

## *Leucadendron barkerae* Williams 1967 Swartberg Conebush

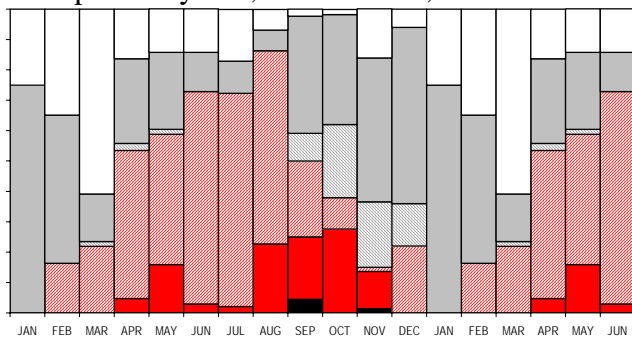
**Other Common Names:** None known.  
**Other Scientific Names:** *None*.

### 620 Records

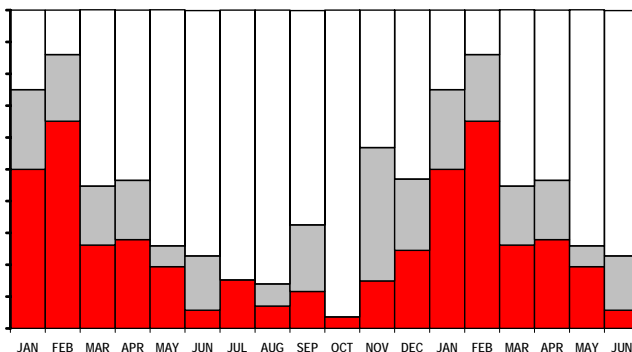
**Population** (613 records): 15% Common, 65% Frequent, 19% Rare, 0.2% Extinct.

**Dispersion** (565 records): 59% variable, 36% clumped, 3% widespread, 2% evenly distributed.

**Flowering** (608 records with: Jan 8, Feb 43, Mar 64, Apr 43, May 63, Jun 70, Jul 47, Aug 44, Sep 44, Oct 58, Nov 74, Dec 50): Buds from Mar to Sep and Dec; Flowering from Aug to Oct; Peak Flowering from not significant; Over from Oct to Nov; Fruit from Sep to Feb and Apr to May; Nothing from Jan to Mar. Peak levels at 86% in Aug. Historically recorded as flowering from late Sep to early Oct, fruits in Dec, shed.



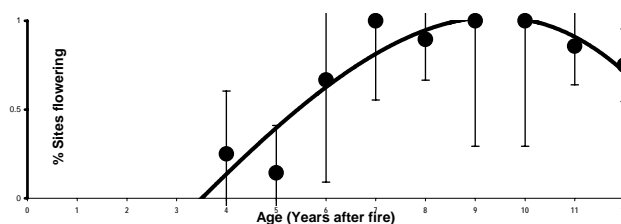
**Growth** (602 records with: Jan 8, Feb 43, Mar 65, Apr 43, May 62, Jun 70, Jul 46, Aug 43, Sep 43, Oct 56, Nov 74, Dec 49): Much from Dec to Apr; Rare from Nov to Feb and Sep; None from Mar to Jan. Peak levels at 86% in Feb.



**Seedlings** (187 records): Absent in 99%; fewer seedlings than prefire adults in 1 case. Seedlings found in Jul.

**Fire Survival** (22 records): 45% escaped fires in fire-safe areas, 36% survived by seedlings only, 9% eliminated from the area by fires, 9% resprouted from underground boles.

**Age to first flowering:** First flowers recorded at 3 years, 50% estimated at 5-6 years, and 100% estimated at 13 years, with some evidence of senescence after 21 years.



**Height** (610 records): 1% 0-0.2 m tall, 60% 0.2-1 m tall, 38% 1-2 m tall, 0.2% 2-5 m tall.

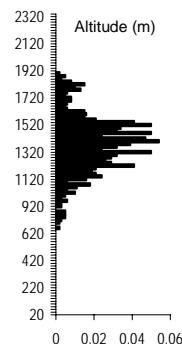
**Pollinators** (6 records): 67% beetles, 17% butterflies or moths, 17% bees or wasps.

**Detailed Pollinators** (2 records): Solitary Bee, Heady Maiden Moth.

### Habitat:

**Distance to Ocean** (615 records): 100% inland - further than 2 km from coast.

**Altitude** (615 records): 640 - 1800 m; 1120 *lq* - 1280 *med* - 1380 *uq* m.



**Landform** (615 records): 64% shallow soil, 33% deep soil, 3% rocky outcrops.

**Slope** (615 records): 50% steep incline, 39% gentle incline, 7% hill top, 3% platform, 1% cliff, 0.3% valley bottom.

**Aspect** (554 records): 54% South, 19% North, 14% East, 13% West.

**Soil Type** (614 records):

52% sandy, 20% loamy, 17% rocky, 9% gravelly, 1% clayey, 0.3% peaty.

**Soil Colour** (607 records):

53% brown, 32% grey, 6% orange, 4% black, 2% yellow, 1% white, 1% red.

**Geology** (604 records): 93% sandstone, 6% shale, 0.2% conglomerate, 0.2% silcrete or ferricrete, 0.2% Tertiary sands.

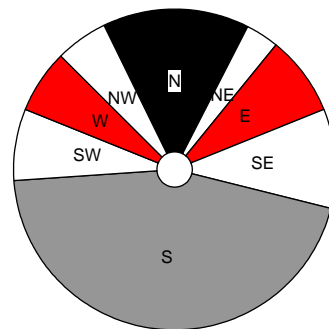
**Vegetation** (612 records): 100% shrubland, 0.3% grassland.

### Conservation Status and Threat:

**Red Data List Status:** Least Concern.

Occurrence (Fynbos): 3 515 km<sup>2</sup> with 25% conserved and 1% lost; Occupancy: 642 km<sup>2</sup> with 25% conserved and 1% lost. Fragmentation index: 6%.

**Nature Reserves** (615 records): 36% in Nature Reserves.



**Habitat destruction** (587 records):  
98% extensive natural habitat, 1% naturally linear habitats, 0.5% islands, 0.3% naturally fragmented habitats, 0.2% patches, 0.2% corridors.

**Alien Invasive Species** (580 records):  
92% none, 6% *Pinus*, 1% *Hakea*, 1% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (567 records): 94% alien-free, 6% sparse, 0.2% impenetrable.

**Cultivation & Utilization:**

**Picking** (513 records): 99% no sign of picking, 0.6% lightly picked.

**Cultivation Status:** Plantings - 1 record (0.2%).

**Atlassers Notes:**

With features very reminiscent of *L. burchellii* (NAH92051601, NAH94042301, NAH97030202); Odd population similar to those collected by Rebelo et al on Bonteberg with recurved involucre (outer series) bracts esp in male and with very few cilia on margins: *L. "touwsrivierenses"*. Specimen in NBG herbarium (NAH # 1626) (NAH98102404; First Encounter with putative *L. burchellii* recorded in NAH92051601 (SHR93080803); With leaves like *L. burchellii* but basal bracts of flowers are not recurved and flowerheads are partially enclosed by involucre leaves - attributes of *L. barkerae*. Follow-up to NAH92051601 - herbarium specimen (male & female) taken (Richardson # 2 NBG) (SHR93080804);

Most dead (originally over 12 plants) - only males remain (AGRY0031828); Half plants in part of plot dead (AGRY0031915); 2 senescent males in rocks (AKS95111405); Only 1 plant seen on this site & in area

nearby (EGH94071305); Burnt bush seen (EGH94071403); Very sick plant (OUT95061802); Also several dead (Drought?) (SMRY0021106); Poor condition (WMPY0031903);

Yellow spider in flowerhead (ASP94100904); Seen in an area roughly 2 km x 2 km but may occupy much of the s facing Witwaterskloof area (NAH92051601);

**Confusing Species:** Confused with several members of the Stigmatic Sun Conebushes, *L. tinctum* (55% of queries), *L. burchellii* (12% - all from the western Langeberg - see atlassers notes), *L. cordatum* (18% - all from the Groot Swartberg around Swartberg Pass) and *L. pubibracteolatum*, although several atlassers declined to identify the species below the Stigmatic Sun Conebushes (8%). Two instances misidentification with *L. pubescens* were also noted. In the bud stage it is unmistakable, most resembling *L. daphnoides* (which is not a Stigmatic Sun Conebush).

Records of identification queries = 94.

Records of corrected identification queries = 49.

**Variation and Taxonomy:** Williams notes that there is a lack of variation, but the populations from the western Langeberg need to be critically evaluated.

Williams noted that this was the only Conebush with toothed leaves, but these are sporadic: atlassers have also found toothed leaves in *L. rubrum*.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron burchellii* Williams 1972  
Riviersonderend Conebush

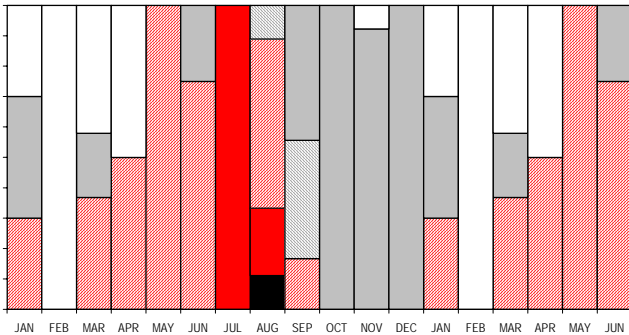
**Other Common Names:** None known.  
**Other Scientific Names:** *None*.

**90 Records**

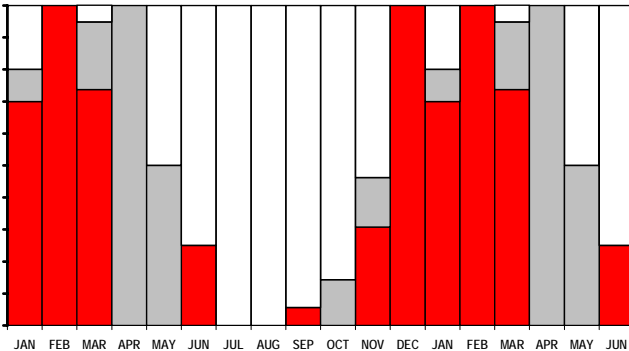
**Population** (89 records): 29% Common, 53% Frequent, 18% Rare.

**Dispersion** (77 records): 70% variable, 29% clumped, 1% widespread.

**Flowering** (88 records with: Jan 10, Feb 1, Mar 19, Apr 2, May 2, Jun 4, Jul 1, Aug 9, Sep 18, Oct 7, Nov 13, Dec 2): Buds from Jan to Jun and Aug; Flowering from Jul to Aug; Peak Flowering not significant in Aug; Over from Sep; Fruit from Sep to Jan, Mar and Jun; Nothing from Jan to Apr. Peak levels unreliable at 100% in Aug. Historically recorded as flowering in Aug, fruits in Dec, shed.



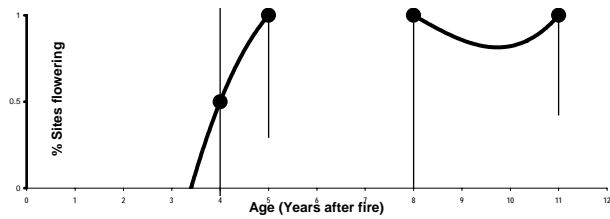
**Growth** (88 records with: Jan 10, Feb 1, Mar 19, Apr 2, May 2, Jun 4, Jul 1, Aug 9, Sep 18, Oct 7, Nov 13, Dec 2): Much from Nov to Mar and Jun; Rare from Mar to May; None from May to Jan. Peak levels unreliable at 100% in Dec and Feb.



**Seedlings** (42 records): All without any seedlings present.

**Fire Survival** (1 record): 100% survived by seedlings only.

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



**Height** (89 records): 1% 0-0.2 m tall, 69% 0.2-1 m tall, 30% 1-2 m tall.

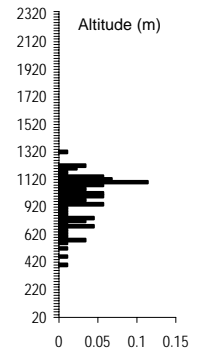
**Pollinators** (2 records): 100% beetles.

**Detailed Pollinators** (1 record): Snout Weevil.

**Habitat:**

**Distance to Ocean** (87 records): 100% inland - further than 2 km from coast.

**Altitude** (87 records): 380 - 1220 m; 720 *lq* - 900 *med* - 980 *uq* m.



**Landform** (86 records): 81% deep soil, 14% shallow soil, 5% rocky outcrops.

**Slope** (85 records): 62% gentle incline, 25% steep incline, 9% platform, 4% hill top.

**Aspect** (77 records): 42% North, 23% South, 19% East, 16% West.

**Soil Type** (84 records):

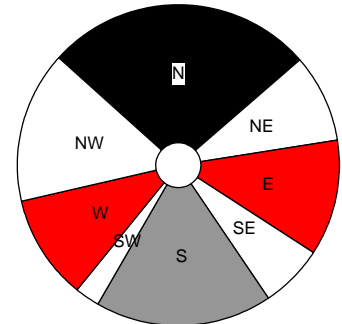
55% sandy, 20% loamy, 17% gravelly, 4% clayey, 2% peaty, 2% rocky.

**Soil Colour** (84 records):

50% grey, 31% brown, 8% white, 7% orange, 2% black, 1% yellow.

**Geology** (84 records): 93% sandstone, 7% shale.

**Vegetation** (85 records): 98% shrubland, 1% thicket, 1% agricultural lands.



**Conservation Status and Threat:**

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

Occurrence (Fynbos): 345 km<sup>2</sup> with 36% conserved and 0% lost; Occupancy: 65 km<sup>2</sup> with 19% conserved and 1% lost. Fragmentation index: 11%.

**Nature Reserves** (87 records): 8% in Nature Reserves - inadequately conserved.

**Habitat destruction** (84 records): 94% extensive natural habitat, 4% islands, 2% naturally linear habitats.

**Alien Invasive Species** (86 records): 49% none, 33% *Hakea*, 17% *Pinus*, 1% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (86 records): 49% alien-free, 48% sparse, 2% abundant, 1% impenetrable.

**Cultivation & Utilization:**

**Picking** (70 records): 96% no sign of picking, 3% lightly picked, 1% severely picked.

**Cultivation Status:** Plantings - 1 record (1%), Augmentations - 1 record (1%).

**Atlassers Notes:**

Remnants of planted field? - no probably natural (AWA97100704); Some look remnants of planted field, others definitely spread by some means or other - probably natural (AWA97100705); May be planted - possible but unlikely (SHR95011406); Some planted some natural (SMR99092901); Population has been reduced by further ploughing and planting of *Protea compacta* and *L. platyspermum* varieties (SHR97101606);

**Confusing Species:** Most often confused with *L. tinctum* (90%), which has spreading

involucral leaves, oily basal bracts and hairless male perianth. Two records of confusion with *L. daphnoides*, but not in flowering stages.

Records of identification queries = 34.

Records of corrected identification queries = 26.

**Variation and Taxonomy:** No variation known. Prior to Williams was only collected by Burchell in 1815.

Williams noted the gnawing of seedheads by rodents keen to get the fruit.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron cordatum* Phill. 1917 *Langeberg form*  
**Langeberg Droopy Conebush**  
*Bergkatjiepiering*

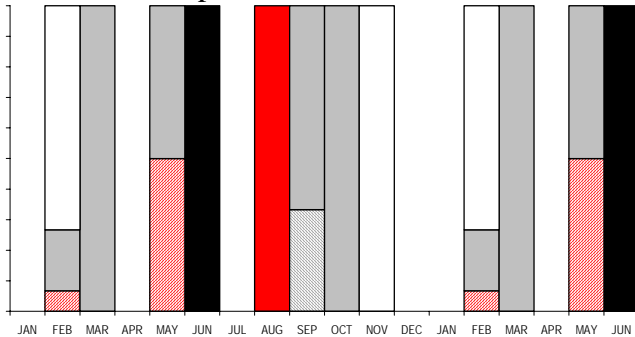
**Other Common Names:** None known.  
**Other Scientific Names:** *None*.

**38 Records**

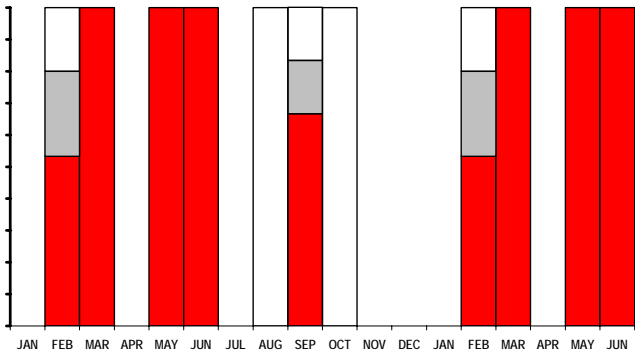
**Population** (38 records): 45% Common, 32% Frequent, 21% Rare, 3% Extinct.

**Dispersion** (34 records): 65% clumped, 32% variable, 3% widespread.

**Flowering** (37 records with: Jan 0, Feb 15, Mar 3, Apr 0, May 6, Jun 1, Jul 0, Aug 3, Sep 6, Oct 2, Nov 1, Dec 0): Buds from May; Flowering from Aug; Peak Flowering from Jun; Over from Sep; Fruit from Feb to May and Sep to Oct; Nothing from Nov to Feb. Peak levels unreliable at 100% in Jun and Aug. Historically recorded as flowering in Jun, fruits ripen 4 months later and are shed.



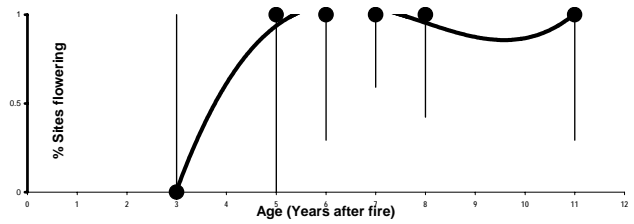
**Growth** (36 records with: Jan 0, Feb 15, Mar 3, Apr 0, May 6, Jun 1, Jul 0, Aug 3, Sep 6, Oct 2, Nov 0, Dec 0): Much from Feb to Jun and Sep; Rare from Feb; None from Aug and Oct. Peak levels unreliable at 100% from Mar to Jun.



**Seedlings** (8 records): Absent in 75%: more seedlings than prefire adults in 1 case. Seedlings found in Nov.

**Fire Survival** (1 record): 100% survived by seedlings only.

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



**Height** (36 records): 14% 0-0.2 m tall, 86% 0.2-1 m tall.

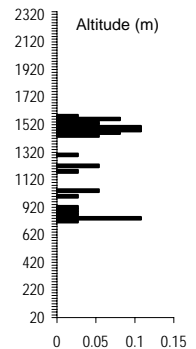
**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (37 records): 100% inland - further than 2 km from coast.

**Altitude** (37 records): 700 - 1480 m; 880 *lq* - 1340 *med* - 1380 *uq*m.

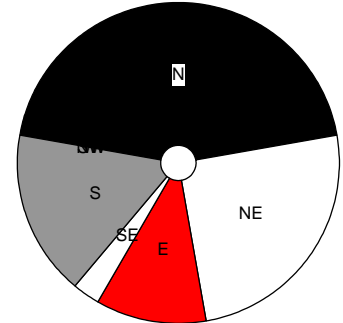


**Landform** (37 records):

78% deep soil, 11% rocky outcrops, 11% shallow soil.

**Slope** (37 records): 59% gentle incline, 30% steep incline, 8% hill top, 3% platform.

**Aspect** (36 records): 54% North, 28% East, 18% South.



**Soil Type** (36 records): 81% sandy, 11% loamy, 8% gravelly.

**Soil Colour** (36 records):

50% grey, 39% brown, 8% yellow, 3% white.

**Geology** (36 records): 89% sandstone, 11% shale.

**Vegetation** (36 records): 100% shrubland.

**Conservation Status and Threat:**

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

Occurrence (Fynbos): 158 km<sup>2</sup> with 11% conserved and 8% lost; Occupancy: 49 km<sup>2</sup> with 8% conserved and 8% lost. Fragmentation index: 16%.

**Nature Reserves** (37 records): 19% in Nature Reserves - inadequately conserved.

**Habitat destruction** (35 records): 94% extensive natural habitat, 3% road verges, 3% naturally linear habitats.

**Alien Invasive Species** (37 records): 65% none, 27% *Pinus*, 3% Fabaceae (chiefly alien *Acacia*), 3% Myrtaceae, 3% other aliens.

**Alien Density** (37 records): 65% alien-free, 35% sparse.

**Cultivation & Utilization:**

**Picking** (34 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Many plants are over 1 m (VJK94060504);  
It is difficult to distinguish male & female  
plants: male flowerheads are yellow to red  
and are more matured; involucre bracts  
much larger. Female flowerheads green to  
yellow. 1 male bright pine-yellow  
(VJK94060504);

Sprawled well below the dominant of the thick  
vegetation - it was difficult to see even with  
the dramatic flowers - I'm sure there were  
many more of them (SMR99080703);  
Apparently in area according to Peter Slingsby's  
map (WIJ93102801);

**Confusing Species:** None noted.

Records of identification queries = 2.

**Variation and Taxonomy:** Shrubs from Koo  
are decumbent, whereas those from  
Montagu, Bovlakte and Sarahs rivier are  
erect.

The largest and broadest involucre leaves are at  
Montagu.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron cordatum* Phill. 1917 Swartberg form  
**Swartberg Droopy Conebush**  
*Bergkatjeepering*

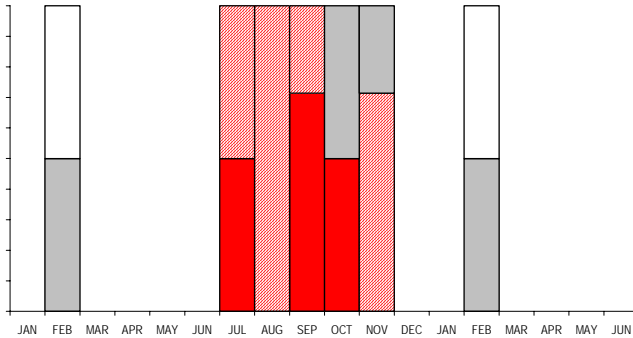
**Other Common Names:** None known.  
**Other Scientific Names:** *humifusum* E.Mey. in Drege 1844, *ovale* var. *humifusum* Meisn. 1856.

**27 Records**

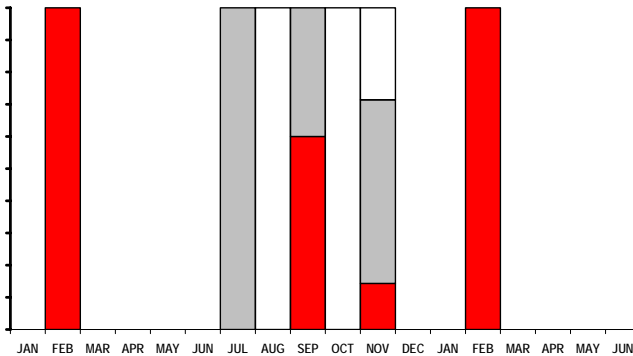
**Population** (26 records): 4% Common, 81% Frequent, 15% Rare.

**Dispersion** (25 records): 36% variable, 36% clumped, 28% evenly distributed.

**Flowering** (26 records with: Jan 0, Feb 4, Mar 0, Apr 0, May 0, Jun 0, Jul 2, Aug 4, Sep 7, Oct 2, Nov 7, Dec 0): Buds from Jul to Sep and Nov; Flowering from Jul and Sep to Oct; Peak Flowering and Over not recorded; Fruit from Oct to Feb; Nothing from Feb. Peak levels unreliable at 100% from Jul to Sep. Historically recorded as flowering from Jun to Jul, fruit ripen after 4-5 months and are shed.



**Growth** (21 records with: Jan 0, Feb 2, Mar 0, Apr 0, May 0, Jun 0, Jul 2, Aug 4, Sep 5, Oct 1, Nov 7, Dec 0): Much from Feb and Sep; Rare from Jul, Sep and Nov; None from Aug and Oct to Nov. Peak levels unreliable at 100% in Feb.



**Seedlings** (9 records): All without any seedlings present.

**Fire Survival** : No data.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 3-4 years, and 100% estimated at 7 years.



**Height** (25 records): 16% 0-0.2 m tall, 84% 0.2-1 m tall.

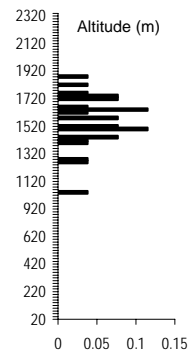
**Pollinators** (1 record): 100% beetles.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (26 records): 100% inland - further than 2 km from coast.

**Altitude** (26 records): 920 - 1780 m; 1320 *lq* - 1420 *med* - 1540 *uq*m.



**Landform** (25 records):

48% deep soil,  
 44% shallow soil,  
 8% rocky outcrops.

**Slope** (26 records): 54% steep incline, 46% gentle incline.

**Aspect** (26 records): 60% North, 27% East, 8% South, 6% West.

**Soil Type** (24 records):

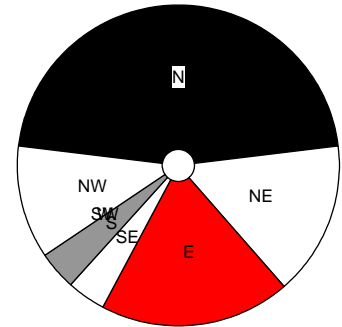
38% sandy,  
 25% gravelly,  
 21% rocky,  
 13% loamy,  
 4% clayey.

**Soil Colour** (25 records):

52% grey,  
 48% brown.

**Geology** (25 records): 92% sandstone, 8% shale.

**Vegetation** (26 records): 85% shrubland, 15% wooded grassland.



**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 258 km<sup>2</sup> with 90% conserved and 1% lost; **Occupancy:** 52 km<sup>2</sup> with 83% conserved and 1% lost. **Fragmentation index:** 18%.

**Nature Reserves** (26 records): 65% in Nature Reserves - well conserved.

**Habitat destruction** (25 records): 96% extensive natural habitat, 4% islands.

**Alien Invasive Species** (21 records): 95% none, 5% *Pinus*.

**Alien Density** (21 records): 95% alien-free, 5% sparse.

**Cultivation & Utilization:**

**Picking** (17 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:** None, other than notes on hybrids and confusion with *L. tinctum*.

**Confusing Species:** Confused with *L. tinctum*, but mainly when not in flower. In flower the heads of *L. tinctum* are erect, whereas in *L. cordatum* they are drooping; the leaves of *L. tinctum* are more oblong (*versus* broadly elliptic).

Plate 170 and its description as *L. humifusum* in Flowering Plants of South Africa (1925) is *L. sessile* (Williams 1972).

Records of identification queries = 14.

Records of corrected identification queries = 7.

**Variation and Taxonomy:** The populations from Klaarstroom are decumbent.

**Distribution:** Add.

Check record from Rooiberg?

INCLUDEPICTURE

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*Leucadendron orientale* Williams 1972  
**Van Staden's Sunbush**  
*Gouerosettolbos*

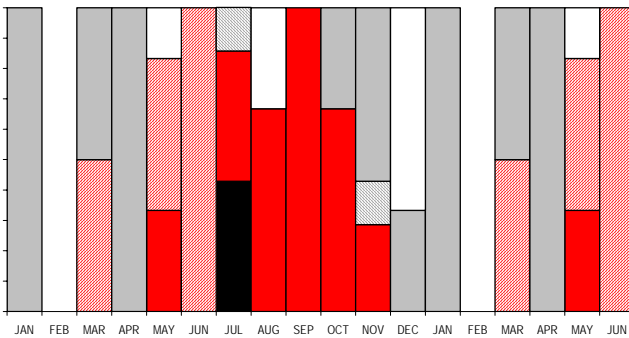
**Other Common Names:** Golden-rosette Conebush, Oriental Conebush, Van Staden's Conebush, *Scented Petals*.  
**Other Scientific Names:** *None*.

**38 Records**

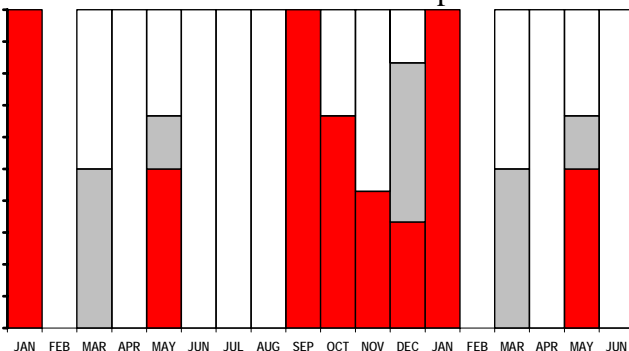
**Population** (34 records): 35% Common, 47% Frequent, 18% Rare.

**Dispersion** (32 records): 66% clumped, 31% variable, 3% evenly distributed.

**Flowering** (38 records with: Jan 1, Feb 0, Mar 2, Apr 1, May 6, Jun 1, Jul 7, Aug 3, Sep 1, Oct 3, Nov 7, Dec 6): Buds from Mar and May to Jun; Flowering from May to Nov; Peak Flowering from Jul; Over not significant; Fruit from Oct to Apr; Nothing from Aug and Dec. Peak levels unreliable at 100% in Jul. Historically recorded as flowering from late Jun and Jul, fruit in Nov, shed.



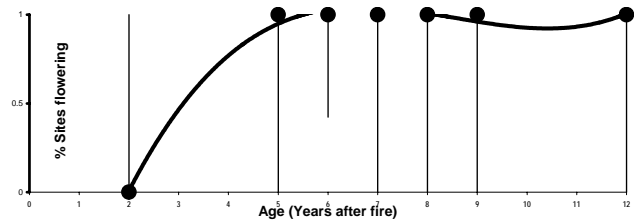
**Growth** (38 records with: Jan 1, Feb 0, Mar 2, Apr 1, May 6, Jun 1, Jul 7, Aug 3, Sep 1, Oct 3, Nov 7, Dec 6): Much from Sep to Jan and May; Rare from Mar, May and Dec; None from Mar to Aug and Oct to Nov. Peak levels unreliable at 100% in Sep and Jan.



**Seedlings** (27 records): Absent in 93%: more seedlings than prefire adults in 1 case. Seedlings found in May.

**Fire Survival** (3 records): 67% survived by seedlings only, 33% escaped fires in fire-safe areas.

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



**Height** (38 records): 5% 0-0.2 m tall, 66% 0.2-1 m tall, 29% 1-2 m tall.

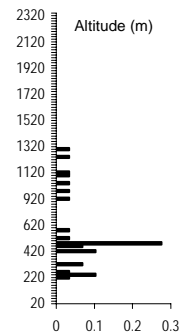
**Pollinators** (3 records): 33% bees or wasps, 33% flies, 33% beetles.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (26 records): 100% inland - further than 2 km from coast.

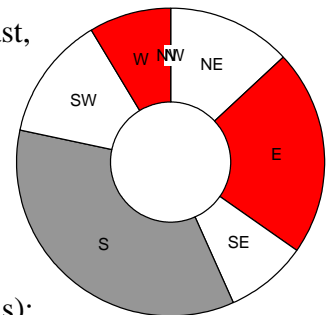
**Altitude** (26 records): 200 - 1200 m; 400 *lq* - 480 *med* - 480 *uq*m.



**Landform** (26 records): 81% deep soil, 19% shallow soil.

**Slope** (26 records): 50% gentle incline, 19% steep incline, 15% hill top, 15% platform.

**Aspect** (20 records): 50% South, 33% East, 13% West, 5% North.



**Soil Type** (25 records): 60% loamy, 32% sandy, 4% clayey, 4% gravelly.

**Soil Colour** (25 records): 60% grey, 36% brown, 4% orange.

**Geology** (26 records): 92% sandstone, 4% shale, 4% silcrete or ferricrete.

**Vegetation** (26 records): 96% shrubland, 4% grassland.

**Conservation Status and Threat:**

**Red Data List Status:** Endangered

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

**Occurrence** (Fynbos): 592 km<sup>2</sup> with 50% conserved and 29% lost; Occupancy: 43 km<sup>2</sup> with 52% conserved and 10% lost. Fragmentation index: 7%.

**Nature Reserves** (26 records): 73% in Nature Reserves - well conserved.

**Habitat destruction** (25 records): 84% extensive natural habitat, 16% islands.

**Alien Invasive Species** (24 records): 38% *Pinus*, 33% none, 17% Fabaceae (chiefly alien *Acacia*), 8% *Hakea*, 4% Myrtaceae.

**Alien Density** (24 records): 33% alien-free, 54% sparse, 8% abundant, 4% dense.

**Cultivation & Utilization:**

**Picking** (31 records): 100% no sign of picking.  
**Cultivation Status:** Plantings - 2 records (5%),  
Escapes - 1 record (3%).

**Atlassers Notes:**

Stand is very healthy but small in extent (DFJ97111604);

12 plants seen: area in firebelt for nature reserve. Needs reserve to be moved and a two-tier fire belt (6-8 yr rotation) installed (AGRY0070442);

One plant growing on a grave: I presume the seed came from a bouquet or wreath on the grave plants 3-4 years old origin of seed unknown - confirmation of plant requested by Tony - how did he see it going past at 120 km on the freeway? (GNIY0072101);  
I don't think these have been atlassed before - they have been completely overgrown and

hidden in wattles. These are being cleared and a fire exposed them more and they are now growing well (MCGY1111101);

**Confusing Species:** Confused with *L. pubibracteolatum* (but has more erect leaves, and involucre leaves closely clasping the base of the heads) and *L. conicum* (which it totally different). Prior to 1972 specimens were classified as either *L. daphnoides* or *L. tinctum*.

Records of identification queries = 5.

Records of corrected identification queries = 4.

**Variation and Taxonomy:** No variation noted.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron pubibracteolatum* Williams 1972  
Purple-leaf Conebush

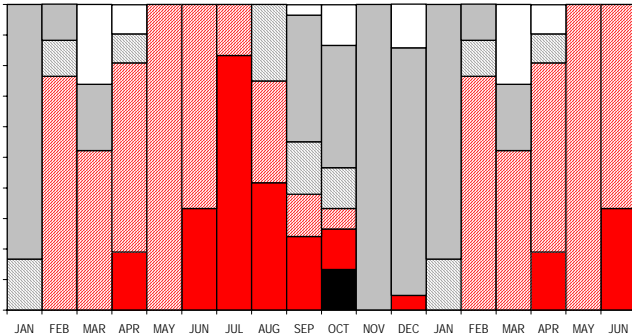
**Other Common Names:** Golden Rose Conebush, Golden-leaf Conebush, Grandiflorum, *Begrafnisblom*.  
**Other Scientific Names:** *None*.

**177 Records**

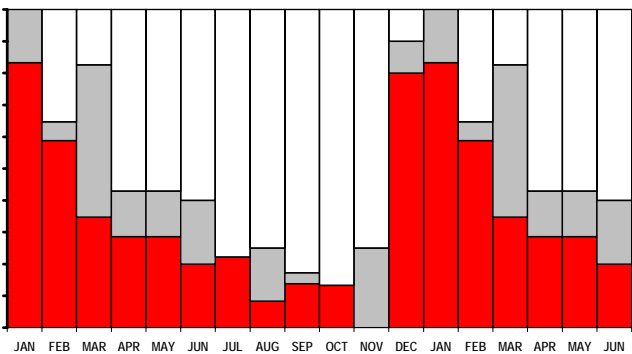
**Population** (173 records): 9% Common, 63% Frequent, 28% Rare.

**Dispersion** (159 records): 47% clumped, 43% variable, 6% evenly distributed, 4% widespread.

**Flowering** (174 records with: Jan 6, Feb 17, Mar 23, Apr 21, May 8, Jun 6, Jul 12, Aug 12, Sep 29, Oct 15, Nov 4, Dec 21): Buds from Feb to Jun and Aug; Flowering from Jun to Sep; Peak Flowering not significant; Over from Aug; Fruit from Sep to Jan and Mar; Nothing from Mar. Peak levels at 100% in Jul. Historically recorded as flowering from late Jul and early Aug, fruits Nov, shed.



**Growth** (168 records with: Jan 6, Feb 17, Mar 23, Apr 21, May 7, Jun 5, Jul 9, Aug 12, Sep 29, Oct 15, Nov 4, Dec 20): Much from Dec to Jul; Rare from Mar, Jun and Nov; None from Feb and Apr to Nov. Peak levels at 100% in Jan.



**Seedlings** (88 records): Absent in 93%: fewer seedlings than prefire adults in 2 cases, and more in 1 case. Seedlings found in Oct (2) and Dec.

**Fire Survival** (10 records): 70% survived by seedlings only, 20% eliminated from the area by fires, 10% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 2 years, and 100% recorded at 4 years.



**Height** (171 records): 5% 0-0.2 m tall, 43% 0.2-1 m tall, 51% 1-2 m tall, 1% 2-5 m tall.

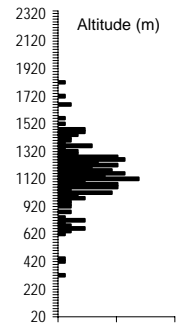
**Pollinators** (3 records): 67% beetles, 33% bees or wasps.

**Detailed Pollinators** (2 records): Solitary Bee, Snout Weevil.

**Habitat:**

**Distance to Ocean** (175 records): 100% inland - further than 2 km from coast.

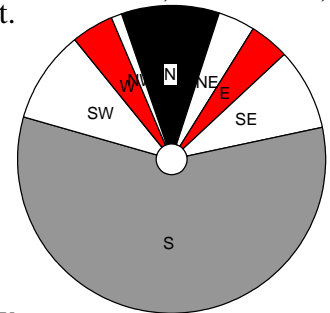
**Altitude** (175 records): 300 - 1720 m; 940<sub>lq</sub> - 1040<sub>med</sub> - 1120<sub>uq</sub>m.



**Landform** (174 records): 49% deep soil, 45% shallow soil, 6% rocky outcrops.

**Slope** (174 records): 47% gentle incline, 46% steep incline, 3% hill top, 2% cliff, 2% platform, 0.6% valley bottom.

**Aspect** (164 records): 68% South, 13% North, 9% East, 9% West.



**Soil Type** (171 records): 44% sandy, 28% loamy, 20% rocky, 5% gravelly, 1% clayey, 1% peaty.

**Soil Colour** (172 records): 47% grey, 41% brown, 9% black, 2% orange, 0.6% white, 0.6% yellow, 0.6% red.

**Geology** (173 records): 96% sandstone, 4% shale.

**Vegetation** (174 records): 99% shrubland, 0.6% grassland, 0.6% thicket.

**Conservation Status and Threat:**

**Red Data List Status:** Near Threatened B2a(i)c(iv).

**Occurrence** (Fynbos): 7 679 km<sup>2</sup> with 36% conserved and 9% lost; **Occupancy:** 277 km<sup>2</sup> with 53% conserved and 3% lost. **Fragmentation index:** 3%.

**Nature Reserves** (175 records): 58% in Nature Reserves - well conserved.

**Habitat destruction** (155 records): 96% extensive natural habitat, 2% naturally linear habitats, 1% islands, 0.6% naturally fragmented habitats.

**Alien Invasive Species** (150 records):

82% none, 11% *Hakea*, 5% *Pinus*,  
3% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (149 records): 83% alien-free,  
15% sparse, 2% abundant, 0.7% dense.

**Cultivation & Utilization:**

**Picking** (113 records): 100% no sign of  
picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Male plants only (RDF95090902); Only 1 male  
plant next to road female 30m down slope  
more plants 100m further west on the track  
down hill (RDF94112605);

Quite A Few Dead Plants (WMP97092401+05);

**Confusing Species:** Frequently confused (69%  
of cases) with *L. tinctum*, especially the  
western-most populations. It differs in  
having the male floral bract hairy and not  
glabrous, a ridged perimeter to the fruit and a  
broad based cone with bracts recurved but  
standing fairly erect. It is also more of an

erect plant than *L. tinctum*, and has a purplish  
hue. The two are clearly closely related.

Other errors include *L. barkerae*, *L.*  
*cordatum* and *L. orientale*, all members of  
the Stigmatic Sun Conebushes, but none with  
open (not clasping), erect involucre bracts.

Records of identification queries = 63.

Records of corrected identification queries = 26.

**Variation and Taxonomy:** There is subtle  
variation, mostly that plants in the west  
approach *L. tinctum* in giss. Specifically, the  
westernmost population progressively lose  
the diagnostic features, with the exception of  
the hairy male floral bract, which thus  
remains the diagnostic feature for the species  
as defined by Williams. Previous to 1972 this  
was considered to be *L. tinctum*.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron tinctum* Williams 1968  
**Spicy Conebush**  
*Toffeappel*

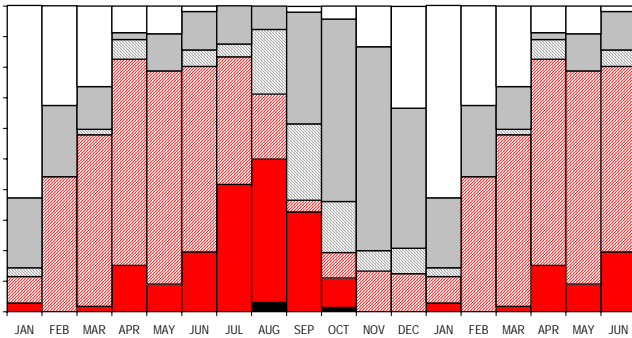
**Other Common Names:** Daphnoides, Grandiflorum, Lollypop, Mountain Rose, Painted-rossette Conebush, Rose Cockade, Bergkatjeepering, Berggroos.  
**Other Scientific Names:** *conchiforme* (Kuntze) 1898, *humifusum* E.Mey. 1844.

**579 Records**

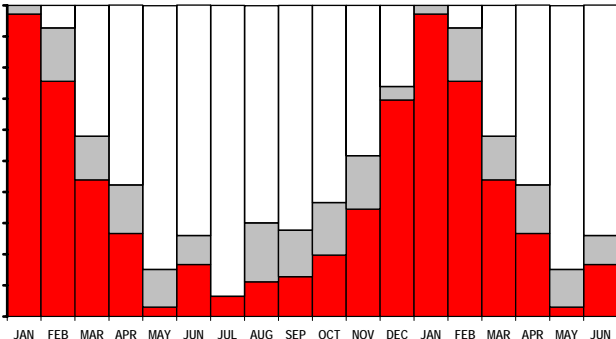
**Population** (543 records): 0.4% Abundant, 20% Common, 60% Frequent, 19% Rare, 0.2% Extinct.

**Dispersion** (501 records): 52% variable, 36% clumped, 7% evenly distributed, 5% widespread.

**Flowering** (562 records with: Jan 35, Feb 43, Mar 57, Apr 46, May 33, Jun 56, Jul 48, Aug 66, Sep 52, Oct 72, Nov 30, Dec 24): Buds from Feb to Aug; Flowering from Jun to Sep; Peak Flowering not significant; Over from Aug to Sep; Fruit from Sep to Feb; Nothing from Dec to Mar. Peak levels at 92% in Aug. Historically recorded as flowering in July at lower altitudes, but somewhat later inland and at higher altitudes, fruit ripen and fall 3 months later.



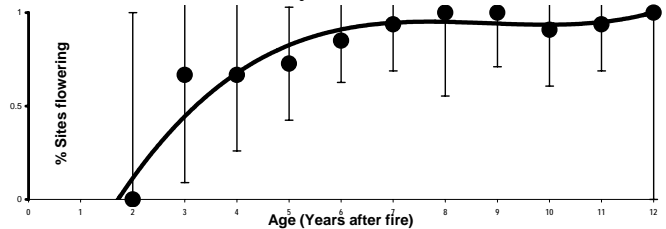
**Growth** (545 records with: Jan 36, Feb 41, Mar 57, Apr 45, May 33, Jun 54, Jul 46, Aug 63, Sep 47, Oct 71, Nov 29, Dec 23): Much from Oct to Apr; Rare not significant; None from Mar to Dec. Peak levels at 100% in Jan.



**Seedlings** (261 records): Absent in 94%; fewer seedlings than prefire adults in 7 cases, and more in 1 case. Seedlings found in Feb (2), Apr, Jun, Jul, Aug (2) and Sep.

**Fire Survival** (19 records): 47% survived by seedlings only, 32% eliminated from the area

by fires, 16% escaped fires in fire-safe areas, 5% resprouted from underground boles.  
**Age to first flowering:** First flowers recorded at 3 years, 50% estimated at 2-3 years, and 100% recorded at 8 years.



**Height** (561 records): 3% 0-0.2 m tall, 57% 0.2-1 m tall, 40% 1-2 m tall.

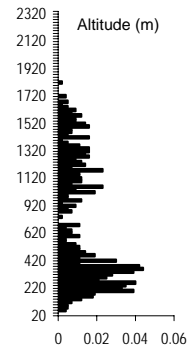
**Pollinators** (3 records): 67% bees or wasps, 33% flies.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (540 records): 95% inland - further than 2 km from coast.

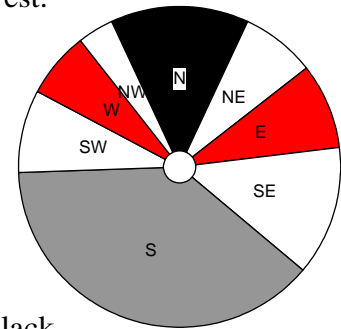
**Altitude** (540 records): 40 - 1720 m; 280<sub>lq</sub> - 480<sub>med</sub> - 1060<sub>uq</sub>m.



**Landform** (531 records): 57% deep soil, 38% shallow soil, 5% rocky outcrops, 0.2% riverine.

**Slope** (530 records): 46% gentle incline, 45% steep incline, 6% hill top, 1% platform, 0.8% valley bottom, 0.6% cliff.

**Aspect** (492 records): 51% South, 19% North, 18% East, 12% West.



**Soil Type** (530 records):

53% sandy, 26% loamy, 10% rocky, 8% gravelly, 3% clayey.

**Soil Colour** (530 records):

44% grey, 42% brown, 5% black, 4% orange, 2% yellow, 2% white, 0.4% red.

**Geology** (527 records): 91% sandstone, 8% shale, 0.9% silcrete or ferricrete, 0.4% conglomerate, 0.4% limestone.

**Vegetation** (536 records): 98% shrubland, 1% plantations, 0.6% grassland, 0.6% thicket, 0.2% wooded grassland.

**Conservation Status and Threat:**

**Red Data List Status:** Near Threatened A4c.

Occurrence (Fynbos): 9 150 km<sup>2</sup> with 25% conserved and 18% lost; Occupancy: 712 km<sup>2</sup> with 44% conserved and 13% lost. Fragmentation index: 3%.

**Nature Reserves** (540 records): 56% in Nature Reserves - well conserved.

**Habitat destruction** (516 records): 95% extensive natural habitat, 2% islands, 1.0% naturally linear habitats, 0.6% road verges, 0.4% patches, 0.4% naturally fragmented habitats, 0.2% corridors.

**Alien Invasive Species** (503 records): 51% none, 21% *Pinus*, 14% Fabaceae (chiefly alien *Acacia*), 11% *Hakea*, 2% Myrtaceae, 0.4% annual alien grasses, 0.2% other aliens.

**Alien Density** (493 records): 52% alien-free, 36% sparse, 9% abundant, 2% dense, 0.6% impenetrable.

#### **Cultivation & Utilization:**

**Picking** (438 records): 97% no sign of picking, 3% lightly picked, 0.2% severely picked.

**Cultivation Status:** Plantings - 20 records (3%), Escapes - 8 records (1%).

#### **Atlassers Notes:**

1.8 m tall (TJB94010604);

Longer thinner leaves than normal (AGR97022413); More like *L. pubibracteatum* in colour and habit - only one female seen (AGRY2053033); I am not happy that this is a true blue *L. tinctum* - it has so many features that are *L. pubibracteolatum* starting with the altitude where it grows the bushes are sparsely leaved 1/2 the branches are bare leaves towards extremity leaves grey green, etc. (VJK98110105);

John Oaks says that these were planted and have escaped (AGR92103106, JAT94090303); Planted or escapees from the houses upslope (APE92100413); Probably escaped from local nature park where they were planted many years ago (JOA92110301); Occurred outside the garden of Erf 547 (protea garden) & not in the area where a lot of seedlings came up after the 1983 fire - but could have come

from a cultivated plant - I will look out for others further anyway (YDA92060801); 1/2 plants dead ((AGR93050503+04)); Two of the plants were dead (SHR91092101); 31 Plants (TJB94010604); So far we have only found one population with 500 plants - will continue to look for more - site 97 has 876 plants (VJK93101002); Site 382 has 6 plants (VJK97100403); We were most interested to read in Sasol proteas that it grows here in Gysmanshoek Pass so decided to find them: so far we have only found one population - they grow in a strip 125x70 m. Jean counted 125 through length of patch and I counted 70 (VJK97100403);

**Confusing Species:** Considerable confusion was caused in 1912 by Phillips and Hutchinson regarding this as a synonym of *L. grandiflorum*, which is totally unrelated, an error only rectified in 1968. Atlassers confused this species with *L. pubibracteolatum* (42% of cases, which has hairless male floral bracts, and is easily confused in the eastern populations), *cordatum* (35%, which has nodding heads), *L. cryptocephalum* (12%, which has flat fruit), and also with *L. barkerae*, *daphnoides* and *loranthifolium*.

Records of identification queries = 59.

Records of corrected identification queries = 26.

**Variation and Taxonomy:** This is a variable species, but most of the extreme forms have been recognized as distinct species. Variation in the species as now delimited is limited, but no geographical variation has been documented.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron 'touwsriverensis'* (undescribed)

**Touwsriver Conebush**

Toffeepappel Tolbos

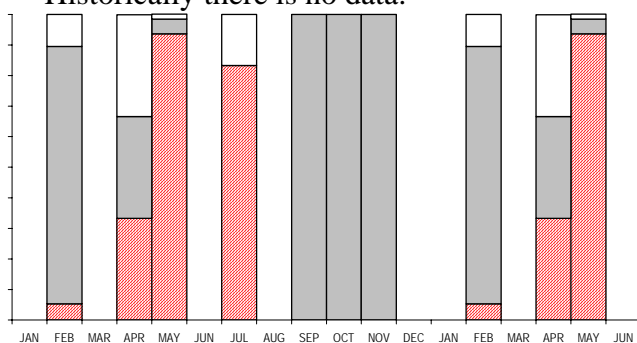
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**95 Records**

**Population** (94 records): 40% Common, 44% Frequent, 16% Rare.

**Dispersion** (87 records): 55% variable, 45% clumped.

**Flowering** (94 records with: Jan 0, Feb 19, Mar 0, Apr 3, May 63, Jun 0, Jul 6, Aug 0, Sep 1, Oct 1, Nov 1, Dec 0): Buds from Apr to Jul; Flowering, Peak Flowering and Over not recorded; Fruit from Sept to Apr; Nothing from Apr. Peak levels unreliable. Historically there is no data.



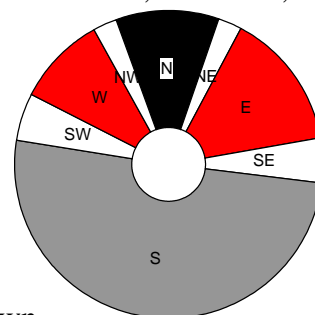
**Distance to Ocean** (95 records): 100% inland - further than 2 km from coast.

**Altitude** (95 records): 860 - 1420 m; 960<sub>lq</sub> - 1060<sub>med</sub> - 1180<sub>uqm</sub>.

**Landform** (95 records): 57% deep soil, 43% shallow soil.

**Slope** (95 records): 43% gentle incline, 36% steep incline, 15% hill top, 4% valley bottom, 2% platform.

**Aspect** (83 records): 56% South, 17% East, 14% North, 13% West.



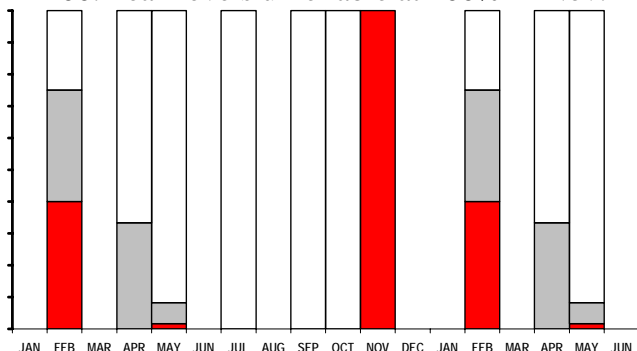
**Soil Type** (95 records): 31% sandy, 24% loamy, 22% rocky, 17% gravelly, 6% clayey.

**Soil Colour** (93 records): 55% brown, 26% grey, 10% orange, 5% yellow, 4% red.

**Geology** (93 records): 76% sandstone, 23% shale, 1% Tertiary sands.

**Vegetation** (95 records): 100% shrubland.

**Growth** (93 records with: Jan 0, Feb 20, Mar 0, Apr 3, May 61, Jun 0, Jul 6, Aug 0, Sep 1, Oct 1, Nov 1, Dec 0): Much from Nov to Feb; Rare from Feb and Apr; None from Oct 100. Peak levels unreliable at 100% in Nov.



**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered A4c.

**Occurrence** (Fynbos): 920 km<sup>2</sup> with 9% conserved and 6% lost; **Occupancy:** 109 km<sup>2</sup> with 3% conserved and 7% lost. **Fragmentation index:** 5%.

**Nature Reserves** (95 records): 6% in Nature Reserves - inadequately conserved.

**Habitat destruction** (95 records): 98% extensive natural habitat, 1% corridors, 1% naturally linear habitats.

**Alien Invasive Species** (93 records): 98% none, 1% Fabaceae (chiefly alien *Acacia*), 1% Myrtaceae.

**Alien Density** (93 records): 98% alien-free, 2% sparse.

**Cultivation & Utilization:**

**Picking** (70 records): 100% no sign of picking.  
**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

First atlassed as *L. barkerae* but strange - recurved involuclral bracts! New species? (AGR97051801); Realized not be *L. barkerae* - and all rest for day - recurved involuclral bracts! (AGR97051802); Some *L. barkerae* plants had much bigger leaves than the others: see specimen (LYM97051705); More than 10 *L. barkerae* were very robust with bigger than normal leaves (LYM97051804); There is something funny going on with *L. barkerae* - there is a big leaf form which has the characteristic recurved bracts of *L. tinctum*. (NGF97051704);

**Seedlings** (39 records): Absent in 95%: more seedlings than prefire adults in 1 case. Seedlings found in May.

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

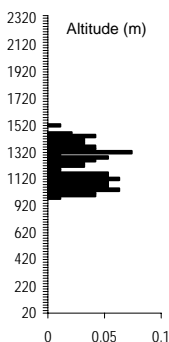
**Age to first flowering:** First flowers recorded at 100% at 16 years, no data from younger veld.

**Height** (92 records): 53% 0.2-1 m tall, 47% 1-2 m tall.

**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**



Herbarium Specimen And DNA taken  
(NGF99042505);

At base of population some 2/3 of plants  
recently dead: drought! (since April!) 1/2  
way through flowering when died - live ones  
aborted flowers – of 700 plants only 3 seen  
in bud (AGR99072501); 1/3 dead lately  
(AGRY1020605); Quite a few plants  
stressed (WMP99042504);

Attracting bees to cones with oily bracts  
(SHR97092402);

**Confusing Species:** Initially atlassed as *L.*  
*barkeræ* with notes as to its differences.  
One instance each of misidentification with  
*L. glaberrimum* subsp. *glaberrimum* and *L.*  
*tinctum*.

Records of identification queries = 39.

Records of corrected identification queries = 35.

**Variation and Taxonomy:** No variation noted.  
This is an undescribed species, differing from *L.*  
*tinctum* in that it has many more basal  
involucral bracts, with clasping involucral  
leaves, narrower leaves and an erect habit  
with ascending leaves. In giss it is most  
similar to *L. orientale*.

The following specimens are of this species:  
Esterhuysen 15577 Stettynsberg,  
Esterhuysen 18705 Matroosberg. Also  
Acocks (?? **Prinspoort**).

**Distribution:** Add.

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*Leucadendron tradouwense* Williams 1972  
Tradouw Conebush

**Other Common Names:** Lemon-rosette Conebush.

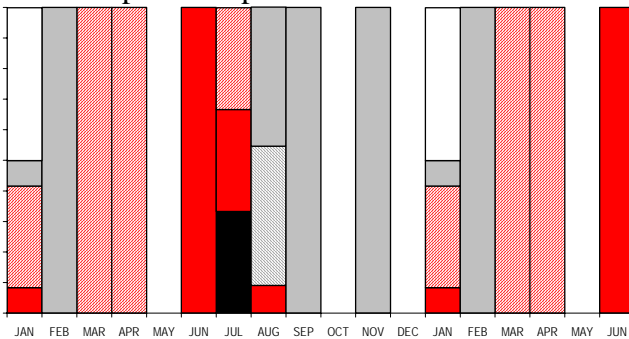
**Other Scientific Names:** None.

**35 Records**

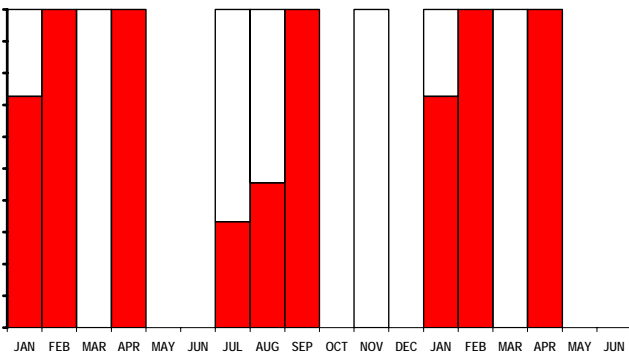
**Population** (34 records): 3% Abundant, 38% Common, 50% Frequent, 9% Rare.

**Dispersion** (33 records): 70% clumped, 24% variable, 6% evenly distributed.

**Flowering** (34 records with: Jan 12, Feb 1, Mar 3, Apr 1, May 0, Jun 1, Jul 3, Aug 11, Sep 1, Oct 0, Nov 1, Dec 0): Buds from Jan, Mar to Apr and Jul; Flowering from Jun to Jul; Fruit from Feb and Aug to Nov; Nothing from Jan. Peak levels unreliable at 100% in Jul. Historically recorded as flowering in Jun, fruit ripen in Sep and are shed.



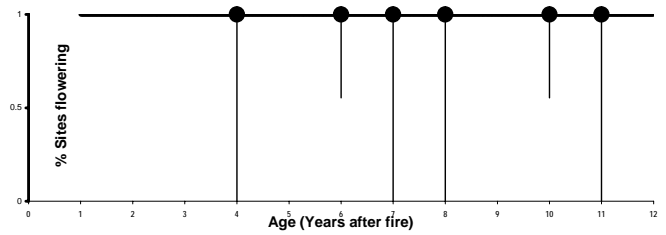
**Growth** (32 records with: Jan 11, Feb 1, Mar 3, Apr 1, May 0, Jun 0, Jul 3, Aug 11, Sep 1, Oct 0, Nov 1, Dec 0): Much from Jan to Feb and Apr to Sep; Rare not recorded; None from Nov to Jan, Mar and Jul to Aug. Peak levels unreliable.



**Seedlings** (16 records): All without any seedlings present.

**Fire Survival** (1 record): 100% survived by seedlings only.

**Age to first flowering:** First flowers recorded at 2 years, 50% estimated at 2-3 years, and 100% recorded at 4 years.



**Height** (35 records): 9% 0-0.2 m tall, 46% 0.2-1 m tall, 46% 1-2 m tall.

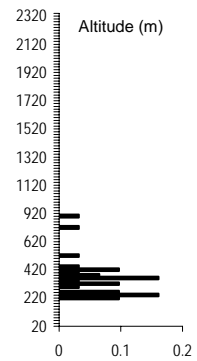
**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (30 records): 100% inland - further than 2 km from coast.

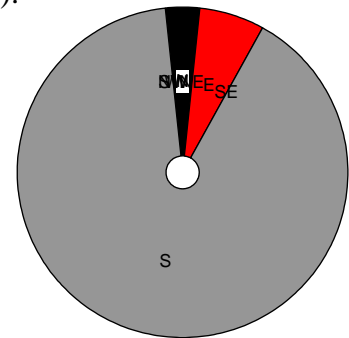
**Altitude** (30 records): 200 - 800 m; 220<sub>lq</sub> - 260<sub>med</sub> - 320<sub>uq</sub> m.



**Landform** (30 records): 83% deep soil, 13% rocky outcrops, 3% shallow soil.

**Slope** (30 records): 53% steep incline, 30% gentle incline, 10% cliff, 7% hill top.

**Aspect** (30 records): 93% South, 7% East.



**Soil Type** (29 records): 45% sandy, 38% loamy, 10% rocky, 3% clayey, 3% gravelly.

**Soil Colour** (29 records): 66% brown, 17% grey, 14% yellow, 3% black.

**Geology** (30 records): 83% sandstone, 17% shale.

**Vegetation** (30 records): 97% shrubland, 3% grassland.

**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered B1b(i,ii,iii,iv)c(iv).

**Occurrence** (Fynbos): 35 km<sup>2</sup> with 2% conserved and 10% lost; **Occupancy:** 23 km<sup>2</sup> with 1% conserved and 32% lost. **Fragmentation index:** 62%.

**Nature Reserves** (30 records): 0% in Nature Reserves - unconserved.

**Habitat destruction** (30 records): 87% extensive natural habitat, 10% islands, 3% naturally linear habitats.

**Alien Invasive Species** (29 records): 41% Fabaceae (chiefly alien *Acacia*), 34% none, 24% *Pinus*.

**Alien Density** (29 records): 34% alien-free, 52% sparse, 7% abundant, 3% dense, 3% impenetrable.

**Cultivation & Utilization:**

**Picking** (28 records): 96% no sign of picking, 4% lightly picked.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Previous sites on s side of Tradouws Pass seem to have become extinct - severely overburned and overgrazed and no sign of *Ld trad* could be found (LSA92070101); At last! Our search for *L. tradouwense* is ended on a sad note. Told us where they were last seen 6 years ago with a population of 6. We found 1 male and 1 female approximately 2 m tall - female prostrate and male propped up by *L. eucalyptifolium* - but both well. It is doomed for extinction if a burn does not come soon as the surrounding plants and fynbos are 4-5m tall. Exact location: 110 from 1st parapet wall, left side at drain 50m: 2 plants about 30m apart (VJK93091201); Vic Keightley says there are 3 plants in this locality 2 females seen (WIJ96041209); We heard on the grapevine that the recorded sites are going to be burned after Easter. It is long overdue as the plants have nearly reached the end of their life cycle. (VJK99032601); Original site where Dr Ion Williams recorded and collected in 1963. We recorded 2 plants after a 1.5 year search for them in Dec 1999. Fire burnt 1st time in 35yrs - May 1999 returned to find no seedlings or young. So it was a great surprise to find so many young plants as recorded here: if Dr Williams is alive tell him to come here in 2005 for some fresh material for the Compton Herbarium (VJKY1011301); The return of *L. tradouwense* is one of nature's miracles! In 1999 the plants were distinct they were overgrown by Conebushes, grass, restio and Acacia. The site had not been burned for 35 yrs. In Dec 1999 a fire raged through the Tradouw Pass. In Jan 2000 there were no

seedlings of any proteas. In Jan 2001 there were young seedlings 150 mm tall. Today it is in bud a few in peak flower! I am amazed how quickly they have grown. There are between 100/200 plants growing on this site (VJKY2070701); (VJKY1011301); 2 populations found on this farm (LSA92070101); The rest of the plants grow in a narrow belt along latitude 34°00' S at an altitude of 200 m. It is pleasing to see that on the west side of this site the Black Wattle invaders have been cleared and *L. tradouwense* is returning: well done Lindsay and Keith Moodie (VJK97080107); This is a new sighting of about 20 plants at an altitude of 200 m (VJK97080803); Strange - growing at altitude of 300m in a belt 100m wide - usually alt about 200m - plants not healthy and several dying: need a burn soon! (VJK97080805); The plants are growing in a belt about 100 m wide usually at 250m altitude (VJK97080806); The population count cannot be much over 100 plants and the future looks bleak for them as a burn is urgent the total number of plants in this general area in my estimation is less than 1000 plants - will check again (VJK97080809);

**Confusing Species:** Confused with *L. tinctorum* (which is more sprawling with hairy branches and spreading leaves, narrower and more oily bracts) and *burchellii* (with involucre leaves clasping the flowerheads)  
Records of identification queries = 7.  
Records of corrected identification queries = 4.

**Variation and Taxonomy:** No variation known.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron chamelaea* (Lam.) Williams 1791, 1967  
**Witsenberg Conebush**  
*Langbeentjebos*

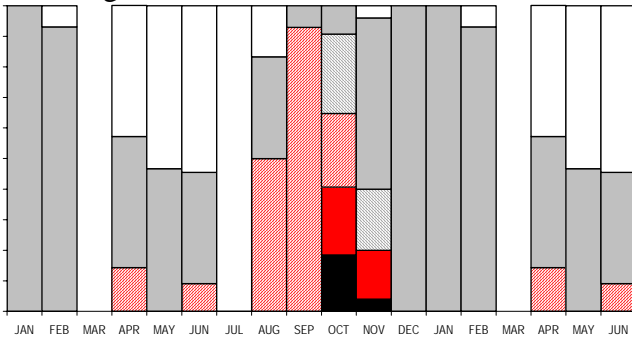
**Other Common Names:** Glutinous Protea.  
**Other Scientific Names:** *decurrens* R.Br. 1810,  
*pyramidalis* (Thunb.) 1803.

**193 Records**

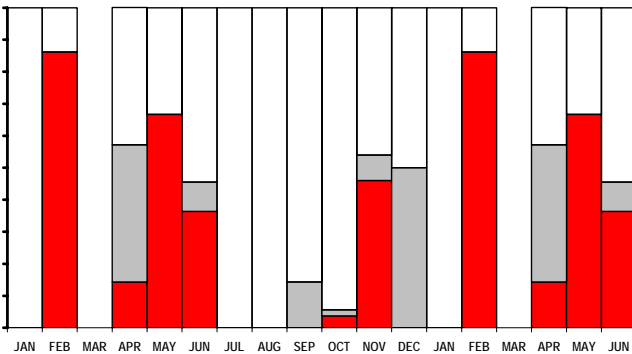
**Population** (189 records): 5% Abundant,  
 37% Common, 44% Frequent, 14% Rare.

**Dispersion** (172 records): 55% variable,  
 38% clumped, 6% widespread, 0.6% evenly  
 distributed.

**Flowering** (193 records with: Jan 1, Feb 29,  
 Mar 0, Apr 7, May 15, Jun 11, Jul 1, Aug 6,  
 Sep 14, Oct 54, Nov 50, Dec 5): Buds from  
 Aug to Oct; Flowering from Oct; Peak  
 Flowering from Oct; Over from Oct to Nov;  
 Fruit from Nov to Aug; Nothing from Apr to  
 Jul. Peak levels at 91% in Oct. Historically  
 recorded as flowering from Sep, fruits ripen  
 in Jan, and are shed over a long period by  
 strong wind.



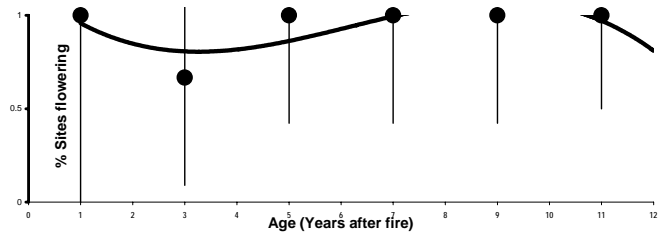
**Growth** (192 records with: Jan 1, Feb 29, Mar  
 0, Apr 7, May 15, Jun 11, Jul 1, Aug 6, Sep  
 14, Oct 54, Nov 50, Dec 4): Much from Feb  
 and May to Jun and Nov; Rare from Apr and  
 Dec; None from Apr to Jan. Peak levels  
 unreliable at 86% in Feb.



**Seedlings** (77 records): Absent in 82%: fewer  
 seedlings than prefire adults in 6 cases, and  
 more in 1 case. Seedlings found in Jun (3)  
 and Nov (4).

**Fire Survival** (10 records): 70% survived by  
 seedlings only, 20% eliminated from the area  
 by fires, 10% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded  
 at 1 years, 50% estimated at 2-3 years, and  
 100% estimated at 4-5 years.



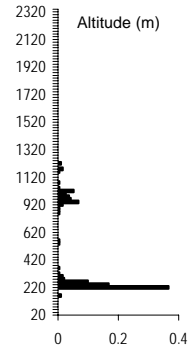
**Height** (191 records): 1% 0-0.2 m tall,  
 14% 0.2-1 m tall, 77% 1-2 m tall, 8% 2-5 m  
 tall.

**Pollinators** (4 records): 75% beetles, 25% flies.  
**Detailed Pollinators** (2 records): Monkey  
 Beetle.

**Habitat:**

**Distance to Ocean** (188  
 records): 100% inland -  
 further than 2 km from  
 coast.

**Altitude** (188 records): 200 -  
 1120 m; 200<sub>lq</sub> - 220<sub>med</sub> -  
 220<sub>uq</sub>m.



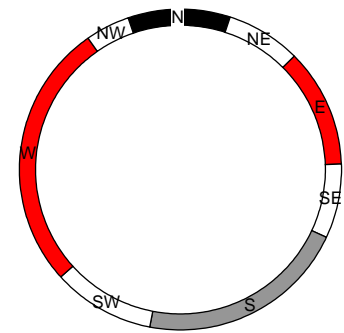
**Landform** (188 records):  
 99% deep soil,  
 0.5% swamp,  
 0.5% shallow soil.

**Slope** (187 records):  
 51% platform, 32% valley bottom,  
 18% gentle incline.

**Aspect** (64 records): 36% West, 27% South,  
 20% East, 17% North.

**Soil Type** (188  
 records):  
 73% sandy,  
 16% loamy,  
 5% clayey,  
 3% gravelly,  
 2% rocky,  
 0.5% peaty.

**Soil Colour** (184  
 records):  
 39% grey,  
 38% brown,  
 11% white, 7% yellow, 5% orange,  
 0.5% black.



**Geology** (157 records): 55% sandstone,  
 20% Tertiary sands, 13% conglomerate,  
 10% shale, 3% silcrete or ferricrete.

**Vegetation** (186 records): 94% shrubland,  
 5% agricultural lands, 0.5% grassland,  
 0.5% plantations.

**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered  
 A4c.

Occurrence (Fynbos): 1 425 km<sup>2</sup> with 16%  
 conserved and 29% lost; Occupancy:  
 198 km<sup>2</sup> with 2% conserved and 56% lost.  
 Fragmentation index: 12%.

**Nature Reserves** (188 records): 2% in Nature Reserves - unconserved.

**Habitat destruction** (186 records):  
54% extensive natural habitat, 32% islands,  
10% road verges, 2% corridors, 1% naturally  
linear habitats, 1% naturally fragmented  
habitats.

**Alien Invasive Species** (181 records):  
31% Fabaceae (chiefly alien *Acacia*),  
23% none, 22% *Pinus*, 17% *Hakea*,  
5% Myrtaceae, 2% annual alien grasses.

**Alien Density** (180 records): 23% alien-free,  
54% sparse, 18% abundant, 3% dense,  
1% impenetrable.

**Cultivation & Utilization:**

**Picking** (141 records): 98% no sign of picking,  
2% lightly picked.

**Cultivation Status:** Plantings - 3 records (2%).

**Atlassers Notes:**

Large specimen in cone and 9 small  
(WMP99092601);

Heavy grazing and trampling by cattle, burned  
area nearby (NAH92061706);

Chopped down in road verges for 'Vaalwurm'  
(ASP94111516); Some plants had been  
chopped out (LYM96042505);  
Lots of seedlings dead (about 2/3)  
(AGRY0112206); Not affected by heat?  
which killed other proteas (AGRY0112301);  
Many plants have died (GEH95051702);  
Numerous dead specimens - viruses?  
(NAH92061702);

**Confusing Species:** No confusing species  
noted.

Records of identification queries = 5.

**Variation and Taxonomy:** No significant  
variation known.

**Distribution:** Add.

**Pillans & Garside at Groot Drakenstein.**

INCLUDEPICTURE

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*Leucadendron elimense* subspecies *elimense* Phill. 1939

**Elim Conebush**

*Elimtolbos*

**Other Common Names:** *Bergkatjievering*, *Elim mense*.

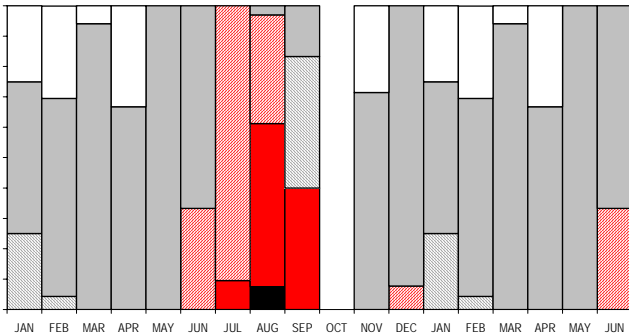
**Other Scientific Names:** None.

**247 Records**

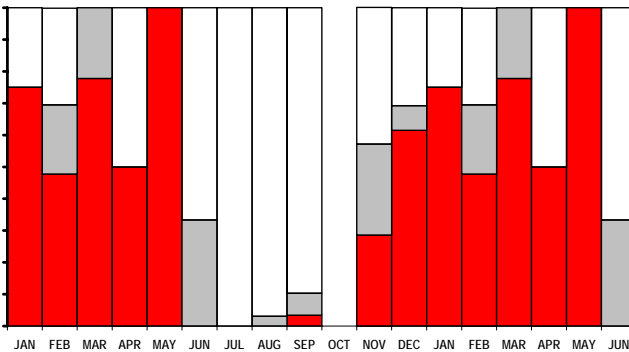
**Population** (243 records): 0.4% Abundant, 16% Common, 53% Frequent, 30% Rare, 0.4% Extinct.

**Dispersion** (168 records): 57% variable, 43% clumped.

**Flowering** (192 records with: Jan 4, Feb 23, Mar 17, Apr 6, May 1, Jun 3, Jul 21, Aug 67, Sep 30, Oct 0, Nov 7, Dec 13): Buds from Jun to Aug; Flowering from Aug to Sep; Peak Flowering not significant; Over from Jan and Sep; Fruit from Nov to Jun; Nothing from Jan to Feb, Apr and Nov. Peak levels at 97% in Aug. Historically recorded as flowering from Aug to Sep, fruits ripen in Feb and are shed.



**Growth** (192 records with: Jan 4, Feb 23, Mar 18, Apr 6, May 1, Jun 3, Jul 21, Aug 67, Sep 29, Oct 0, Nov 7, Dec 13): Much from Nov to May; Rare from Feb to Mar, Jun and Nov; None from Jun to Feb and Apr. Peak levels at 100% in Mar.



**Seedlings** (49 records): All without any seedlings present.

**Fire Survival** (4 records): 50% eliminated from the area by fires, 25% survived by seedlings only, 25% resprouted from underground boles.

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



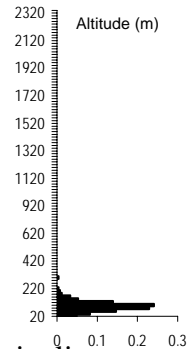
**Height** (192 records): 0.5% 0-0.2 m tall, 53% 0.2-1 m tall, 44% 1-2 m tall, 2% 2-5 m tall.

**Pollinators** (2 records): 50% flies, 50% beetles. **Detailed Pollinators** (1 record): Monkey Beetle.

**Habitat:**

**Distance to Ocean** (244 records): 100% inland - further than 2 km from coast.

**Altitude** (244 records): 20 - 300 m; 40<sub>lq</sub> - 80<sub>med</sub> - 80<sub>uq</sub> m.



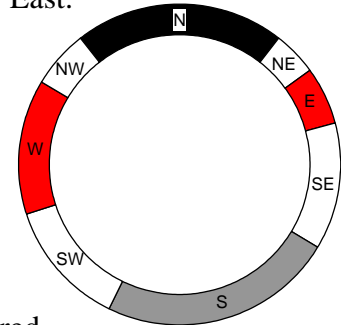
**Landform** (192 records): 94% deep soil, 4% shallow soil, 1% riverine, 0.5% swamp.

**Slope** (191 records): 50% gentle incline, 36% platform, 9% hill top, 5% valley bottom, 0.5% steep incline.

**Aspect** (118 records): 36% South, 26% North, 24% West, 14% East.

**Soil Type** (189 records): 34% loamy, 32% clayey, 24% sandy, 10% gravelly.

**Soil Colour** (189 records): 58% brown, 29% grey, 8% orange, 2% red, 2% white, 1% yellow.



**Geology** (214 records): 45% shale, 36% silcrete or ferricrete, 16% sandstone, 1% Tertiary sands, 0.9% limestone.

**Vegetation** (242 records): 97% shrubland, 2% agricultural lands, 0.4% thicket.

**Conservation Status and Threat:**

**Red Data List Status:** Endangered A2c.

**Occurrence** (Fynbos): 787 km<sup>2</sup> with 5% conserved and 39% lost; **Occupancy:** 291 km<sup>2</sup> with 10% conserved and 51% lost. **Fragmentation index:** 33%.

**Nature Reserves** (244 records): 9% in Nature Reserves - inadequately conserved.

**Habitat destruction** (193 records): 53% extensive natural habitat, 25% road verges, 20% islands, 1% naturally

fragmented habitats, 0.5% naturally linear habitats.

**Alien Invasive Species** (190 records): 69% Fabaceae (chiefly alien *Acacia*), 15% none, 8% *Pinus*, 7% Myrtaceae, 1% other aliens.

**Alien Density** (190 records): 15% alien-free, 63% sparse, 20% abundant, 2% dense, 0.5% impenetrable.

**Cultivation & Utilization:**

**Picking** (145 records): 95% no sign of picking, 3% lightly picked, 1% severely picked.

**Cultivation Status:** Plantings - 1 record (0.4%).

**Atlassers Notes:**

This is the strange form: very tall 3-4 m (DEB99031802); Identity suspect: unusually tall (2m) with overlapping leaves (SHR95092301); Small yellow plants (SSA92082702);

About 1/5 seeds still in cones : all cones on plant (AGR96040801);

Both males (AGRY0081606); 3 males (AMMY0032908);

Plus 2 dead (AGRY1022810); 9 dead to every one alive (AGRY1030124); A lot of plants were dead (LYMY0081611); Plants unhealthy yellow: 2 dead, remainder have new healthy growth (MJDY1011902); As many skeletons standing around as live ones (SMRY0081608); More skeletons than living plants (SMRY0081611);

Chopped out of road reserve (DJLY0081612); 2 Arum Lily Frogs Found on one plant - well camouflaged on leaves (LYM97081603);

**Confusing Species:** Confused once with *L. nervosum* (how?) and *L. tinctum* (seeds not nuts, involucre bracts not recurved).

Records of identification queries = 6.

Records of corrected identification queries = 2.

**Variation and Taxonomy:** This is a variable species.

- More normal populations are mostly between Strandkloof and Elim, but even these have odd plants of unusual size.
- Small forms, both in stature (often not exceeding 1m tall) and leaf and cone sizes, occur to the north and east of this, and (from atlas data) to the west.
- Large forms, both in stature – over 2 m tall - and leaf and cone sizes, occur to the south and east.

The type specimen (Stokoe sn 8/1936, PRE 21906) locality at Kogelberg is clearly incorrect, and the locality of Bredasdorp (Stokoe sn 8/1936, SAM 52191) is more likely.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron elimense* subspecies 'nova' (unpublished)  
Greyton Conebush

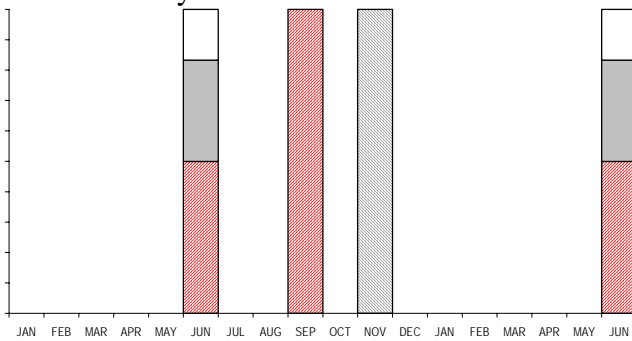
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**10 Records**

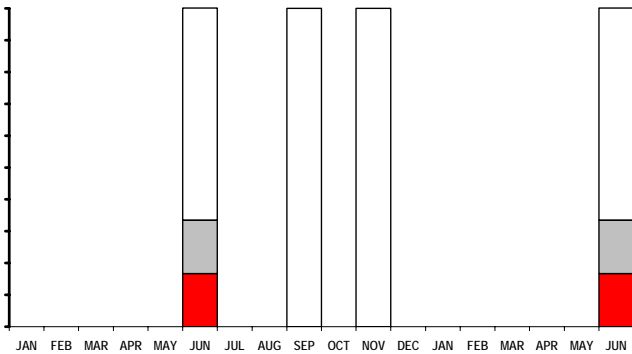
**Population** (9 records): 56% Common, 33% Frequent, 11% Rare.

**Dispersion** (9 records): 56% variable, 44% clumped.

**Flowering** (9 records with: Jan 0, Feb 0, Mar 0, Apr 0, May 0, Jun 6, Jul 0, Aug 0, Sep 2, Oct 0, Nov 1, Dec 0): Buds from Jun to Sep; Flowering and Peak Flowering not recorded; Over from Nov; Fruit from Jun; Nothing not significant. Peak levels unreliable. Historically not recorded



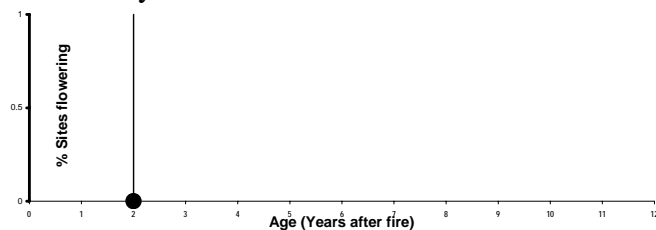
**Growth** (9 records with: Jan 0, Feb 0, Mar 0, Apr 0, May 0, Jun 6, Jul 0, Aug 0, Sep 2, Oct 0, Nov 1, Dec 0): Much and Rare not significant in Jun, but summer data lacking; None from Jun to Nov. Peak levels unreliable.



**Seedlings** (3 records): All without any seedlings present.

**Fire Survival** : No data.

**Age to first flowering:** No flowers recorded from 2-year old veld: no other data.



**Height** (9 records): 67% 0.2-1 m tall, 33% 1-2 m tall.

**Pollinators** (2 records): 100% beetles.

**Detailed Pollinators** (1 record): Great Protea Beetle.

**Habitat:**

**Distance to Ocean** (10 records): 100% inland - further than 2 km from coast.

**Altitude** (10 records): 380 - 660 m; 460<sub>lq</sub> - 480<sub>med</sub> - 480<sub>uq</sub>m.

**Landform** (10 records): 80% deep soil, 20% shallow soil.

**Slope** (10 records): 60% steep incline, 40% gentle incline.

**Aspect** (9 records): 72% South, 17% East, 11% West.

**Soil Type** (10 records): 40% clayey, 30% gravelly, 20% loamy, 10% rocky.

**Soil Colour** (10 records): 80% brown, 10% black, 10% grey.

**Geology** (10 records): 90% shale, 10% sandstone.

**Vegetation** (10 records): 100% shrubland.

**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered B1a(ii)b(i,ii,iii,v)c(iv) + 2a(ii)b(i,ii,iii,v)c(iv).

**Occurrence** (Fynbos): 4 km<sup>2</sup> with 0% conserved and 16% lost; **Occupancy:** 11 km<sup>2</sup> with 0% conserved and 27% lost. **Fragmentation index:** meaningless.

**Nature Reserves** (10 records): 0% in Nature Reserves - unconserved.

**Habitat destruction** (10 records): 90% extensive natural habitat, 10% naturally linear habitats.

**Alien Invasive Species** (10 records): 70% *Hakea*, 30% none.

**Alien Density** (10 records): 30% alien-free, 70% sparse.

**Cultivation & Utilization:**

**Picking** (9 records): 100% no sign of picking.  
**Cultivation Status:** No noted cultivation.

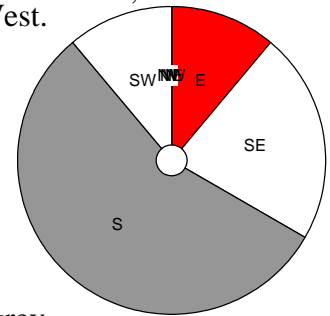
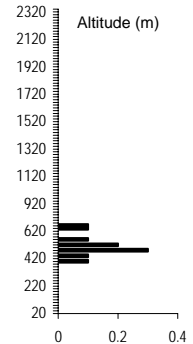
**Atlasers Notes:** None.

**Confusing Species:** None recorded: recognized as *L. elimense* but unlike existing forms upon discovery.

Records of identification queries = 8.

Records of corrected identification queries = 3.

**Variation and Taxonomy:** This species is clearly *L. elimense*, but has features of *L. globosum* and thus resembles *L. tinctum*



more than any other subspecies of *L.*  
*elimense*.

**Distribution:** Add.

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*Leucadendron elimense* subspecies *salteri* Williams 1972  
Caledon Conebush

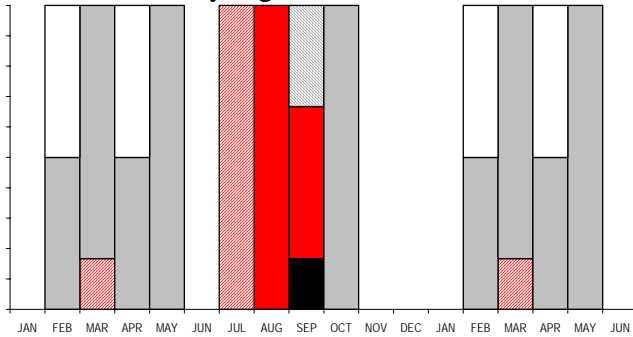
**Other Common Names:** None known.  
**Other Scientific Names:** *None*.

**21 Records**

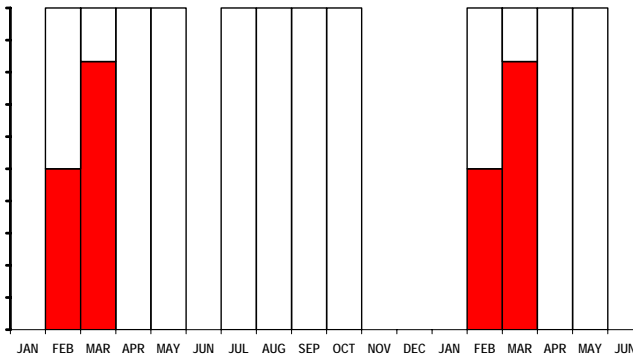
**Population** (21 records): 29% Common, 57% Frequent, 14% Rare.

**Dispersion** (19 records): 53% variable, 47% clumped.

**Flowering** (21 records with: Jan 0, Feb 2, Mar 6, Apr 2, May 1, Jun 0, Jul 1, Aug 2, Sep 6, Oct 1, Nov 0, Dec 0): Buds from Jul; Flowering from Aug to Sep; Peak Flowering from Sep; Over from Sep; Fruit from Oct to May; Nothing from Feb and Apr. Peak levels unreliable at 100% from Aug to Sep. Historically recorded as flowering from late Aug to Sep, fruit Feb and released slowly from cones by high wind.



**Growth** (21 records with: Jan 0, Feb 2, Mar 6, Apr 2, May 1, Jun 0, Jul 1, Aug 2, Sep 6, Oct 1, Nov 0, Dec 0): Much from Feb to Mar; Rare not recorded; None from Apr to Feb. Peak levels unreliable at 83% in Mar.



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

**Fire Survival** (1 record): 100% survived by seedlings only.

**Age to first flowering:** First flowers recorded at 100% at 16 years, no data from younger veld.

**Height** (21 records): 38% 0.2-1 m tall, 62% 1-2 m tall.

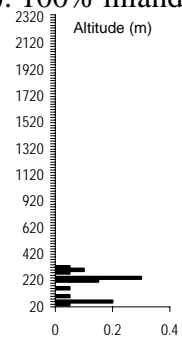
**Pollinators** (1 record): 100% beetles.

**Detailed Pollinators** (1 record): Monkey Beetle.

**Habitat:**

**Distance to Ocean** (20 records): 100% inland - further than 2 km from coast.

**Altitude** (20 records): 20 - 320 m; 80<sub>lq</sub> - 220<sub>med</sub> - 240<sub>uq</sub>m.



**Landform** (20 records): 95% deep soil, 5% shallow soil.

**Slope** (20 records): 85% gentle incline, 10% steep incline, 5% hill top.

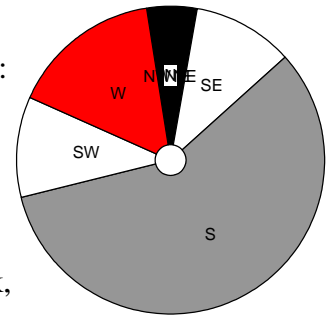
**Aspect** (19 records): 68% South, 21% West, 5% North, 5% East.

**Soil Type** (20 records): 35% sandy, 30% loamy, 30% clayey, 5% gravelly.

**Soil Colour** (20 records): 75% brown, 15% grey, 5% black, 5% yellow.

**Geology** (18 records): 61% shale, 22% silcrete or ferricrete, 17% sandstone.

**Vegetation** (19 records): 100% shrubland.



**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered B2a(i)b(i,ii,iii,iv,v)c(iv).

Occurrence (Fynbos): 195 km<sup>2</sup> with 7% conserved and 32% lost; Occupancy: 17 km<sup>2</sup> with 0% conserved and 67% lost. Fragmentation index: 8%.

**Nature Reserves** (20 records): 0% in Nature Reserves - unconserved.

**Habitat destruction** (20 records): 60% extensive natural habitat, 35% islands, 5% road verges.

**Alien Invasive Species** (19 records): 37% Fabaceae (chiefly alien *Acacia*), 26% none, 21% *Pinus*, 16% *Hakea*.

**Alien Density** (19 records): 26% alien-free, 37% sparse, 16% abundant, 16% dense, 5% impenetrable.

**Cultivation & Utilization:**

**Picking** (17 records): 82% no sign of picking, 12% severely picked, 6% lightly picked.

**Cultivation Status:** No noted cultivation.

**Atlasers Notes:**

Only about 140 plants seen about 15 dead (AGR98030511); Also 1 dead (CHE98030502); Few older large plants with most of pop made up of young plants not yet flowering. Occurs on edge of Botrivierplaas and into the road reserve (MAJ93021701); 13 Plants surviving in road reserve under pines - severely picked remainder of population ploughed up by the owner despite being informed on several occasions about the plants on his property! (MAJY1031401); 2 Living plants and 1 dead in this plot. was

scraped of all vegetation along canal about 3 years ago and these three plants probably germinated then but no sign of more plants. Mountain Fynbos less than 10 m away (NAHY4021801); A very recent patchy fire has wiped out many plants but many plants still remain (NGF96070607); Between 10 and 20 plants (all on the roadside) (SMRY2082901);

Cones on older plants open but with seed still retained in cone (MAJ93021701);

**Confusing Species:** None noted.

**Variation and Taxonomy:** No variation recorded.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron elimense* subspecies *vyeboomensis* Williams 1972  
**Vyeboom Conebush**

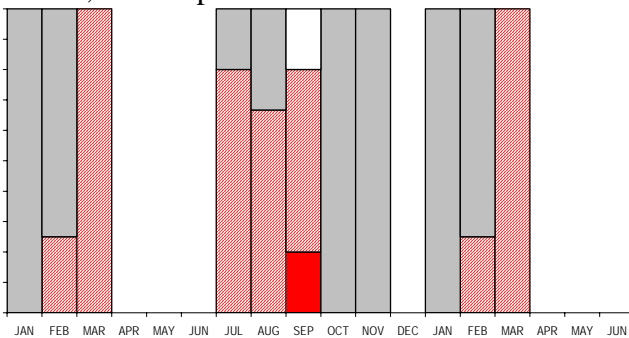
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**23 Records**

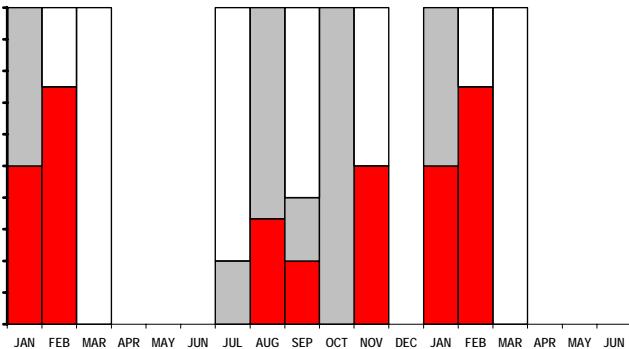
**Population** (23 records): 17% Common, 70% Frequent, 13% Rare.

**Dispersion** (23 records): 74% variable, 22% clumped, 4% widespread.

**Flowering** (23 records with: Jan 2, Feb 4, Mar 1, Apr 0, May 0, Jun 0, Jul 5, Aug 3, Sep 5, Oct 1, Nov 2, Dec 0): Buds from Feb to Sep; Flowering from Sep; Peak Flowering and Over not recorded; Fruit from Oct to Feb and Aug; Nothing from Sep. Peak levels unreliable at 80% in Sep. Historically recorded as flowering from late Sep to early Oct, fruits ripen in Feb and are shed.



**Growth** (23 records with: Jan 2, Feb 4, Mar 1, Apr 0, May 0, Jun 0, Jul 5, Aug 3, Sep 5, Oct 1, Nov 2, Dec 0): Much from Aug to Feb; Rare from Jan, and Jul to Oct; None from Feb to Jul, Sep and Nov. Peak levels unreliable at 100% in Jan.



**Seedlings** (9 records): All without any seedlings present.

**Fire Survival** : No data.

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



**Height** (22 records): 5% 0-0.2 m tall, 77% 0.2-1 m tall, 18% 1-2 m tall.

**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

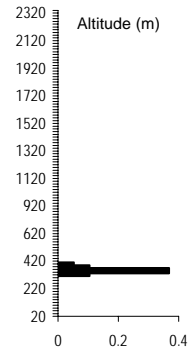
**Distance to Ocean** (19 records): 100% inland - further than 2 km from coast.

**Altitude** (19 records): 300 - 400 m; 320<sub>lq</sub> - 340<sub>med</sub> - 340<sub>uq</sub> m.

**Landform** (19 records): 100% deep soil.

**Slope** (19 records): 63% gentle incline, 32% platform, 5% steep incline.

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



**Soil Type** (19 records):

53% loamy, 32% sandy, 16% clayey.

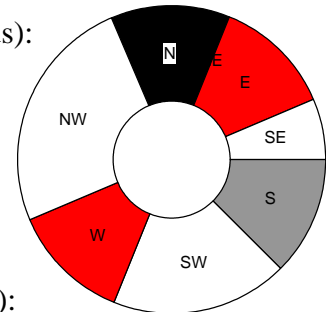
**Soil Colour** (19 records):

47% brown, 26% grey, 21% orange, 5% yellow.

**Geology** (19 records):

47% shale, 42% sandstone, 11% silcrete or ferricrete.

**Vegetation** (19 records): 100% shrubland.



**Conservation Status and Threat:**

**Red Data List Status: Critically Endangered**

B2a(i)b(i,ii,iii,iv,v)c(iv).

Occurrence (Fynbos): 12 km<sup>2</sup> with 18% conserved and 51% lost; Occupancy: 17 km<sup>2</sup> with 19% conserved and 55% lost.

Fragmentation index: meaningless.

**Nature Reserves** (19 records): 26% in Nature Reserves.

**Habitat destruction** (19 records):

84% extensive natural habitat, 5% patches, 5% islands, 5% corridors.

**Alien Invasive Species** (19 records):

68% *Pinus*, 11% Fabaceae (chiefly alien *Acacia*), 11% none, 5% *Hakea*, 5% annual alien grasses.

**Alien Density** (19 records): 11% alien-free, 84% sparse, 5% abundant.

**Cultivation & Utilization:**

**Picking** (20 records): 100% no sign of picking.  
**Cultivation Status:** No noted cultivation.

**Atlasers Notes:**

Pruning by the Vlei Rat *Otomus* on 1 plant (BAW96072403); One plant broken and leaves grazed - herbivore? (MAJ92020101); Population very much in decline: action urgently needed. Population very small! (AGR92020407); Lots of plants dead

especially females (AGR99092001); Most plants dead (AGRY0012202); Population = 3 (BAW96072403); These plants look exceptionally healthy: 11 adults dead - it seems as though it could be caused by heat stress or some other environmental factor - the other possibility would be *Phytophthora*. The ones in the fence area are in pretty bad shape (IEBY1090301); 2 dead plants found on this plot (LYM96072405); 9 females, 4 males and 7 dead plants. Pines more dense around the plants (MAJ92020101); 60 - 70 % of the plants have died in the last year (NGF97111502); Major mortality (SHR97091401); Dead Plants also frequent (estimate of live plants 60 to 100)

(SMR96072406); All numbered: at least 127 tags! Estimate about 30 dead and 80 flourishing seen on the Theewaterskloof side of road (SMRY2022801); 5 plants outside fenced area (IEBY1090301);

**Confusing Species:** None noted.

**Variation and Taxonomy:** No variation noted.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron globosum* (Ken. ex Andr.) Williams 1803, 1967  
**Grabouw Conebush**

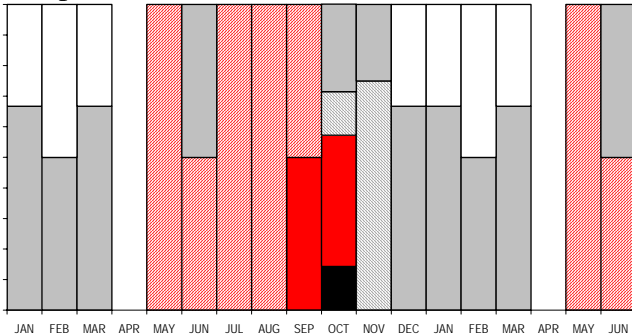
**Other Common Names:** Elgin Conebush, Mountain Rose, One-colour Euryspermum, *Bergroos*.  
**Other Scientific Names:** *concolor* Salisb. ex Knight 1809, *ovale* R.Br. 1810.

**42 Records**

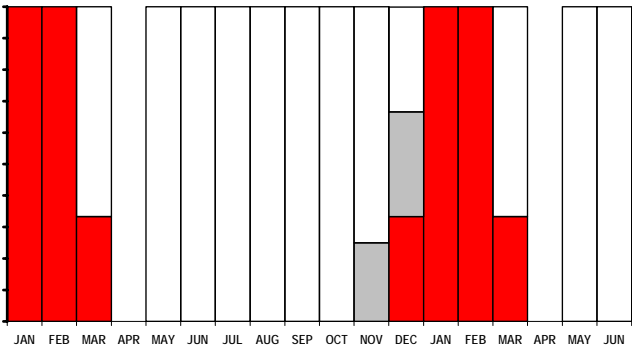
**Population** (41 records): 0% Common, 15% Frequent, 85% Rare.

**Dispersion** (36 records): 56% clumped, 42% variable, 3% evenly distributed.

**Flowering** (40 records with: Jan 3, Feb 2, Mar 3, Apr 0, May 2, Jun 2, Jul 3, Aug 5, Sep 6, Oct 7, Nov 4, Dec 3): Buds from May to Sep; Flowering from Sep to Oct; Peak Flowering not significant - in Oct; Over from Nov; Fruit from Oct to Mar and Jun; Nothing from Dec to Mar. Peak levels unreliable at 100% in Sep. Historically recorded as flowering from late Sep to early Oct, fruit ripen in Feb and are shed.



**Growth** (42 records with: Jan 5, Feb 2, Mar 3, Apr 0, May 2, Jun 2, Jul 3, Aug 5, Sep 6, Oct 7, Nov 4, Dec 3): Much from Dec to Mar; Rare from Nov to Dec; None from Mar. Peak levels unreliable at 100% in Jan to Feb.



**Seedlings** (17 records): All without any seedlings present.

**Fire Survival** : No data.

**Age to first flowering:** First flowers recorded at 100% at 16 years, no data from younger veld.

**Height** (42 records): 19% 0.2-1 m tall, 79% 1-2 m tall, 2% 2-5 m tall.

**Pollinators** (1 record): 100% beetles.

**Detailed Pollinators:** No additional data.

**Habitat:**

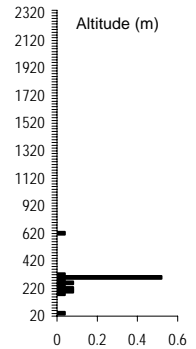
**Distance to Ocean** (24 records): 100% inland - further than 2 km from coast.

**Altitude** (24 records): 160 - 620 m; 240<sub>lq</sub> - 300<sub>med</sub> - 300<sub>uq</sub>m.

**Landform** (23 records): 96% deep soil, 4% shallow soil.

**Slope** (23 records): 52% steep incline, 48% gentle incline.

**Aspect** (23 records): 91% South, 4% East, 4% West.

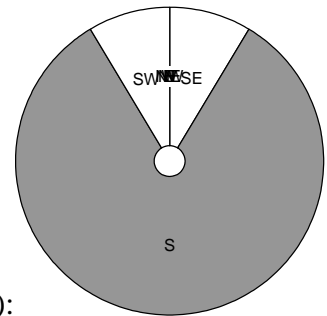


**Soil Type** (23 records): 52% clayey, 26% loamy, 22% gravelly.

**Soil Colour** (23 records): 61% brown, 39% orange.

**Geology** (18 records): 78% shale, 17% silcrete or ferricrete, 6% sandstone.

**Vegetation** (23 records): 78% shrubland, 22% plantations.



**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered A2c, B1b(i,ii,iii,iv,v)c(iv)<sub>2</sub>

**Occurrence** (Fynbos): 55 km<sup>2</sup> with 2% conserved and 95% lost; **Occupancy:** 20 km<sup>2</sup> with 1% conserved and 89% lost. **Fragmentation index:** 36%.

**Nature Reserves** (24 records): 4% in Nature Reserves - unconserved.

**Habitat destruction** (23 records): 48% road verges, 48% islands, 4% extensive natural habitat.

**Alien Invasive Species** (23 records): 74% *Pinus*, 22% Fabaceae (chiefly alien *Acacia*), 4% Myrtaceae.

**Alien Density** (23 records): 30% sparse, 48% abundant, 22% dense.

**Cultivation & Utilization:**

**Picking** (31 records): 97% no sign of picking, 3% severely picked.

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

**Atlassers Notes:**

N2 - *Palmiet River (type) population:*

Down to 3 males and 1 female (AGR95111001); 3 males & 1 female - female in poor condition (SMR96052205); 3 male 1 female plant found (LYM96062201); Only 3 plants - all male (JID97101701); 3 males only! in road reserve (MAJY0012902); 2 males: bush on the east side damaged with broken branches about 1 month old - both bushes have fallen over in poor condition (GNIY0110301); All 3 male

plants; two with no new growth at all and one with very young buds (leaf?) (SGAY1030906); These plants are not being cared for and have been damaged by the plantation wire fence and at least 2 branches of each is already dead; severely threatened by aliens as well (NAHY1062002); Two plants have been killed in the last 3 weeks after I believe the plants were sprayed with herbicide by roads department. I found 3 skeletons: 1- the old female plant which died a few years ago 2 males. The plant lowest down growing in amongst the ferns survived the desecration (NGFY1122601); Only males left (AGRY1012602); All save 1 female [out of 13 male plants] killed by chopping area due for terraforming soon to apple orchard (ASP92092301); Lots of young plants (ASP92092303); Only 1 male seen on edge of dam plus 1 dead male in forest (ASP92092410); Female plant becoming moribund (DJL98072301); No females 1 plant dead ( female) (GED99102901); 12 plants seen (KEH98102106); A total of 13 plants seen of which only 8 look healthy - the others senescing - urgently in need of fire and alien clearing (NAHY5031202); Counted 24 plants which all looked very happy (NGF98103101); PN Plants are male

(SHR97091302); Farmer says 5 on farm all male and Elsenberg took cuttings. But David found a young plant that had not flowered - over that was my 3rd and I think the farm's 6th plant. It was height 2, the other 2 that we saw were old and leggy (SMR99102901); Only in fire tracer! Farmer said area had been prepared for burning two years ago but nature conservation did not turn up to burn veld: now is moribund - needs to burn (APE95081706);

**Confusing Species:** Superficially most similar to *L. tinctum* (especially with the recurved basal bracts and colouring of the involucreal leaves), but atlassers had no problems identifying this species, presumably because of its erect growth and distinct cones. Records of identification queries = 1.

**Variation and Taxonomy:** No variation known.

**Distribution:** Add. Threatened by lack of fire and regeneration.

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*Leucadendron grandiflorum* (Salisb.) R.Br. 1806, 1810  
Wynberg Conebush

**Other Common Names:** Large-flower  
Euryspermum, Extinct Conebush.  
**Other Scientific Names:** None.

**0 Records: Extinct**

**Conservation Status and Threat:**

**Red Data List Status:** Extinct, both in the wild and *ex situ*, probably since 1806.  
Occurrence (Fynbos): 0 km<sup>2</sup> with 0% conserved and 100% lost; Occupancy: 0 km<sup>2</sup> with 0% conserved and 100% lost. Fragmentation index: meaningless. Original occupancy probably never exceeding 10 km<sup>2</sup>.

**Population** (0 records): Probably Frequent and Common, but now sadly Extinct.

**Dispersion** (0 records): Probably Variable and Clumped.

**Flowering** Probably: Buds from May to Aug; Flowering from Aug to Sep; Peak Flowering not significant; Over from Sep; Fruit from Oct to Mar; Nothing from Jan to May.

**Growth** Probably Much from Nov to Feb; None from Apr to Nov.

**Seedlings:** Probably All without any seedlings present, due to lack of fires.

**Fire Survival** : Probably surviving as seeds only.

**Age to first flowering:** Probably flowering after 1 year, 100% flowering by 5 years.

**Height** (0 records): Probably 20% 0.2-1 m tall, 70% 1-2 m tall, 10% 2-5 m tall.

**Pollinators** : Probably Beetles.

**Habitat:**

**Distance to Ocean** (0 records): All 100% inland - more than 2 km from coast.

**Altitude** (0 records): Probably 100 - 300 m; 150<sub>lq</sub> - 180<sub>med</sub> - 200<sub>ug</sub> m.

**Landform** (0 records): Probably deep soils.

**Slope** (0 records): Probably gentle incline and steep incline.

**Aspect** (0 records): Probably South.

**Soil Type** (0 records): Probably clayey and loamy.

**Soil Colour** (0 records): Probably brown and orange.

**Geology** (0 records): Probably granite.

**Vegetation** (0 records): Probably shrubland.

**Nature Reserves** (0 records): Probably 0%. There is a small chance that it might have occurred near Cecelia, which is currently under pines, but within the National Park.

**Habitat destruction** (0 records): Probably 100% islands.

**Alien Invasive Species** (0 records): Probably *Pinus*, Fabaceae (chiefly alien *Acacia*) and *Hakea*.

**Alien Density** (0 records): Probably 50% abundant, 50% dense.

**Cultivation & Utilization:**

**Picking:** Probably no sign of picking.

**Cultivation Status:** Probably no noted cultivation, but given its status would most certainly be in Kirstenbosch.

**Witch's Broom Infestation:** Probably 0 records.

**Confusing Species:** None, due to its distribution, and malodorous male flowerheads. Although there is a chance that it might be mistaken for *L. laureolum* when not in flower.

**Variation and Taxonomy:** No variation known.

A few persons have claimed that it might not be a good species based on a single plant, but Salisbury's description leaves no doubt that at least the male was quite distinct from the other Crown Conebushes. That coupled with the distribution make it highly likely that this was quite a distinct species. There are similarly scarce records of *L. macowanii* and *Protea scorzoneriifolia* from Constantia Valley, so the area had other either very localized or poorly-collected proteas.

**Distribution:** Add.

INCLUDEPICTURE

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***Leucadendron corymbosum* Bergius 1766**  
**Swartveld Conebush**  
*Skraaltolbos*

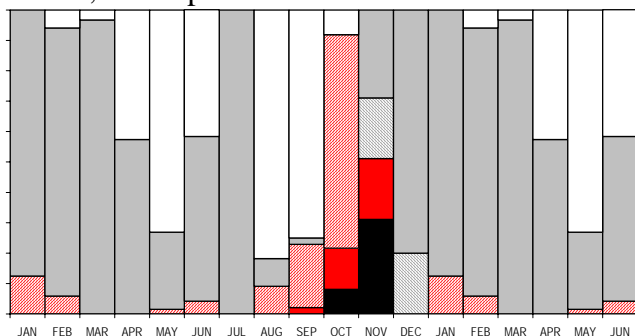
**Other Common Names:** Brunia-leaf Protea.  
**Other Scientific Names:** *bruniades* L.f. 1781,  
*bruniaefolia* Salisb. ex Knight 1809.

**377 Records**

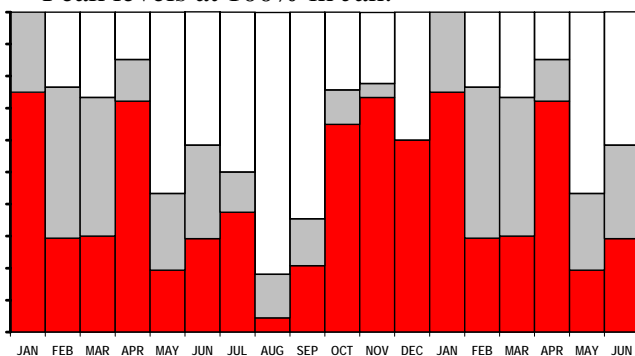
**Population** (376 records): 3% Abundant,  
 49% Common, 40% Frequent, 7% Rare.

**Dispersion** (361 records): 67% variable,  
 31% clumped, 1% widespread, 0.6% evenly  
 distributed.

**Flowering** (373 records with: Jan 16, Feb 17,  
 Mar 30, Apr 54, May 67, Jun 24, Jul 8, Aug  
 22, Sep 48, Oct 37, Nov 45, Dec 5): Buds  
 from Sep to Oct; Flowering from Nov; Peak  
 Flowering from Nov; Over from Nov to Dec;  
 Fruit from Nov to Jul; Nothing from Apr to  
 Sep. Peak levels at 91% in Oct. Historically  
 recorded as flowering from late Sep to early  
 Oct, fruit ripen after 4 months and are shed.



**Growth** (373 records with: Jan 16, Feb 17, Mar  
 30, Apr 54, May 67, Jun 24, Jul 8, Aug 22,  
 Sep 48, Oct 37, Nov 45, Dec 5): Much from  
 Sep to Jul; Rare from Jan to Mar and May to  
 Jun; None from Feb to Mar and May to Dec.  
 Peak levels at 100% in Jan.



**Seedlings** (147 records): Absent in 88%: fewer  
 seedlings than prefire adults in 4 cases, and  
 more in 5 cases. Seedlings found in Jul, Sep,  
 Oct, Nov (5) and Dec.

**Fire Survival** (10 records): 80% survived by  
 seedlings only, 20% resprouted from  
 underground boles.

**Age to first flowering:** First flowers recorded  
 at 2 years, 50% estimated at 3-4 years, and  
 100% recorded at 4 years.



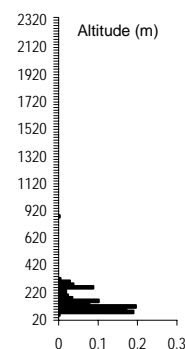
**Height** (375 records): 1% 0-0.2 m tall,  
 12% 0.2-1 m tall, 56% 1-2 m tall, 31% 2-5 m  
 tall.

**Pollinators** (2 records): 100% beetles.  
**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (373 records):  
 100% inland - further than 2  
 km from coast.

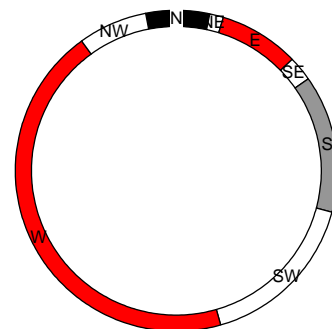
**Altitude** (373 records): 40 - 780  
 m; 80<sub>lq</sub> - 100<sub>med</sub> - 120<sub>uq</sub>m.



**Landform** (373 records):  
 97% deep soil, 3% swamp,  
 0.3% riverine, 0.3% shallow  
 soil.

**Slope** (370 records):  
 58% platform, 25% gentle  
 incline, 16% valley bottom,  
 1% dunes, 0.5% hill top, 0.3% steep incline.

**Aspect** (207 records): 57% West, 22% South,  
 11% North,  
 10% East.



**Soil Type** (366  
 records):  
 44% sandy,  
 34% loamy,  
 13% clayey,  
 9% gravelly,  
 0.3% rocky.

**Soil Colour** (365  
 records):  
 58% brown,  
 19% grey, 13% orange, 7% white, 2% red,  
 1% yellow.

**Geology** (309 records): 61% shale,  
 16% Tertiary sands, 12% sandstone,  
 6% conglomerate, 3% silcrete or ferricrete,  
 2% granite.

**Vegetation** (371 records): 93% shrubland,  
 4% agricultural lands, 1% grassland,  
 0.8% plantations, 0.5% suburban,  
 0.3% thicket.

**Conservation Status and Threat:**

**Red Data List Status:** Vulnerable A2c.

**Occurrence** (Fynbos): 1 200 km<sup>2</sup> with 22%  
 conserved and 43% lost; **Occupancy:**  
 280 km<sup>2</sup> with 21% conserved and 48% lost.  
**Fragmentation index:** 10%.

**Nature Reserves** (373 records): 54% in Nature  
 Reserves - well conserved.



**Habitat destruction** (371 records):  
75% extensive natural habitat, 14% islands,  
7% road verges, 3% naturally linear habitats,  
1% corridors, 0.5% naturally fragmented  
habitats.

**Alien Invasive Species** (363 records):  
42% Fabaceae (chiefly alien *Acacia*),  
41% none, 8% *Pinus*, 5% *Hakea*,  
2% Myrtaceae, 2% annual alien grasses.

**Alien Density** (362 records): 41% alien-free,  
37% sparse, 16% abundant, 5% dense,  
1% impenetrable.

**Cultivation & Utilization:**

**Picking** (286 records): 100% no sign of  
picking, 0.3% lightly picked.

**Cultivation Status:** No noted cultivation.

**Atlasers Notes:**

*Habit:*

A Few Plants greater than 2 m tall  
(SGAY1022012);

Appears to be both resprouting and reseeded;  
the resprouting plants are fewer but are  
already in bud (NAH92090706);

*Grazing:*

Heavily grazed - especially the lower most part  
of branches: presumably by ostriches  
(AGR95011119); Very overgrazed and one  
dead area badly overgrazed  
(AGRY2061301); Heavily grazed  
(SMR96090502);

*Survival:*

A weedy species - healthy colony with lots of  
cones and new growth (AGR91120106); A  
weed spreading in old lands!  
(ASP95060818);

Lots of young - good interfire recruitment!  
(AGR96042703 + 13); Lots of young  
(AGR96042704 + 19); Lots of young plants :  
expanding! (ASP94110302); Thousands of  
small plants standing water amongst the less  
dense *Acacias* (CHE97061204);

Only two plants seen. Male and female - good  
seed crop including a few of last years crop

(AGR91111620); 4 Males 1 female plant and  
1 dead plant (AJT94111901); 1 live and 1  
dead (ASP94071402); Many dead  
(CHE98051403); Many male plants! girls  
have got it good ! (VCH98100907);

*Road Verges:*

Some young plants in road verge only, rest  
mowed (AGR93011801); Mowed to 100 mm  
in road verge and thriving (AGR96041107);  
Happy with 100 mm high mowing  
(AGR96051001);

Half plants killed in *Acacia* removal!  
(AGR94071016); Chopped out as part of  
clearing operation (ASP94072701); No more  
plants To 3.2 km N - all now grass verges  
(AGR92071208);

**Confusing Species:** This is quite a distinct  
species, confused initially by one or two  
atlassers as *L. stellare* or *thymifolium*, but is  
not a resprouter and has a distinct growth  
corymbose growth habit, female cones and  
seeds.

Records of identification queries = 12.

Records of corrected identification queries = 4.  
= 0.0%.

**Variation and Taxonomy:** Two manuscript  
names *ericifolia* and *purpurea* have never  
been published. The latter was quite widely  
used in the early 1800s. Salisbury regarded  
the name *corymbosum* as an error, but the  
flowerheads are somewhat corymb-like in  
appearance.

No variation is apparent or has been recorded.  
William's statement that the hybrid was from  
an isolated population is probably the result  
of loss of intervening populations.

**Distribution:** Add.

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## *Leucadendron laxum* Williams 1967 Bredasdorp Conebush

**Other Common Names:** Smartrose, Vlei Rose, *Vleirosie*.

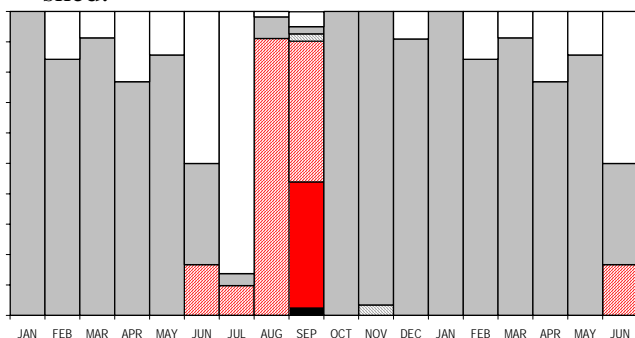
**Other Scientific Names:** *None*.

### 354 Records

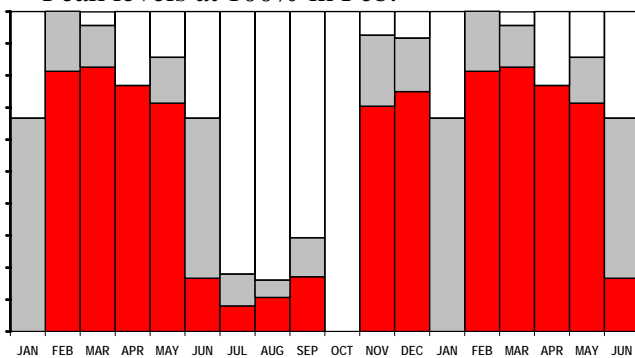
**Population** (330 records): 2% Abundant, 38% Common, 45% Frequent, 14% Rare, 0.6% Extinct.

**Dispersion** (243 records): 65% variable, 34% clumped, 0.8% widespread, 0.4% evenly distributed.

**Flowering** (260 records with: Jan 3, Feb 19, Mar 23, Apr 13, May 7, Jun 6, Jul 51, Aug 56, Sep 41, Oct 1, Nov 29, Dec 11): Buds from Aug to Sep; Flowering from Sep; Peak Flowering and Over not significant; Fruit from Oct to Jun; Nothing from Apr and Jun to Jul. Peak levels at 93% in Sep. Historically recorded as flowering from Sep to Oct, fruit ripen 6 months later and are shed.



**Growth** (255 records with: Jan 3, Feb 16, Mar 23, Apr 13, May 7, Jun 6, Jul 50, Aug 56, Sep 41, Oct 1, Nov 27, Dec 12): Much from Nov to May; Rare from Jan, Jun and Nov; None from Jan, Apr, and Jun to Oct 100. Peak levels at 100% in Feb.



**Seedlings** (79 records): All without any seedlings present.

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

**Age to first flowering:** First flowers recorded at 100% at 6 years, no data from younger veld other than 0% at 1 years.



**Height** (261 records): 2% 0-0.2 m tall, 44% 0.2-1 m tall, 52% 1-2 m tall, 3% 2-5 m tall.

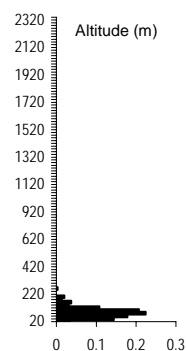
**Pollinators :** No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (353 records): 98% inland - further than 2 km from coast.

**Altitude** (353 records): 20 - 260 m; 40 *lq* - 60 *med* - 80 *uq*m.



**Landform** (295 records):

79% deep soil, 12% swamp, 5% riverine, 4% shallow soil.

**Slope** (276 records):

48% gentle incline, 34% platform, 16% valley bottom, 1% hill top, 0.4% steep incline.

**Aspect** (173 records): 35% South, 27% North, 21% West, 17% East.

**Soil Type** (261 records):

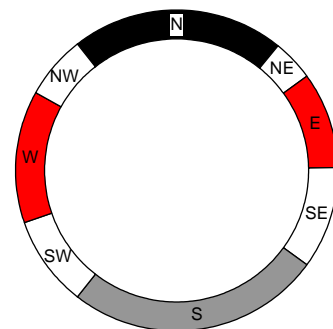
38% loamy, 32% clayey, 26% sandy, 3% gravelly, 0.4% peaty.

**Soil Colour** (259 records):

59% brown, 26% grey, 8% orange, 4% white, 2% black, 0.8% red, 0.4% yellow.

**Geology** (286 records): 46% shale, 33% silcrete or ferricrete, 20% sandstone, 1% Tertiary sands, 0.3% conglomerate, 0.3% limestone.

**Vegetation** (348 records): 99% shrubland, 0.9% agricultural lands, 0.6% thicket.



**Conservation Status and Threat:**

**Red Data List Status:** Endangered A2c.

Occurrence (Fynbos): 1 120 km<sup>2</sup> with 5% conserved and 37% lost; Occupancy: 393 km<sup>2</sup> with 7% conserved and 53% lost. Fragmentation index: 30%.

**Nature Reserves** (353 records): 9% in Nature Reserves - inadequately conserved.

**Habitat destruction** (268 records): 47% extensive natural habitat, 24% islands, 19% road verges, 6% naturally linear

habitats, 3% naturally fragmented habitats,  
1% corridors.

**Alien Invasive Species** (260 records):

74% Fabaceae (chiefly alien *Acacia*),  
12% none, 8% *Pinus*, 5% Myrtaceae,  
0.8% other aliens.

**Alien Density** (260 records): 12% alien-free,  
47% sparse, 27% abundant, 12% dense,  
2% impenetrable.

**Cultivation & Utilization:**

**Picking** (214 records): 97% no sign of picking,  
2% lightly picked, 0.9% severely picked.

**Cultivation Status:** Augmentations - 1 records  
(0.3%).

**Atlassers Notes:**

Some local thickets of HC4: over 2 m  
(SMRY0081611);

Growing on fallow agricultural land  
(LYM98091103); Seems capable of  
surviving amongst Kikuyu in old meadow as  
it resprouts (NAHY0051801);

Gone! Without a trace! (AGR98042201);

Lightly grazed (NGF96072812);  
Picked – but evidence hard to see  
(AGR92032601);

Lesser Double Collared Sunbirds visiting  
(LYMY0081602);

Proteas in clear zonation around vleilet: *L.  
xanthoconus* closest, then *laxum*  
(AGR98060619);

**Confusing Species:** A single misidentification  
with *L. corymbosum*, which is superficially  
quite similar

Records of identification queries = 2.

Records of corrected identification queries = 1.

**Variation and Taxonomy:** No variation  
known.

**Distribution:** Add.

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*Leucadendron verticillatum* (Thunb.) Meisn. 1803, 1856

**Klapmuts Conebush**

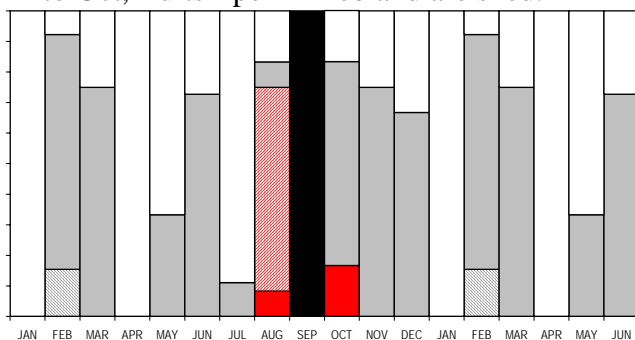
**Other Common Names:** None known.  
**Other Scientific Names:** *cinereum* R.Br. 1810.

**83 Records**

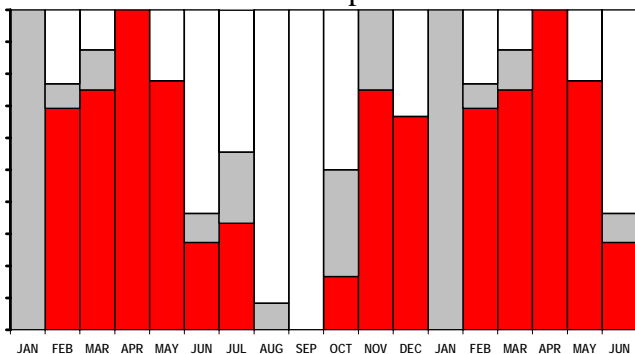
**Population** (78 records): 32% Common, 62% Frequent, 6% Rare.

**Dispersion** (76 records): 53% variable, 41% clumped, 7% evenly distributed.

**Flowering** (82 records with: Jan 1, Feb 13, Mar 8, Apr 2, May 9, Jun 11, Jul 9, Aug 12, Sep 1, Oct 6, Nov 4, Dec 6): Buds from Aug; Flowering from Oct; Peak Flowering from Sep; Over not significant; Fruit from Oct to Jun; Nothing from Nov to Jan and Mar to Jul. Peak levels unreliable at 75% in Aug. Historically recorded as flowering from Sep to Oct, fruits ripen in Feb and are shed.



**Growth** (82 records with: Jan 1, Feb 13, Mar 8, Apr 2, May 9, Jun 11, Jul 9, Aug 12, Sep 1, Oct 6, Nov 4, Dec 6): Much from Nov to Jul; Rare from Jul and Oct to Nov; None from Feb and May to Oct and Dec. Peak levels unreliable at 100% in Apr.



**Seedlings** (34 records): Absent in 65%: fewer seedlings than prefire adults in 1 case, and more in 5 cases. Seedlings found in Mar (2), May, Jun, Jul and Aug.

**Fire Survival** (3 records): 67% eliminated from the area by fires, 33% survived by seedlings only.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 3-11 years, and 100% consistently recorded at 13 years and older.



**Height** (80 records): 3% 0-0.2 m tall, 10% 0.2-1 m tall, 83% 1-2 m tall, 5% 2-5 m tall.

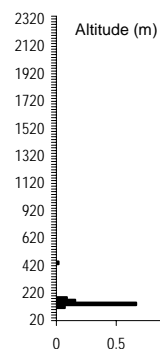
**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

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

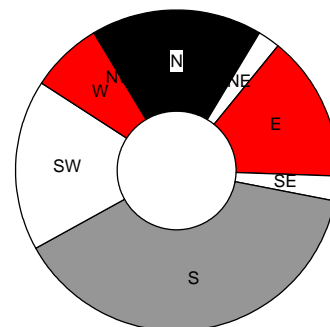
**Altitude** (57 records): 100 - 440 m; 120<sub>lq</sub> - 140<sub>med</sub> - 140<sub>uq</sub>m.



**Landform** (55 records): 95% deep soil, 5% shallow soil.

**Slope** (54 records): 70% gentle incline, 20% platform, 7% hill top, 2% steep incline.

**Aspect** (41 records): 45% South, 20% West, 18% North, 17% East.



**Soil Type** (55 records): 44% loamy, 35% clayey, 22% sandy.

**Soil Colour** (55 records): 49% brown, 35% grey, 9% orange, 4% white, 2% yellow, 2% red.

**Geology** (48 records): 46% shale, 19% sandstone, 19% granite, 17% silcrete or ferricrete.

**Vegetation** (54 records): 91% shrubland, 7% agricultural lands, 2% grassland.

**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered A2c, B1b(i,ii,iii,iv)c(iv).

**Occurrence** (Fynbos): 30 km<sup>2</sup> with 1% conserved and 67% lost; **Occupancy:** 34km<sup>2</sup> with 1% conserved and 66% lost. **Fragmentation index:** 40%.

**Nature Reserves** (57 records): 21% in Nature Reserves.

**Habitat destruction** (54 records): 39% islands, 30% road verges, 24% extensive natural habitat, 4% corridors, 2% patches, 2% naturally fragmented habitats.

**Alien Invasive Species** (53 records): 75% Fabaceae (chiefly alien *Acacia*),

13% *Pinus*, 9% none, 2% annual alien grasses.

**Alien Density** (53 records): 9% alien-free, 64% sparse, 13% abundant, 8% dense, 6% impenetrable.

**Cultivation & Utilization:**

**Picking** (65 records): 98% no sign of picking, 2% severely picked.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Most of colony is dead by fire - few young coming up (AGR99121501); Some 2/3 population burnt out 6 months ago: seedlings present as well as young plants (AKS94073001); Note : 70 - 80 % of this population burned (accidentally) on 1999/02/25 (NAH99022001); 200-300 plants in need of burning (SMRY3022601);

Occurring in road verge not in adjacent veld: only where sandstone over shale but more edge of it! (ASP94072702); Counted 19 seedlings not seen previously (HCA93060301); 7 adult plants, 6 dead adults and ca 35 young plants and seedlings: highly vulnerable - surrounded by dense *Acacia saligna* (NAH92052201); This fairly widespread population of about 40 plants is severely threatened by *Acacia saligna* and squatters (NAH98080401); This population is severely threatened by *Acacia saligna* and is within years of being smothered: conservation action even a fire is necessary as it is one of the biggest populations of this endangered species (NAH98080402); Less than 20 plants in a 20 m stretch of road verge (SHR97032101);

Grazed (CHE97061202); Some damage to plants by ?cattle (NAH92052201);

Weaver birds building nests in plants (LYM97111902);

Growing in ploughed lands! Either recently ploughed for first time or this is a weedy species! Spreading from mature plants on edge! (ASP95081007);

**Confusing Species:** Misidentified as *L. levisanus* which it superficially resembles (although it more resembles *L. cinereum*, but has distinct seeds, cones and flowers, and leaves less narrowed at base). Also misidentified in an Environmental Impact Assessment as *L. stellare*, which is completely different.

Records of identification queries = 1.

Records of corrected identification queries = 1.

**Variation and Taxonomy:** No variation noted.

**Distribution:** Add.

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