lost; **Occupancy:**
 1 392 km² with 42% conserved and 2% lost.
Fragmentation index: 3%.

Nature Reserves (1262 records): 51% in nature
 reserves - well conserved.

Habitat destruction (1227 records):
 95% extensive natural habitat, 3% naturally
 linear habitats, 1% islands.

Alien Invasive Species (1211 records):85% none, 11% *Pinus*, 3% *Hakea*.**Alien Density** (1211 records): 85% alien-free, 14% sparse, 1% abundant.**Cultivation & Utilization:****Picking** (798 records): 100% no sign of picking.**Cultivation Status:** Escapes - 1 record (0.08%).**Witch's Broom Infestation:** 1 record (0.08%).**Atlassers Notes:**

Had yellow flowers - not like in book (AWA96101502); Inflorescences have little or no pink pigment (SHR94090403);

Broad leaf but very hummocky in growth habit (AGRY1022203);

Good recruitment - lots of young (AGR97051807);

Only dead plants seen (AGR99080707); 1/2 plants dead (AGR99092609); One dead plant seen (AGRY0112314); Some (ca 5%) dead (AGRY0112518); Look sick (AWAY0050302); Is dead (DOA97022703); 2/5 dead (GEDY0112309); 30% of all plants dead or dying some releasing seed apparently due to drought (NAH94040203); About 80% dead, presumably from drought (NAHY1060302); More than one half of the plants were dead (NGFY0081604); 2 plants dead (SAS98080802); One dead plant seen (SAS99092405); Many dead - drought related (WIJY0112607);

Pollinator a Masuarid? Wasp (AGRY4110605); Rodent chewing and scats and ants

(AGRY4110701); Pollinated (?) by cockroach (AMMY3100811); Ants on single flowerhead seen (DJL98100207); Ants were burrowing into the flowers (LYM99092405); All the leaves eaten off a few cm above ground! we have never seen similar before (AWA99101007); Mouse was eating seeds (DEB94080701); Seeds dispersing as new buds nearly ready to open (PMR99060501);

Confusing Species: Confused variously with *P. acaulos* (43% of corrected queries; which has hairless, smooth, spoon-shaped leaves), and once each with *P. convexa*, *caespitosa*, and *vogtsiae* (none have the narrow involucre bracts) and *P. scabriuscula* (which does not normally resprout).

Records of identification queries = 30.

Records of corrected identification queries = 7.

Variation and Taxonomy: "Enormously" variable in leaves, inflorescence size and habit. Forms with more compact habit, larger leaves and flowerheads tend to occur in wetter regions. The largest forms are found in the Groot Winterhoek. In arid areas the involucre bracts tend to have a more dense wool.**Distribution:** Add.

INCLUDEPICTURE

"C:\\temp\\atlas\\PRSRFL_m.jpg" *

MERGEFORMAT \d

Protea aspera Phill. Rough-leaf Sugarbush

Other Common Names: Snowball, Aardroos, Sneeuwal.

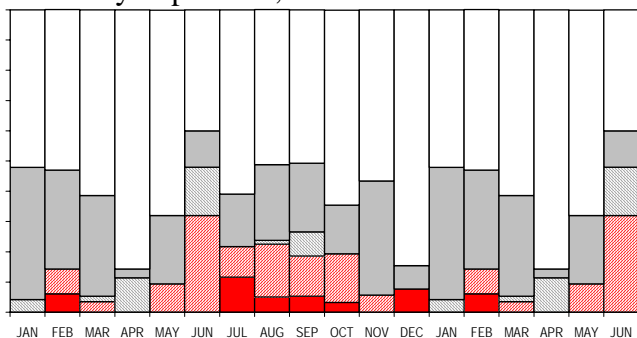
Other Scientific Names: *None*.

674 Records

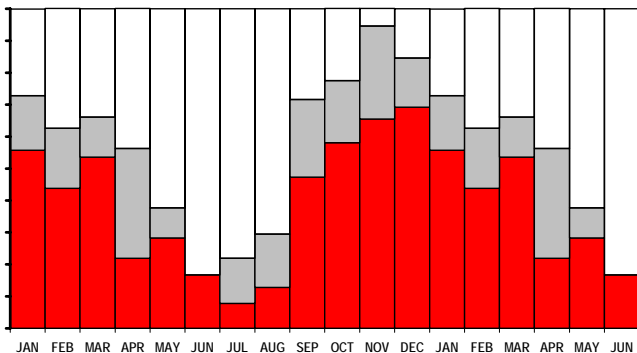
Population (665 records): 0.3% Abundant, 14% Common, 59% Frequent, 26% Rare.

Dispersion (529 records): 76% variable, 21% clumped, 2% widespread, 0.8% evenly distributed.

Flowering (611 records with: Jan 71, Feb 49, Mar 57, Apr 35, May 53, Jun 25, Jul 69, Aug 80, Sep 75, Oct 31, Nov 53, Dec 13): Buds from Jun; Flowering not significant peaking in Jul; Peak Flowering not recorded; Over from Jun; Fruit from Jan to Mar, May, Aug to Sep and Nov; Nothing from all year round, peaking in Apr. Peak levels at 48% in Jun. Historically recorded as flowering from chiefly Sep to Oct, but to Dec.



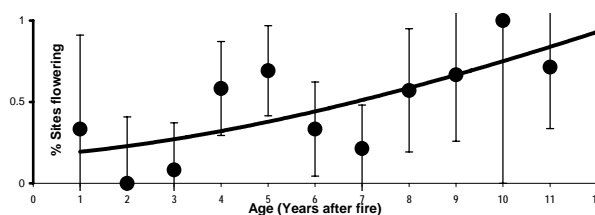
Growth (598 records with: Jan 70, Feb 48, Mar 56, Apr 32, May 53, Jun 24, Jul 64, Aug 78, Sep 74, Oct 31, Nov 55, Dec 13): Much from Sep to May; Rare from Apr and Sep to Nov; None from Jan to Oct. Peak levels at 95% in Nov.



Seedlings (264 records): Absent in 95%; fewer seedlings than prefire adults in 3 cases, and more in 4 cases. Seedlings found in Jan (4), Jul (2) and Oct.

Fire Survival (57 records): 100% resprouted from underground boles.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 3-7 years, and 100% recorded at 10 years, with senescence after 10 years.



Height (612 records): 87% 0-0.2 m tall, 13% 0.2-1 m tall.

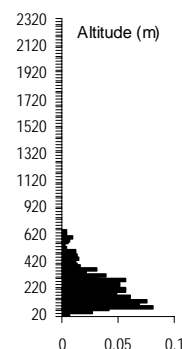
Pollinators (1 record): 100% mammals.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (667 records): 99% inland - further than 2 km from coast.

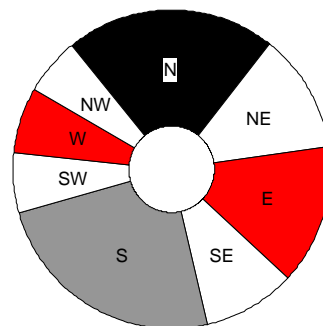
Altitude (667 records): 20 - 920 m; 100_{lq} - 180_{med} - 260_{uq}m.



Landform (607 records): 86% deep soil, 11% shallow soil, 2% rocky outcrops.

Slope (605 records): 63% gentle incline, 15% steep incline, 12% platform, 9% hill top, 1% valley bottom.

Aspect (499 records): 32% South, 30% North, 25% East, 12% West.



Soil Type (605 records): 61% sandy, 27% loamy, 5% gravelly, 5% clayey.

Soil Colour (600 records): 53% grey, 33% brown, 7% white, 3% black, 2% yellow, 2% orange.

Geology (630 records): 72% sandstone, 13% shale, 12% silcrete or ferricrete, 2% Tertiary sands, 1% limestone.

Vegetation (660 records): 100% shrubland.

Conservation Status and Threat:

Red Data List Status: Vulnerable A2c.

Occurrence (Fynbos): 4 291 km² with 16% conserved and 29% lost; Occupancy: 628 km² with 8% conserved and 30% lost. Fragmentation index: 6%.

Nature Reserves (667 records): 20% in nature reserves.

Habitat destruction (590 records): 90% extensive natural habitat, 8% islands, 1% road verges.

Alien Invasive Species (589 records): 31% Fabaceae (chiefly alien *Acacia*), 27% none, 23% *Pinus*, 13% *Hakea*, 6% Myrtaceae.

Alien Density (587 records): 27% alien-free, 54% sparse, 16% abundant, 3% dense.

Cultivation & Utilization:

Picking (437 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 1 record (0.1%).

Atlassers Notes:

Found One Plant With A New Bud, Just Over Ten in flower (AWA97081406); A Few Dried Flowerheads (CVV95043002); One Flower and 1 Bud Found (LYM98101502); Rodent Damage Seen On Flowerheads (LYMY0081605); Seem To Only Occur - Recent Burn Areas! (AJT95043007); Lots Of Die Back (OUT99060511);

Pr Scabra Present But Also Narrower Longer Leaved Patches With Short Stems - If Not Pr Aspera - Then Half Way There! (AGR96052207); Very Broad Leaf! (AGRY3111211);

Confusing Species: Mostly confused with *P. scabra*, and less often in the Langeberg with *P. piscina*, which when in flower or fruit

have small (flowers less than 50 mm long), not large heads. Often though populations without flowerheads are encountered, when broad-leaf forms may easily be confused, but the short, emergent green stems appears to be a good character. An intermediate population seems to occur on Babylonstoring. A single case of misidentification with *P. laevis* was recorded, but this has smooth, not sandpapary leaves.

Records of identification queries = 48.

Records of corrected identification queries = 28.

Variation and Taxonomy: Although most involucre bracts are rusty brown, paler brown forms do occur, but are not noteworthy.

Distribution: Add.

INCLUDEPICTURE

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MERGEFORMAT \d

Protea denticulata Rourke
Tooth-leaf Sugarbush
Tandjies

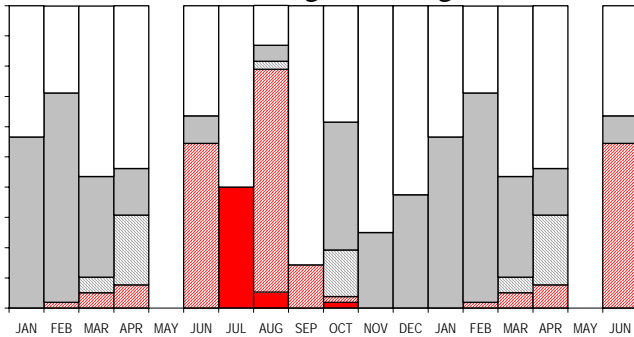
Other Common Names: None known.
Other Scientific Names: *None.*

301 Records

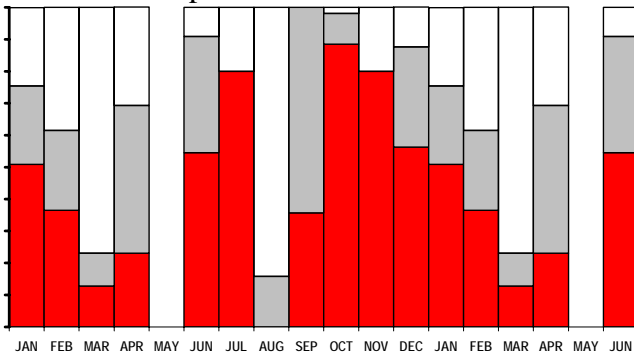
Population (301 records): 0.7% Abundant, 27% Common, 55% Frequent, 18% Rare.

Dispersion (276 records): 81% variable, 15% clumped, 3% widespread, 1% evenly distributed.

Flowering (297 records with: Jan 53, Feb 52, Mar 39, Apr 13, May 0, Jun 11, Jul 5, Aug 38, Sep 14, Oct 52, Nov 4, Dec 16): Buds from Jun and Aug; Flowering from Jul; Peak flowering not recorded; Over from Apr; Fruit from Oct to Mar; Nothing from Sep to Jul. Peak levels at 81% in Aug. Historically recorded as flowering from Aug to Oct.



Growth (298 records with: Jan 53, Feb 52, Mar 39, Apr 13, May 0, Jun 11, Jul 5, Aug 38, Sep 14, Oct 52, Nov 5, Dec 16): Much from Sep to Feb and Apr to Jul; Rare from Dec to Feb, Apr to Jun and Sep; None from Jan to Apr and Jul to Aug and Nov. Peak levels at 100% in Sep.



Seedlings (157 records): Absent in 96%: fewer seedlings than prefire adults in 2 cases, and more in 1 case. Seedlings found in Jun, Jul and Sep.

Fire Survival (8 records): 63% resprouted from underground boles, 25% escaped fires in fire-safe areas, 13% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 4-7 years, and 100% recorded consistently at 8 years.



Height (294 records): 55% 0-0.2 m tall, 45% 0.2-1 m tall, 0.3% 1-2 m tall.

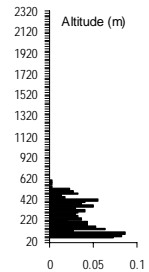
Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (301 records): 96% inland - further than 2 km from coast.

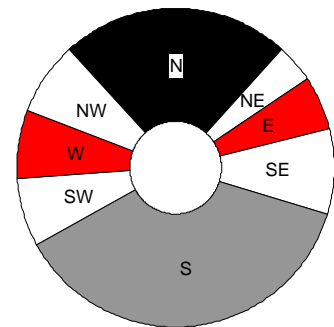
Altitude (301 records): 40 - 600 m; 100_{lq} - 220_{med} - 360_{uq}m.



Landform (299 records): 73% deep soil, 20% shallow soil, 6% rocky outcrops.

Slope (300 records): 44% gentle incline, 31% steep incline, 18% platform, 5% hill top, 1% valley bottom.

Aspect (256 records): 46% South, 30% North, 13% West, 10% East.



Soil Type (298 records): 40% sandy, 37% loamy,

10% gravelly, 6% rocky, 6% clayey, 1% peaty.

Soil Colour (299 records): 60% grey, 28% brown, 5% black, 4% white, 2% yellow.

Geology (287 records): 77% sandstone, 10% silcrete or ferricrete, 7% shale, 5% Tertiary sands, 1% limestone.

Vegetation (301 records): 99% shrubland.

Conservation Status and Threat:

Red Data List Status: Least Concern – Rare based on vegetation type.

Occurrence (Fynbos): 167 km² with 56% conserved and 8% lost; **Occupancy:** 156 km² with 61% conserved and 10% lost.

Fragmentation index: 88%.

Nature Reserves (301 records): 67% in nature reserves - well conserved.

Habitat destruction (295 records): 87% extensive natural habitat, 8% islands, 5% naturally linear habitats

Alien Invasive Species (287 records):

44% Fabaceae (chiefly alien *Acacia*),
39% none, 14% *Pinus*, 3% Myrtaceae.

Alien Density (287 records): 39% alien-free,
47% sparse, 9% abundant, 5% dense.

Cultivation & Utilization:

Picking (224 records): 100% no sign of
picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 4 records (1%).

Atlassers Notes:

Appears to have aborted all its flowers in this
population (AGR92080412);

Of all the plants we saw only counted 12
flowerheads supposedly because plants still
young (VJK99090803);

Confusing Species: Misidentified as *P.*
piscina, but is a resprouter with erect stems.

The two species do not overlap.

Records of identification queries = 2.

Records of corrected identification queries = 2.

Variation and Taxonomy: None noted.

Plants from the north slopes of Potberg,
which are drier and less frequently burned,
tend to be taller than those on the south
slopes.

Distribution: Add.

INCLUDEPICTURE

"C:\\temp\\atlas\\PRDENT_m.jpg" *

MERGEFORMAT \d

Protea piscina Rourke
Visgat Sugarbush
Skurweblaarsuikerbos

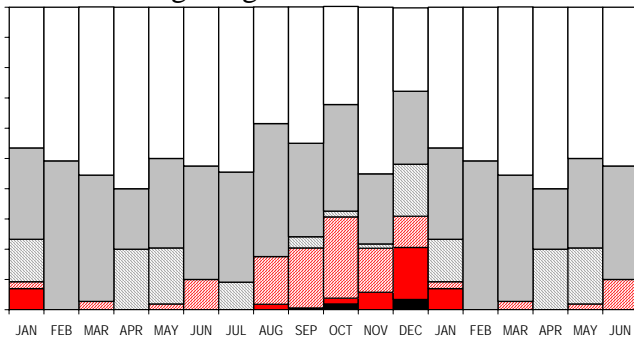
Other Common Names: Piketberg Protea, Tufted Sugarbush, *Skurweblaardwergprotea*.
Other Scientific Names: *tenuifolia* Phill & Stapf.

752 Records

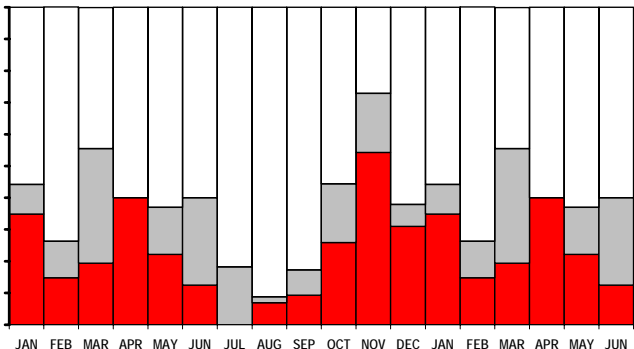
Population (748 records): 18% Common, 55% Frequent, 27% Rare.

Dispersion (648 records): 69% variable, 29% clumped, 2% widespread, 0.6% evenly distributed.

Flowering (744 records with: Jan 43, Feb 61, Mar 36, Apr 5, May 54, Jun 40, Jul 11, Aug 57, Sep 162, Oct 108, Nov 138, Dec 29): Buds from Sep to Oct; Flowering and Peak Flowering not significant, peaking in Dec; Over from Apr to May and Dec to Jan; Fruit from all year round; Nothing from all year round. Peak levels at 48% in Dec. Historically recorded as flowering from Nov to Jan in the Cold Bokkeveld and Jun to Sep in the Langeberg. <do 2 seasons!>



Growth (746 records with: Jan 43, Feb 61, Mar 36, Apr 5, May 54, Jun 40, Jul 11, Aug 57, Sep 162, Oct 108, Nov 140, Dec 29): Much from Oct to Jan and Apr to May; Rare from Mar, Jun and Oct to Nov; None from all year round. Peak levels at 73% in Nov.

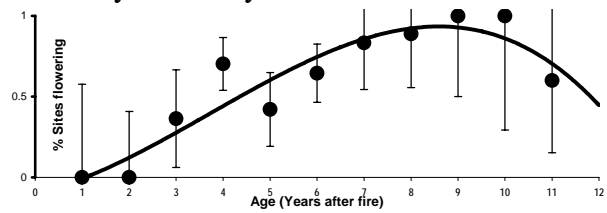


Seedlings (281 records): Absent in 99%; more seedlings than prefire adults in 1 case. Seedlings found in Dec.

Fire Survival (102 records): 98% resprouted from underground boles, 2% escaped fires in fire-safe areas.

Age to first flowering: First flowers recorded at 3 years, 50% estimated at 3-5 years, and

100% recorded at 9 years, but fluctuating widely after 10 years.



Height (746 records): 82% 0-0.2 m tall, 17% 0.2-1 m tall, 0.1% 1-2 m tall.

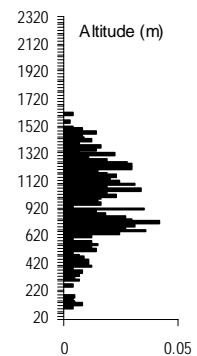
Pollinators (1 record): 100% mammals.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (740 records): 100% inland - further than 2 km from coast.

Altitude (740 records): 80 - 1760 m; 660 *lq* - 840 *med* - 1080 *uq*m.

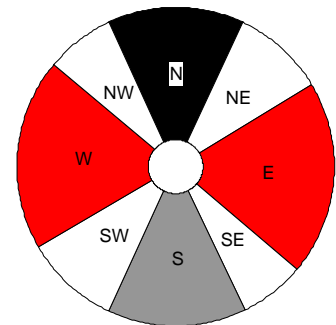


Landform (739 records): 68% deep soil, 28% shallow soil, 4% rocky outcrops.

Slope (735 records):

50% gentle incline, 34% steep incline, 8% hill top, 6% platform.

Aspect (642 records): 28% East, 28% West, 22% North, 22% South.



Soil Type (738 records): 45% sandy, 22% loamy, 22% gravelly, 9% rocky, 2% clayey.

Soil Colour (738 records): 54% brown, 32% grey, 5% yellow, 4% white, 2% orange, 2% red.

Geology (730 records): 81% sandstone, 16% shale, 2% conglomerate, 2% silcrete or ferricrete.

Vegetation (740 records): 99% shrubland.

Conservation Status and Threat:

Red Data List Status: Least Concern.

Occurrence (Fynbos): 8 140 km² with 12% conserved and 13% lost; **Occupancy:** 765 km² with 24% conserved and 6% lost. **Fragmentation index:** 5%.

Nature Reserves (740 records): 40% in nature reserves.

Habitat destruction (729 records): 95% extensive natural habitat, 2% islands, 2% naturally linear habitats.

Alien Invasive Species (723 records):
79% none, 14% *Pinus*, 4% Fabaceae (chiefly alien *Acacia*), 2% Myrtaceae, 1% *Hakea*.
Alien Density (723 records): 79% alien-free, 19% sparse, 2% abundant.

Cultivation & Utilization:

Picking (527 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 2 records (0.3%).

Atlassers Notes:

Not many had buds (AWA97090601); Strange no buds or old flowerheads - no fire damage amongst plants? (VJK93093001);

Young plants present but not common (NAH92081511);

Broad leaves 9mm wide (WIJ98021403);

Lots of plants dead (AGRY0111114);

There was a distinct path to the flowerheads presumably made by rodents (VJK94091809);

On edge of ridge below plateau these species seem to require a bit more water and occur around a seepage zone (AGR91122901);

Only at crest of ridge (AGR91122903); In rocky - bouldery areas (AGR92123006);

Confusing Species: Variously misidentified, usually when not in flower, with *P. restionifolia* (leaves narrower and hairy), *P. revoluta* (leaves smooth and folded, although some instances of nearly smooth leaves in *P. piscina* were noted), *P. scabra* (with much broader leaves), *P. lorea* (with much longer, smooth, needle-like leaves), *P. scorzoneriifolia* (leaves less sinuous, more tightly rolled and almost needle-like). When in flower the small, yellow flowerheads are distinctive.

Records of identification queries = 29

Records of corrected identification queries = 11.

Variation and Taxonomy: Usually with yellow involucre bracts, but pinkish forms are sometimes encountered.

Distribution: Add.

INCLUDEPICTURE

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MERGEFORMAT \d

Protea restionifolia (Salisb. ex Kn.) Rycr.
Reed-leaf Sugarbush

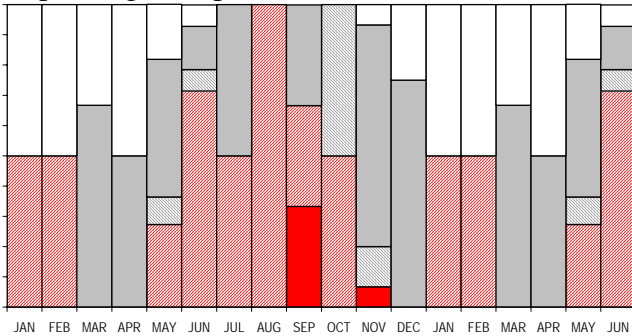
Other Common Names: Grass-leaf Sugarbush, Restio-leaf Erodendrum, Restio-leaf Sugarbush, *Bruingrondprotea*.
Other Scientific Names: *echinulata* Meisn 1856.

68 Records

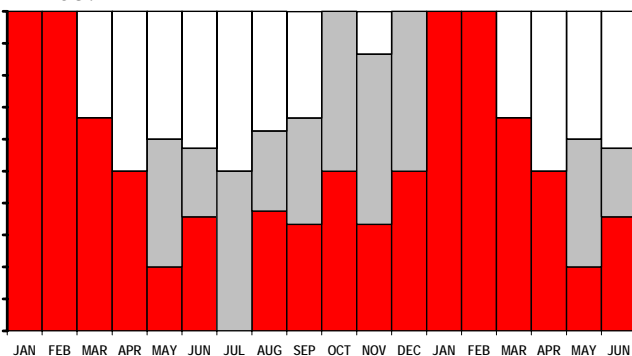
Population (67 records): 10% Common, 42% Frequent, 48% Rare.

Dispersion (57 records): 51% clumped, 47% variable, 2% widespread.

Flowering (68 records with: Jan 2, Feb 2, Mar 3, Apr 2, May 11, Jun 14, Jul 2, Aug 8, Sep 3, Oct 2, Nov 15, Dec 4): Buds from Jan to Feb, and May to Oct; Flowering from Sep; Peak Flowering not recorded; Over from Oct; Fruit from Mar to May, Jul and Sep to Dec; Nothing from Dec to Apr. Peak levels unreliable at 100% in Aug. Historically recorded as flowering from Aug to Oct, peaking in Sep.



Growth (67 records with: Jan 2, Feb 2, Mar 3, Apr 2, May 10, Jun 14, Jul 2, Aug 8, Sep 3, Oct 2, Nov 15, Dec 4): Much from Aug to Jun; Rare from May to Dec; None from Mar to Sep. Peak levels at 100% from Dec to Feb.



Seedlings (24 records): All without any seedlings present.

Fire Survival (3 records): 67% escaped fires in fire-safe areas, 33% resprouted from underground boles.

Age to first flowering: First flowers recorded at 3 years, 50% estimated at 2 years, and 100% recorded at 3 years, with a hint of senescence after 20 years.



Height (68 records): 78% 0-0.2 m tall, 22% 0.2-1 m tall.

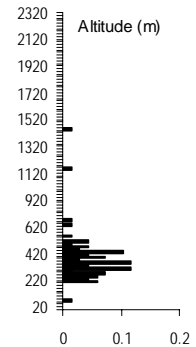
Pollinators (1 record): 100% mammals.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (68 records): 100% inland - further than 2 km from coast.

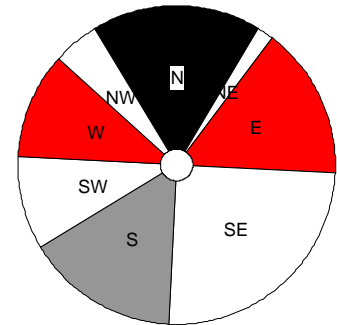
Altitude (68 records): 60 - 1360 m; 280_{lq} - 360_{med} - 400_{uq}m.



Landform (68 records): 74% deep soil, 22% shallow soil, 4% rocky outcrops.

Slope (68 records): 51% steep incline, 38% gentle incline, 4% cliff, 4% hill top, 1% platform.

Aspect (64 records): 34% South, 27% East, 20% North, 19% West.



Soil Type (68 records): 50% loamy, 22% sandy, 15% gravelly, 9% clayey, 4% rocky.

Soil Colour (68 records): 53% brown, 22% grey, 18% orange, 4% red, 3% yellow.

Geology (57 records): 54% shale, 46% sandstone.

Vegetation (67 records): 100% shrubland.

Conservation Status and Threat:

Red Data List Status: Vulnerable A2c, B1a(i,ii)b(i,ii,iii,iv,v)+2a(i,ii)b(i,ii,iii,iv,v).

Occurrence (Fynbos): 943 km² with 28% conserved and 15% lost; **Occupancy:** 103 km² with 9% conserved and 25% lost. **Fragmentation index:** 6%.

Nature Reserves (68 records): 1% in nature reserves - unconserved.

Habitat destruction (67 records): 90% extensive natural habitat, 4% islands, 4% naturally linear habitats, 1% corridors.

Alien Invasive Species (67 records): 40% *Hakea*, 31% none, 18% *Pinus*,

7% Fabaceae (chiefly alien *Acacia*),
3% Myrtaceae.

Alien Density (67 records): 31% alien-free,
64% sparse, 3% abundant, 1% dense.

Cultivation & Utilization:

Picking (56 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Atlassers Notes:

The population was destroyed by the quarry works -and are only on the verge near an electricity pylon. The colony was in the small spot for years - it was more sandy there than elsewhere (LIN92100701);
The plants were in a clay band at this sandstone site (PVR93092405);

Confusing Species: None noted, the thin densely haired leaves being quite distinctive.
Records of identification queries = 1.

Variation and Taxonomy: Occasionally forms with pinkish to carmine styles and inner involucre bracts, which are usually yellowish cream. Plants south of Villiersdorp tend to have larger heads (60-70mm long), whereas those in the Breede River Valley are smaller (30-40mm long) (figures corrected from Rourke 1980).

Distribution: Add.

INCLUDEPICTURE

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MERGEFORMAT \d

***Protea scabra* R.Br.**
Sandpaper-leaf Sugarbush
Skurweblaargrondsuikerbos

Other Common Names: Rasp-leaf Erodendrum, Scab-leaf Protea, Scabrous Sugarbush.

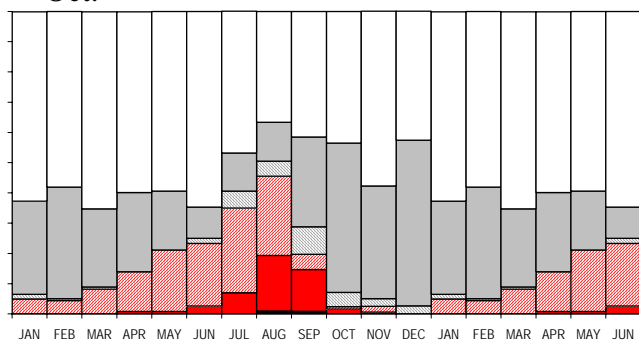
Other Scientific Names: *caledonensis* Guthrie, *tenuifolia* R.Br.

2256 Records

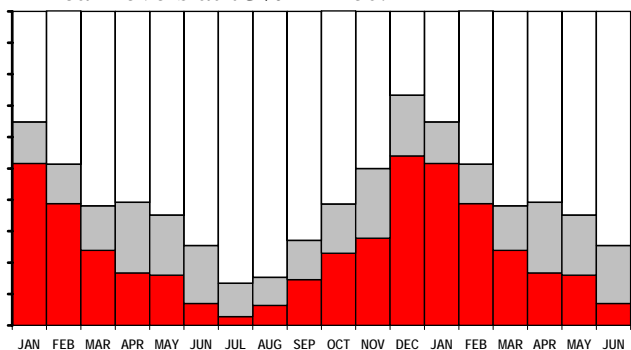
Population (2232 records): 0.5% Abundant, 20% Common, 53% Frequent, 26% Rare, 0.1% Extinct.

Dispersion (1906 records): 77% variable, 18% clumped, 5% widespread, 0.4% evenly distributed.

Flowering (2229 records with: Jan 182, Feb 160, Mar 267, Apr 122, May 133, Jun 116, Jul 143, Aug 202, Sep 340, Oct 253, Nov 161, Dec 150): Buds from May to Aug; Flowering not significant peaking from Aug to Sep; Peak Flowering and Over not significant; Fruit from Sep to May; Nothing from all year round. Peak levels at 51% in Aug. Historically recorded as flowering erratically from Apr to Oct, mainly Jul to Oct.



Growth (2203 records with: Jan 182, Feb 160, Mar 268, Apr 120, May 131, Jun 114, Jul 142, Aug 202, Sep 328, Oct 244, Nov 162, Dec 150): Much from Oct to Mar; Rare from Apr and Nov; None from all year round. Peak levels at 73% in Dec.

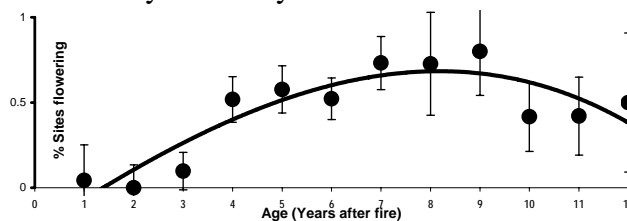


Seedlings (942 records): Absent in 99%: fewer seedlings than prefire adults in 4 cases, and more in 1 case. Seedlings found in Jan, May, Jul and Dec (2).

Fire Survival (180 records): 97% resprouted from underground boles, 2% survived by

seedlings only, 1% escaped fires in fire-safe areas.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 4-5 years, and 100% recorded at 15 years, declining markedly after 17 years.



Height (2242 records): 86% 0-0.2 m tall, 14% 0.2-1 m tall.

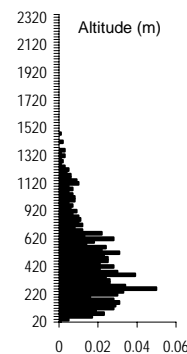
Pollinators (5 records): 40% mammals, 40% beetles, 20% flies.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (2207 records): 85% inland - further than 2 km from coast.

Altitude (2207 records): 20 - 1500 m; 220 *lq* - 380 *med* - 560 *uq*m.



Landform (2197 records): 81% deep soil, 16% shallow soil, 3% rocky outcrops, 0.1% swamp, 0.1% riverine.

Slope (2199 records): 54% gentle incline, 37% steep incline, 5% hill top, 4% platform, 0.5% cliff, 0.3% valley bottom.

Aspect (2045 records): 38% South, 23% North, 21% West, 17% East.

Soil Type (2190 records):

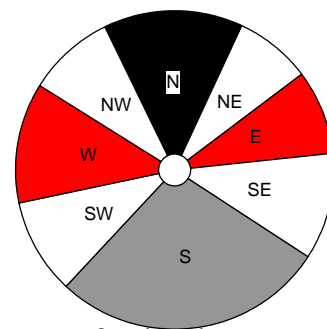
48% sandy, 27% loamy, 11% gravelly, 10% clayey, 4% rocky, 1% peaty.

Soil Colour (2183 records):

52% grey, 35% brown, 5% orange, 3% black, 3% white, 1% yellow.

Geology (2143 records): 74% sandstone, 22% shale, 2% silcrete or ferricrete, 1% granite.

Vegetation (2196 records): 98% shrubland.



Conservation Status and Threat:

Red Data List Status: Near Threatened A2c+4c.

Occurrence (Fynbos): 4 167 km² with 32% conserved and 25% lost; **Occupancy:**

1 366 km² with 28% conserved and 21% lost. Fragmentation index: 19%.
Nature Reserves (2207 records): 40% in nature reserves.
Habitat destruction (2180 records): 94% extensive natural habitat, 5% islands, 1% naturally linear habitats.
Alien Invasive Species (2160 records): 39% *Pinus*, 29% none, 19% *Hakea*, 11% Fabaceae (chiefly alien *Acacia*), 2% Myrtaceae.
Alien Density (2155 records): 29% alien-free, 57% sparse, 10% abundant, 3% dense.

Cultivation & Utilization:

Picking (1572 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 1 record (0.04%).

Atlassers Notes:

Flowering

Only one plant in bud (AKS93090201); Only very old seedheads (AWA95031301); One plant with flower (AWA95091901); Some with buds (AWA99041403); Occasional buds (CVV96070902); 2 old flowerheads (GYC93100104); A couple of dried buds seen but no old flowerheads since fire (GYC98101701); Approx 5% were in flower (HCE96070904+5); No buds seen on hillside – only buds seen in sheltered donga (KENY0090502);

Survival

Fire seems to have passed over these low plants which were damaged in some cases (TLE99122706);

Variation

Protea scabra and *aspera* seen in same plot - quite distinct: latter narrow leaved, former very broad (AGRY0052405); Boundary here between *P. aspera* and *scabra* should be investigated (AMMY3111106)

Has very broad leaves - suspect hybrid with *P. magnifica* far wider than on slopes below cliff (SHR91092109)

Broad leaf form (AGR91092101 SMR91092109);

Very thin leaved form - taken as *P. aspera* until a flowerhead turned up later and confirmed

ID (SMRY2090601); A narrow leaf (WIJ92121610);
Some variation in leaf size between various plants 240mm long + 8mm vs wide 240mm long + 24mm wide (WEL94050102);

New growth

Veld covered with *P. scabra* new growth (AWA95031401);

Browsing

Grazed (AGR96081502); Grazed down (FWV96080702); Some grazed (LYM99040803); Grazed by sheep (NAH97060201); Young leaves browsed: only 1-2cm left (SMRY0060205);

Mortality

All dead (AGRY1101907); 1 dead (AGRY3102815);

Deep ripped - killed! (ASP92092208);

Distribution

In a little shaley spot (AGR99120814); Occurring at the join of the flats and the hill slope (CJL98061601); Hugs a band at about 100m (CJL98061604); In a definite band at about 80 M (CJL98061605); Only found on a very small section of shale rather than the dominant sandstone (NGF97011803);

Burnt area on west side of firebreak covered in young plants/seedlings (AWA95031403);

Confusing Species: Quite distinct with broad leaves and small, brown flowerhead, but confused when not in flower or seed with *P. aspera* (short (100mm-long) leafy stems), *angustata* (with erect stems and smooth leaves), *scorzoneriifolia* (with longer, rolled leaves) and *scolopendriifolia* (with a long petiolar region).

Records of identification queries = 31.

Records of corrected identification queries = 9.

Variation and Taxonomy: Leaves may vary from 2-25mm wide, but in most populations are 10-20mm wide.

Distribution: Add.

INCLUDEPICTURE

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Protea scorzonerifolia (Salisb. ex Kn.) Rycr.
Channel-leaf Sugarbush

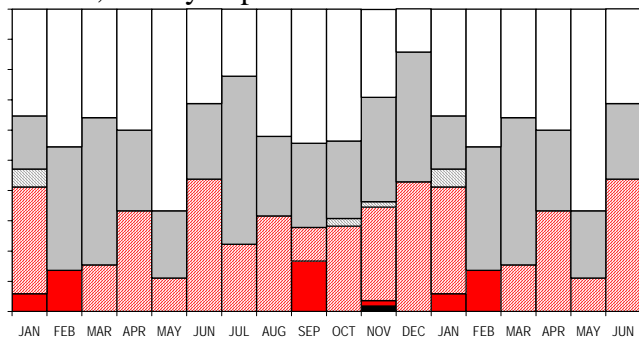
Other Common Names: Scorzonera-leaf Erodendrum.
Other Scientific Names: *repens* (L)L-Thunb.

266 Records

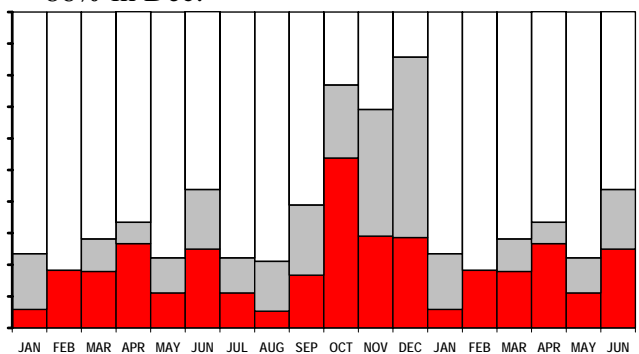
Population (266 records): 12% Common, 55% Frequent, 34% Rare.

Dispersion (220 records): 77% variable, 22% clumped, 0.9% evenly distributed.

Flowering (265 records with: Jan 17, Feb 22, Mar 39, Apr 15, May 9, Jun 16, Jul 9, Aug 19, Sep 18, Oct 39, Nov 55, Dec 7): Buds from Oct to Jan, Apr and Jun to Aug; Flowering, Peak Flowering and Over not significant, from Sep to Feb; Fruit from Feb to Dec; Nothing from all year round. Peak levels at 47% in Jan. Historically recorded as flowering from erratically from Aug to Dec, mainly Sep to Oct.



Growth (265 records with: Jan 17, Feb 22, Mar 39, Apr 15, May 9, Jun 16, Jul 9, Aug 19, Sep 18, Oct 39, Nov 55, Dec 7): Much from Apr, Jun and Oct to Dec; Rare from Sep to Dec; None from Jan to Nov. Peak levels at 86% in Dec.



Seedlings (138 records): Absent in 96%; fewer seedlings than prefire adults in 1 case, and more in 2 cases. Seedlings found in Jul and Nov (2).

Fire Survival (54 records): 100% resprouted from underground boles.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 3-4 years, and 100% recorded at 5 years.



Height (265 records): 64% 0-0.2 m tall, 36% 0.2-1 m tall.

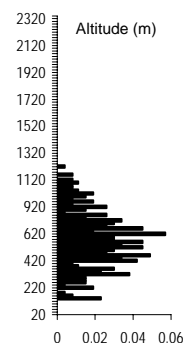
Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (265 records): 100% inland - further than 2 km from coast.

Altitude (265 records): 120 - 1120 m; 400_{lq} - 540_{med} - 660_{uq}m.

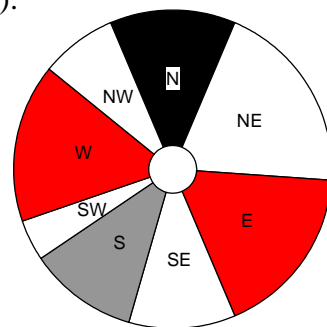


Landform (263 records): 76% deep soil, 23% shallow soil, 2% rocky outcrops.

Slope (264 records): 53% gentle incline, 33% steep incline, 8% platform, 5% hill top, 1% valley bottom.

Aspect (242 records):

33% East,
25% North,
22% West,
20% South.



Soil Type (263 records):

36% loamy,
33% sandy,
19% gravelly,
10% rocky,
3% clayey.

Soil Colour (261 records): 64% brown, 24% grey, 8% orange, 3% white, 1% yellow.

Geology (260 records): 56% sandstone, 20% shale, 18% granite, 3% silcrete or ferricrete, 2% conglomerate.

Vegetation (265 records): 97% shrubland, 2% plantations.

Conservation Status and Threat:

Red Data List Status: Vulnerable A2c.

Occurrence (Fynbos): 2 407 km² with 33% conserved and 31% lost; **Occupancy:** 312 km² with 19% conserved and 23% lost. **Fragmentation index:** 9%.

Nature Reserves (265 records): 21% in nature reserves.

Habitat destruction (263 records): 95% extensive natural habitat, 3% islands, 1% naturally linear habitats.

Alien Invasive Species (263 records): 41% *Hakea*, 25% *Pinus*, 23% none, 10% Fabaceae (chiefly alien *Acacia*).

Alien Density (261 records): 23% alien-free, 53% sparse, 20% abundant, 3% dense.

Cultivation & Utilization:

Picking (214 records): 100% no sign of picking.

Cultivation Status: No noted cultivation.

Witch's Broom Infestation: 1 record (0.4%).

Atlassers Notes:

One plant had a flower (LYM97112607);

1 bud seen - eaten by moth? larva

(AGR95112625);

Eaten (CHE98052106); Signs of grazing

(LYM97081305); Heavily grazed probably

by cows (NGF96051602);

Most dead! (drought?) (AGRY0101903);

Confusing Species: A distinctive species, especially when in flower with the large flowerheads and long channeled leaves. Has been misidentified when not in flower as *P.*

scabra (with broad leaves), *P. piscina* (with an open-channeled, sinuous leaf), *P. laevis* (with a broad, flat leaf) and – presumably a transcription error - with *P. neriifolia*.

Records of identification queries = 7.

Records of corrected identification queries = 4.

Variation and Taxonomy: Involucral bracts creamy yellow, but pinkish forms sometimes seen. The small-leaf form (dealt with separately below) is not recorded in the literature.

Distribution: Add.

INCLUDEPICTURE

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Protea scorzonerifolia Dwarf form

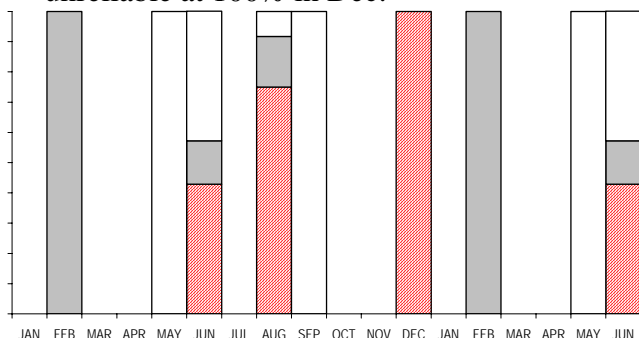
Other Common Names: None known.
Other Scientific Names: *None*.

29 Records

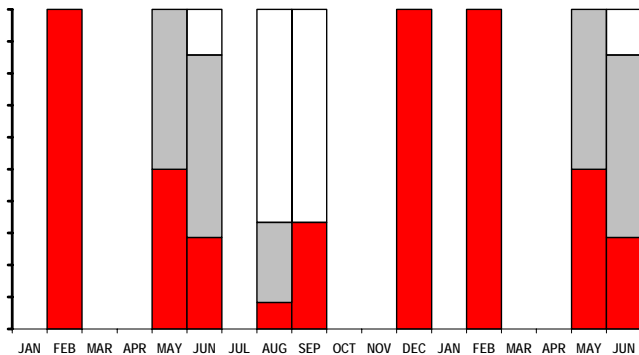
Population (28 records): 21% Common, 46% Frequent, 32% Rare.

Dispersion (25 records): 76% variable, 12% widespread, 12% clumped.

Flowering (28 records with: Jan 0, Feb 1, Mar 0, Apr 0, May 4, Jun 7, Jul 0, Aug 12, Sep 3, Oct 0, Nov 0, Dec 1): Buds from Jun, Aug and Dec; Flowering Peak Flowering and Over not recorded; Fruit from Feb; Nothing from May to Jun and Sep. Peak levels unreliable at 100% in Dec.



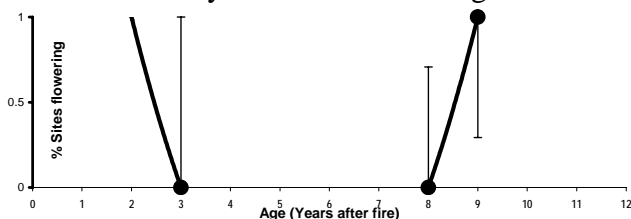
Growth (28 records with: Jan 0, Feb 1, Mar 0, Apr 0, May 4, Jun 7, Jul 0, Aug 12, Sep 3, Oct 0, Nov 0, Dec 1): Much from Sep to Jun; Rare from May to Aug; None from Aug to Sep. Peak levels unreliable at 100% from Dec to Feb.



Seedlings (10 records): All without any seedlings present.

Fire Survival (4 records): 100% resprouted from underground boles.

Age to first flowering: First flowers recorded at 100% at 9 years but data lacking.



Height (28 records): 93% 0-0.2 m tall, 7% 0.2-1 m tall.

Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

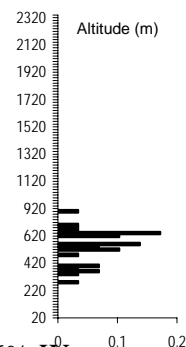
Distance to Ocean (29 records): 100% inland - further than 2 km from coast.

Altitude (29 records): 260 - 800 m; 460_{lq} - 560_{med} - 560_{uq}m.

Landform (28 records): 79% deep soil, 21% shallow soil.

Slope (29 records): 34% steep incline, 34% gentle incline, 21% hill top, 10% platform.

Aspect (23 records): 43% East, 26% West, 17% North, 13% South.

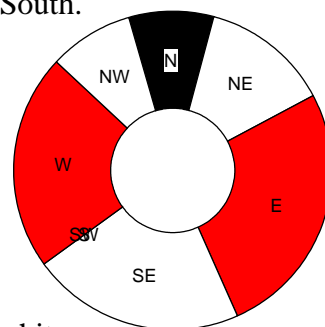


Soil Type (28 records): 46% gravelly, 36% sandy, 11% clayey, 7% loamy.

Soil Colour (27 records): 56% brown, 22% grey, 15% orange, 7% white.

Geology (29 records): 90% sandstone, 7% shale, 3% silcrete or ferricrete.

Vegetation (29 records): 100% shrubland.



Conservation Status and Threat:

Red Data List Status: Near Threatened D2(i). Occurrence (Fynbos): 60 km² with 19% conserved and 18% lost; Occupancy: 32 km² with 36% conserved and 6% lost. Fragmentation index: 27%.

Nature Reserves (29 records): 48% in nature reserves.

Habitat destruction (29 records): 100% extensive natural habitat.

Alien Invasive Species (27 records): 44% none, 37% *Pinus*, 15% *Hakea*, 4% Fabaceae (chiefly alien *Acacia*).

Alien Density (27 records): 44% alien-free, 56% sparse.

Cultivation & Utilization:

Picking (25 records): 100% no sign of picking.
Cultivation Status: No noted cultivation.

Atlasers Notes: None.

Confusing Species: First identified as *P. piscina* from non-flowering material, but seedheads and flowerheads subsequently found and too large – typically *P. scorzonerifolia*.

Records of identification queries = 13.

Records of corrected identification queries = 13.

Variation and Taxonomy: see PAN 27.

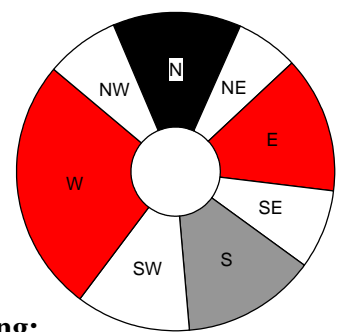
Distribution: Add.

INCLUDEPICTURE

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***Protea burchellii* Stapf**
Burchell's Sugarbush
Blinksuikerbos



Other Common Names: Gleaming Sugarbush, Neat Erodendrum, Petite Protea, Sugar Sugarbush, *Kleinsuikerbos*, *Suikerbos*, *Waboom*.

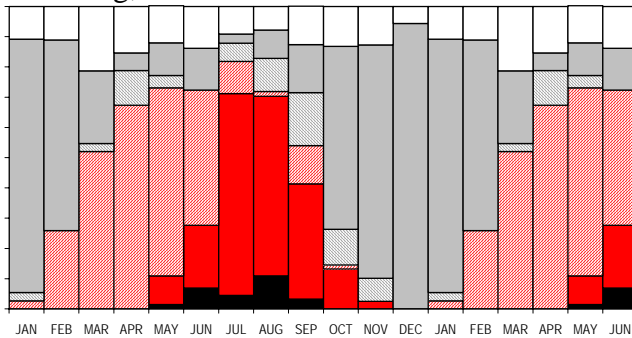
Other Scientific Names: *pulchella* Andr 1802, *pulchra* Rycroft 1961, *subpulchella* Stapf 1925.

698 Records

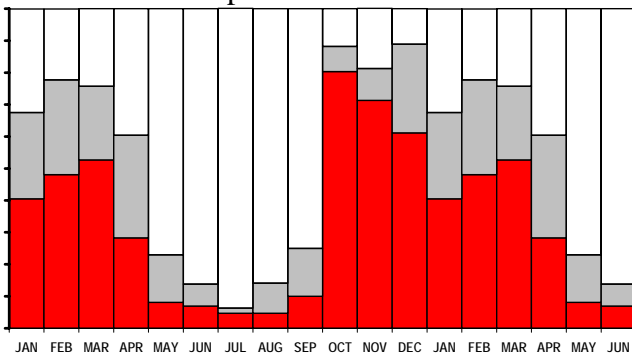
Population (627 records): 0.6% Abundant, 23% Common, 50% Frequent, 26% Rare, 0.6% Extinct.

Dispersion (537 records): 72% variable, 23% clumped, 3% widespread, 1% evenly distributed.

Flowering (687 records with: Jan 37, Feb 54, Mar 75, Apr 52, May 74, Jun 29, Jul 66, Aug 64, Sep 63, Oct 76, Nov 79, Dec 18): Buds from Feb to Jun; Flowering from Jun to Sep; Peak Flowering and Over not significant; Fruit from Oct to Mar; Nothing from Mar. Peak levels at 88% in Jul. Historically recorded as flowering from midwinter – Jun to Aug, with a main flush in Jun-Jul.



Growth (683 records with: Jan 37, Feb 54, Mar 74, Apr 53, May 74, Jun 29, Jul 64, Aug 64, Sep 60, Oct 76, Nov 80, Dec 18): Much from Oct to Apr; Rare from Dec to Apr; None from Jan to Sep. Peak levels at 89% in Dec.

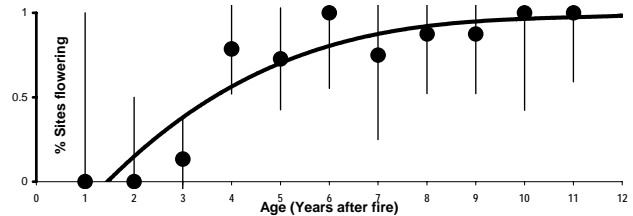


Seedlings (302 records): Absent in 95%: fewer seedlings than prefire adults in 3 cases, and more in 5 cases. Seedlings found in May, Jun, Aug (3), Oct and Nov (2).

Fire Survival (26 records): 92% survived by seedlings only, 4% eliminated from the area by fires, 4% escaped fires in fire-safe areas.

Age to first flowering:

First flowers recorded at 3 years, 50% estimated at 3-4 years, and 100% recorded consistently at 10 years.



Height (688 records): 2% 0-0.2 m tall, 50% 0.2-1 m tall, 45% 1-2 m tall, 2% 2-5 m tall, 0.1% taller than 5 m.

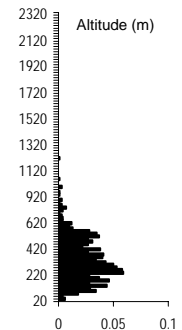
Pollinators (25 records): 48% bees or wasps, 32% birds, 12% beetles, 4% flies, 4% mites.

Detailed Pollinators (16 records): Cape Sugarbird (7), Honey Bee (6), Scarab Beetle, Malachite Sunbird, Great Protea Beetle.

Habitat:

Distance to Ocean (617 records): 100% inland - further than 2 km from coast.

Altitude (617 records): 40 - 1120 m; 180 *lq* - 300 *med* - 400 *uq*m.



Landform (617 records): 93% deep soil, 6% shallow soil.

Slope (616 records): 59% gentle incline, 19% platform, 16% steep incline, 3% hill top, 2% valley bottom.

Aspect (525 records): 38% West, 23% South, 21% East, 18% North.

Soil Type (611 records): 43% sandy, 35% loamy, 12% clayey, 8% gravelly, 2% rocky.

Soil Colour (609 records): 55% brown, 19% grey, 13% orange, 6% white, 5% yellow, 1% red.

Geology (570 records): 35% granite, 27% sandstone, 16% shale, 14% Tertiary sands, 5% conglomerate, 2% silcrete or ferricrete.

Vegetation (614 records): 94% shrubland, 4% plantations, 1% thicket.

Conservation Status and Threat:

Red Data List Status: Vulnerable A2c+3c. Occurrence (Fynbos): 4 913 km² with 23% conserved and 40% lost; Occupancy: 692 km² with 16% conserved and 40% lost. Fragmentation index: 7%.

Nature Reserves (617 records): 30% in nature reserves.

Habitat destruction (579 records): 78% extensive natural habitat, 18% islands,

2% naturally linear habitats, 1% road verges,
1% naturally fragmented habitats.

Alien Invasive Species (597 records):

39% Fabaceae (chiefly alien *Acacia*),
30% *Pinus*, 17% none, 10% *Hakea*,
3% Myrtaceae.

Alien Density (597 records): 17% alien-free,
53% sparse, 25% abundant, 5% dense.

Cultivation & Utilization:

Picking (511 records): 99% no sign of picking,
1% lightly picked, 0.2% severely picked.

Cultivation Status: Plantings - 52 records
(7%), Augmentations - 1 record (0.1%),
Escapes - 11 records (2%).

Witch's Broom Infestation: 8 records (1%).

Atlasers Notes:

Browsing

Most plants very heavily grazed - 1/3 size of
ungrazed plants and not flowering
(AGRY0072706); Heavily grazed
(GEH95051708); Grazed (LYM96090505,
SMR96090506) Grazed probably by cows
(NGF96051603); Much browsed
(SMR98051405);

Mortality

Lots of dead senescent plants in patches of very
old veld (>15 years) (AGRY4102705);

New growth was severely blemished possibly
affected by fallout from fire at sulfur dump?
(LYM96030703);

Variation

Beautiful gun metal silver leaves - spectacular
leaf colour form – used to rehabilitate this
quarry: where did it come from?
(AGRY4061201);

Plantings

Assume was planted (NGF94080701); The
mother of the current farm owner is thought
to have planted (NGF97021204); Some
planted in gravel pit area at end of road
(WIJ98121603)

Population size

Only a single plant seen - definitely! but
nothing anywhere else (AGRY4031009);

Mortality

3 dead plants found (LYM97051405); All dead
(VCH99091707); Many dead also
(SMR96110703);

Damage

Baboons picking heads - numerous broken
heads lying all over the place - broken open
(WEL94080601);

Picking was old (SMR97022006);

Distribution

Almost absent from road verge
(AGR91092901); Only in dune slacks with
feet in water (AGRY0072717); Sand with a
red tint - said to be associated with pr burch
(APE93060512);

Naturalized plants restricted to clayey soils
above granite suboutcrop exposed in roadcut
on upslope side of road - The population is
separate from that on the road between Kloof
Nek and lower Cableway Station (also on
granite) (SHR93071101);

Confusing Species: Mostly confused with *P.*

nerifolia (which has more of a beard and
hairy involucre bracts and bigger
flowerheads). Hybrids with *P. laurifolia*
especially caused many identification
problems. Single instances of nonflowering
plants misidentified as *P. caespitosa*, *P.*
coronata and *P. longifolia*.

Records of identification queries = 47.

Records of corrected identification queries = 29.

Variation and Taxonomy: Extremely variable
in color forms, with involucre bracts ranging
from pale cream to greenish, to pink and
carmine, and beards ranging from purple-
black to white or black. Beards may be
prominent to almost absent. Atlasers
sporadically recorded silver, green and grey
leaf colours.

Distribution: Add.

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***Protea compacta* R.Br.**
Bot River Sugarbush
Suikerkan

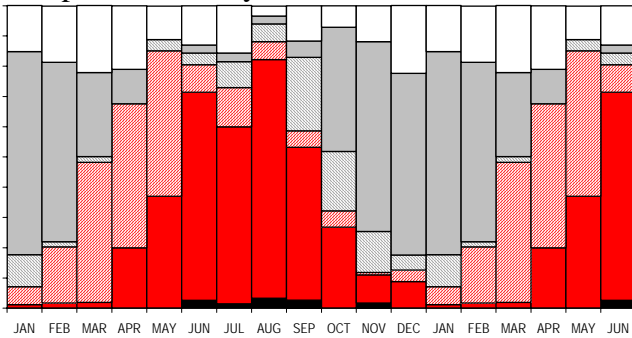
Other Common Names: Compacta, Handsome Erodendrum, Pink Protea, Pinkvelvet Protea, Prince Sugarbush, *Botrivierprotea*, *Botriviersuikerbos*, *Duinesuikerbos*, *Suikerbos*, *Suikerkannetjie*, *Brenda*, *Thomas*.
Other Scientific Names: *coronata* Andr, *formosum* (Salisb)RBr, *spectabilis* Willd ex Meisn, *triandra* Schltr.

1176 Records

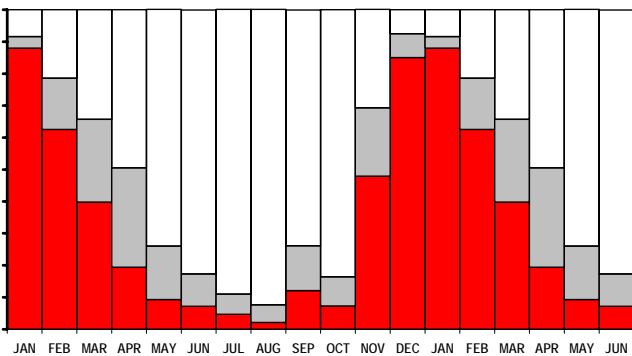
Population (926 records): 4% Abundant, 45% Common, 40% Frequent, 10% Rare, 0.4% Extinct.

Dispersion (806 records): 71% variable, 22% clumped, 6% widespread, 1% evenly distributed.

Flowering (1075 records with: Jan 85, Feb 59, Mar 108, Apr 105, May 54, Jun 77, Jul 70, Aug 152, Sep 111, Oct 56, Nov 118, Dec 80): Buds from Mar to May; Flowering from Apr to Oct; Peak Flowering not significant; Over from Sep to Oct; Fruit from Oct to Mar; Nothing from Mar to Apr and Dec 23. Peak levels at 94% in Aug. Historically recorded as flowering from Apr to Sep, with a peak from May to Jun.



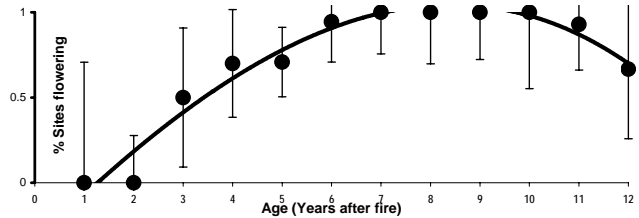
Growth (1042 records with: Jan 83, Feb 56, Mar 108, Apr 103, May 54, Jun 69, Jul 64, Aug 146, Sep 107, Oct 55, Nov 117, Dec 80): Much from Nov to Mar; Rare from Mar to Apr and Nov; None from Feb to Nov. Peak levels at 93% in Dec.



Seedlings (459 records): Absent in 88%: fewer seedlings than prefire adults in 15 cases, and more in 13 cases. Seedlings found in Jan (6), Feb (2), May (2), Jun (2), Jul (3), Aug (5), Sep (7) and Dec.

Fire Survival (59 records): 81% survived by seedlings only, 14% eliminated from the area by fires, 5% escaped fires in fire-safe areas.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 2-3 years, and 100% recorded at 7 years.



Height (1077 records): 3% 0-0.2 m tall, 22% 0.2-1 m tall, 57% 1-2 m tall, 18% 2-5 m tall.

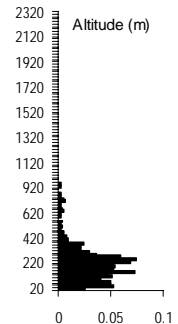
Pollinators (46 records): 80% birds, 13% bees or wasps, 4% mites, 2% beetles.

Detailed Pollinators (39 records): Cape Sugarbird (21), Orange-breasted Sunbird (9), Malachite Sunbird (3), Southern Double-collared Sunbird (2), Honey Bee (2), Wasp (unspecified), Solitary Bee.

Habitat:

Distance to Ocean (933 records): 83% inland - further than 2 km from coast.

Altitude (933 records): 20 - 700 m; 100_{lq} - 180 med - 240 uqm.



Landform (853 records): 89% deep soil, 6% shallow soil, 3% rocky outcrops.

Slope (853 records): 64% gentle incline, 14% steep incline, 13% platform, 6% hill top, 2% valley bottom.

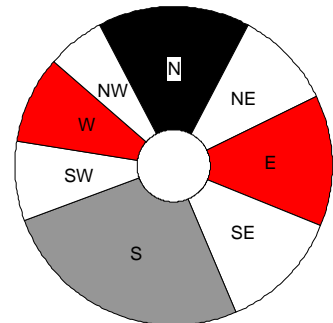
Aspect (738 records): 38% South, 25% East, 22% North, 16% West.

Soil Type (852 records):

73% sandy, 17% loamy, 4% gravelly, 4% clayey, 1% rocky.

Soil Colour (850 records):

57% grey, 24% brown, 11% white, 3% yellow, 2% orange, 2% black.



Geology (854 records): 81% sandstone, 7% shale, 5% silcrete or ferricrete, 4% Tertiary sands, 2% limestone.

Vegetation (922 records): 98% shrubland.

Conservation Status and Threat:

Red Data List Status: Near Threatened
A2c+4d.

Occurrence (Fynbos): 2 476 km² with 10% conserved and 35% lost; Occupancy: 801 km² with 12% conserved and 23% lost. Fragmentation index: 23%.

Nature Reserves (933 records): 19% in nature reserves - inadequately conserved.

Habitat destruction (835 records): 88% extensive natural habitat, 7% islands, 2% road verges, 2% naturally linear habitats.

Alien Invasive Species (837 records): 34% Fabaceae (chiefly alien *Acacia*), 26% *Pinus*, 25% none, 7% *Hakea*, 7% Myrtaceae.

Alien Density (834 records): 25% alien-free, 52% sparse, 17% abundant, 6% dense.

Cultivation & Utilization:

Picking (805 records): 79% no sign of picking, 16% lightly picked, 6% severely picked.

Cultivation Status: Plantings - 203 records (17%), Augmentations - 36 records (3%), Escapes - 30 records (3%).

Witch's Broom Infestation: 42 records (4%).

Atlassers Notes:

Senescence

Tatty and very tall (PAP92082711); One dead plant seen (LYM99040809); Many dead also (SMRY0081601); Lots of very big dead plants - died shading out by pines and old age (AGR96052201); Several dead because of encroaching pines (WIJ99020702);

Plantings

Evidence of harvesting and perhaps planting (APE92080404); Naturally occurring population augmented by planted (DJL98021808); Escaped from adjacent planted area (DJL99092906); Planted in rows - now abandoned (NAHY5110901);

Planted (or descended from planted) proteas (SMR96080701); Some planted some may have spread from orchard (SMR96120401); Some planted some escape (SMR98120904); Broadcast not planted in lines (SMR99052011)

The owner of the property tells me none of these proteas were planted and that a white form grows further up on his farm (JAT95010502);

Witches Broom

On 6 plants (SMR96120402); On some plants (LYM98060603, SMR98120904, SMRY0032905); Frequent (TRUY0081603); Common (DJLY0081608); Heavily infested (PAP94111202); On nearly all the plants (SMRY0081609);

Evident - farmer confirmed physical removal (FBH96041802);

Several plants - on some plants it had killed the branch it was on (LYM96040503);

Confusing Species: Very distinctive and not easily confused, although when young leaves are narrower. A single case *P. coronata* may be a transcription error.

Records of identification queries = 9.

Records of corrected identification queries = 1.

Variation and Taxonomy: Atlassers noted occasional white heads, which are apparently quite common at Baardscheedersbos, but rare elsewhere. Atlassers also recorded forms with small heads, but it is not recorded if these might have been hybrids.

Distribution: Add.

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Protea eximia (Salisb. ex Kn.) Four.
Broad-leaf Sugarbush
Breeblaarsuikerbos

Other Common Names: Duchess Sugarbush, Eximia, Fine Erodendrum, Ray-flower Sugarbush, Rose-spoon Protea, Swartberg Sugarbush, *Basters*, *Waboom*, *Baron*.

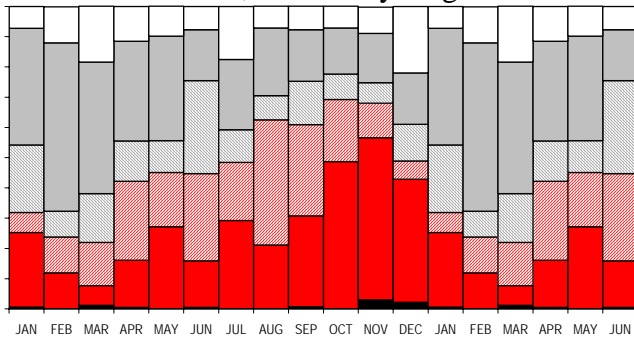
Other Scientific Names: *auriculata* Tausch, *latifolia* R.Br.

2630 Records

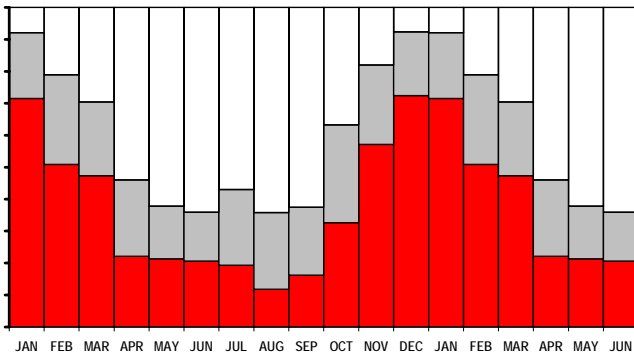
Population (2387 records): 1% Abundant, 24% Common, 59% Frequent, 16% Rare, 0.2% Extinct.

Dispersion (2187 records): 53% variable, 30% clumped, 13% widespread, 4% evenly distributed.

Flowering (2553 records with: Jan 166, Feb 176, Mar 168, Apr 218, May 162, Jun 208, Jul 120, Aug 237, Sep 306, Oct 347, Nov 263, Dec 182): Buds from Apr, Jun and Aug to Oct; Flowering from Jul to Jan and May; Peak Flowering not significant; Over from Jan and Jun; Fruit from Jan to May and Jul to Aug; Nothing from Dec. Peak levels at 78% in Oct. Historically recorded as flowering from Jul to Dec, but chiefly Aug to Oct.



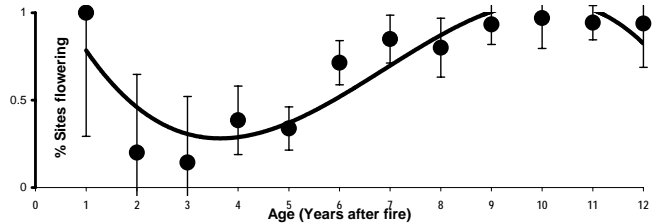
Growth (2517 records with: Jan 165, Feb 175, Mar 169, Apr 213, May 164, Jun 209, Jul 114, Aug 229, Sep 297, Oct 340, Nov 261, Dec 181): Much from Oct to Jul; Rare from Jul to Apr; None from Feb to Oct. Peak levels at 92% in Dec.



Seedlings (1060 records): Absent in 91%: fewer seedlings than prefire adults in 25 cases, and more in 22 cases. Seedlings found in Jan (5), Feb (3), Mar (3), Apr, May, Jun (10), Jul (3), Aug (8), Sep (2), Oct (6), Nov (3) and Dec (2).

Fire Survival (111 records): 46% survived by seedlings only, 32% escaped fires in fire-safe areas, 22% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 4-6 years, and 100% recorded at 10 years.



Height (2585 records): 2% 0-0.2 m tall, 25% 0.2-1 m tall, 61% 1-2 m tall, 13% 2-5 m tall, 0.2% taller than 5 m.

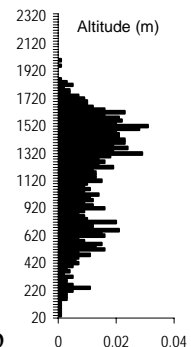
Pollinators (96 records): 86% birds, 9% beetles, 3% bees or wasps, 1% mites.

Detailed Pollinators (72 records): Cape Sugarbird (55), Orange-breasted Sunbird (12), Honey Bee (3), Amethyst Sunbird (2).

Habitat:

Distance to Ocean (2352 records): 100% inland - further than 2 km from coast.

Altitude (2352 records): 100 - 2000 m; 800 *lq* - 1180 *med* - 1380 *uq* m.

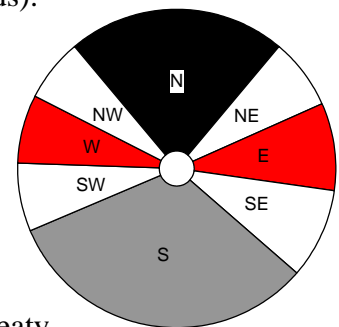


Landform (2344 records): 48% deep soil, 46% shallow soil, 6% rocky outcrops.

Slope (2346 records): 47% gentle incline, 43% steep incline, 5% hill top, 3% platform, 1% valley bottom.

Aspect (2145 records):

41% South, 30% North, 16% East, 13% West.



Soil Type (2326 records):

47% sandy, 30% loamy, 12% rocky, 8% gravelly, 2% clayey, 1% peaty.

Soil Colour (2321 records): 45% grey, 41% brown, 8% black, 2% orange, 2% yellow, 1% white.

Geology (2326 records): 93% sandstone, 7% shale.

Vegetation (2342 records): 98% shrubland,.

Conservation Status and Threat:

Red Data List Status: Least Concern. Occurrence (Fynbos): 19 456 km² with 31% conserved and 12% lost; Occupancy:

2 004 km² with 53% conserved and 5% lost.
Fragmentation index: 5%.

Nature Reserves (2352 records): 61% in nature reserves - well conserved.

Habitat destruction (2256 records):
94% extensive natural habitat, 2% naturally linear habitats, 2% islands.

Alien Invasive Species (2193 records):
70% none, 14% *Hakea*, 14% *Pinus*,
2% Fabaceae (chiefly alien *Acacia*).

Alien Density (2163 records): 71% alien-free,
23% sparse, 4% abundant, 1% dense.

Cultivation & Utilization:

Picking (1937 records): 99% no sign of picking, 1.0% lightly picked, 0.5% severely picked.

Cultivation Status: Plantings - 205 records (8%), Augmentations - 1 record (0.04%), Escapes - 27 records (1%).

Witch's Broom Infestation: 68 records (3%).

Atlasers Notes:

Very strong plants with very large flowerheads (OUT94110506);

Most plants straggly with lush new growth only at tips [We call *P. eximia* Protea untidyfolia] (AWA98103102);

Mortality

Senile (HRK97051502); Plants about 4m tall but collapsed due to age and weight to about 1m height most of the plants in poor health and shape due to old age (GNIY1032904); Many dead - very old: 4 - 5 high (OUT98082202);

Dying (AGR99080703); Lot of dieback (OUT98050906); Drought stricken and poor condition (SMR99080704); Whole population looks sick (SSA92081601); Very stressed however many did have lots of new growth on the tips and some had flowers or buds - farmer reported very heavy rains in summer 1998? causing some disease + this winter has been the driest on record (WMPY0110401+2);

Etiolated and dead due to pines (AGRY0070320);

Most of plants dead! (AGR99090739); All dead - just a few plants (AGRY0070207); Only dead plants seen (AGRY0121510); Only dead skeletons seen in a clump (AGRY1112710); Many dead too (SMR99080801);

Chopped down (because alien?) (AGR99100102);

The most scruffy plants I have ever seen looks like a type of plant leprosy and mange infection: no bugs or goggas to blame so could be some atomic fall out which has burnt and dried out the leaves <Eds: cause is hail damage a few weeks earlier> (VJK98092501);

Lower leaves were dead (SMR99080701); Soil creep and many proteas are leaning over and breaking (WIJ99080805);

Recruitment

Skeletons but no seedlings or young plants (GNIY1032901);

Visitors

Dense stand with a lot of Cape Sugarbird activity (DOA93012217); Lots of Cape Sugarbirds at 11h05 (JWI98061101); Plenty of birds busy on flowers (RDF94112604);

Lots of Cape Sugarbirds and beetles (RTS98110901); Lots of flowering with lots of cape sugarbirds on it (RTS98112601+2);

Black ants slightly larger than Argentine Ants (OGM93010101); Many ants found in seedhead (CVD97012701);

Had a Gnaphosid Spider in the axil of a leaf below the flower head (WEL94030602);

Witches Broom

Very heavily infested (BMJ98092604, SMRY0021111); Large cancerous growths (SSA92081601); Huge broom on 2 plants (WMP99060601);

Confusing Species: Very distinctive with large oval leaves. Misidentified with *P. laurifolia* (quite different with elliptic leaves) and *P. grandiceps* (with green, harder leaves.

Records of identification queries = 10.

Records of corrected identification queries = 2.

Variation and Taxonomy: Swartberg and Kammanassie forms has a particularly pink blush in winter. In moister habitats green, rather than glaucous, forms predominate. Forms from Waboornsberg and Naudesberg have large inflorescences with brightly coloured bracts.

Distribution: Add.

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***Protea longifolia* Andrews**
Long-leaf Sugarbush
Langblaarsuikerbos

Other Common Names: Blackbeard Sugarbush, Embossed Erodendrum, Ermine-tail Sugarbush, Goatee Protea, Long-feather Erodendrum, Strap-leaf Erodendrum, *Begrafnisblom*, *Bokbaardsuikerbos*, *Donkieore*, *Swartbaartprotea*, *Wolkop*, *Candy*.

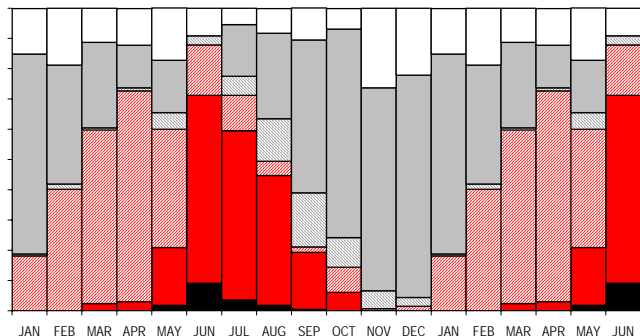
Other Scientific Names: *ignota* Phill, *longipenne* Salisb. ex Knight 1809, *minor* (Phill)Compton, *umbonalis* (Salisb. ex Knight)Sweet 1809, *vidua* Gawl.

1624 Records

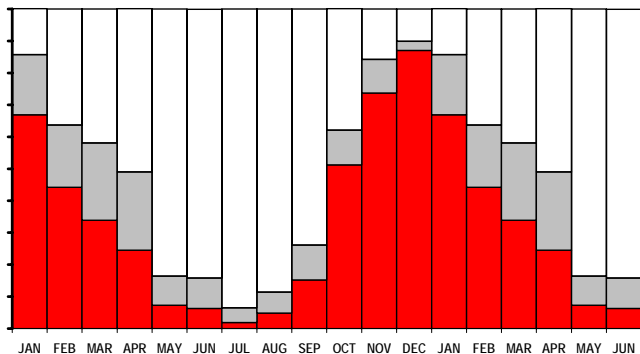
Population (1586 records): 0.6% Abundant, 30% Common, 54% Frequent, 15% Rare, 0.1% Extinct.

Dispersion (1381 records): 81% variable, 16% clumped, 3% widespread.

Flowering (1526 records with: Jan 159, Feb 117, Mar 124, Apr 99, May 110, Jun 66, Jul 111, Aug 170, Sep 218, Oct 132, Nov 152, Dec 68): Buds from Feb to May; Flowering from May to Sep; Peak Flowering and Ovr not significant; Fruit from Aug to Mar; Nothing from Nov and Dec. Peak levels at 91% in Jun. Historically recorded as flowering from May to Sep, but peaking in Jun to Jul.



Growth (1499 records with: Jan 160, Feb 113, Mar 124, Apr 94, May 110, Jun 63, Jul 108, Aug 166, Sep 211, Oct 129, Nov 152, Dec 69): Much from Oct to Apr; Rare from Jan to Apr; None from Feb to Oct. Peak levels at 90% in Dec.

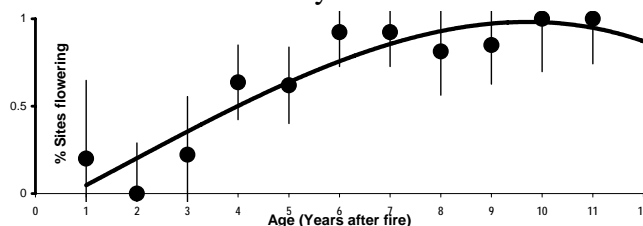


Seedlings (643 records): Absent in 91%; fewer seedlings than prefire adults in 13 cases, and more in 17 cases. Seedlings found in Jan

(10), Feb (2), Apr, Jun, Jul, Aug (5), Sep (4), Oct (3) and Nov (3).

Fire Survival (52 records): 83% survived by seedlings only, 10% eliminated from the area by fires, 4% escaped fires in fire-safe areas, 4% resprouted from underground boles.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 3-4 years, and 100% recorded at 10 years.



Height (1524 records): 2% 0-0.2 m tall, 64% 0.2-1 m tall, 33% 1-2 m tall, 0.5% 2-5 m tall.

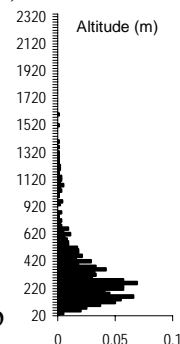
Pollinators (18 records): 67% birds, 17% bees or wasps, 17% beetles.

Detailed Pollinators (14 records): Cape Sugarbird (8), Honey Bee (2), Orange-breasted Sunbird, Monkey Beetle, Malachite Sunbird, Green Beetle.

Habitat:

Distance to Ocean (1566 records): 91% inland - further than 2 km from coast.

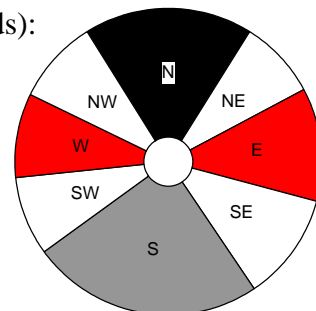
Altitude (1566 records): 20 - 1500 m; 140 *lq* - 240 *med* - 320 *uq* m.



Landform (1477 records): 88% deep soil, 9% shallow soil, 2% rocky outcrops, 0.3% riverine, 0.2% swamp.

Slope (1477 records): 67% gentle incline, 18% steep incline, 7% platform, 7% hill top.

Aspect (1335 records): 35% South, 27% North, 21% East, 17% West.



Soil Type (1468 records): 61% sandy, 22% loamy, 8% gravelly, 5% clayey, 2% rocky.

Soil Colour (1465 records): 59% grey, 26% brown, 6% white, 4% orange, 3% black, 2% yellow.

Geology (1477 records): 81% sandstone, 13% shale, 4% silcrete or ferricrete, 1% Tertiary sands.

Vegetation (1557 records): 99% shrubland.

Conservation Status and Threat:**Red Data List Status:** Vulnerable A2c+4c.Occurrence (Fynbos): 3 901 km² with 20% conserved and 30% lost; Occupancy: 1 249 km² with 16% conserved and 29% lost. Fragmentation index: 20%.**Nature Reserves** (1566 records): 31% in nature reserves.**Habitat destruction** (1450 records):

91% extensive natural habitat, 6% islands, 2% road verges, 1% naturally linear habitats.

Alien Invasive Species (1447 records):38% *Pinus*, 25% Fabaceae (chiefly alien *Acacia*), 19% none, 14% *Hakea*, 4% Myrtaceae.**Alien Density** (1442 records): 19% alien-free, 61% sparse, 16% abundant, 4% dense.**Cultivation & Utilization:****Picking** (1098 records): 98% no sign of picking, 2% lightly picked.**Cultivation Status:** Plantings - 22 records (1%), Escapes - 6 records (0.4%).**Witch's Broom Infestation:** 18 records (1%).**Atlassers Notes:**

Baboons had destroyed some flowerheads (LYM96070601+3+8);

Small form - dwarf in stature (but not *P. longifolia minor* (LYM96082104);

Numerous plants have portions of the leaves "rolled closed" and red - caused by scale insect type bug (AJT96082911);

Evidently planted next to stacked alien heaps (CVV98100905);

Although shorter than expected, seem to be at about the same density to prefire (AGR99072902);

Dying (CFR99072903); Lots of plants dieing (AGRY0110512); All dead (AGRY1012803);

Confusing Species: Many identification queries due to hybrids. The most common misidentifications were in young veld with *P. nerifolia* (which sometimes has long, thin leaves with attenuate bases), *P. burchellii* (which has much shorter leaves) and *P. magnifica* (with much wider leaves)..

Records of identification queries = 9.

Records of corrected identification queries = 7.

Variation and Taxonomy: Highly variable on account of rampant hybridization. Hybrids seem to preferentially backcross to *P. longifolia* so that some populations seem to have characters of associated species. Involucral bract colour is usually yellow or creamy green, but pink and red forms do occur. The awn colours are usually black, occasionally white forms occur. Smaller flowered forms occur. The dwarf form which replaces the normal form in the Agulhas area is treated separately (see *P. longifolia minor*). Occasional plants with small flowerheads are found within normal populations, some of which might be hybrids with smaller ground proteas (in which case the plants are usually dwarfed), and some of which appear to be simply smaller flower forms on normal plants.**Distribution:** Add.

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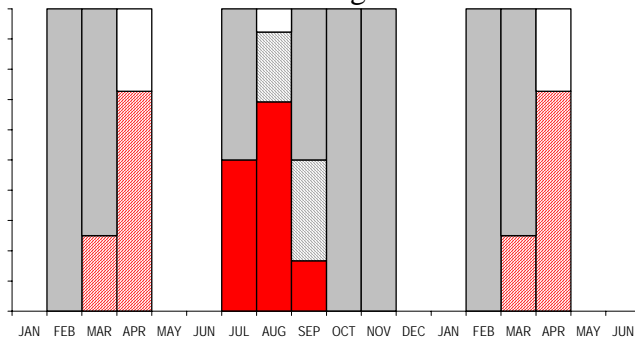
Protea longifolia var. *minor* Dwarf Long-leaf Sugarbush

Other Common Names: None known.
Other Scientific Names: *None*.

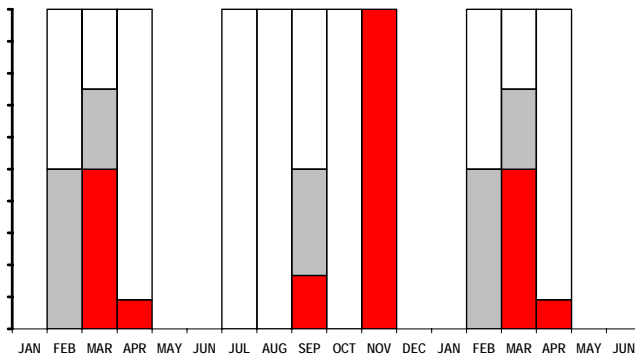
43 Records

Population (42 records): 24% Common, 55% Frequent, 19% Rare, 2% Extinct.
Dispersion (36 records): 72% variable, 28% clumped.

Flowering (40 records with: Jan 0, Feb 2, Mar 4, Apr 11, May 0, Jun 0, Jul 2, Aug 13, Sep 6, Oct 1, Nov 1, Dec 0): Buds from Mar 25 - Apr 73 -; Flowering from Jul 50 - Aug 69 - Sep 17 -; Peak Flowering from ; Over from Aug 23 - Sep 33 -; Fruit from Feb 100 - Mar 75 - Jul 50 - Sep 50 - Oct 100 - Nov 100 -; Nothing from Apr 27 - Aug 8. Peak levels unreliable at 92% in Aug.



Growth (40 records with: Jan 0, Feb 2, Mar 4, Apr 11, May 0, Jun 0, Jul 2, Aug 13, Sep 6, Oct 1, Nov 1, Dec 0): Much from Mar 50 - Apr 9 - Sep 17 - Nov 100 -; Rare from Feb 50 - Mar 25 - Sep 33 -; None from Feb 50 - Mar 25 - Apr 91 - Jul 100 - Aug 100 - Sep 50 - Oct 100. Peak levels unreliable.



Seedlings (12 records): All without any seedlings present.

Fire Survival (6 records): 83% survived by seedlings only, 17% eliminated from the area by fires.

Age to first flowering: y4 100% (1), y7 100% (2), y9 100% (2), y11 100% (1). First flowers recorded at 4 years, 50% estimated at xx years, and 100% recorded at 4 years.



Height (40 records): 8% 0-0.2 m tall, 85% 0.2-1 m tall, 8% 1-2 m tall.

Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (42 records): 100% inland - further than 2 km from coast.

Altitude (42 records): 20 - 180 m; 20_{lq} - 40_{med} - 40_{uq} m.

Landform (41 records): 98% deep soil, 2% riverine.

Slope (41 records): 54% platform, 27% gentle incline, 10% valley bottom, 7% hill top, 2% steep incline.

Aspect (20 records):

52% North,
18% South,
15% East,
15% West.

Soil Type (41 records): 56% sandy, 27% loamy, 15% clayey, 2% gravelly.

Soil Colour (41 records): 56% brown, 27% grey, 10% white, 5% yellow, 2% orange.

Geology (36 records): 47% silcrete or ferricrete, 22% sandstone, 17% Tertiary sands, 11% shale, 3% limestone.

Vegetation (42 records): 100% shrubland.

Conservation Status and Threat:

Red Data List Status: Endangered A3c, B1b(i,ii)c(iv)+2b(i,ii)c(iv).

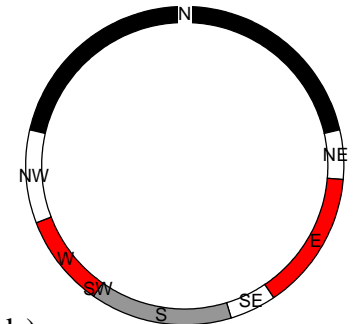
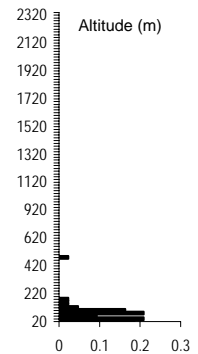
Occurrence (Fynbos): 198 km² with 8% conserved and 47% lost; **Occupancy:** 62 km² with 12% conserved and 38% lost. **Fragmentation index:** 25%.

Nature Reserves (42 records): 17% in nature reserves - inadequately conserved.

Habitat destruction (40 records): 88% extensive natural habitat, 5% islands, 5% naturally fragmented habitats, 3% naturally linear habitats.

Alien Invasive Species (40 records): 50% Fabaceae (chiefly alien *Acacia*), 28% none, 13% Myrtaceae, 10% *Pinus*.

Alien Density (40 records): 28% alien-free, 45% sparse, 23% abundant, 5% dense.



Cultivation & Utilization:

Picking (24 records): 96% no sign of picking,
4% lightly picked.

Cultivation Status: Plantings - 1 records (2%).

Witch's Broom Infestation: 1 records (2%).

Atlases Notes:

Protea longifolia minor - looked like *P. pudens* to me! (SMRY0081608);

Confusing Species: Easily mistaken for normal *P. longifolia* when young – in fact, impossible to tell from the type. When in flower the flowerheads are noticeably shorter and the plants may appear smaller. Except when in flower, also easily mistaken for *P. pudens*, but this has reddish involucre bracts, far less of a cone, and prostrate not erect, flowerheads. *P. pudens* is not always a prostrate plant which means that plants in

seed are sometimes confused. The matter is complicated by occasional hybrids where the two species grow in association. No other misidentifications are known.

Records of identification queries = 4.

Records of corrected identification queries = 4.

Variation and Taxonomy: This variety should be ranked a subspecies as it is geographically distinct, although intermediates occur at the edges with *P. longifolia*. Hybrids with *P. pudens*

Distribution: Add.

INCLUDEPICTURE

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MERGEFORMAT \d

***Protea obtusifolia* Buek ex Meisn.**
Limestone Sugarbush
Bredasdorpsuikerbos

Other Common Names: Bredasdorp Sugarbush, Holiday-red Protea, Jester Sugarbush, Obtusifolia, Stilbay Sugarbush, Klipprotea, Strandveldsuikerbos.

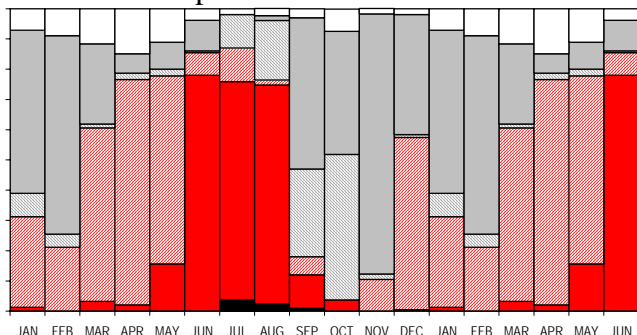
Other Scientific Names: *calocephala* Meisn, *gandogerii* Schinz. ex Gandoger.

1368 Records

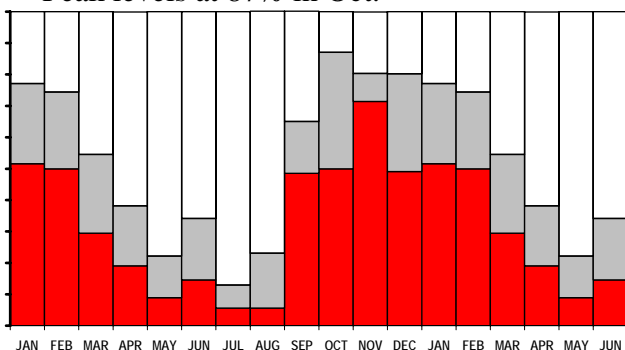
Population (1330 records): 0.4% Abundant, 41% Common, 49% Frequent, 9% Rare, 0.2% Extinct.

Dispersion (1197 records): 79% variable, 16% clumped, 4% widespread.

Flowering (1251 records with: Jan 154, Feb 90, Mar 155, Apr 47, May 45, Jun 159, Jul 54, Aug 127, Sep 100, Oct 54, Nov 57, Dec 209): Buds from Dec to May; Flowering from Jun to Aug; Peak Flowering not significant; Over from Aug to Oct; Fruit from Sep to Mar; Nothing not significant. Peak levels at 98% in Jul. Historically recorded as flowering from Apr to Sep, with a Jun to Jul peak.



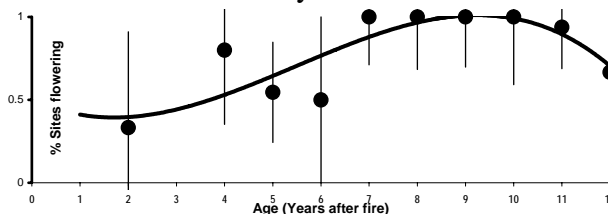
Growth (1248 records with: Jan 153, Feb 90, Mar 156, Apr 47, May 45, Jun 158, Jul 54, Aug 126, Sep 97, Oct 54, Nov 56, Dec 212): Much from Sep to Mar; Rare from Dec to Mar, Jun 20 and Oct; None from Nov to Sep. Peak levels at 87% in Oct.



Seedlings (594 records): Absent in 96%: fewer seedlings than prefire adults in 1 case, and more in 10 cases. Seedlings found in Jan (3), Nov and Dec (7).

Fire Survival (32 records): 75% survived by seedlings only, 19% escaped fires in fire-safe areas, 6% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 4-5 years, and 100% recorded at 7 years.



Height (1261 records): 0.5% 0-0.2 m tall, 23% 0.2-1 m tall, 64% 1-2 m tall, 13% 2-5 m tall.

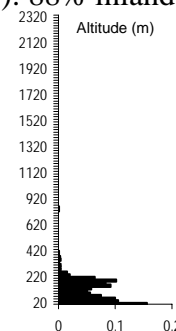
Pollinators (42 records): 74% birds, 19% bees or wasps, 7% beetles.

Detailed Pollinators (37 records): Cape Sugarbird (25), Honey Bee (4), Orange-breasted Sunbird (3), Southern Double-collared Sunbird, Solitary Bee, Protea Rove Beetle, Malachite Sunbird, Great Protea Beetle.

Habitat:

Distance to Ocean (1340 records): 88% inland - further than 2 km from coast.

Altitude (1340 records): 20 - 400 m; 20_{lq} - 80_{med} - 140_{uq}m.



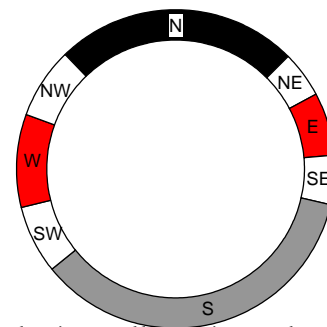
Landform (1259 records): 57% deep soil, 41% shallow soil, 2% rocky outcrops.

Slope (1259 records): 40% gentle incline, 28% platform, 13% hill top, 8% dunes, 8% steep incline, 3% valley bottom.

Aspect (796 records): 42% South, 31% North, 16% West, 11% East.

Soil Type (1237 records): 67% sandy, 22% loamy, 7% rocky, 2% gravelly, 1% clayey.

Soil Colour (1227 records): 44% grey, 35% brown, 6% white, 5% black, 4% yellow, 4% red, 2% orange.



Geology (1301 records): 86% limestone, 7% Tertiary sands, 5% sandstone, 2% shale.

Vegetation (1334 records): 98% shrubland, 2% thicket.

Conservation Status and Threat:

Red Data List Status: Near Threatened A4c. Occurrence (Fynbos): 4 262 km² with 15% conserved and 25% lost; Occupancy:

1 263 km² with 32% conserved and 18% lost. Fragmentation index: 14%.

Nature Reserves (1340 records): 38% in nature reserves.

Habitat destruction (1238 records): 86% extensive natural habitat, 9% islands, 2% road verges, 2% naturally fragmented habitats, 1% naturally linear habitats.

Alien Invasive Species (1222 records): 71% Fabaceae (chiefly alien *Acacia*), 27% none.

Alien Density (1218 records): 28% alien-free, 39% sparse, 18% abundant, 13% dense, 3% impenetrable.

Cultivation & Utilization:

Picking (955 records): 99% no sign of picking, 0.5% lightly picked, 0.4% severely picked.

Cultivation Status: Plantings - 21 records (2%), Escapes - 6 records (0.4%).

Witch's Broom Infestation: 48 records (4%).

Atlassers Notes:

Variation

White flowers (APE92080111, LYM97081501, LYM97081615); Both the pink and white forms (NGW98070702);

Pruned to look like trees! (AGR94111301)

Mortality

New growth had died. Was this because of the hot summer? (NGFY0061606);

1 dead seen (AGRY2092611, AMMY2100913); All plants dead (LYMY0021403);

Bushcut all dead (AGRY0061823);

Masses of dead plants about 3 years old – pre-flowering (OUTY1020309);

Flower visitors

Ants and bees (WMPY0061603);

Arum Lily Frog in flowerhead (AGR97081610);

Habitat

On rock slabs (SGAY1031420); Magic! Plot mostly limestone pavement with round plantpot size holes colonised by proteas (SMRY1031411);

A rare occurrence on deep sand (RMC92101201); Very unusual to see growing in sandstone (DOA99031502);

WitchesBroom

Occasional (SMRY1031407); Some (SMRY1031409-11)

Confusing Species: Quite distinct! Mistaken for *P. neriifolia* (wrong habitat and beardless involucre bracts) and *P. susannae* (which has untidy seedheads, wavy margins to the leaves which stink).

Records of identification queries = 14.

Records of corrected identification queries = 6.

Variation and Taxonomy: None known, apart from involucre bract colour which is very variable from pure white, through creamy-white and yellow to deep carmine. Atlassers noted some unusual exclusively pale populations.

Distribution: Add.

INCLUDEPICTURE

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MERGEFORMAT \d

***Protea pudens* Rourke**
Bashful Sugarbush
Aardroos

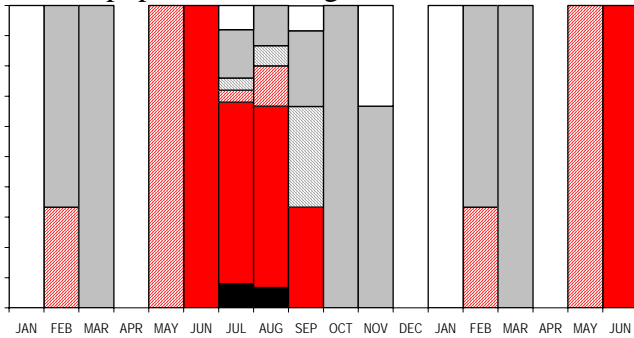
Other Common Names: Creeping Protea, Ground-rose Sugarbush, Minor Protea, *Kleinsuikerbos*, *Minor*, *Ranksuikerbos*, *Skaamblommetjie*, *Skaamgesiggie*, *Skaamsuikerbos*.
Other Scientific Names: *minor* Auct.

76 Records

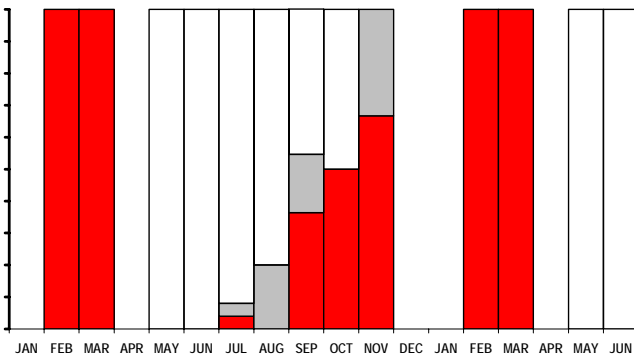
Population (67 records): 16% Common, 58% Frequent, 24% Rare, 1% Extinct.

Dispersion (54 records): 69% variable, 28% clumped, 4% widespread.

Flowering (64 records with: Jan 1, Feb 3, Mar 1, Apr 0, May 1, Jun 1, Jul 25, Aug 15, Sep 12, Oct 2, Nov 3, Dec 0): Buds from Feb and May; Flowering from Jun to Sep; Peak Flowering not significant; Over from Sep; Fruit from Sep to Mar; Nothing from Nov to Jan. Peak levels probably at 87% in Aug. Historically recorded as flowering from May to Sep, peak Jul to Aug.



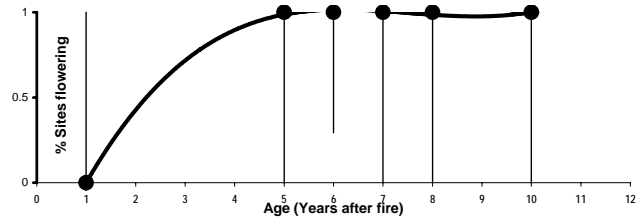
Growth (61 records with: Jan 0, Feb 2, Mar 1, Apr 0, May 1, Jun 1, Jul 25, Aug 15, Sep 11, Oct 2, Nov 3, Dec 0): Much from Sep to Mar; Rare from Aug and Nov; None from May to Oct. Peak levels unreliable at 100% in Nov.



Seedlings (14 records): Absent in 71%: more seedlings than prefire adults in 2 cases. Seedlings found in Jul.

Fire Survival (4 records): 50% eliminated from the area by fires, 50% survived by seedlings only.

Age to first flowering: First flowers recorded at 5 years, 50% estimated at 3 years, and 100% recorded at 5 years.



Height (61 records): 10% 0-0.2 m tall, 90% 0.2-1 m tall.

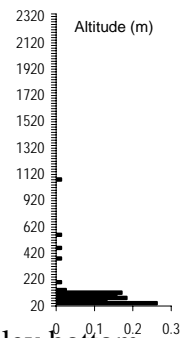
Pollinators (4 records): 100% beetles.

Detailed Pollinators (4 records): Monkey Beetle.

Habitat:

Distance to Ocean (69 records): 100% inland - further than 2 km from coast.

Altitude (69 records): 20 - 140 m; 20_{lq} - 40_{med} - 40_{uq}m.

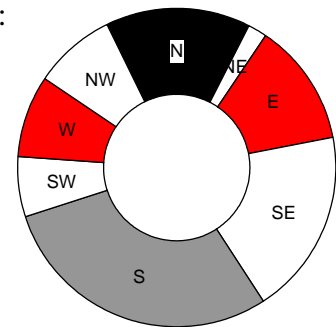


Landform (60 records): 92% deep soil, 8% shallow soil.

Slope (60 records): 63% gentle incline, 20% platform, 12% valley bottom, 5% hill top.

Aspect (43 records):

43% South, 23% East, 19% North, 15% West.



Soil Type (60 records):

47% loamy, 33% sandy, 10% clayey, 10% gravelly.

Soil Colour (57 records): 68% brown, 25% grey, 4% yellow, 2% black, 2% red.

Geology (63 records): 38% shale, 33% sandstone, 25% silcrete or ferricrete, 3% limestone.

Vegetation (69 records): 100% shrubland.

Conservation Status and Threat:

Red Data List Status: Endangered

B1a(ii)b(i,ii,iii,iv,v)+2a(ii)b(i,ii,iii,iv,v),

Occurrence (Fynbos): 67 km² with 0% conserved and 45% lost; Occupancy: 40 km² with 0% conserved and 35% lost.

Fragmentation index: 53%.

Nature Reserves (69 records): 19% in nature reserves - inadequately conserved.

Habitat destruction (58 records):

76% extensive natural habitat, 17% islands, 5% naturally linear habitats, 2% naturally fragmented habitats.

Alien Invasive Species (57 records):

40% Fabaceae (chiefly alien *Acacia*), 23% Myrtaceae, 19% none, 16% *Pinus*, 2% *Hakea*.

Alien Density (57 records): 19% alien-free, 67% sparse, 14% abundant.

Cultivation & Utilization:

Picking (47 records): 98% no sign of picking, 2% lightly picked.

Cultivation Status: Plantings - 7 records (9%), Augmentations - 3 records (4%).

Witch's Broom Infestation: 2 records (3%).

Atlassers Notes:

This area specially burnt to regenerate this species (MEL96070701);

This 1km area is also planted with *P. pudens* (MEL96070701); There were 3 plants naturally - the rest were clumped in neat rows and therefore planted (NGF97113011);

A few dead specimens (SMRY0072006);

Most moribund some with witches broom (AGRY0081607);

Confusing Species: Only readily confused with *P. longifolia* var. *minor*, with which it occasionally hybridizes. However, this has only erect flowerheads, and very few decumbent branches; in flower the pale heads with a long cone are quite distinctive.

Records of identification queries = 4.

Records of corrected identification queries = 1.

Variation and Taxonomy: Flowerheads vary in size from 50 to 80 mm long. All known plants are deep dusty pink in colour – pale forms have not been recorded.

Distribution: Add.

INCLUDEPICTURE

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Protea roupelliae subsp. *hamiltonii* Beard ex Rourke
Dwarf Silver Sugarbush
Ranksilversuikerbos

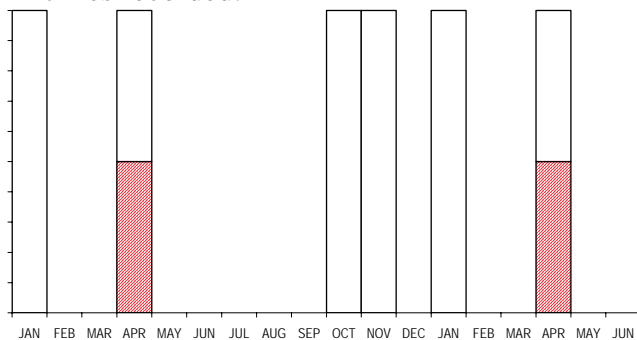
Other Common Names: Rambling-silver Sugarbush.
Other Scientific Names: *None*.

5 Records

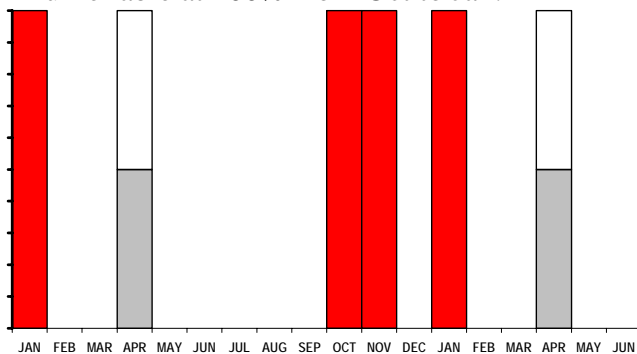
Population (4 records): 50% Common, 50% Frequent.

Dispersion (4 records): 75% variable, 25% clumped.

Flowering (5 records with: Jan 1, Feb 0, Mar 0, Apr 2, May 0, Jun 0, Jul 0, Aug 0, Sep 0, Oct 1, Nov 1, Dec 0): Buds from Apr; Flowering, Peak Flowering, Over – and significantly – Fruit not recorded; Nothing from all year round. Peak levels unreliable, but foresters report that no flowers were produced during the atlas project. No historical flowering times recorded.



Growth (5 records with: Jan 1, Feb 0, Mar 0, Apr 2, May 0, Jun 0, Jul 0, Aug 0, Sep 0, Oct 1, Nov 1, Dec 0): Much from Oct to Jan; Rare from Apr; None from Apr. Peak levels unreliable at 100% from Oct to Jan.



Seedlings (3 records): Absent in 33%: fewer seedlings than prefire adults in 1 case. Seedlings found in Jan.

Fire Survival : No data.

Age to first flowering: Foresters report that no flowers were produced during the duration of Protea Atlas Project.



Height (5 records): 20% 0-0.2 m tall, 80% 0.2-1 m tall.

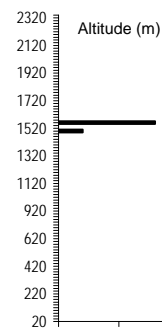
Pollinators: No data.

Detailed Pollinators: No additional data.

Habitat:

Distance to Ocean (4 records): 100% inland - further than 2 km from coast.

Altitude (4 records): 1440 - 1460 m; 1440 *lq* - 1460 *med* - 1460 *uq*m.

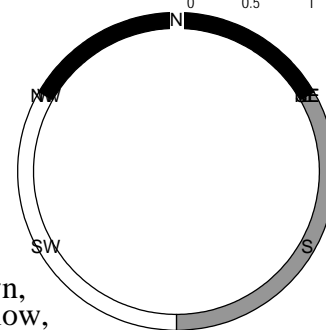


Landform (4 records):

100% deep soil.

Slope (4 records): 50% platform, 25% gentle incline, 25% valley bottom.

Aspect (2 records): 75% South, 25% West.



Soil Type (4 records):

50% loamy,

25% sandy,

25% clayey.

Soil Colour (4 records):

25% brown,

25% grey, 25% yellow,

25% red.

Geology (2 records): 100% shale.

Vegetation (4 records): 100% grassland.

Conservation Status and Threat:

Red Data List Status: Critically Endangered

A2ac, B1a(ii)b(i,ii,iii,iv,v)

+2a(ii)b(i,ii,iii,iv,v), C2a(i,ii).

Occurrence: 1 km² with 0% conserved and 92% lost; Occupancy: 3 km² with 0% conserved and 66% lost. Fragmentation index meaningless.

Nature Reserves (4 records): 75% in nature reserves - well conserved.

Habitat destruction (4 records): 100% islands.

Alien Invasive Species (4 records): 75% *Pinus*, 25% Myrtaceae.

Alien Density (4 records): 100% sparse.

Cultivation & Utilization:

Picking (4 records): 75% no sign of picking, 25% lightly picked.

Cultivation Status: Plantings - 1 record (20%).

Atlasers Notes:

We were told was declining in numbers and all plants that were seen had no buds or flowers or cones (NGFY0040403);

Confusing Species: None: distinct in growth habit – although in cultivation is does grow to 1m.

Variation and Taxonomy: None noted.

Distribution: Add.

INCLUDEPICTURE

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Protea roupelliae subsp. roupelliae Meisn.

Silver Sugarbush

Silwerblaarsuikerbos

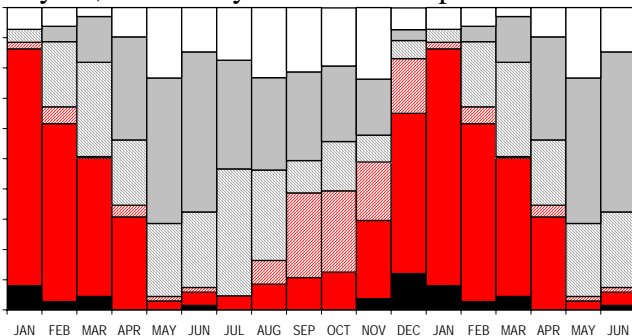
Other Common Names: Drakensberg Sugarbush, Roupell's Sugarbush, Silver-leaf Sugarbush, Sugarbush, Sugarbush Protea, Transvaal-silverleaf Sugarbush, *Silber Zuckerbusch*, *Silwersuikerbos*, *Siukerkan*, *Suikerbos*, *Transvaalwaboom*, *Waboom*, *Isicalabane* (Swazi), *Isidlungu* (Swazi), *isiQalaba* (Xhosa, Zulu), *Sekile* (S-Sotho), *Seqalaba* (S-Sotho), *uQhambathi* (Zulu).
Other Scientific Names: *lanuginosus* (Kuntz)Schum, *rudatisii* Engl, *transvaalensis* (Gand)Gand & Schinz.

1681 Records

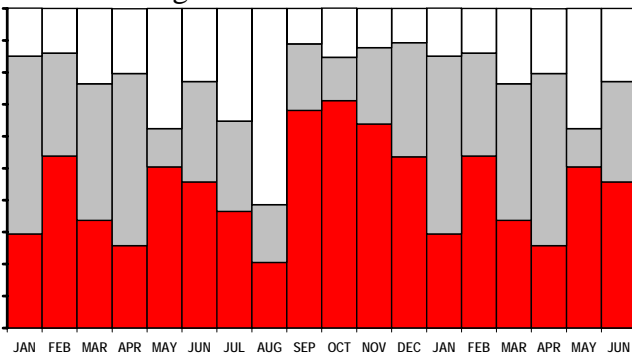
Population (1671 records): 0.1% Abundant, 23% Common, 59% Frequent, 18% Rare, 0.2% Extinct.

Dispersion (1580 records): 47% variable, 34% clumped, 12% widespread, 7% evenly distributed.

Flowering (1547 records with: Jan 138, Feb 177, Mar 199, Apr 185, May 133, Jun 68, Jul 86, Aug 164, Sep 75, Oct 104, Nov 135, Dec 83): Buds from Sep to Oct; Flowering from Nov to Apr; Peak Flowering not significant; Over from Feb to Aug; Fruit from Apr to Nov; Nothing from May and Aug to Nov. Peak levels at 93% in Jan. Historically recorded as flowering from throughout the year, but chiefly from Feb to Apr.



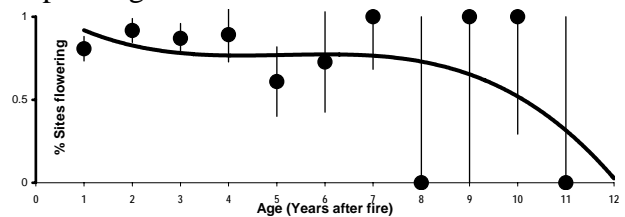
Growth (1530 records with: Jan 126, Feb 171, Mar 199, Apr 182, May 133, Jun 70, Jul 85, Aug 166, Sep 72, Oct 104, Nov 138, Dec 84): Much from all year round; Rare from Nov to Apr, Jun to Jul and Sep; None from Mar to Aug. Peak levels at 89% in Dec.



Seedlings (760 records): Absent in 48%: fewer seedlings than prefire adults in 157 cases, and more in 39 cases. Seedlings found in Jan (20), Feb (16), Mar (29), Apr (5), May, Jun (13), Jul (11), Aug (18), Sep (3), Oct (20), Nov (22) and Dec (38).

Fire Survival (744 records): 53% escaped fires in fire-safe areas, 31% resprouted from aerial trunks, 10% resprouted from underground boles, 4% survived by seedlings only, 2% eliminated from the area by fires.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 1 years, and 100% recorded at 7 years. These ages probably reflect the grassland age, not the plant ages.



Height (1655 records): 0.1% 0-0.2 m tall, 4% 0.2-1 m tall, 21% 1-2 m tall, 71% 2-5 m tall, 4% taller than 5 m.

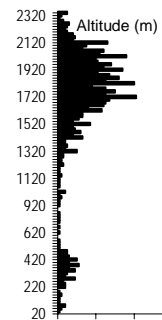
Pollinators (285 records): 56% birds, 27% beetles, 11% bees or wasps, 4% flies, 1% none observed, 0.4% mites.

Detailed Pollinators (107 records): Malachite Sunbird (54), Transvaal Sugarbird (40), Honey Bee (6), Great Protea Beetle (3), Wasp (unspecified) (2), Amethyst Sunbird (2).

Habitat:

Distance to Ocean (1651 records): 99% inland - further than 2 km from coast.

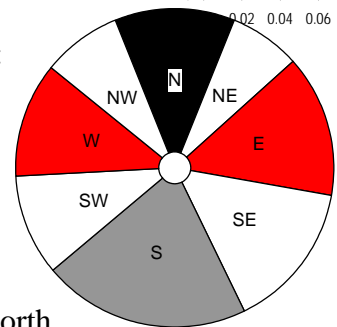
Altitude (1651 records): 20 - 2440 m; 1440 *lq* - 1660 *med* - 1820 *uq*m.



Landform (1636 records): 44% deep soil, 38% shallow soil, 18% rocky outcrops.

Slope (1637 records): 54% steep incline, 36% gentle incline, 7% hill top, 2% cliff, 1.0% platform.

Aspect (1528 records): 35% South, 25% East, 20% West, 20% North.



Soil Type (1539 records): 61% loamy, 23% sandy, 8% rocky, 4% gravelly, 3% clayey.

Soil Colour (1545 records): 68% brown, 18% grey, 6% red, 3% black, 3% orange, 2% yellow.

Geology (1224 records): 79% sandstone, 6% dolerite, 4% shale, 4% basalt, 3% granite, 1% conglomerate.

Vegetation (1633 records): 59% grassland, 36% wooded grassland, 4% shrubland.

Conservation Status and Threat:

Red Data List Status: Least Concern.

Occurrence: 329 663 km² with 3% conserved and 22% lost; Occupancy: 2 395 km² with 30% conserved and 14% lost. Fragmentation index: 1%.

Nature Reserves (1651 records): 50% in nature reserves.

Habitat destruction (1553 records): 84% extensive natural habitat, 8% islands, 4% naturally linear habitats, 1% naturally fragmented habitats, 1% corridors.

Alien Invasive Species (1442 records): 64% none, 21% Fabaceae (chiefly alien *Acacia*), 11% *Pinus*, 1% other aliens, 1% Myrtaceae.

Alien Density (1439 records): 64% alien-free, 27% sparse, 5% abundant, 4% dense.

Cultivation & Utilization:

Picking (1066 records): 99% no sign of picking, 0.9% lightly picked, 0.3% severely picked.

Cultivation Status: Plantings - 3 records (0.2%).

Atlasers Notes:

Variation

Very silver! (AGR99021609!); Very pretty cerise form (VCHY0021901); The "green" form (JEB92010501);

Size distribution

Not killed bole: 21; very small not killed trunk: 16; thick brown or green trunk not killed escape: 19; looking back it meant all of them really escaped a cool fire - walking further we saw lots more low plants (AWA95051901);

13 dead above 2m; 100+ less than 1m; 8 up to 2m; 5 above 2m. Why no medium plants? (AWA95052601);

Very small plants next to big plants (DFJ99081902); The area had two distinct populations according to size : about half population was 2-5 m high the rest about 30 cm high (HANY1011302); Colony of small plants around one larger tree (JOO99091102); Range in size from HC1-4 (MHG96062501); Healthy population; all sizes from 0.3m to 5m (SGAY1033001);

Fire survival

'Weathers' fire (APE94021202); Seedlings few to none - grass burnt annually (ATA92030401) Fire did not reach rock bed (AWA96052203); Although recently burnt the fire did not reach most of the plants as they are mostly amongst boulders (BRB96072002); 80% of adult trees destroyed - some are partially burnt mainly on sides. No reprotting present (DDS91122401); Resprouting after fire (DDS92120901+2); Proteas burnt at lower branches and leaves some trees are dead.

Damage not significant (DDS93110603); Light fire (grass mainly short) burnt only lower branches and leaves of proteas few dead protea trees a few also burnt near canopy but not extensive (DDS93110604); Trees start to reprot (after rainfall of late sept to dec?) Mainly at the end of the branches - leave tips. The canopies of trees are not damaged by the fire and some have still flowers (DDS93112401); Trees who are only burnt at lower parts shown more resprouting. Several trees with burnt branches have new buds on branch tips (DDS94022702); Fire damage only on isolated trees - large trees destroyed (n=6) fewer have topkill - fire old - 1 yr but probably only grass burns - protea trees very large and full flower (DDS94120701); Several protea trees burnt down & crowns (DDS96122101); Some burnt proteas start to regrowth at burnt ends some trees dead other only burnt on sides (DDS96122801); Only few trees (< than 6) not damaged by fire - crowns not burnt rest of clump 100% crown fire and are destroyed by fire of august 1996 the fire was chased by the wind (DDS97012301); Frequently burnt veld so plants always above flames and protected by rock band (DFJ99081901); Clear fire protection of rock slab in burnt overgrazed veld (DFJ99081902); Several dead - remainder in a very poor state (fire) - another fire will probably kill them (JCVY0040903); In a very poor condition due to veld fires (JCVY1032701); Last survivor of larger clump rest dead ! (SRIY0052302); 2/3 killed by fire (JCVY1032703); More than half killed by fire (KPB93053003); About 10% of trees killed during last fire (LOTY1021702); 5 Out of a total of 7 were killed by the fire - the 2 remaining ones have only the topmost branches still living (RHE99013001); The fire must have been very hot at this site as there were about 5 dead trees (PAB98102902);

Seeds all over! (LOT94101802);

Some Seedlings (MSA99111701); It Was A Pleasant Surprise To See Plenty Of Seedlings (NAU95011904);

Seed Viability Test Done By Reserve Management Indicate Seeds To Be Mostly Sterile (NAU95011904);

Mortality

One dead (AGR99082412); A few dead (AGRY0040638, AJBY0021202); Expired (AJBY0021201); About 10 dead trees (PAB98102902);

The trees mostly very old. in sorry state hard hit by the droughts. Very few flowers. A dying population with few young trees (APE93020612);

Habitat

Along drainage line (ATA93012301-3, ATA93012301, ATA94112202, ATA94112301); In moist places (ATA94112405); Hugging edges top of hill of side stream (AWA95052404); There were just a few trees on both sides of the stream banks which varied from 1-15m tapering out as it wanders out of the reserve There is the

odd tree or three along this NE slope (BRB96011404);

Mainly on steeper slopes and krans edges (ATA99042802); On top of gigantic fallen rock (AWA96052215); Were even growing in fissures in huge rocks (BRB99013006); Remarkable size on a fire protected ledge (DFJ99081906);

In a group on top of a small rise (BRB96032304); Clumped stand just below summit of flat top hill (OUTY0101906); Only at sandstone ledge (TDK99040704);

Parasitism

With outgrowth on leaves (forms a tube) (LOT94110901); Heavily parasitized by Mistletoe *Tapinanthus* sp (MSA93110502); Ring - barked; leaves riddled with insect larvae (PHM92102402);

Tips of leaves have been browsed - don't know by what (RHEY1092404);

Trees were very sparsely leaved (LOT95041101);

Firewood

Heavy cutting for firewood (AGR99082008); A big concern is the collecting of firewood by the loads (they just climb over the fence). several branches of small or longish trees are cut of and it will not be long before all the trees are collected? (DDS93112401); Large trees who are destroyed by fire totally (smaller trees) are cut of by locals of surrounding for firewood several trees (at least 10 trees) are destroyed in this manner (DDS94022702); Chopping for firewood seems to be a threat (DDS94120501); 3 Large specimens chopped down in this area (LDM99010501); Branches sawn off trees (RBW99031403); Chopped - harvested for firewood (SRI99082005); Wood-cutting of dead trees by locals (WIJ99032806);

Evidence of harvesting - probably for fuel (WMP99081905); Harvesting (WMP99081907, WMP99082002);

Browsing

Young plants grazed (RSRI99082004); Lots of young plants have tops chewed off (WMP99082002);

Visitors

The bright green 6mm beetles are *Melyris* Spp (APE93020612); Golden spider, also sunbird (HANY1011302); Ants occur on most of the flowers. beetle was small green/blue colour possibly of Scarabidae type but uncertain (RGR93041401); Ants (WIJ99032804);

Confusing Species: One instance of misidentification with *P. caffra*. With a distinctive growth habit and leaf shape, it is not easily confused.

Records of identification queries = 11.

Records of corrected identification queries = 1.

Variation and Taxonomy: Variable in leaf colour and hairiness (silky silver *versus* glabrous green), leaf dimensions, bract colour (creamy yellow to deep pink) and awn colour (pale pink to deep purple/black, rusty red or brown). Whereas the latter colours vary within populations, the leaf colours are far more fixed, but sadly atlassers did not document where the colour forms occur.

Distribution: Add.

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Protea susannae Phill.
Stink-leaf Sugarbush
Stinkblaarsuikerbos

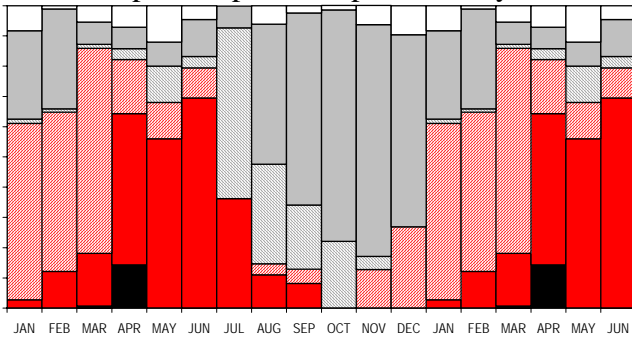
Other Common Names: Susan's Sugarbush, *Sandprotea*.
Other Scientific Names: *None*.

1013 Records

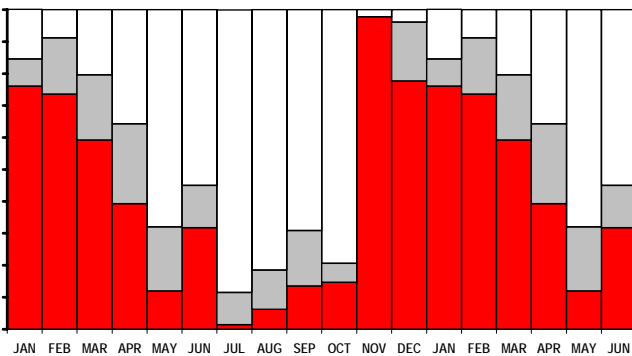
Population (958 records): 0.6% Abundant, 48% Common, 40% Frequent, 10% Rare, 0.4% Extinct.

Dispersion (868 records): 73% variable, 20% clumped, 6% widespread, 1% evenly distributed.

Flowering (951 records with: Jan 72, Feb 91, Mar 149, Apr 28, May 25, Jun 131, Jul 69, Aug 82, Sep 85, Oct 68, Nov 47, Dec 104): Buds from Dec to Mar; Flowering from Apr to Jul; Peak Flowering not significant in Apr; Over from Jul to Oct; Fruit from Aug to Feb; Nothing not significant. Peak levels at 87% in Mar. Historically recorded as flowering from Apr to Sep, with a peak in May to Jul.



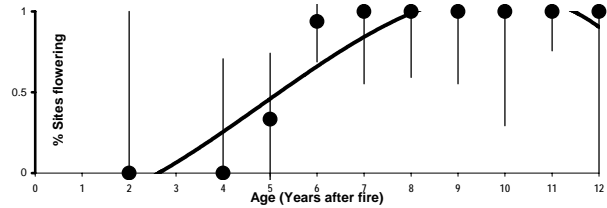
Growth (939 records with: Jan 71, Feb 91, Mar 147, Apr 28, May 25, Jun 129, Jul 69, Aug 81, Sep 81, Oct 68, Nov 46, Dec 103): Much from Nov to Apr and Jun; Rare from Mar to May; None from Mar to Oct. Peak levels at 98% in Nov.



Seedlings (422 records): Absent in 99%: fewer seedlings than prefire adults in 2 cases, and more in 1 case. Seedlings found in Feb, Jul, and Aug.

Fire Survival (12 records): 50% survived by seedlings only, 33% escaped fires in fire-safe areas, 8% eliminated from the area by fires, 8% resprouted from aerial trunks.

Age to first flowering: First flowers recorded at 1 years, 50% estimated at 5 years, and 100% recorded consistently at 7 years.



Height (954 records): 0.3% 0-0.2 m tall, 13% 0.2-1 m tall, 52% 1-2 m tall, 34% 2-5 m tall, 1% taller than 5 m.

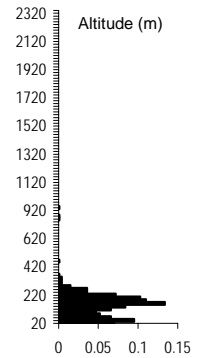
Pollinators (51 records): 98% birds, 2% bees or wasps.

Detailed Pollinators (51 records): Cape Sugarbird (45), Orange-breasted Sunbird (3), Southern Double-collared Sunbird, Malachite Sunbird, Honey Bee.

Habitat:

Distance to Ocean (954 records): 88% inland - further than 2 km from coast.

Altitude (954 records): 20 - 340 m; 60 *lq* - 140 *med* - 160 *uq*m.

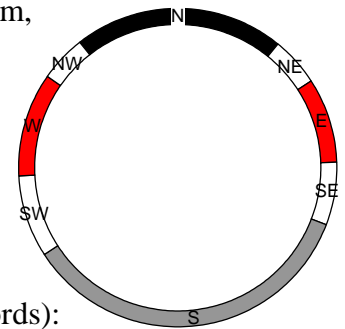


Landform (922 records): 90% deep soil, 10% shallow soil.

Slope (918 records): 39% gentle incline, 36% platform,

10% valley bottom, 7% hill top, 5% dunes, 3% steep incline.

Aspect (552 records): 44% South, 26% North, 17% West, 14% East.



Soil Type (916 records): 89% sandy, 8% loamy, 2% rocky.

Soil Colour (901 records): 38% grey, 31% brown, 11% white, 8% red, 6% yellow, 5% orange.

Geology (902 records): 49% limestone, 34% Tertiary sands, 13% sandstone, 2% silcrete or ferricrete, 1% shale.

Vegetation (945 records): 99% shrubland.

Conservation Status and Threat:

Red Data List Status: Near Threatened A2c+4c.

Occurrence (Fynbos): 4 287 km² with 15% conserved and 25% lost; **Occupancy:** 921 km² with 29% conserved and 15% lost. **Fragmentation index:** 10%.

Nature Reserves (954 records): 41% in nature reserves.

Habitat destruction (898 records): 82% extensive natural habitat, 8% islands, 4% naturally linear habitats, 3% road verges, 3% naturally fragmented habitats.

Alien Invasive Species (886 records):

71% Fabaceae (chiefly alien *Acacia*),
23% none, 4% *Pinus*, 2% Myrtaceae.

Alien Density (884 records): 24% alien-free,
47% sparse, 17% abundant, 11% dense,
1% impenetrable.

Cultivation & Utilization:

Picking (716 records): 96% no sign of picking,
3% lightly picked, 1% severely picked.

Cultivation Status: Plantings - 44 records
(4%), Escapes - 6 records (0.6%).

Witch's Broom Infestation: 25 records (2%).

Atlassers Notes:

About 4m diameter (OUTY0072712);

Pruned to look like trees! (AGR94111301);

Heavily grazed (NGFY0061811)

1 dead skeleton (AGRY1030837); Was dead
(SASY0061713);

A large part of this plot had been bush cut hence
dead plants (NGFY0061810);

In gully on black soil (AGR96122815);
Concentrated on deep sandy soil patches
(SGAY1031412);

Witches Broom

Much (SMRY0032903); Some

(SMRY1031408, SMRY2082904); On 3 or 4
plants (SMRY2082903);

Confusing Species: Mistaken for *P. obtusifolia*
which has odourless, straight-edged,
hard leaves and neat seedheads. A case of *P.*
scabriuscula is inexplicable.

Records of identification queries = 26.

Records of corrected identification queries = 16.

Variation and Taxonomy: .

Distribution: Add.

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