

# *Leucadendron floridum* R.Br. 1810

## Flats Conebush

**Other Common Names:** Silky Euryspermum, Sunny, *Tolbos*, Florida.

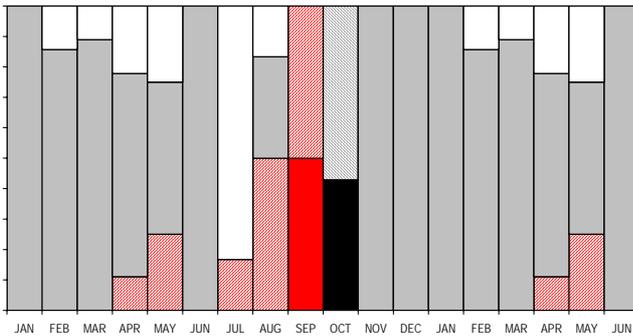
**Other Scientific Names:** *conifera* (L.) 1762, *saligna* (Thunb.) 1781, *sericeum* (Salisb. ex Knight) 1809.

### 63 Records

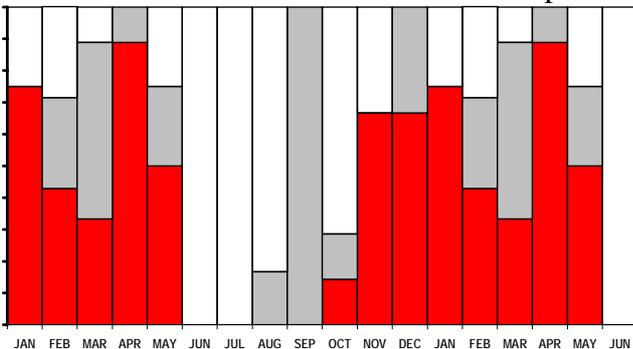
**Population** (58 records): 21% Common, 40% Frequent, 36% Rare, 3% Extinct.

**Dispersion** (52 records): 58% clumped, 31% variable, 10% evenly distributed, 2% widespread.

**Flowering** (61 records with: Jan 4, Feb 7, Mar 9, Apr 9, May 4, Jun 1, Jul 6, Aug 6, Sep 2, Oct 7, Nov 3, Dec 3): Buds from May and Aug to Sep; Flowering from Sep; Peak Flowering from Oct; Over from Oct; Fruit from Nov to Jun and Aug; Nothing from Apr to May and Jul. Peak levels unreliable at 100% from Sep to Oct. Historically recorded as flowering from Sep to Oct, fruits ripen after 6 months and – uncharacteristically for the section and subsection – are shed a month later.



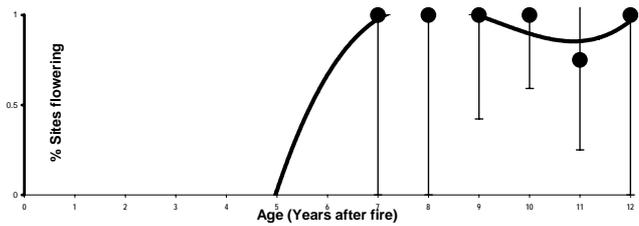
**Growth** (61 records with: Jan 4, Feb 7, Mar 9, Apr 9, May 4, Jun 1, Jul 6, Aug 6, Sep 2, Oct 7, Nov 3, Dec 3): Much from Nov to May; Rare from Feb, Mar, May, Sep and Dec; None from Jan to Feb and May to Nov. Peak levels unreliable at 100% in Dec and Apr.



**Seedlings** (26 records): Absent in 62%: fewer seedlings than prefire adults in 4 cases, and more in 1 case. Seedlings found in Feb, Mar (2), Aug and Sep.

**Fire Survival** (1 record): 100% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 100% at 7 years, no data from younger veld.



**Height** (60 records): 18% 0.2-1 m tall, 78% 1-2 m tall, 3% 2-5 m tall.

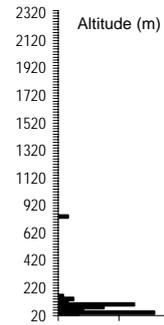
**Pollinators** (1 record): 100% beetles.

**Detailed Pollinators:** No additional data.

### Habitat:

**Distance to Ocean** (55 records): 64% inland - further than 2 km from coast.

**Altitude** (55 records): 20 - 740 m; 20<sub>lq</sub> - 40<sub>med</sub> - 40<sub>uq</sub> m.



**Landform** (54 records): 70% deep soil, 20% swamp, 7% riverine, 2% lake edge.

**Slope** (54 records): 41% gentle incline, 31% valley bottom, 26% platform, 2% steep incline.

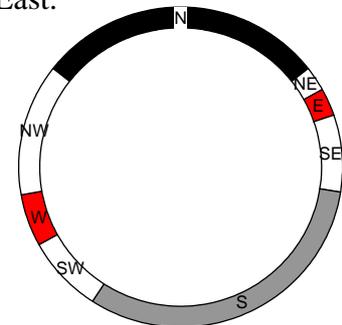
**Aspect** (35 records): 40% North, 37% South, 16% West, 7% East.

**Soil Type** (54 records): 63% sandy, 26% loamy, 11% peaty.

**Soil Colour** (54 records): 65% grey, 19% black, 11% brown, 6% white.

**Geology** (54 records): 100% sandstone.

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



### Conservation Status and Threat:

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

**Occurrence (Fynbos):** 171 km<sup>2</sup> with 60% conserved and 28% lost; **Occupancy:** 28 km<sup>2</sup> with 86% conserved and 7% lost. **Fragmentation index:** 15%.

**Nature Reserves** (55 records): 95% in Nature Reserves - well conserved.

**Habitat destruction** (53 records): 89% extensive natural habitat, 11% naturally linear habitats.

**Alien Invasive Species** (54 records): 74% Fabaceae (chiefly alien *Acacia*), 22% none, 2% *Pinus*, 2% other aliens.

**Alien Density** (54 records): 22% alien-free, 74% sparse, 4% abundant.

### Cultivation & Utilization:

**Picking** (48 records): 98% no sign of picking, 2% lightly picked.

**Cultivation Status:** Plantings - 4 records (6%), Escapes - 1 record (2%).

**Atlassers Notes:**

*Table Mountain population:*

*L. uliginosum* planted or escaped - (LYM96080401); This has been atlassed as both *L. floridum* and *uliginosum*: gizz is former with some features of latter - possibly a Kirstenbosch hybrid? (AGRY0012501);

*Other populations:*

4 dead plants seen with live plant - seeds released (AGR99101014); All dead - remains of 2 females and 2 males - only 1 was alive this time last year but other skeletons still present (AGRY4041110); 6 female and 13 male (CNR95101902); Population comprises 2 females and 1 male (CRS95020803); Population consists of 4 males and 3 females (CRS95021702); Population consists of 2 small clumps of plants 1 female on outer extremities of study site (CRS95031301); Both individuals appear to be half dead! both are male (CRS95031302); 2 parent plants, both female (CRS95031303); There may be more young plants in fairly dense growth (CVV96030802); One south of road, others north (CVV97090501); 2 dead (CVV97090501); Main clump north of jeep track to ruin and 30m from tar road (JID94101610); Many of the plants had branches that were dead or dying (LYM95041601); About 40 plants in 3 small subpopulations (NAH98070701); 5 dead plants were seen (not killed by fire - other causes) (NGF94071702); Moribund (OUTY0110503); None seen ! (PMR98031901); 3 males and 2 females

(TLE96101903); A few dead plants also seen (WIJ94101606);

Reestablished by D. Clarke a few years back after dense wattle thicket cleared (AGR91112404); These 2 plants are the only surviving ones of stock allowed to germinate there by Roger Gray the land owner about 7 yrs ago. One is from the original stock and the other is probably a 3 year old seedling from that stock. All the others (about 10) that germinated and grew have since died (NAH99041401);

Some individuals on road side of fence but these are prone to herbicidal spray from roads department (CRS94092201); Most cones have lost seed (CVV96030801);

**Confusing Species:** Confused with *L. macowanii* (leaves hairless, *Acacia*-like), *coniferum* (leaves hairless, fruit broadly winged) and *uliginosum* (which has short adpressed hairs – not silky – leaves and branches, planted plants causing the problem).

Records of identification queries = 11.

Records of corrected identification queries = 4.

**Variation and Taxonomy:** Did not appear to vary significantly.

Phillips and Hutchingson did not distinguish between *L. floridum* and *uliginosum*, and thus the two were confused well into the 1960s, with *L. uliginosum* being present in Peninsula species lists of the time.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron loeriense* Williams 1967

**Loerie Conebush**

*Loerietolbos*

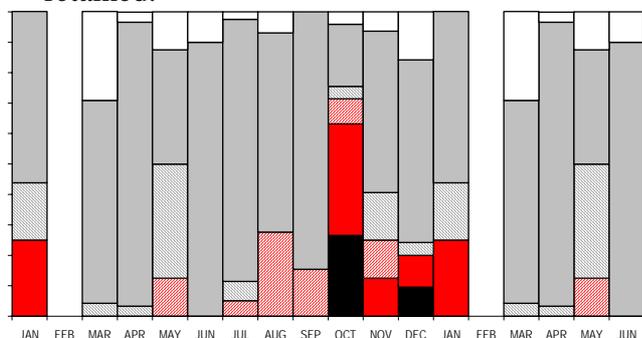
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**445 Records**

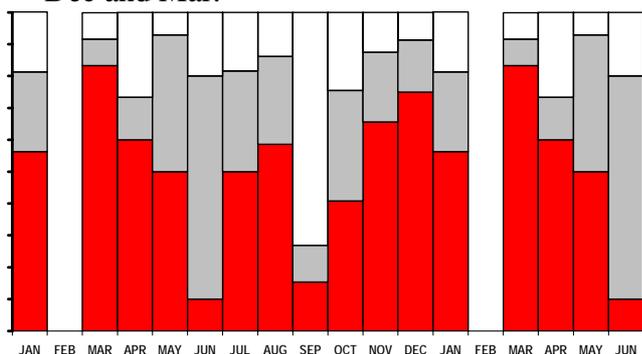
**Population** (434 records): 6% Abundant, 50% Common, 32% Frequent, 12% Rare, 0.5% Extinct.

**Dispersion** (407 records): 52% variable, 28% clumped, 17% widespread, 3% evenly distributed.

**Flowering** (406 records with: Jan 16, Feb 0, Mar 24, Apr 30, May 16, Jun 10, Jul 79, Aug 29, Sep 26, Oct 49, Nov 32, Dec 95): Buds from Aug; Flowering from Jan and Oct; Peak Flowering from Oct; Over from May; Fruit from all year round; Nothing from Mar. Peak levels at 76% in Oct. Historically recorded as flowering from Dec to Jan, fruits retained.



**Growth** (398 records with: Jan 16, Feb 0, Mar 24, Apr 30, May 14, Jun 10, Jul 76, Aug 29, Sep 26, Oct 49, Nov 32, Dec 92): Much from Oct to May and Jul to Aug; Rare from Jan, May to Aug and Oct to Nov; None from Apr, Jun, and Sep to Oct. Peak levels at 91% in Dec and Mar.



**Seedlings** (268 records): Absent in 94%: more seedlings than prefire adults in 8 cases. Seedlings found in Mar, May, Jun, Oct (4) and Dec.

**Fire Survival** (52 records): 52% survived by seedlings only, 33% escaped fires in fire-safe areas, 13% eliminated from the area by fires, 2% resprouted from underground boles.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 4-5 years, and 100% recorded at 6 years.



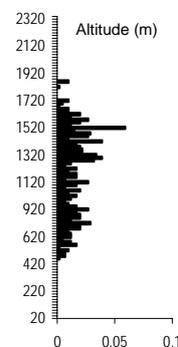
**Height** (408 records): 4% 0-0.2 m tall, 10% 0.2-1 m tall, 55% 1-2 m tall, 29% 2-5 m tall, 1.0% taller than 5 m.

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

**Habitat:**

**Distance to Ocean** (408 records): 100% inland - further than 2 km from coast.

**Altitude** (408 records): 440 - 1760 m; 800<sub>lq</sub> - 1120<sub>med</sub> - 1320<sub>uq</sub>m.



**Landform** (399 records): 50% deep soil, 45% shallow soil, 4% rocky outcrops, 0.3% riverine, 0.3% swamp.

**Slope** (401 records): 60% steep incline, 28% gentle incline, 11% hill top, 1.0% cliff, 0.7% platform, 0.2% valley bottom.

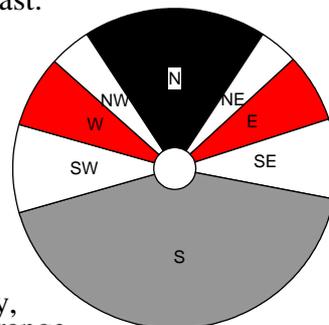
**Aspect** (362 records): 52% South, 23% North, 13% West, 12% East.

**Soil Type** (393 records): 60% loamy, 21% sandy, 12% rocky, 5% gravelly, 2% clayey, 0.3% peaty.

**Soil Colour** (393 records): 54% grey, 41% brown, 2% orange, 1% black, 0.5% red, 0.3% white, 0.3% yellow.

**Geology** (374 records): 99% sandstone, 1% shale.

**Vegetation** (402 records): 85% shrubland, 8% plantations, 6% grassland, 1.0% thicket.



**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 3 138 km<sup>2</sup> with 57% conserved and 3% lost; **Occupancy:** 443 km<sup>2</sup> with 67% conserved and 7% lost. **Fragmentation index:** 6%.

**Nature Reserves** (408 records): 52% in Nature Reserves - well conserved.

**Habitat destruction** (387 records): 88% extensive natural habitat, 10% islands, 2% naturally linear habitats.

**Alien Invasive Species** (371 records):

74% none, 24% *Pinus*, 0.8% Fabaceae (chiefly alien *Acacia*), 0.5% other aliens, 0.3% *Hakea*, 0.3% Myrtaceae.

**Alien Density** (371 records): 74% alien-free, 11% sparse, 8% abundant, 7% dense.

**Cultivation & Utilization:**

**Picking** (303 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Witch's Broom Infestation:** 1 record (0.2%).

**Atlassers Notes:**

The new growth at the ends of the branches glows a peachy red in the sunlight - an absolutely wonderful sight (MCG97120603);

In spite of being listed as 'rare' in the book is extremely common all over this area (MCG96082403); In parts so thick as to be impenetrable (MCG96082501); The *L. loeriense* jungle is a sight to see (MCG97120603);

Small brown spiders spun webs inside young new leaves and laid eggs - ants also seen (BMJ96071401);

**Confusing Species:** Considerable confusion was caused by the key in Williams (1972). Although specimens key out to *L. uliginosum* subsp. *uliginosum* (3 % of errors), this is clearly incorrect as was the plants are not silver, and the subsp. *glabratum* was usually

(93%) selected instead, even though the leaves are too long and hairy. In 4% of cases, atlassers did not venture a subspecies. A single case of misidentification with *L. spissifolium* was noted (but with subspecies *spissifolium* which is utterly distinct - a hairless resprouter with large cones!).

Records of identification queries = 179.

Records of corrected identification queries = 163.

**Variation and Taxonomy:** William's description of the habit is incorrect: plants from the type locality exceed 2m tall. The key to the subsection, should therefore have *L. loeriense* inserted into couplet 5\*, with the following shared features: Leaves 35m long, male perianth limb, and the separating features being: leaves with erect pubescence for *L. loeriense* and leaves with adpressed-silvery pubescence for *L. uliginosum* subsp. *uliginosum*. Some populations are glabrescent, and in a few the female cones do not develop the characteristic red blush, but otherwise it does not appear to be very variable.

**Distribution:** Add.

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*Leucadendron uliginosum* subspecies *uliginosum* R.Br. 1810

**Outeniqua Conebush**

*Silwerbos*

**Other Common Names:** Silverbush, Silvery Euryspermum, *Duineknoppiesbos*, *Knoppiesbos*, *Knoppiestolbos*, *Kraaltolbos*, *Tolletjiesbos*.

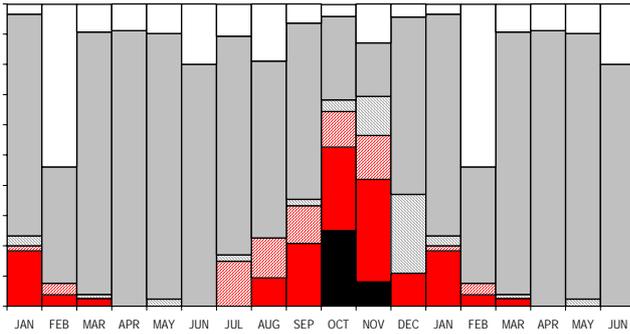
**Other Scientific Names:** *argenteum* (Salisb. ex Kn.) 1809, *concinnum* (Salisb.) 1796, *salignum* (Thunb.) 1781.

**646 Records**

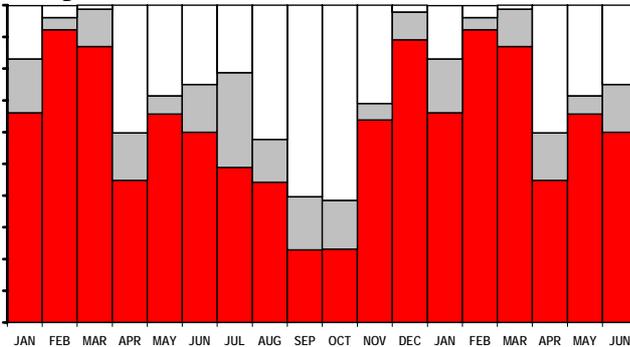
**Population** (630 records): 9% Abundant, 43% Common, 41% Frequent, 6% Rare, 0.3% Extinct.

**Dispersion** (598 records): 44% variable, 31% widespread, 18% clumped, 7% evenly distributed.

**Flowering** (623 records with: Jan 60, Feb 26, Mar 76, Apr 68, May 41, Jun 20, Jul 47, Aug 53, Sep 48, Oct 76, Nov 62, Dec 46): Buds not significant; Flowering from Sep to Nov; Peak Flowering from Oct; Over from Dec; Fruit from Dec to Oct; Nothing from Feb and Jun. Peak levels at 69% in Nov. Historically recorded as flowering from Nov, fruit retained.



**Growth** (600 records with: Jan 59, Feb 26, Mar 77, Apr 67, May 35, Jun 20, Jul 47, Aug 52, Sep 48, Oct 65, Nov 58, Dec 46): Much from all year round; Rare from Jul; None from Apr to Nov. Peak levels at 99% in Mar.



**Seedlings** (215 records): Absent in 69%: fewer seedlings than prefire adults in 20 cases, and more in 13 cases. Seedlings found in Jan (2), Feb (6), Mar, Jun, Jul (9), Aug (5), Sep (7), Oct and Nov.

**Fire Survival** (40 records): 80% survived by seedlings only, 10% eliminated from the area by fires, 10% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 3 years, 50% estimated at 3-5 years, and 100% recorded at 8 years.



**Height** (635 records): 3% 0-0.2 m tall, 15% 0.2-1 m tall, 50% 1-2 m tall, 32% 2-5 m tall, 0.6% taller than 5 m.

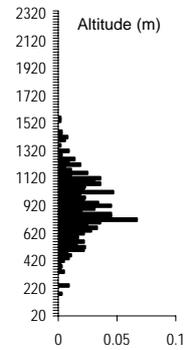
**Pollinators** (5 records): 40% birds, 40% beetles, 20% none observed.

**Detailed Pollinators** (2 records): Orange-breasted Sunbird.

**Habitat:**

**Distance to Ocean** (628 records): 100% inland - further than 2 km from coast.

**Altitude** (628 records): 320 - 1460 m; 660 *lq* - 780 *med* - 920 *uq*m.



**Landform** (625 records): 77% deep soil, 20% shallow soil, 2% rocky outcrops, 0.2% riverine, 0.2% swamp.

**Slope** (626 records): 50% steep incline, 41% gentle incline, 5% hill top, 2% platform, 1% cliff, 0.5% valley bottom.

**Aspect** (584 records): 32% North, 32% South, 20% East, 16% West.

**Soil Type** (624 records):

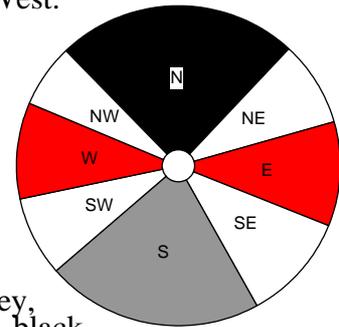
47% loamy, 37% sandy, 7% peaty, 5% gravelly, 3% clayey, 1% rocky.

**Soil Colour** (624 records):

41% grey, 28% brown, 27% black, 3% orange, 0.8% white, 0.8% yellow, 0.2% red.

**Geology** (624 records): 91% sandstone, 9% shale.

**Vegetation** (625 records): 99% shrubland, 1% plantations.



**Conservation Status and Threat:**

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

Occurrence (Fynbos): 2 382 km<sup>2</sup> with 22% conserved and 19% lost; Occupancy: 510 km<sup>2</sup> with 43% conserved and 13% lost. Fragmentation index: 18%.

**Nature Reserves** (628 records): 62% in Nature Reserves - well conserved.

**Habitat destruction** (607 records):

96% extensive natural habitat, 3% islands, 0.7% corridors, 0.3% road verges, 0.3% naturally linear habitats, 0.2% naturally fragmented habitats.

**Alien Invasive Species** (622 records):

34% *Hakea*, 33% *Pinus*, 29% none, 4% Fabaceae (chiefly alien *Acacia*), 0.3% Myrtaceae.

**Alien Density** (622 records): 29% alien-free, 60% sparse, 7% abundant, 4% dense.**Cultivation & Utilization:**

**Picking** (374 records): 99% no sign of picking, 0.5% lightly picked.

**Cultivation Status:** Plantings - 13 records (2%).

**Atlassers Notes:**

Very interesting! In amongst stands of very definite *L. uliginosum* subsp. *uliginosum* was a solitary male specimen with greener and hairless leaves. What an excellent chance to compare the two subspecies! But why only one specimen? <considered a sport>- (DFJ99012602); Note: subspecies *glabratum* possibly also sighted, but not confirmed. Planning a return visit ... (OUT93082101);

Abundant: needs family planning (AWA98111706); In spite of very dry conditions young plants were all thriving. Were they responding as if there had just been a fire? (DFJ96062902); Particularly healthy and dense stand along path to this hiking trail hut - no fire for a long time it seems (DFJ96062903);

Plants dead (OUT98013102); Recently dead (OUT99050704);

Vast stands at entrance to reserve in bud, 0.5 km up road in full bloom, then higher up [this SRS] again as at gate. Why the difference? (AWA94102501);

With dense patches of fire-killed adult plants (height about 2 m) but poor post-fire regeneration (SGAY0121306);

**Confusing Species:** Some confusion was caused by Meisner (1956) not realizing the difference between *L. floridum* and *uliginosum*, and Phillips and Hutchingson (1912) not recognizing *L. floridum* as a different species. Also due to an identification error for a voucher specimen, Muir (1929) referred to *L. meridianum* as *uliginosum*., resulting in further confusion in the literature.

Atlassers occasionally reported both subspecies together or muddled them (40% of errors).

One atlasser identified the species as *L. album*, based on the silver leaves. A misidentification with *L. conicum* was also noted.

Records of identification queries = 25.

Records of corrected identification queries = 17.

**Variation and Taxonomy:** All the older names were already occupied in *Leucadendron* and thus could not be applied. No variation known.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron uliginosum* subspecies *glabratum* Williams 1972  
Tsitsikamma Conebush

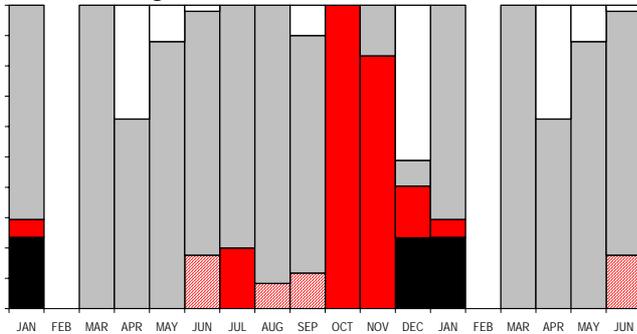
**Other Common Names:** Ugi, *Geeltolbos*.  
**Other Scientific Names:** *None*.

**268 Records**

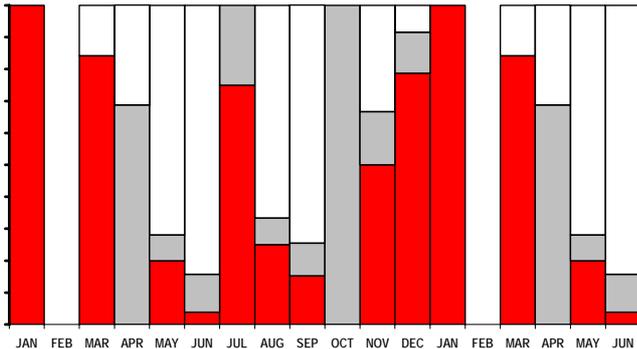
**Population** (266 records): 6% Abundant, 57% Common, 31% Frequent, 6% Rare, 0.4% Extinct.

**Dispersion** (258 records): 67% variable, 16% clumped, 15% widespread, 2% evenly distributed.

**Flowering** (260 records with: Jan 17, Feb 0, Mar 19, Apr 16, May 25, Jun 51, Jul 5, Aug 12, Sep 60, Oct 2, Nov 6, Dec 47): Buds from Jun; Flowering from Oct to Nov; Peak Flowering from Dec to Jan; Over not recorded; Fruit from Jan to Sep; Nothing from Apr and Dec. Peak levels unreliable at 100% in Oct. Historically recorded as flowering in Dec, fruits retained.



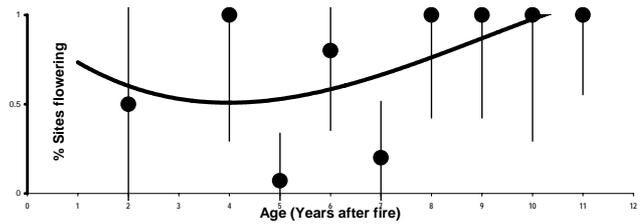
**Growth** (258 records with: Jan 17, Feb 0, Mar 19, Apr 16, May 25, Jun 51, Jul 4, Aug 12, Sep 59, Oct 2, Nov 6, Dec 47): Much from Nov to Mar, May and Jul to Aug; Rare from Apr, Jul and Oct; None from Apr to Nov. Peak levels unreliable at 100% in Jan.



**Seedlings** (118 records): Absent in 93%; fewer seedlings than prefire adults in 3 cases, and more in 1 case. Seedlings found in Jun (2), Jul and Sep.

**Fire Survival** (14 records): 57% survived by seedlings only, 21% eliminated from the area by fires, 21% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 2 years, 50% estimated at 3-6 years, and 100% recorded consistently after 8 years.



**Height** (265 records): 3% 0-0.2 m tall, 25% 0.2-1 m tall, 33% 1-2 m tall, 39% 2-5 m tall, 0.4% taller than 5 m.

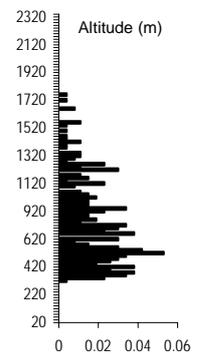
**Pollinators:** No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (264 records): 100% inland - further than 2 km from coast.

**Altitude** (264 records): 300 - 1660 m; 480 *lq* - 660 *med* - 840 *uq*m.



**Landform** (264 records): 76% deep soil, 19% shallow soil, 5% rocky outcrops.

**Slope** (263 records): 49% steep incline, 35% gentle incline, 11% hill top, 2% cliff, 2% platform, 0.8% valley bottom.

**Aspect** (231 records): 37% South, 32% North, 17% West, 13% East.

**Soil Type** (261 records):

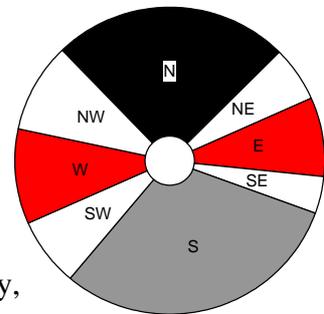
65% loamy, 19% sandy, 10% peaty, 4% rocky, 2% clayey, 0.4% gravelly.

**Soil Colour** (262 records):

39% grey, 30% brown, 29% black, 2% red, 0.8% white, 0.4% orange.

**Geology** (261 records): 93% sandstone, 7% shale.

**Vegetation** (264 records): 92% shrubland, 6% plantations, 2% grassland, 0.4% thicket.



**Conservation Status and Threat:**

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

Occurrence (Fynbos): 926 km<sup>2</sup> with 74% conserved and 3% lost; Occupancy: 222 km<sup>2</sup> with 55% conserved and 4% lost.

Fragmentation index: 22%.

**Nature Reserves** (264 records): 58% in Nature Reserves - well conserved.

**Habitat destruction** (260 records): 97% extensive natural habitat, 3% islands, 0.4% corridors.

**Alien Invasive Species** (263 records): 59% *Pinus*, 30% *Hakea*, 9% none, 2% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (262 records): 9% alien-free, 66% sparse, 21% abundant, 3% dense.

**Cultivation & Utilization:**

**Picking** (178 records): 100% no sign of picking.

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

**Atlassers Notes:**

Leaves appeared silvery and the cones green not red/ brown (BMJ96072104); Is hairy although not silver - quite green (DFJ99050201);

Were growing hard from the bottom - is this because there has not been a fire here for some time? (PVR97092008);

A very exposed and windy slope but still the plants manage HC3 ?? (DFJ97050406);

**Confusing Species:** Mainly confused with subsp. *uliginosum* when in new growth or when hairs persistent, but hairs are not silver. One instance of misidentification with *L. album* which is quite a different plant.

Records of identification queries = 19.

Records of corrected identification queries = 17.

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

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron conicum* (Lam.) Williams 1791, 1967

**Garden-Route Conebush**

*Vaaltoibos*

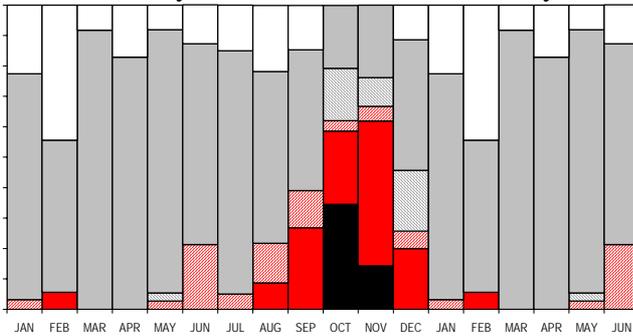
**Other Common Names:** Grey Conebush, Ruby-cone Conebush, *Grystolbos*, *Robyntol*.  
**Other Scientific Names:** *conifera* Poir 1804, *ramosissimum* Buek ex Meisn 1856.

**475 Records**

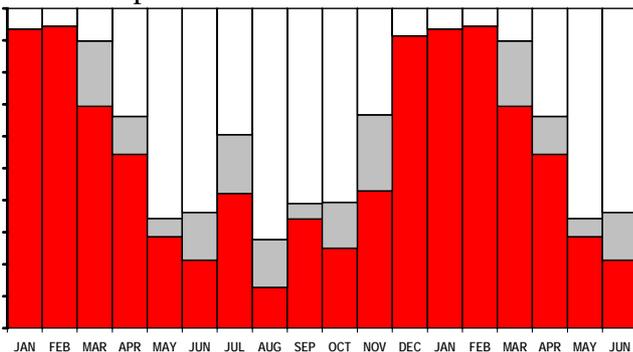
**Population** (472 records): 2% Abundant, 28% Common, 59% Frequent, 11% Rare, 0.2% Extinct.

**Dispersion** (447 records): 45% clumped, 40% variable, 11% widespread, 5% evenly distributed.

**Flowering** (464 records with: Jan 31, Feb 18, Mar 49, Apr 70, May 37, Jun 47, Jul 40, Aug 46, Sep 41, Oct 29, Nov 21, Dec 35): Buds from Jun; Flowering from Sep to Dec; Peak Flowering from Oct; Over from Dec; Fruit from all year round; Nothing from Jan to Feb and Aug. Peak levels at 79% in Oct. Historically recorded as flowering from late Oct to early Nov, fruit retained for 1-2 years.



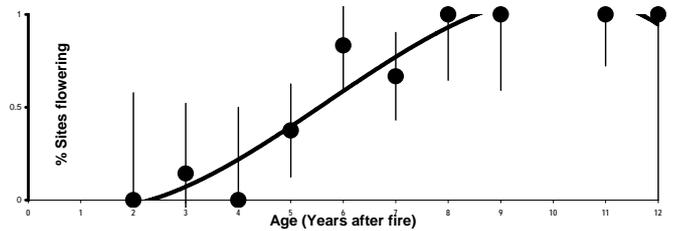
**Growth** (458 records with: Jan 31, Feb 18, Mar 49, Apr 68, May 35, Jun 47, Jul 38, Aug 47, Sep 41, Oct 28, Nov 21, Dec 35): Much from Sep to Jul; Rare from Mar and Nov; None from Apr to Nov. Peak levels at 94% in Feb.



**Seedlings** (172 records): Absent in 87%: fewer seedlings than prefire adults in 5 cases, and more in 6 cases. Seedlings found in Jan (2), Feb, Jun (3), Jul, Aug, Sep, Nov and Dec.

**Fire Survival** (19 records): 89% survived by seedlings only, 5% eliminated from the area by fires, 5% resprouted from underground boles.

**Age to first flowering:** First flowers recorded at 3 years, 50% estimated at 5-6 years, and 100% recorded at 8 years.



**Height** (469 records): 2% 0-0.2 m tall, 17% 0.2-1 m tall, 33% 1-2 m tall, 42% 2-5 m tall, 5% taller than 5 m.

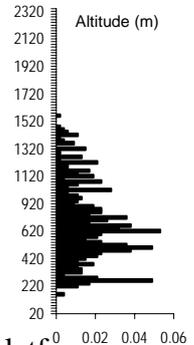
**Pollinators** (2 records): 100% flies.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (469 records): 99% inland - further than 2 km from coast.

**Altitude** (469 records): 140 - 1460 m; 460 *lq* - 620 *med* - 760 *uq*m.

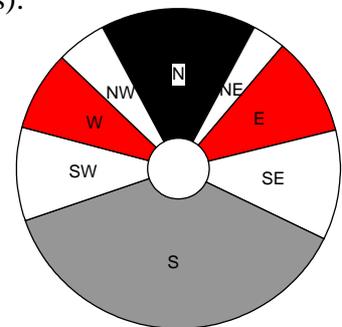


**Landform** (467 records): 85% deep soil, 9% shallow soil, 3% riverine, 2% rocky outcrops, 0.6% swamp.

**Slope** (469 records): 44% steep incline, 39% gentle incline, 8% platform, 5% hill top, 3% valley bottom, 0.4% cliff.

**Aspect** (405 records):

49% South, 20% North, 16% East, 15% West.



**Soil Type** (446 records): 54% loamy, 22% peaty, 20% sandy, 3% gravelly, 0.9% clayey, 0.7% rocky.

**Soil Colour** (446 records): 43% black, 28% brown, 26% grey, 0.9% orange, 0.7% white, 0.7% red, 0.2% yellow.

**Geology** (460 records): 93% sandstone, 7% shale.

**Vegetation** (469 records): 96% shrubland, 3% plantations, 1% thicket, 0.2% grassland.

**Conservation Status and Threat:**

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

Occurrence (Fynbos): 5 890 km<sup>2</sup> with 29% conserved and 18% lost; Occupancy: 547 km<sup>2</sup> with 60% conserved and 16% lost. Fragmentation index: 7%.

**Nature Reserves** (469 records): 62% in Nature Reserves - well conserved.

**Habitat destruction** (454 records): 88% extensive natural habitat, 4% road verges, 4% islands, 2% corridors,

2% naturally linear habitats, 0.4% naturally fragmented habitats.

**Alien Invasive Species** (446 records):

46% *Pinus*, 24% *Hakea*, 23% none, 6% Fabaceae (chiefly alien *Acacia*), 0.4% other aliens, 0.2% Myrtaceae.

**Alien Density** (446 records): 23% alien-free, 66% sparse, 9% abundant, 2% dense.

**Cultivation & Utilization:**

**Picking** (324 records): 99% no sign of picking, 0.6% lightly picked.

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

**Atlassers Notes:**

Trees growing on wet south facing rock face of cutting uniform green - no typical red colouring due to lack of sun

(AWA97080701); Green leaves and cones with no red pigment (SHR95092501);

Plants 5-10 m tall (OBK96040711); Thick stem (about 150 mm diam.) and thick branches.

Far too few leaves for its size. Very few new cones (AWA96070903);

Recovering from pines - not noticed before as under pines (ASPY2112101); Zillions and Tillions of plants (AWA98012902); Many widespread dead plants about 2m high seedlings in only 1 patch (SGAY0121303);

In riverbed (AWA98103108); Growing in squelchy streambed (MCG96092301);

Growing along river bank; Older than rest of plot: 10-15 years (OUT94072303); Most common in wettest area (OUT98082205); In wet stream (VCH98040401);

Full of green beetles - no flowers

(AWA97120402); Lots of Sugarbirds roosting in the bushes (VCH98040408);

**Confusing Species:** Confused with the closely related *L. uliginosum* subsp. *glabratum*, which has an entirely different growth habit and much smaller leaves and *L. salicifolium* which has linear leaves, and hairless flowerheads and basal bracts.

Records of identification queries = 18.

Records of corrected identification queries = 4.

**Variation and Taxonomy:** Not variable except for one character:

- Plants with a pronounced reddish tinge and basal bracts bright pink from Robinson Pass to Montagu Pass, near George.
- Elsewhere plants green and with yellow basal bracts.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron macowanii* Phill. 1913  
Acacia-leaf Conebush

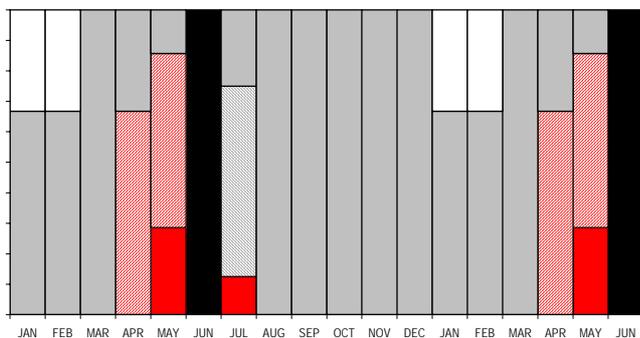
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**39 Records**

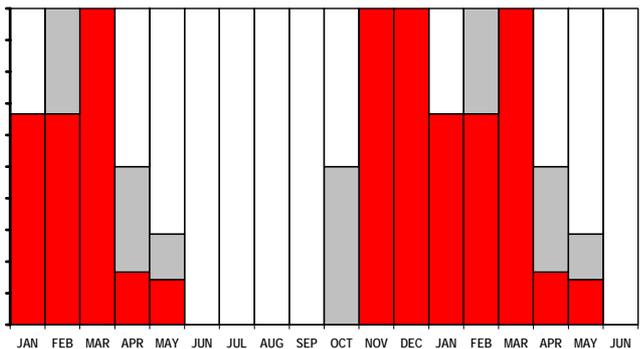
**Population** (35 records): 3% Common, 69% Frequent, 29% Rare.

**Dispersion** (34 records): 59% clumped, 35% variable, 6% evenly distributed.

**Flowering** (39 records with: Jan 3, Feb 3, Mar 2, Apr 6, May 7, Jun 1, Jul 8, Aug 3, Sep 1, Oct 2, Nov 1, Dec 2): Buds from Apr to May; Flowering from May; Peak Flowering from Jun; Over from Jul; Fruit from Jul to Apr; Nothing from Jan to Feb. Peak levels unreliable at 100% in Jun. Historically recorded as flowering from May to Jul, fruit retained.



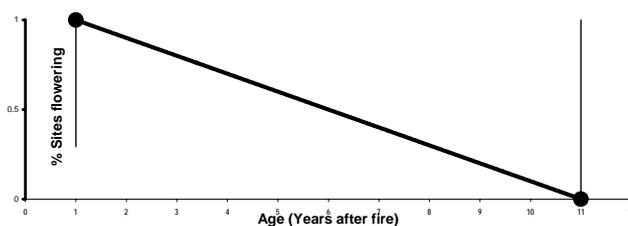
**Growth** (39 records with: Jan 3, Feb 3, Mar 2, Apr 6, May 7, Jun 1, Jul 8, Aug 3, Sep 1, Oct 2, Nov 1, Dec 2): Much from Jan 67 - Feb 67 - Mar 100 - Apr 17 - May 14 - Nov 100 - Dec 100 -; Rare from Feb 33 - Apr 33 - May 14 - Oct 50 -; None from Jan 33 - Apr 50 - May 71 - Jun 100 - Jul 100 - Aug 100 - Sep 100 - Oct 50.



**Seedlings** (10 records): Absent in 80%: more seedlings than prefire adults in 1 case. Seedlings found in Feb.

**Fire Survival** : No data.

**Age to first flowering:** First flowers recorded at 100% at 1 years, additional data from veld less than 11 years old missing.



**Height** (39 records): 3% 0-0.2 m tall, 13% 0.2-1 m tall, 79% 1-2 m tall, 5% 2-5 m tall.

**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

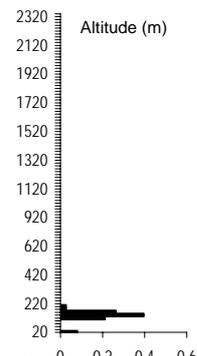
**Distance to Ocean** (34 records): 100% coastal - less than 2 km from coast.

**Altitude** (34 records): 100 - 200 m; 120<sub>lq</sub> - 140<sub>med</sub> - 140<sub>uq</sub>m.

**Landform** (34 records): 56% deep soil, 24% riverine, 18% swamp, 3% rocky outcrops.

**Slope** (34 records): 68% gentle incline, 15% platform, 12% valley bottom, 6% steep incline.

**Aspect** (30 records): 57% East, 20% North, 20% South, 3% West.



**Soil Type** (34 records):

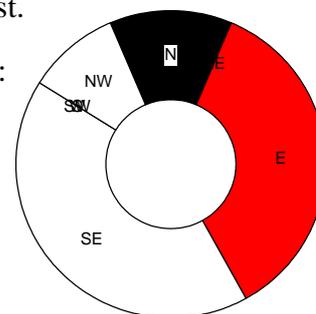
44% sandy, 38% loamy, 18% peaty.

**Soil Colour** (34 records):

38% grey, 26% black, 26% brown, 9% white.

**Geology** (33 records): 97% sandstone, 3% shale.

**Vegetation** (32 records): 88% shrubland, 13% thicket.



**Conservation Status and Threat:**

**Red Data List Status:** Critically Endangered A2c, B1a(i)c(iv) + 2a(i)c(iv).

**Occurrence** (Fynbos): 9 km<sup>2</sup> with 96% conserved and 5% lost; **Occupancy:** 9 km<sup>2</sup> with 68% conserved and 9% lost. **Fragmentation index:** 90%.

**Nature Reserves** (34 records): 68% in Nature Reserves - well conserved.

**Habitat destruction** (33 records): 48% extensive natural habitat, 42% naturally linear habitats, 9% islands.

**Alien Invasive Species** (34 records): 68% Fabaceae (chiefly alien *Acacia*), 21% none, 9% *Pinus*, 3% Myrtaceae.

**Alien Density** (34 records): 21% alien-free, 65% sparse, 9% abundant, 6% dense.

**Cultivation & Utilization:**

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

**Cultivation Status:** Plantings - 4 records (10%).

**Atlassers Notes:**

Appears to be exclusively serotinous: many cones showing signs of infestation (galls) similar to Port Jackson (CBE92071801);

The plants were bush-cut in error three years ago it has recovered magnificently and there are now about 20 plants (ANR97082301); The population is both inside and outside the reserve (CBE92071801); Dead tree (CBE93031403); Population Under Threat From Aliens - Both Inside and Outside The Reserve (CNR95041101); Only 1 old female battered by bergies and horse riders - seeds taken from old cones: to be smoked and planted out in reserve - once an extensive population - fence firebreak wiped it out! (*de ja voure*) (CNR95050901); Total plants in valley is 12: 6 male and 6 female (CNR95101102); This is the population that was destroyed in 1994 (CRS95021701); According to the reserve warden there should be over 150 plants planted along valley bottom (CVV94050402); Not many more than 10 plants (JAT95080601); Growing right next to fence: population fenced off. I assume they are the planted ones Roy Erntzen told us about (LYM96012001); This reserve population appears to be about 40

plants: all looking healthy. The firebreak killed at most 2 plants, leaving the others untouched (NAH95042701);

About 20 plants present some threatened by aliens (NAH98070801); About 20 plants in total (NAH98070802); One dead plant (PMRY0052001); He also mentioned that seeds that he planted near the dam at Silvermine are thriving (SHR96022401); Between 10 & 20 inside fence (SMR99042107);

**Confusing Species:** Although very similar to *L. conicum* (red – not purplish – tinged plant, and hairy) and *salicifolium* (smaller leaves and prominent involucre bracts), its localized distribution and rarity prevented any confusion with other species.

Records of identification queries = 3.

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

The specimen of Wolley-Dod 2924 (K) cited by Phillips is not of this species, but is *L. xanthoconus*.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron pondoense* Van Wyk 1990  
**Pondoland Conebush**  
*Pondolandtolbos*

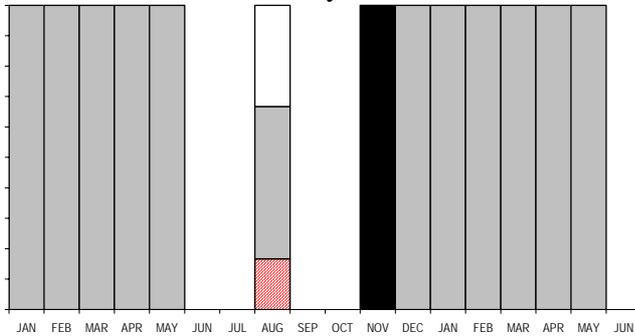
**Other Common Names:** Pondo Conebush, Pondoland Streambush.  
**Other Scientific Names:** None.

**35 Records**

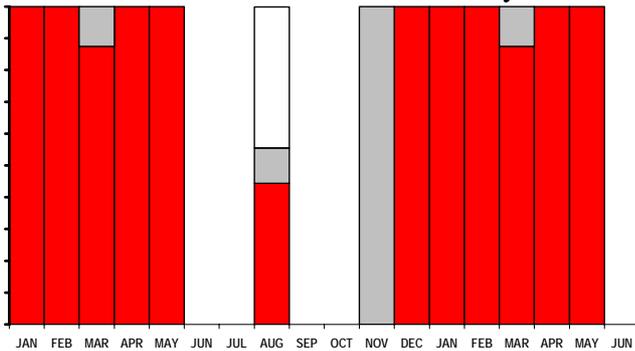
**Population** (35 records): 51% Common, 49% Frequent.

**Dispersion** (35 records): 51% variable, 34% evenly distributed, 14% clumped.

**Flowering** (31 records with: Jan 5, Feb 4, Mar 8, Apr 1, May 3, Jun 0, Jul 0, Aug 6, Sep 0, Oct 0, Nov 2, Dec 2): Buds from Aug ; Flowering not recorded; Peak Flowering from Nov; Over not recorded; Fruit from Dec to Aug; Nothing from Aug. Peak levels unreliable at 100% in Nov. Historically recorded as flowering from Sep to Dec, fruit released after about 1 year.



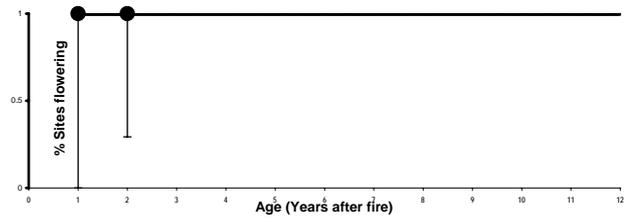
**Growth** (34 records with: Jan 5, Feb 4, Mar 8, Apr 1, May 3, Jun 0, Jul 0, Aug 9, Sep 0, Oct 0, Nov 2, Dec 2): Much from Dec to Aug; Rare from Nov; None from Aug. Peak levels unreliable at 100% from Nov to May.



**Seedlings** (17 records): Absent in 53%: fewer seedlings than prefire adults in 3 cases, and more in 1 case. Seedlings found in Jan (4).

**Fire Survival** (14 records): 79% escaped fires in fire-safe areas, 21% survived by seedlings only.

**Age to first flowering:** First flowers recorded at 100% at 1 years, no data for veld older than 2 years.



**Height** (34 records): 12% 0.2-1 m tall, 65% 1-2 m tall, 24% 2-5 m tall.

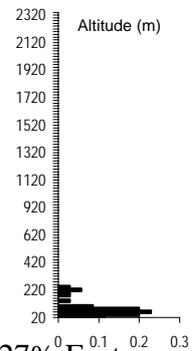
**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (35 records): 83% coastal - less than 2 km from coast.

**Altitude** (35 records): 20 - 240 m; 20<sub>lq</sub> - 40<sub>med</sub> - 60<sub>uq</sub> m.

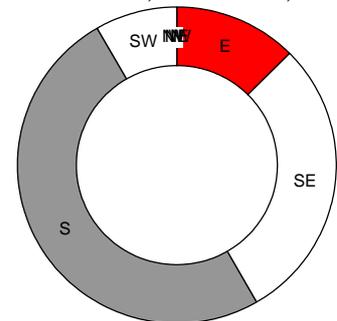


**Landform** (35 records):

77% riverine, 14% deep soil, 9% shallow soil.

**Slope** (32 records): 47% gentle incline, 47% valley bottom, 6% steep incline.

**Aspect** (24 records): 69% South, 27% East, 4% West.



**Soil Type** (33 records):

52% loamy, 48% sandy.

**Soil Colour** (33 records):

61% grey, 18% black, 15% white, 6% brown.

**Geology** (35 records): 100% sandstone.

**Vegetation** (30 records): 50% grassland, 50% shrubland.

**Conservation Status and Threat:**

**Red Data List Status: Vulnerable**

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

Occurrence: 186 km<sup>2</sup> with 24% conserved and 3% lost; Occupancy: 50 km<sup>2</sup> with 45% conserved and 1% lost. Fragmentation index: 27%.

**Nature Reserves** (35 records): 77% in Nature Reserves - well conserved.

**Habitat destruction** (25 records): 56% naturally linear habitats, 40% extensive natural habitat, 4% islands.

**Alien Invasive Species** (28 records):

57% Fabaceae (chiefly alien *Acacia*), 36% none, 4% *Hakea*, 4% Myrtaceae.

**Alien Density** (28 records): 36% alien-free, 64% sparse.

**Cultivation & Utilization:**

**Picking** (23 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Grows in stream beds on sandstone where safe from fire which kills them (ATA92111001-02); Occurs only in stream beds as a fire escape (ATA99011701); Not subjected to fire (BRB99082401); Some plants had scorched leaves but most had escaped the recent fire (BRB99082402); Only on stream margins and on sand banks in stream beds; common on most streams (PAW93012001); Some killed by fire (VCH99082303); Beetles on the Cones (NGFY1033102);

**Confusing Species:** None recorded, probably due to its geographical isolation.

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

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron radiatum* Phill. & Hutch. 1912  
**Langeberg Conebush**

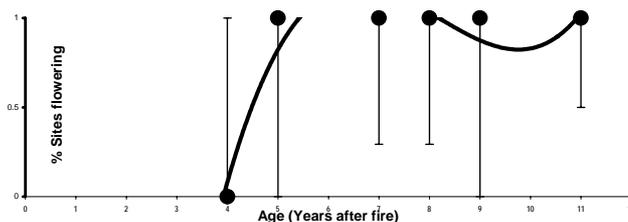
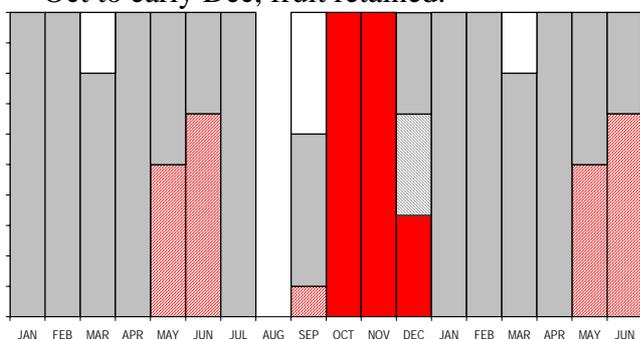
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**38 Records**

**Population** (38 records): 18% Common, 42% Frequent, 37% Rare, 3% Extinct.

**Dispersion** (32 records): 50% clumped, 34% variable, 13% widespread, 3% evenly distributed.

**Flowering** (37 records with: Jan 4, Feb 3, Mar 5, Apr 4, May 2, Jun 3, Jul 1, Aug 0, Sep 10, Oct 1, Nov 1, Dec 3): Buds from May to Jun; Flowering from Oct to Dec; Peak Flowering not recorded; Over from Dec; Fruit from Dec to Sep; Nothing from Mar and Sep. Peak levels unreliable at 100% from Oct to Nov. Historically recorded as flowering from late Oct to early Dec, fruit retained.



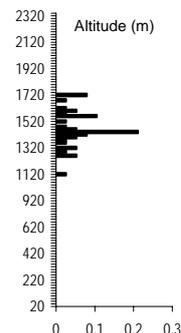
**Height** (37 records): 11% 0-0.2 m tall, 81% 0.2-1 m tall, 8% 1-2 m tall.

**Pollinators** (2 records): 50% flies, 50% mites.  
**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (38 records): 100% inland - further than 2 km from coast.

**Altitude** (38 records): 1000 - 1620 m; 1280 *lq* - 1340 *med* - 1340 *uq*m.

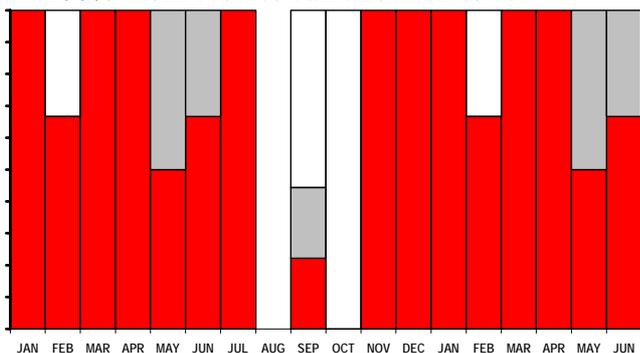


**Landform** (38 records): 47% shallow soil, 45% deep soil, 8% rocky outcrops.

**Slope** (38 records): 74% steep incline, 13% hill top, 8% gentle incline, 5% cliff.

**Aspect** (35 records): 59% South, 16% East, 13% North, 13% West.

**Growth** (36 records with: Jan 4, Feb 3, Mar 5, Apr 4, May 2, Jun 3, Jul 1, Aug 0, Sep 9, Oct 1, Nov 1, Dec 3): Much from Nov to Sep; Rare from May to Jun and Sep; None from Feb and Sep to Oct. Peak levels unreliable at 100% from Nov to Jan and Mar to Jul.

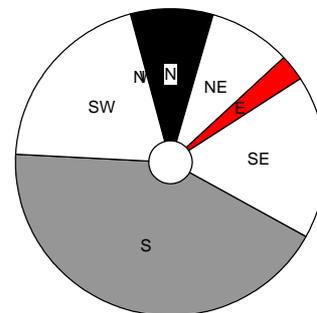


**Soil Type** (37 records): 32% sandy, 32% peaty, 22% loamy, 14% rocky.

**Soil Colour** (37 records): 49% black, 46% grey, 5% brown.

**Geology** (38 records): 87% sandstone, 13% shale.

**Vegetation** (38 records): 97% shrubland, 3% grassland.



**Seedlings** (15 records): Absent in 87%; more seedlings than prefire adults in 1 case. Seedlings found in Feb.

**Fire Survival** : No data.

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

**Conservation Status and Threat:**

**Red Data List Status: Endangered**

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

Occurrence (Fynbos): 247 km<sup>2</sup> with 41% conserved and 4% lost; Occupancy: 37 km<sup>2</sup> with 66% conserved and 0% lost. Fragmentation index: 14%.

**Nature Reserves** (38 records): 92% in Nature Reserves - well conserved.

**Habitat destruction** (38 records): 89% extensive natural habitat, 8% naturally linear habitats, 3% naturally fragmented habitats.

**Alien Invasive Species** (34 records): 85% none, 15% *Pinus*.

**Alien Density** (34 records): 85% alien-free, 15% sparse.

**Cultivation & Utilization:**

**Picking** (26 records): 100% no sign of picking.  
**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Female skeleton 3 m across and 3 m high  
(AGR98092602) About 1.5 m high  
(WIJ97030909);

No live plants seen. some huge female  
skeletons 3 m across 3 m high with smaller  
male in gully. reason for lack of recruitment  
not apparent (AGR98092602); Old dead  
bushes about 1.5 m high (WIJ97030909);

Confined to unburnt rocky outcrops  
(SGAY1011002); Growing very close to  
summit only (WIJ98051607);

**Confusing Species:** Confused with *L.*  
*meridianum*, which is an unrelated limestone  
species with similarly hairy leaves.

Records of identification queries = 4.  
Records of corrected identification queries = 2.

**Variation and Taxonomy:** Was given a  
manuscript name *Strobilaria radiata* by  
Burchell in 1814, but remained undescribed  
until 1912.

No variation known.

**Distribution:** Add.

Check is on Kamscheberg and Witelsberg by  
Muir.

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*Leucadendron rourkei* Williams 1972  
**Uniondale Conebush**

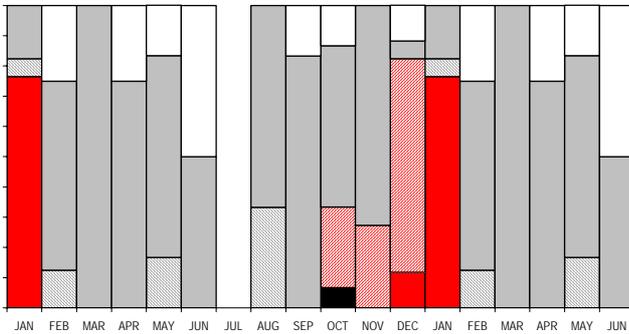
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**109 Records**

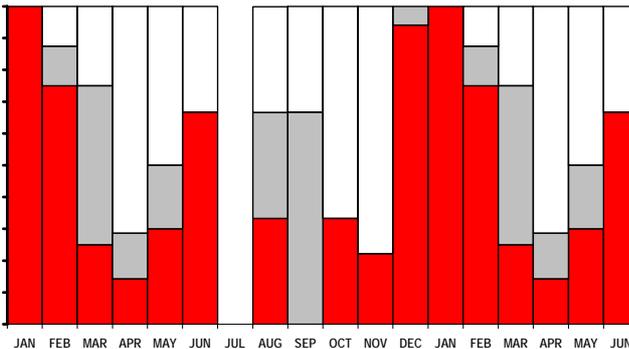
**Population** (106 records): 5% Abundant, 25% Common, 56% Frequent, 14% Rare.

**Dispersion** (102 records): 48% clumped, 41% variable, 8% widespread, 3% evenly distributed.

**Flowering** (103 records with: Jan 17, Feb 8, Mar 4, Apr 8, May 12, Jun 2, Jul 0, Aug 3, Sep 6, Oct 15, Nov 11, Dec 17): Buds from Oct to Dec; Flowering from Jan; Peak Flowering not significant; Over from Aug; Fruit from Feb to Nov; Nothing from Feb, Apr, and Jun. Peak levels at 82% from Dec to Jan. Historically recorded as flowering from Dec to Jan, fruit retained.



**Growth** (98 records with: Jan 16, Feb 8, Mar 4, Apr 7, May 10, Jun 3, Jul 0, Aug 3, Sep 6, Oct 15, Nov 9, Dec 17): Much from Oct to Mar and May to Aug; Rare from Mar, May and Aug to Sep; None from Mar to Nov. Peak levels at 100% from Dec to Jan.



**Seedlings** (33 records): Absent in 88%; fewer seedlings than prefire adults in 1 case, and more in 1 case. Seedlings found in Oct (2).

**Fire Survival** (10 records): 50% escaped fires in fire-safe areas, 40% survived by seedlings only, 10% resprouted from aerial trunks.

**Age to first flowering:** First flowers recorded at 2 years, 50% estimated at 4-6 years, and 100% recorded at 9 years.



**Height** (105 records): 1.0% 0-0.2 m tall, 20% 0.2-1 m tall, 63% 1-2 m tall, 16% 2-5 m tall.

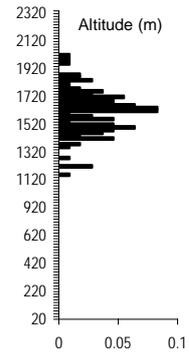
**Pollinators** (1 record): 100% flies.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (109 records): 100% inland - further than 2 km from coast.

**Altitude** (109 records): 1040 - 1920 m; 1380 *lq* - 1520 *med* - 1560 *uq*m.



**Landform** (106 records): 60% shallow soil, 29% deep soil, 10% rocky outcrops.

**Slope** (106 records): 71% steep incline, 13% cliff, 13% gentle incline, 3% hill top.

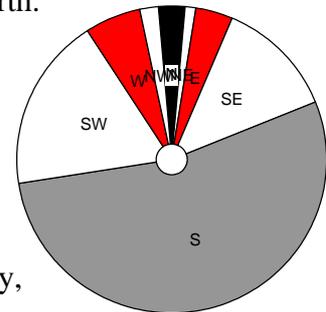
**Aspect** (104 records): 69% South, 16% West, 10% East, 5% North.

**Soil Type** (106 records): 43% loamy, 42% sandy, 8% rocky, 5% gravelly, 3% peaty.

**Soil Colour** (107 records): 52% grey, 25% brown, 19% black, 4% orange.

**Geology** (104 records): 96% sandstone, 4% shale.

**Vegetation** (106 records): 97% shrubland, 3% grassland.



**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 1 552 km<sup>2</sup> with 48% conserved and 3% lost; **Occupancy:** 140 km<sup>2</sup> with 68% conserved and 0% lost. **Fragmentation index:** 6%.

**Nature Reserves** (109 records): 60% in Nature Reserves - well conserved.

**Habitat destruction** (97 records): 97% extensive natural habitat, 3% naturally linear habitats.

**Alien Invasive Species** (97 records): 94% none, 4% *Pinus*, 2% other aliens.

**Alien Density** (97 records): 94% alien-free, 6% sparse.

**Cultivation & Utilization:**

**Picking** (73 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Leaves of young plants with somewhat silvery pubescence and are slightly curved.  
Herbarium specimens taken (NBG)  
(NAH95050403);

**Confusing Species:** Confused with *L. album* (a quite different species in habit and fruit morphology), and both subspecies of *L. uliginosum* (which both have larger leaves, and a longer female perianth).

Records of identification queries = 13.

Records of corrected identification queries = 5.

**Variation and Taxonomy:** No variation known other than:

- New leaves thinly adpressed pubescent in the Kouga Mountains
- New leaves velvety pubescent elsewhere.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron salicifolium* (Salisb.) Williams 1807, 1967

**Common Stream Conebush**

*Riviertolbos*

**Other Common Names:** Cuspidate-leaf Euryspermum, Marsh Euryspermum, River Conebush, Strictum, Willow-leaf Conebush, Geelbos, Knoppiesbos, Knoppiesgeelbos, Knoppiestolbos, Kraaltolbos, Skilpadbos, Wilgerblaartolbos.

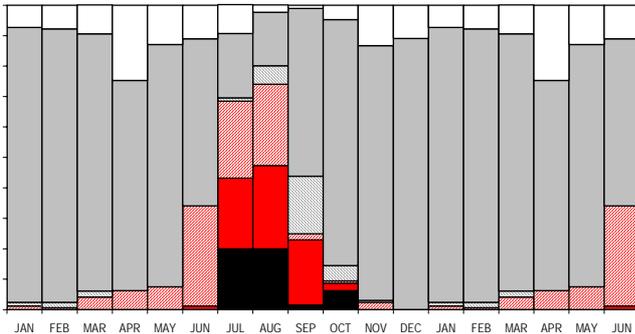
**Other Scientific Names:** *conifera* Andr 1808, *cuspidifolium* (Salisb. ex Knight) 1809, *strictum* R.Br. 1810, *uliginosum* (Salisb. ex Knight) 1809.

**1794 Records**

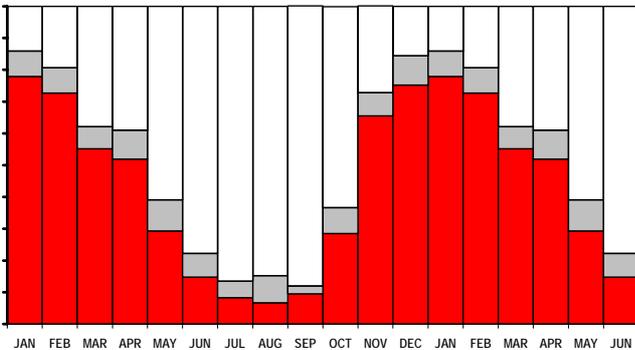
**Population** (1757 records): 1% Abundant, 41% Common, 50% Frequent, 8% Rare, 0.1% Extinct.

**Dispersion** (1676 records): 61% clumped, 36% variable, 2% widespread, 1.0% evenly distributed.

**Flowering** (1748 records with: Jan 165, Feb 166, Mar 148, Apr 81, May 93, Jun 82, Jul 95, Aug 165, Sep 201, Oct 276, Nov 166, Dec 110): Buds from Jun to Aug; Flowering from Jul to Sep; Peak Flowering from Jul to Aug; Over not significant; Fruit from Sep to Jul; Nothing from Apr. Peak levels at 80% in Aug. Historically recorded as flowering from early Jul near the coast to Sep at higher altitudes, fruit retained.



**Growth** (1728 records with: Jan 163, Feb 165, Mar 145, Apr 77, May 92, Jun 81, Jul 96, Aug 164, Sep 201, Oct 270, Nov 165, Dec 109): Much from Oct to May; Rare not significant; None from Mar to Nov. Peak levels at 86% in Jan.

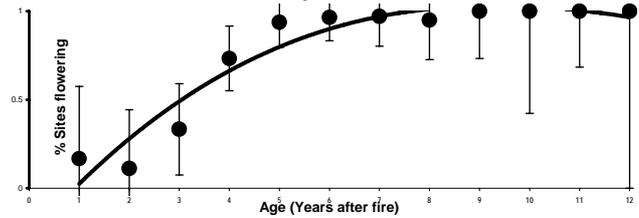


**Seedlings** (725 records): Absent in 93%: fewer seedlings than prefire adults in 13 cases, and more in 12 cases. Seedlings found in Jan (5),

Mar (3), Apr (3), May, Jul, Aug, Sep, Oct (3) and Nov (7).

**Fire Survival** (52 records): 73% survived by seedlings only, 13% eliminated from the area by fires, 10% escaped fires in fire-safe areas, 4% resprouted from underground boles.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 3-4 years, and 100% recorded at 9 years.



**Height** (1769 records): 2% 0-0.2 m tall, 10% 0.2-1 m tall, 39% 1-2 m tall, 47% 2-5 m tall, 2% taller than 5 m.

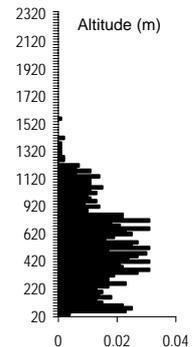
**Pollinators** (21 records): 43% wind, 29% beetles, 19% bees or wasps, 10% flies.

**Detailed Pollinators** (2 records): Monkey Beetle, Honey Bee.

**Habitat:**

**Distance to Ocean** (1737 records): 97% inland - further than 2 km from coast.

**Altitude** (1737 records): 20 - 1460 m; 300 *lq* - 500 *med* - 700 *uq*m.

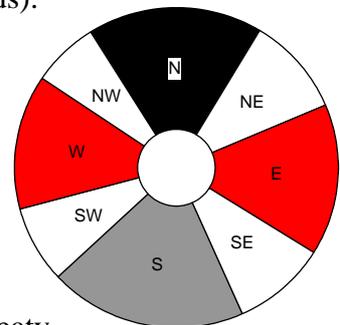


**Landform** (1725 records): 71% deep soil, 13% shallow soil, 10% riverine, 5% rocky outcrops, 2% swamp.

**Slope** (1716 records): 51% gentle incline, 27% steep incline, 13% valley bottom, 8% platform, 0.6% hill top, 0.5% cliff.

**Aspect** (1520 records):

28% South, 26% North, 25% East, 21% West.



**Soil Type** (1652 records):

52% sandy, 27% loamy, 9% gravelly, 6% rocky, 4% clayey, 3% peaty.

**Soil Colour** (1639 records): 45% grey, 32% brown, 9% white, 7% black, 4% orange, 3% yellow, 1.0% red.

**Geology** (1638 records): 78% sandstone, 13% shale, 6% granite, 1% silcrete or ferricrete, 1.0% Tertiary sands, 0.9% conglomerate, 0.1% limestone.

**Vegetation** (1721 records): 93% shrubland, 3% plantations, 2% thicket, 0.6% grassland,

0.4% agricultural lands, 0.3% woodland,  
0.1% wooded grassland, 0.1% forest,  
0.1% suburban.

**Conservation Status and Threat:**

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

Occurrence (Fynbos): 13 533 km<sup>2</sup> with 21% conserved and 20% lost; Occupancy: 1 801 km<sup>2</sup> with 40% conserved and 15% lost. Fragmentation index: 6%.

**Nature Reserves** (1737 records): 50% in Nature Reserves - well conserved.

**Habitat destruction** (1699 records): 82% extensive natural habitat, 10% naturally linear habitats, 5% islands, 2% road verges, 0.8% corridors, 0.5% naturally fragmented habitats, 0.1% patches.

**Alien Invasive Species** (1676 records): 37% none, 28% *Pinus*, 20% Fabaceae (chiefly alien *Acacia*), 13% *Hakea*, 2% Myrtaceae, 0.3% other aliens, 0.1% annual alien grasses.

**Alien Density** (1676 records): 37% alien-free, 47% sparse, 12% abundant, 3% dense, 0.8% impenetrable.

**Cultivation & Utilization:**

**Picking** (1269 records): 99% no sign of picking, 0.6% lightly picked, 0.3% severely picked.

**Cultivation Status:** Plantings - 17 records (0.9%), Escapes - 1 record (0.06%).

**Atlasers Notes:**

*Records of occurring or confined to streams, seeps and river banks omitted.*

2 m tall: usually 4-5 m in river beds (VJK93053002); Tallest plants that I've ever seen (but all killed by fire) (WEL96012705); Males only flowering (AGRY3103119+21); Ants Were Farming Leafhoppers Half Way Up Stem (AGR91111602); Look as if some animal has eaten most of leaves and fine

branches hence most new growth (VJK97030203);

Shows some die back (SMR97031908); Crowded out by pines and very unhappy (SMR98032505); Also plants dying (VCH99040402); Very dry - plants dying (VCH99040403);

Hacked (APE92071610);

Planted in road verge! (APE94082201); Alongside road (planted?) (AWA95092102); This confirms that this is planted and not a range extension (DOA99112301); Probably planted at roadside (WIJ94010201); Introduced 10 years ago (MJDY0100801);

**Confusing Species:** Confused principally (60% of cases) with *L. xanthocomus*, which in areas where *L. salicifolium* is absent, occupies river courses and grows much larger than plants adjacent the wet areas: it has however silvery-haired mature leaves and the male flowerheads are similar to female flowerheads in size, and bilobed cone bracts. Also mistaken for *L. coniferum* (with much broader fruit, and similar sized male and female flowerheads), *conicum* (a close relative and quite similar in habit and habitat, but which has shorter leaves and pubescent basal bracts), *microcephalum* (with broad leaves quite a different beast) and *spissifolium* (probably a typographical error, as this is a low resprouter with broad leaves).  
Records of identification queries = 57.  
Records of corrected identification queries = 30.

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

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron microcephalum* (Gand.) Gand. & Schinz. 1901, 1913  
**Oil-bract Conebush**

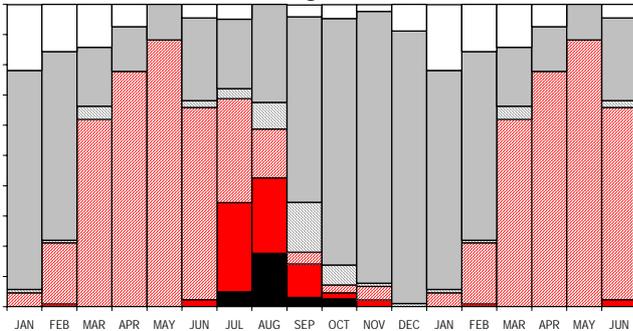
**Other Common Names:** Bootpolish Conebush, Scallop-nest Conebush, *Geelbos*.  
**Other Scientific Names:** *decorum* form *microcephalum* Gand 1901, *squarrosus* R.Br. 1810, *stokoei* Phill 1921.

**1066 Records**

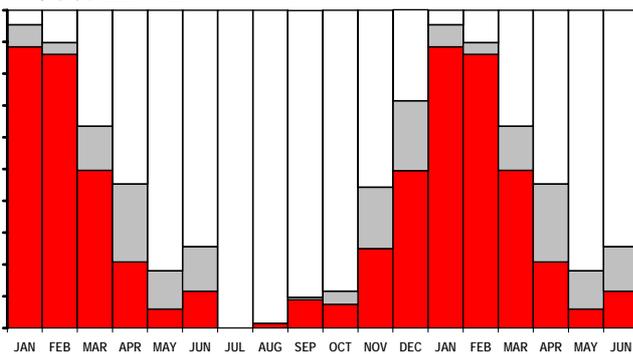
**Population** (1053 records): 2% Abundant, 41% Common, 45% Frequent, 12% Rare, 0.3% Extinct.

**Dispersion** (969 records): 67% variable, 28% clumped, 5% widespread, 0.7% evenly distributed.

**Flowering** (1045 records with: Jan 87, Feb 109, Mar 113, Apr 54, May 51, Jun 44, Jul 61, Aug 68, Sep 127, Oct 151, Nov 89, Dec 91): Buds from Feb to Jul; Flowering from Jul to Aug; Peak Flowering from Aug; Over from Sep; Fruit from Jun to Feb; Nothing from Jan. Peak levels at 72% in Jul. Historically recorded as flowering in Jul, fruit retained.



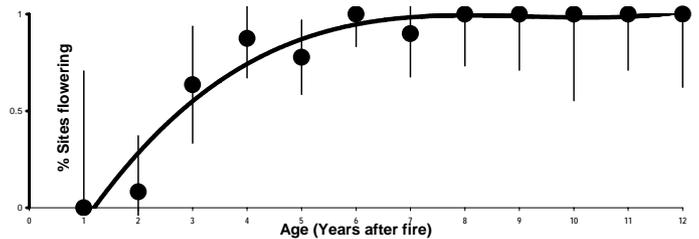
**Growth** (1034 records with: Jan 87, Feb 108, Mar 115, Apr 53, May 50, Jun 43, Jul 61, Aug 68, Sep 123, Oct 147, Nov 88, Dec 91): Much from Nov to Apr; Rare from Apr and Dec; None from Mar to Dec. Peak levels at 95% in Jan.



**Seedlings** (455 records): Absent in 93%: fewer seedlings than prefire adults in 7 cases, and more in 8 cases. Seedlings found in Jan (2), Mar, Apr, Jun (3), Sep (3), Dec (5).

**Fire Survival** (32 records): 91% survived by seedlings only, 6% eliminated from the area by fires, 3% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 2-3 years, and 100% recorded at 6 years.



**Height** (1047 records): 2% 0-0.2 m tall, 51% 0.2-1 m tall, 45% 1-2 m tall, 2% 2-5 m tall.

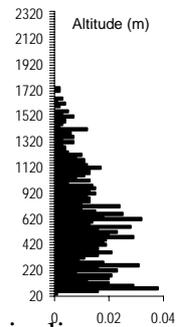
**Pollinators** (5 records): 80% beetles, 20% bees or wasps.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (1033 records): 95% inland - further than 2 km from coast.

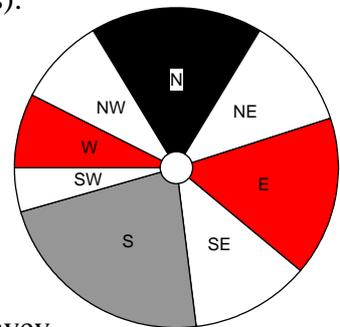
**Altitude** (1033 records): 20 - 1640 m; 260 *lq* - 540 *med* - 820 *uq*m.



**Landform** (1027 records): 73% deep soil, 23% shallow soil, 3% rocky outcrops, 0.9% swamp, 0.3% riverine.

**Slope** (1028 records): 51% gentle incline, 41% steep incline, 3% platform, 3% hill top, 1% valley bottom, 0.3% cliff.

**Aspect** (963 records): 32% South, 28% North, 28% East, 13% West.



**Soil Type** (1026 records): 58% sandy, 20% loamy, 9% gravelly, 6% rocky, 3% peaty, 3% clayey.

**Soil Colour** (1021 records): 68% grey, 18% brown, 7% black, 5% white, 1% orange, 0.6% yellow.

**Geology** (1012 records): 88% sandstone, 11% shale, 0.4% granite, 0.2% conglomerate, 0.2% Tertiary sands.

**Vegetation** (1027 records): 98% shrubland, 0.8% plantations, 0.7% grassland, 0.2% thicket, 0.2% agricultural lands.

**Conservation Status and Threat:**

**Red Data List Status:** Least Concern. Occurrence (Fynbos): 3 234 km<sup>2</sup> with 37% conserved and 20% lost; Occupancy: 736 km<sup>2</sup> with 53% conserved and 9% lost. Fragmentation index: 15%.

**Nature Reserves** (1033 records): 59% in Nature Reserves - well conserved.

**Habitat destruction** (1023 records): 97% extensive natural habitat, 1% islands,

0.9% naturally linear habitats, 0.2% road verges, 0.1% naturally fragmented habitats.

**Alien Invasive Species** (1019 records):

49% *Pinus*, 34% none, 11% *Hakea*, 5% Fabaceae (chiefly alien *Acacia*), 0.8% Myrtaceae.

**Alien Density** (1018 records): 34% alien-free, 53% sparse, 9% abundant, 3% dense, 0.8% impenetrable.

**Cultivation & Utilization:**

**Picking** (707 records): 99% no sign of picking, 0.7% lightly picked.

**Cultivation Status:** Plantings - 3 records (0.3%), Augmentations - 1 record (0.09%), Escapes - 4 records (0.4%).

**Atlassers Notes:**

Beautiful silvery hairy leaf form with salmon pink colouring to leaves beneath hairs (AGRY1032423); Silver-leaved (SHRY1032407);

Bad baboon damage for perch (AGR93081201); No cones in patch with female adults apparently removed by baboons (APE93021406);

Only 1 male seen (AGR91122604, AGR92110102); All female and all by the stream (HCE96070906); Male (WMPY0121706);

And 2 dead (AGRY0121712); Only 1 and it was dead (SMRY0041206);

Beetles eating inflorescence (APE92080906); Pollinator: Grey/beige long-snout weevil (AWA95091903);

**Confusing Species:** Commonly confused with *L. gandogeri* (which also has a brown "boot polish" on the cones and buds) and *L. laureolum* (which has the young female cones ridged and hidden in the involucre leaves), but is unique with the large, scallop-shaped brown involucre bracts (which may become difficult to see in mature female cones, but are always obvious on male flowerheads – even if these need to be looked for on the ground) and the asymmetrical fruit.

Records of identification queries = 47.

Records of corrected identification queries = 13.

**Variation and Taxonomy:** No variation noted in the literature, but Silver forms occur at <lookup>.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron lanigerum* var. *lanigerum* Buek ex Meisn. 1856  
**Common Shale Conebush**  
*Grofblaartolbos*

**Other Common Names:** Rough-leaf Conebush, Squarrose Protea. *Rooikoptolbos*, *Jubilee Crown*.

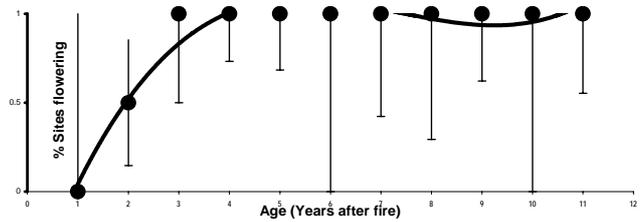
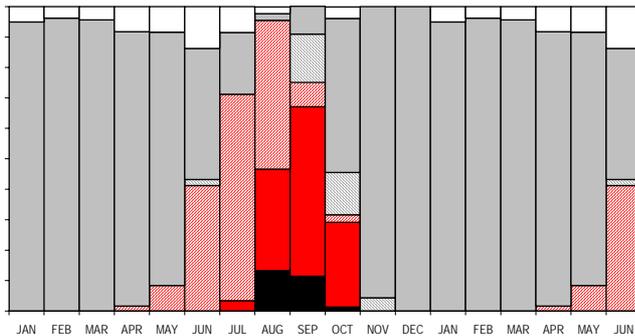
**Other Scientific Names:** *rubricallosum* Buek ex Drege 1844, *squarrosa* Salisb. ex Knight 1809.

**765 Records**

**Population** (758 records): 0.1% Abundant, 25% Common, 56% Frequent, 19% Rare.

**Dispersion** (711 records): 79% variable, 20% clumped, 0.7% widespread, 0.6% evenly distributed.

**Flowering** (759 records with: Jan 20, Feb 79, Mar 90, Apr 61, May 131, Jun 51, Jul 59, Aug 45, Sep 88, Oct 79, Nov 47, Dec 9): Buds from Jun to Aug; Flowering from Aug to Oct; Peak Flowering and Over not significant; Fruit from Oct to Jul; Nothing not significant. Peak levels at 96% in Aug. Historically recorded as flowering from Aug, fruit retained.



**Height** (760 records): 0.5% 0-0.2 m tall, 82% 0.2-1 m tall, 18% 1-2 m tall, 0.1% 2-5 m tall.

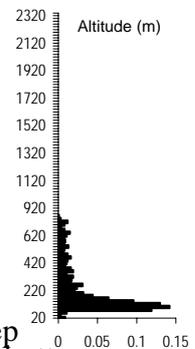
**Pollinators** (18 records): 83% beetles, 11% flies, 6% bees or wasps.

**Detailed Pollinators** (8 records): Monkey Beetle (7), Longhorn Beetle.

**Habitat:**

**Distance to Ocean** (747 records): 99% inland - further than 2 km from coast.

**Altitude** (747 records): 20 - 760 m; 80<sub>lq</sub> - 120<sub>med</sub> - 140<sub>uq</sub>m.

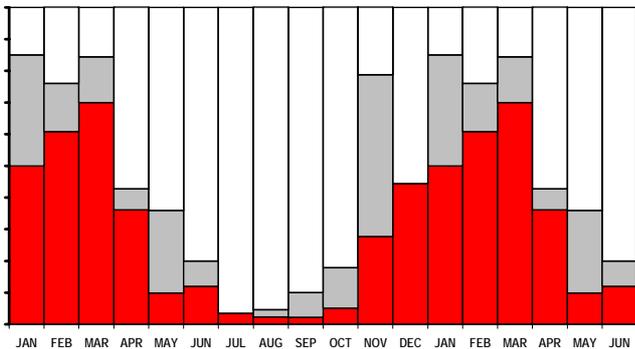


**Landform** (746 records): 96% deep soil, 3% shallow soil, 0.4% rocky outcrops, 0.3% swamp.

**Slope** (743 records): 45% gentle incline, 38% platform, 9% steep incline, 4% hill top, 3% valley bottom, 0.8% dunes.

**Aspect** (544 records): 37% West, 23% South, 22% East, 17% North.

**Growth** (759 records with: Jan 20, Feb 79, Mar 90, Apr 61, May 131, Jun 50, Jul 59, Aug 44, Sep 90, Oct 79, Nov 47, Dec 9): Much from Nov to Apr; Rare from Jan, May and Nov; None from Feb, Apr to Dec. Peak levels at 85% in Jan.

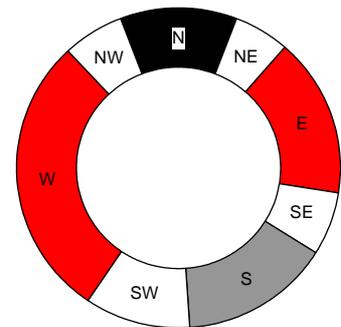


**Soil Type** (741 records): 40% loamy, 40% sandy, 14% clayey, 5% gravelly, 0.3% rocky, 0.1% peaty.

**Soil Colour** (739 records): 59% brown, 18% grey, 10% orange, 7% white, 4% yellow, 2% red, 0.1% black.

**Geology** (708 records): 32% shale, 30% granite, 20% Tertiary sands, 11% sandstone, 3% silcrete or ferricrete, 3% conglomerate.

**Vegetation** (744 records): 98% shrubland, 0.9% agricultural lands, 0.4% grassland, 0.4% thicket, 0.4% plantations.



**Seedlings** (299 records): Absent in 99%: more seedlings than prefire adults in 1 case. Seedlings found in Oct.

**Fire Survival** (49 records): 98% resprouted from underground boles, 2% escaped fires in fire-safe areas.

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

**Conservation Status and Threat:**

**Red Data List Status:** Endangered A2c. Occurrence (Fynbos (Total)): 2 789 (7 174) km<sup>2</sup> with 20 (8)% conserved and 44 (69)% lost; Occupancy: 644 km<sup>2</sup> with 11% conserved and 54% lost. Fragmentation index: 9%.

**Nature Reserves** (747 records): 30% in Nature Reserves.

**Habitat destruction** (737 records):  
68% extensive natural habitat, 23% islands,  
4% road verges, 2% corridors, 2% naturally  
linear habitats, 2% naturally fragmented  
habitats, 0.3% patches.

**Alien Invasive Species** (735 records):  
55% Fabaceae (chiefly alien *Acacia*),  
29% none, 11% *Pinus*, 3% Myrtaceae,  
2% *Hakea*, 0.4% annual alien grasses,  
0.3% other aliens.

**Alien Density** (735 records): 29% alien-free,  
42% sparse, 18% abundant, 9% dense,  
2% impenetrable.

**Cultivation & Utilization:**

**Picking** (610 records): 100% no sign of  
picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Some plants with red flowers! (AGR96080907);  
Females leaves to 31 mm long (WIJ94061803);  
Leaves male 12-17 mm long, female 22-25  
mm long (WIJ94061804);

This population of *L. salignum* has slightly hard  
edges to the leaves and very slightly  
scabrous and also has dimpled cones: strong  
affinity to *L. lanigerum*: definitely two  
morphs present so atlassed as LD LANI N  
for records! (AGR97042802); Both smooth  
and rough leaves; some single stemmed -  
collection made for NBG (NAHY1080901);

One clump of very tall (over 3 m) plants, but  
mostly less than 1 m (SMR97052806); Plants  
here over 1 m tall, on better side plants less  
than 1 m tall (WMPY1091401); A very low  
growing form - many less than 200 mm tall -  
with attractive inflorescence  
(SMR99072108);

Males in bud; females mostly with cones but no  
apparent buds at tips of last years growth  
(SMR99082601);

2/3 of plants killed by fire! (AGRY1101807); 3  
out of 5 killed in fire (GYC95100402); A

number of plants were killed by the fire and  
thus never resprouted (NGFY1011301);  
Some plants were on single stems  
(WIJ94031201); Some resprouters and a few  
non-resprouters (WIJ94031202);

All males (AGR96021401); Mainly males -  
some dead females seen. Veld moribund.  
Sampling lesson: only saw 3 of the plants on  
third walk along same path!

(AGR99100705); All males - moribund  
(AGR99100706); All male in this plot  
(JID98052001); 10% of plants senescent;  
(NAHY1080901); 1 female and about 12  
males (SMRY3022601);

Heavily grazed probably by cows  
(NGF96051601); Parent plant had been  
chopped (SMRY0072710);

**Confusing Species:** Odd coding errors and  
atlassers reluctant to use subspecies.

Probably confused with *L. salignum*,  
especially the forms with reduced involucre  
leaves, but this error would be very difficult  
to detect: even though it was searched for,  
no obvious instances were detected.

Records of identification queries = 17.

Records of corrected identification queries = 4.

**Variation and Taxonomy:** Varies in height,  
size of leaves and size of floral parts, but this  
"does not appear to be of any significance"  
(Williams 1972). Atlassers picked up some  
of this variation, but no geographical patterns  
were detected.

The variety *laevigatum* should be a subspecies  
as it is geographically isolated and quite  
distinct.

**Distribution:** Add.

INCLUDEPICTURE

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*Leucadendron lanigerum* var. *laevigatum* Meisn. 1856  
Worcester Shale Conebush

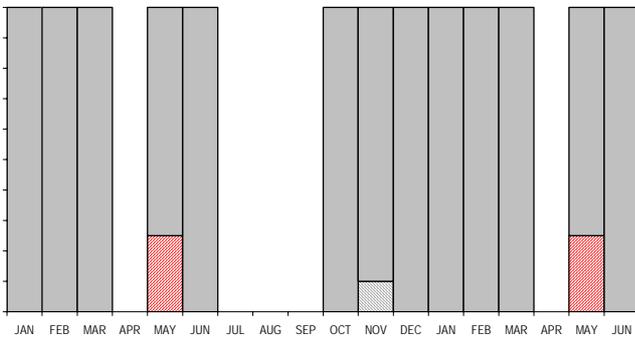
**Other Common Names:** None known.  
**Other Scientific Names:** *aemulum* Schltr 1900, *heterophyllum* E.Mey. ex Drege 1844.

**36 Records**

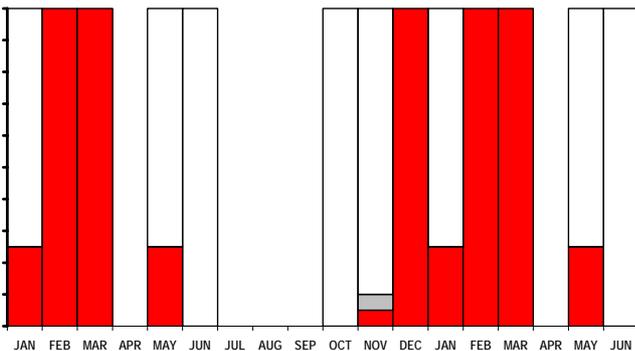
**Population** (35 records): 14% Common, 69% Frequent, 14% Rare, 3% Extinct.

**Dispersion** (33 records): 61% variable, 36% clumped, 3% widespread.

**Flowering** (34 records with: Jan 4, Feb 2, Mar 1, Apr 0, May 4, Jun 1, Jul 0, Aug 0, Sep 0, Oct 1, Nov 20, Dec 1): Buds from May; Flowering and Peak Flowering not recorded; Over not significant from Nov; Fruit from all year round; Nothing not recorded. Peak levels unreliable. Historically recorded as flowering from late Jul to late Sep, fruit retained.



**Growth** (33 records with: Jan 4, Feb 1, Mar 1, Apr 0, May 4, Jun 1, Jul 0, Aug 0, Sep 0, Oct 1, Nov 20, Dec 1): Much from Dec to May; Rare not significant; None from Jan and May to Nov. Peak levels unreliable at 100% from Feb to Mar and Dec.



**Seedlings** (14 records): Absent in 86%; fewer seedlings than prefire adults in 1 case. Seedlings found in Oct.

**Fire Survival** (2 records): 100% survived by seedlings only.

**Age to first flowering:** First flowers recorded at 100% at 3 years.



**Height** (33 records): 58% 0.2-1 m tall, 42% 1-2 m tall.

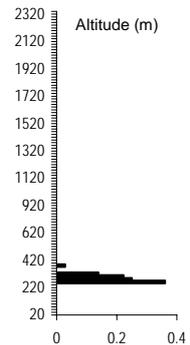
**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (36 records): 100% inland - further than 2 km from coast.

**Altitude** (36 records): 240 - 380 m; 240 *lq* - 260 *med* - 260 *uqm*.



**Landform** (36 records): 97% deep soil, 3% swamp.

**Slope** (36 records): 53% platform, 33% gentle incline, 8% valley bottom, 6% hill top.

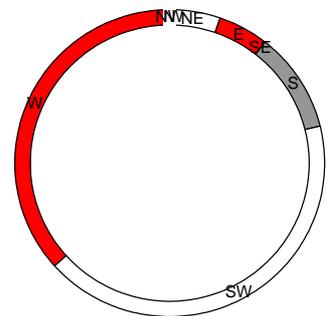
**Aspect** (19 records): 66% West, 24% South, 11% East.

**Soil Type** (34 records): 38% sandy, 38% loamy, 18% clayey, 6% gravelly.

**Soil Colour** (32 records): 59% brown, 16% grey, 16% orange, 6% yellow, 3% red.

**Geology** (27 records): 44% shale, 19% sandstone, 19% silcrete or ferricrete, 19% Tertiary sands.

**Vegetation** (36 records): 92% shrubland, 6% agricultural lands, 3% grassland.



**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 33 km<sup>2</sup> with 0% conserved and 68% lost; **Occupancy:** 32 km<sup>2</sup> with 0% conserved and 66% lost. **Fragmentation index:** 89%.

**Nature Reserves** (36 records): 8% in Nature Reserves - inadequately conserved.

**Habitat destruction** (36 records): 44% islands, 44% extensive natural habitat, 8% naturally linear habitats, 3% corridors.

**Alien Invasive Species** (36 records): 53% Fabaceae (chiefly alien *Acacia*), 31% *Pinus*, 14% *Hakea*, 3% Myrtaceae.

**Alien Density** (36 records): 61% sparse, 33% abundant, 6% dense.

**Cultivation & Utilization:****Picking** (22 records): 100% no sign of picking.**Cultivation Status:** No noted cultivation.**Atlassers Notes:**

Interfire recruitment in quarry (DJL98100907);  
Revisited site as had seen two plants here a few  
years back: area badly overgrazed - no sign  
of any plants now (AGRY2061301); Was  
once (last year!) one of the biggest  
populations of this species - now confined to  
around the quarry due to recent ploughing up  
of this site (DJL98100907);

**Confusing Species:** All incorrect records were  
misidentified or miscoded as the type  
subspecies, which is a resprouter with  
shorter, rougher and hairier leaves.

Records of identification queries = 6.

Records of corrected identification queries = 4.

**Variation and Taxonomy:** No variation noted.  
The variety *laevigatum* should be a subspecies  
as it is geographically isolated and quite  
distinct.

**Distribution:** Add.

Williams notes that Drege's (1844) locality  
Hexriversberg 3500-4000ft is clearly an  
error.

INCLUDEPICTURE

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MERGEFORMAT \d

***Leucadendron modestum* Williams 1967**  
**Rough-leaf Conebush**  
*Skugtertolbos*

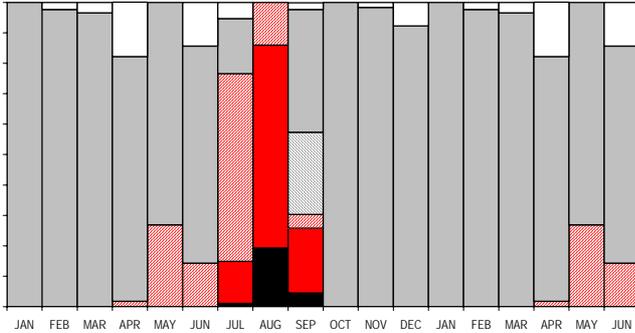
**Other Common Names:** Modest-cone Conebush, Strawberries, *Skilpadbossie*.  
**Other Scientific Names:** None.

**655 Records**

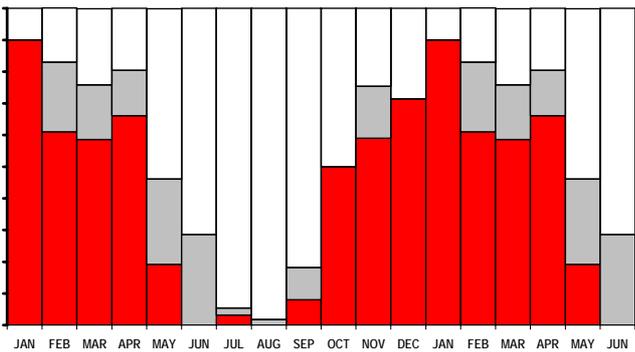
**Population** (645 records): 4% Abundant, 45% Common, 42% Frequent, 9% Rare, 0.2% Extinct.

**Dispersion** (469 records): 81% variable, 16% clumped, 2% widespread, 0.9% evenly distributed.

**Flowering** (496 records with: Jan 10, Feb 43, Mar 29, Apr 56, May 26, Jun 7, Jul 94, Aug 57, Sep 89, Oct 11, Nov 61, Dec 13): Buds from May and Jul; Flowering from Aug to Sep; Peak Flowering from Aug; Over from Sep; Fruit from Sep to Jun; Nothing from Apr. Peak levels at 100% in Aug. Historically recorded as flowering from Aug, fruits retained for a year or two.



**Growth** (492 records with: Jan 10, Feb 41, Mar 29, Apr 56, May 26, Jun 7, Jul 93, Aug 57, Sep 88, Oct 10, Nov 61, Dec 14): Much from Oct to Apr; Rare from Feb and May to Jun; None from Mar to Dec. Peak levels at 90% in Jan.



**Seedlings** (164 records): Absent in 91%: fewer seedlings than prefire adults in 4 cases, and more in 3 cases. Seedlings found in Jan, Jul (4), Aug and Oct.

**Fire Survival** (29 records): 86% survived by seedlings only, 14% eliminated from the area by fires.

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



**Height** (495 records): 2% 0-0.2 m tall, 89% 0.2-1 m tall, 8% 1-2 m tall.

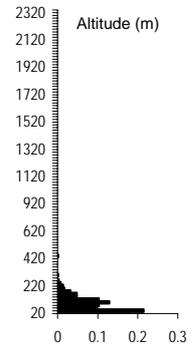
**Pollinators** (7 records): 86% beetles, 14% flies.

**Detailed Pollinators** (6 records): Monkey Beetle (5), Hover Fly.

**Habitat:**

**Distance to Ocean** (651 records): 100% inland - further than 2 km from coast.

**Altitude** (651 records): 20 - 440 m; 20 *lq* - 40 *med* - 40 *uq*m.

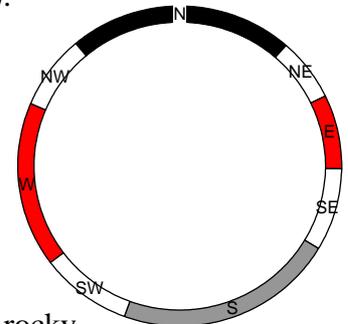


**Landform** (498 records): 94% deep soil, 4% shallow soil, 2% swamp, 0.2% riverine, 0.2% rocky outcrops.

**Slope** (498 records): 43% gentle incline, 42% platform, 8% valley bottom, 4% hill top, 2% steep incline, 1% dunes.

**Aspect** (299 records):

30% South, 29% North, 25% West, 15% East.



**Soil Type** (490 records): 36% sandy, 35% loamy, 20% clayey, 9% gravelly, 0.2% peaty, 0.2% rocky.

**Soil Colour** (484 records): 54% brown, 31% grey, 8% orange, 4% white, 2% yellow, 0.8% black, 0.8% red.

**Geology** (594 records): 44% shale, 30% silcrete or ferricrete, 16% sandstone, 5% limestone, 3% Tertiary sands.

**Vegetation** (650 records): 99% shrubland, 0.8% agricultural lands, 0.2% thicket, 0.2% plantations.

**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 2 447 km<sup>2</sup> with 14% conserved and 33% lost; **Occupancy:** 619 km<sup>2</sup> with 9% conserved and 59% lost. **Fragmentation index:** 16%.

**Nature Reserves** (651 records): 9% in Nature Reserves - inadequately conserved.

**Habitat destruction** (497 records): 60% extensive natural habitat, 22% islands, 14% road verges, 2% naturally fragmented

habitats, 1% naturally linear habitats, 0.6% corridors.

**Alien Invasive Species** (491 records): 73% Fabaceae (chiefly alien *Acacia*), 11% none, 8% Myrtaceae, 8% *Pinus*, 0.8% other aliens, 0.4% *Hakea*.

**Alien Density** (491 records): 11% alien-free, 51% sparse, 27% abundant, 9% dense, 2% impenetrable.

**Cultivation & Utilization:**

**Picking** (383 records): 100% no sign of picking, 0.3% severely picked.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Odd very tall plants similar to *L. stelligerum* (AGR95042912+13, AGR95043004); *L. stelligerum* and *modestum* on same plot - appears to be intermediate population (AGR97113002); Very tall with rather large leaves (AGR99052005); A very robust and broad leaved form to 1 m tall (AGRY1031429); Could be *L. stelligerum* or *modestum* - should be investigated further (AMMY1030116); Both *L. stelligerum* and *modestum* appear to be present (COH97081702, DEB99010112); Some odd much taller plants approaching *L. stelligerum* seen - but these are scattered and isolated and clearly sports ( or hybrids) of *L. modestum* (LYM96072706, NGF96072705); Approaching mixed stands of *L. stelligerum* and *modestum* (LYM97113002); *L. stelligerum* and *modestum* both on same SRS - most individuals large and *stelligerum*-like in appearance - only a few 'stunted' ones indistinguishable from *modestum* in a clump

(LYM97113003); *L. stelligerum* and *modestum* on same locality - about equal in abundance, *modestum* more widespread (NGF97113002);

Male (SGAY1031418);

Found only on road verge (LYM95092404);

Growing on fallow agricultural land (LYM98091103); Growing in ploughed field (LYM98091107);

**Confusing Species:** Only confused with *L. stelligerum*, confounded by odd taller, larger-leaved plants popping up as sports within typical *L. modestum* populations, but scattered and seldom common.

Records of identification queries = 28.

Records of corrected identification queries = 11.

**Variation and Taxonomy:** Although noted by Williams as not varying significantly, atlassers did not see variation. Populations in the extreme southeast of the Agulhas Plain approached *L. stelligerum* in size. In addition, taller, more robust plants appear sporadically within typical *L. modestum* populations: these may be sports or they might possibly be hybrids resulting from freak long distance pollination events: all such recorded sports are within 15 km of typical *L. stelligerum* populations.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron stelligerum* Williams 1967  
**Agulhas Conebush**  
*Sterretjies*

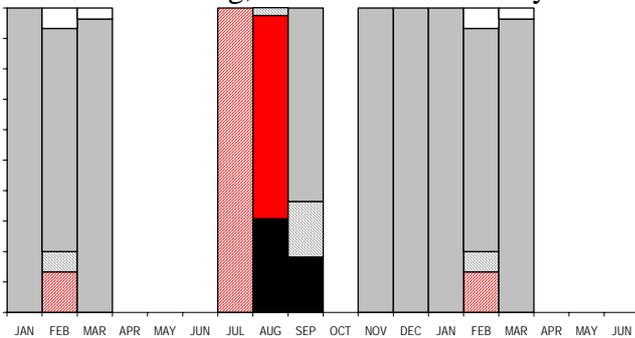
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**136 Records**

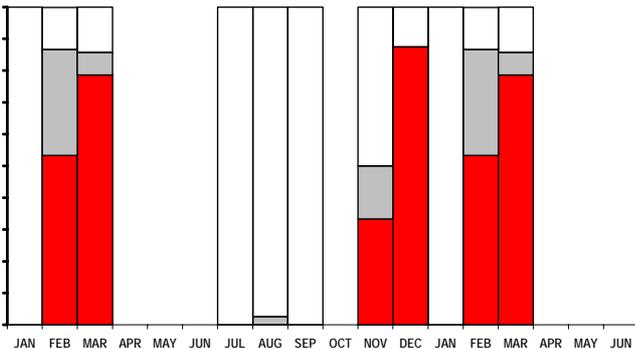
**Population** (135 records): 3% Abundant, 47% Common, 42% Frequent, 7% Rare.

**Dispersion** (112 records): 84% variable, 15% clumped, 0.9% evenly distributed.

**Flowering** (117 records with: Jan 2, Feb 15, Mar 28, Apr 0, May 0, Jun 0, Jul 9, Aug 39, Sep 11, Oct 0, Nov 6, Dec 7): Buds from Jul; Flowering from Aug; Peak Flowering from Aug; Over from Sep; Fruit from Sep to Mar; Nothing not significant. Peak levels at 100% in Aug. Historically recorded as flowering from Jul to Aug, fruit retained for 1-2 years.



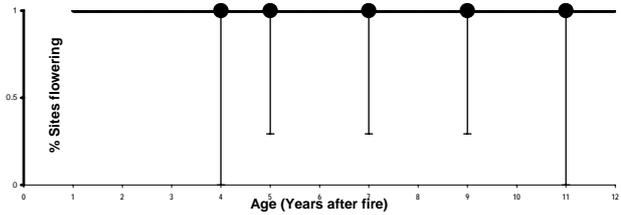
**Growth** (118 records with: Jan 2, Feb 15, Mar 28, Apr 0, May 0, Jun 0, Jul 9, Aug 39, Sep 11, Oct 0, Nov 6, Dec 8): Much from Nov to Mar; Rare from Feb; None from Jan and Jul to Nov. Peak levels unreliable at 88% in Dec.



**Seedlings** (32 records): All without any seedlings present.

**Fire Survival** (1 record): 100% eliminated from the area by fires.

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



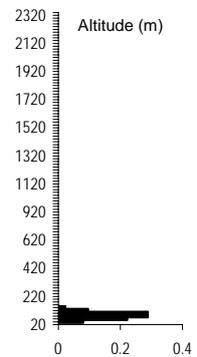
**Height** (118 records): 85% 0.2-1 m tall, 15% 1-2 m tall.

**Pollinators** (7 records): 57% flies, 43% beetles.  
**Detailed Pollinators** (1 record): Monkey Beetle.

**Habitat:**

**Distance to Ocean** (135 records): 100% inland - further than 2 km from coast.

**Altitude** (135 records): 20 - 140 m; 40<sub>lq</sub> - 60<sub>med</sub> - 80<sub>uq</sub>m.



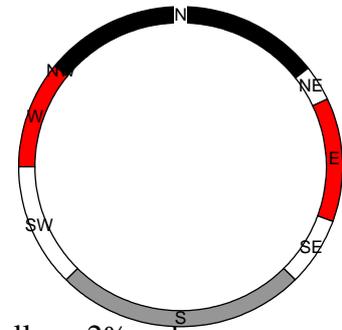
**Landform** (117 records): 92% deep soil, 6% shallow soil, 0.9% riverine, 0.9% swamp.

**Slope** (115 records): 50% platform, 36% gentle incline, 9% hill top, 6% valley bottom.

**Aspect** (56 records): 34% South, 30% North, 18% East, 18% West.

**Soil Type** (114 records): 44% clayey, 31% loamy, 14% sandy, 11% gravelly.

**Soil Colour** (116 records): 53% brown, 28% grey, 15% orange, 2% white, 2% yellow, 2% red.



**Geology** (118 records): 59% silcrete or ferricrete, 31% shale, 7% sandstone, 3% Tertiary sands.

**Vegetation** (134 records): 95% shrubland, 4% agricultural lands, 0.7% plantations.

**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 122 km<sup>2</sup> with 18% conserved and 49% lost; **Occupancy:** 82 km<sup>2</sup> with 22% conserved and 58% lost. **Fragmentation index:** 64%.

**Nature Reserves** (135 records): 13% in Nature Reserves - inadequately conserved.

**Habitat destruction** (119 records): 45% extensive natural habitat, 33% road verges, 19% islands, 2% naturally

fragmented habitats, 0.8% naturally linear habitats.

**Alien Invasive Species** (116 records):  
66% Fabaceae (chiefly alien *Acacia*),  
21% none, 9% *Pinus*, 4% Myrtaceae,  
0.9% other aliens.

**Alien Density** (116 records): 21% alien-free,  
65% sparse, 13% abundant, 2% dense.

**Cultivation & Utilization:**

**Picking** (92 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

*L. stelligerum* and *modestum* on same plot - appears to be intermediate population (AGR97113002); Both *L. stelligerum* and *modestum* appear to be present (COH97081702); *L. stelligerum* and *modestum* both on same srs- most individuals large and *stelligerum*-like in appearance - only a few 'stunted' ones indistinguishable from *modestum* (LYM97113003); *L. stelligerum* and *modestum* on same locality - about equal in abundance but *stelligerum* all in a clump (NGF97113002);

**Confusing Species:** Confused with *L. modestum*, which is a much smaller shrub, with smaller leaves and inconspicuous involucre leaves.

Records of identification queries = 18.

Records of corrected identification queries = 11.

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

Early collections in the 1900s were identified as *L. minus* var. *glabescens* (now *L. spissifolium*).

Taller, more robust plants closely resembling *L. stelligerum* appear sporadically within typical *L. modestum* populations up to about 15 km away from the range of *L. stelligerum*: might these possibly be hybrids resulting from freak long distance pollination events.. Populations in the extreme southeast of the Agulhas Plain <locality> should be critically evaluated to ascertain if they might not be an outlier of this species.

**Distribution:** Add.

INCLUDEPICTURE

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MERGEFORMAT \d

*Leucadendron diemontianum* Williams 1972  
Visgat Conebush

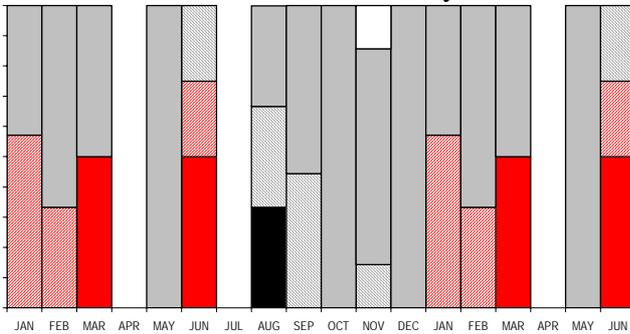
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**56 Records**

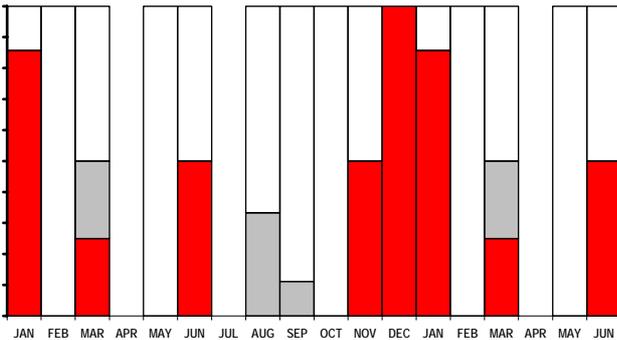
**Population** (53 records): 25% Common, 60% Frequent, 15% Rare.

**Dispersion** (50 records): 58% clumped, 38% variable, 2% evenly distributed, 2% widespread.

**Flowering** (55 records with: Jan 7, Feb 3, Mar 4, Apr 0, May 4, Jun 4, Jul 0, Aug 3, Sep 9, Oct 2, Nov 14, Dec 5): Buds from Jan to Feb and Jun; Flowering from Mar and Jun; Peak Flowering from Aug; Over from Jun to Sep; Fruit from Aug to May; Nothing not significant. Peak levels unreliable at 100% in Jun. Historically recorded as flowering from Jun, fruit retained for 2-3 years.



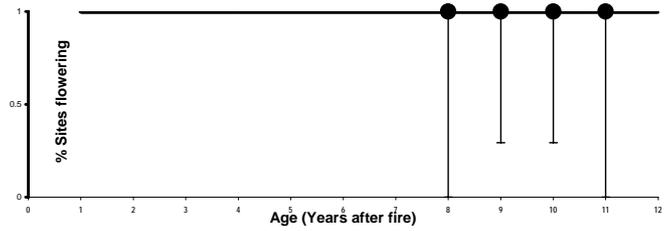
**Growth** (55 records with: Jan 7, Feb 3, Mar 4, Apr 0, May 4, Jun 4, Jul 0, Aug 3, Sep 9, Oct 2, Nov 14, Dec 5): Much from Nov to Jan, Mar and Jun; Rare from Mar and Aug; None from Feb to Nov. Peak levels unreliable at 100% in Dec.



**Seedlings** (35 records): Absent in 94%: fewer seedlings than prefire adults in 1 case. Seedlings found in Jun.

**Fire Survival** (7 records): 71% survived by seedlings only, 29% 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 2-6 years.



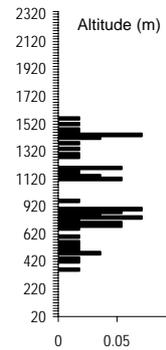
**Height** (56 records): 36% 0.2-1 m tall, 54% 1-2 m tall, 11% 2-5 m tall.

**Pollinators** (1 record): 100% none observed.  
**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (53 records): 100% inland - further than 2 km from coast.

**Altitude** (53 records): 340 - 1460 m; 660 *lq* - 780 *med* - 1040 *uq*m.



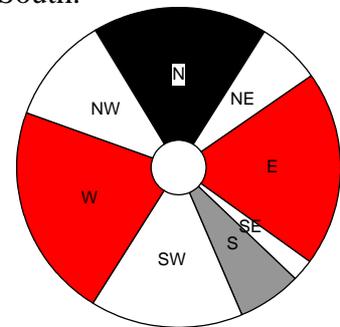
**Landform** (53 records): 57% deep soil, 28% shallow soil, 11% rocky outcrops, 2% riverine, 2% swamp.

**Slope** (51 records): 65% gentle incline, 22% steep incline, 8% valley bottom, 6% platform.

**Aspect** (44 records): 34% West, 28% North, 25% East, 13% South.

**Soil Type** (52 records): 54% sandy, 23% loamy, 13% gravelly, 10% rocky.

**Soil Colour** (51 records): 49% grey, 31% brown, 12% white, 8% yellow.



**Geology** (51 records): 94% sandstone, 6% shale.

**Vegetation** (53 records): 100% shrubland.

**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 1 705 km<sup>2</sup> with 26% conserved and 11% lost; **Occupancy:** 89 km<sup>2</sup> with 25% conserved and 3% lost. **Fragmentation index:** 5%.

**Nature Reserves** (53 records): 30% in Nature Reserves.

**Habitat destruction** (53 records): 98% extensive natural habitat, 2% naturally linear habitats.

**Alien Invasive Species** (50 records): 70% none, 20% *Pinus*, 10% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (50 records): 70% alien-free, 26% sparse, 4% abundant.

**Cultivation & Utilization:**

**Picking** (48 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

About 30 plants (AGR96052602); About 20 seen (AGRY0081224); 100 plants live (AGRY1022103); About 30 plants (NAH92060603); 2 small populations in this valley one with about 15 plants the other with 10 plants (NAH92091202);

Mixed ages - lots of young (JAGY3011601); Some younger plants present (about 3 years old) suggesting inter-fire recruitment (NAH92060603);

1/5 plants dead (AGRY0081224); Bottom end of population near 1/2 plants dead - about 100 plants live still. Unusual as on sandy soil (AGRY1022103); This locality was atlassed 12/9/92 and at least 15 plants were noted.

Today I could see only 4 living adults the dead unburnt skeletons of 5 others. My theory is that the bad drought of 1993/94 killed most of these plants as the remaining plants showed no signs of disease or insect damage (NAH95012203);

More female than male (JAGY3011601); Total adult population about 30 plants with perhaps 20-25 males (NAH92060603); Approximately 500 plants area: 40m x 60m (RTUY4061804);

Most at lowest edge of shale band on edge of rocks some in rocks (AGR96052602);

This is an enormous northerly range extension, being some 85 km north of its Visgat-Onderboskloof population (NAH92091202); Of interest to follow up: I saw another potential colony some 1 km SE of this locality at about 950 m. However this is only a chancy guess as the sighting was via binoculars and in a heat haze from at least 500 m away (NAH95012203);

**Confusing Species:** None noted. Although some records of non-sprouting *L. salignum* might be this species. Very similar to *L. flexuosum*, which is localized, well removed and a resprouter. Unusual in having a corymbose growth habit.

Records of identification queries = 8.

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

**Distribution:** Add.

**Spectacular range extensions.**

INCLUDEPICTURE

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*Leucadendron discolor* Phill. & Hutch. 1912  
**Piketberg Conebush**  
*Rooitolbos*

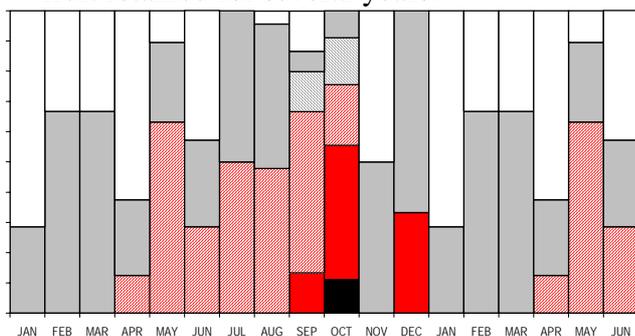
**Other Common Names:** Discolor, Flame Gold Tips, Flame Goldtips, Flametip Conebush, Pompom, Red Conebush, Sunshinebush, Yellow Discolor, *Vlamtolbos*, *Vleigeelbos*, *Red Centre*.  
**Other Scientific Names:** *decorum* var. *obovatum* Meisn. 1856.

**138 Records**

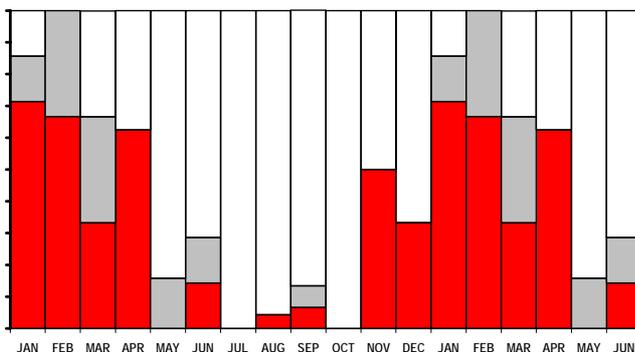
**Population** (109 records): 18% Common, 60% Frequent, 22% Rare.

**Dispersion** (96 records): 69% variable, 28% clumped, 3% widespread.

**Flowering** (137 records with: Jan 7, Feb 3, Mar 3, Apr 8, May 19, Jun 7, Jul 2, Aug 23, Sep 15, Oct 45, Nov 2, Dec 3): Buds from May to Oct; Flowering from Oct and Dec; Peak Flowering and Over not significant; Fruit from Nov to Aug; Nothing from Jan to Apr, Jun and Nov. Peak levels at 91% in Oct. Historically recorded as flowering from Sep, fruit retained for several years.



**Growth** (136 records with: Jan 7, Feb 3, Mar 3, Apr 8, May 19, Jun 7, Jul 2, Aug 23, Sep 15, Oct 44, Nov 2, Dec 3): Much from Nov to Apr; Rare from Feb to Mar; None from Mar to Dec. Peak levels unreliable at 100% in Feb.



**Seedlings** (63 records): Absent in 90%; more seedlings than prefire adults in 3 cases. Seedlings found in Jan (3).

**Fire Survival** (11 records): 64% survived by seedlings only, 18% eliminated from the area by fires, 18% escaped fires in fire-safe areas.

**Age to first flowering:** First flowers recorded at 6 years, 50% estimated at 6-7 years, and 100% recorded at 7 years.



**Height** (137 records): 4% 0-0.2 m tall, 26% 0.2-1 m tall, 52% 1-2 m tall, 18% 2-5 m tall.

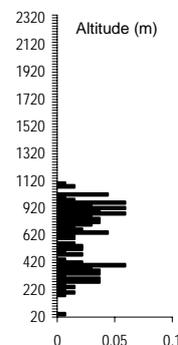
**Pollinators** (10 records): 90% beetles, 10% bees or wasps.

**Detailed Pollinators** (7 records): Monkey Beetle (4), Great Protea Beetle (3).

**Habitat:**

**Distance to Ocean** (106 records): 100% inland - further than 2 km from coast.

**Altitude** (106 records): 260 - 1000 m; 400 *lq* - 680 *med* - 800 *uq* m.



**Landform** (105 records): 68% deep soil, 25% shallow soil, 5% rocky outcrops, 3% swamp.

**Slope** (105 records): 52% gentle incline, 33% steep incline, 7% hill top, 7% platform, 1.0% valley bottom.

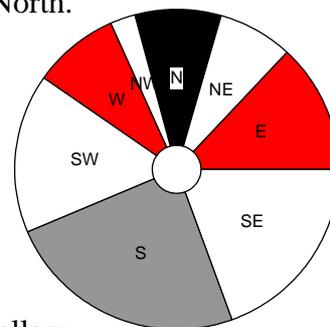
**Aspect** (91 records): 44% South, 27% East, 20% West, 9% North.

**Soil Type** (105 records): 67% sandy, 25% loamy, 5% rocky, 3% gravelly, 1.0% peaty.

**Soil Colour** (104 records): 58% brown, 32% grey, 5% yellow, 3% red, 1.0% black, 1.0% white, 1.0% orange.

**Geology** (99 records): 96% sandstone, 4% shale.

**Vegetation** (105 records): 99% shrubland, 1.0% suburban.



**Conservation Status and Threat:**

**Red Data List Status:** Near Threatened

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

Occurrence (Fynbos): 228 km<sup>2</sup> with 9% conserved and 12% lost; Occupancy: 81 km<sup>2</sup> with 14% conserved and 12% lost. Fragmentation index: 32%.

**Nature Reserves** (106 records): 47% in Nature Reserves.

**Habitat destruction** (104 records):  
88% extensive natural habitat, 10% islands,  
2% naturally fragmented habitats.

**Alien Invasive Species** (103 records):  
77% none, 18% *Pinus*, 3% Myrtaceae,  
2% Fabaceae (chiefly alien *Acacia*).

**Alien Density** (103 records): 77% alien-free,  
20% sparse, 3% abundant.

**Cultivation & Utilization:**

**Picking** (105 records): 97% no sign of picking,  
2% severely picked, 1.0% lightly picked.

**Cultivation Status:** Plantings - 28 records  
(20%), Augmentations - 1 record (0.7%),  
Escapes - 1 record (0.7%).

**Atlassers Notes:**

The plants 'escaped' through the fence from a protea orchard. Owner says it doesn't occur there naturally (AWA97091301); Has "gone wild" alongside road - others are neatly cultivated. Major potential for genetic contamination in this area (NAH97050401); There was an orchard in addition to naturally occurring plants (NGF99051615);

Very few females relative to males  
(APE92100302);  
Approximately 3 plants (WIJ94011501);  
At least 3 spp of beetles on flowerheads  
(APE92100302); Beetles: protea and monkey  
and red (WIJ95101503);  
Three beetles have eaten a large part of a cone  
(NGFY0080602);

**Confusing Species:** Misidentified as *L. foedum*  
(which has much narrower leaves and yellow  
- not red - flowers).

Records of identification queries = 8.

Records of corrected identification queries = 1.

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

First described a *L. discolor* in 1844 by Beuk in  
Drege this is a *nomen nudum*.

**Distribution:** Add.

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*Leucadendron flexuosum* Williams 1967  
Worcester Conebush

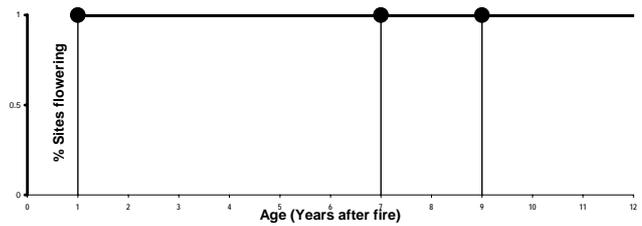
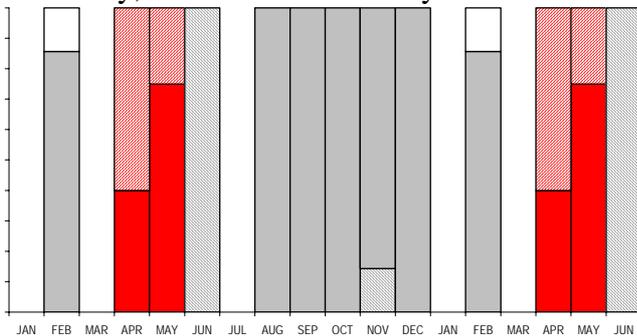
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**44 Records**

**Population** (43 records): 19% Common, 72% Frequent, 9% Rare.

**Dispersion** (40 records): 78% variable, 23% clumped.

**Flowering** (44 records with: Jan 0, Feb 7, Mar 0, Apr 5, May 4, Jun 1, Jul 0, Aug 1, Sep 1, Oct 17, Nov 7, Dec 1): Buds from Apr 60 to May; Flowering from Apr to May; Peak Flowering not recorded; Over from Jun; Fruit from Aug to Feb; Nothing not significant in - Feb. Peak levels at 100% from Apr to May. Historically recorded as flowering from Apr to May, fruit retained for 1-2 years.



**Height** (43 records): 51% 0.2-1 m tall, 47% 1-2 m tall, 2% 2-5 m tall.

**Pollinators** : No data.

**Detailed Pollinators:** No additional data.

**Habitat:**

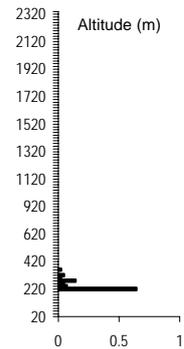
**Distance to Ocean** (42 records): 100% inland - further than 2 km from coast.

**Altitude** (42 records): 200 - 360 m; 200<sub>lq</sub> - 220<sub>med</sub> - 220<sub>uq</sub>m.

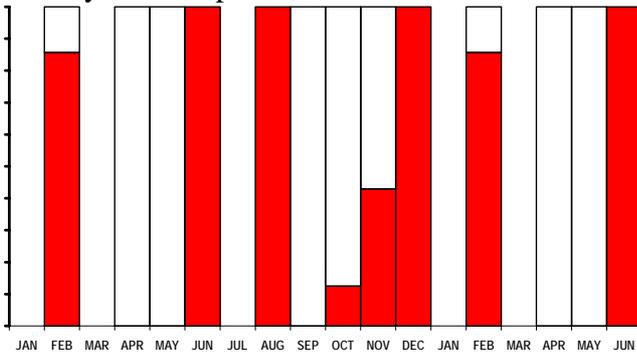
**Landform** (42 records): 100% deep soil.

**Slope** (42 records): 55% platform, 24% gentle incline, 17% valley bottom, 5% steep incline.

**Aspect** (19 records): 58% East, 26% West, 11% South, 5% North.



**Growth** (43 records with: Jan 0, Feb 7, Mar 0, Apr 5, May 4, Jun 1, Jul 0, Aug 1, Sep 1, Oct 16, Nov 7, Dec 1): Much from Feb 86 - Jun 100 - Aug 100 - Oct 13 - Nov 43 - Dec 100 -; Rare from ; None from Feb 14 - Apr 100 - May 100 - Sep 100 - Oct 88 - Nov 57.



**Soil Type** (42 records):

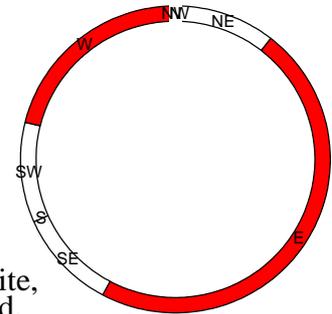
55% sandy, 38% loamy, 5% gravelly, 2% rocky.

**Soil Colour** (42 records):

52% brown, 31% grey, 5% white, 5% yellow, 5% red, 2% orange.

**Geology** (35 records): 37% conglomerate, 29% sandstone, 26% shale, 9% Tertiary sands.

**Vegetation** (42 records): 95% shrubland, 5% agricultural lands.



**Seedlings** (15 records): All without any seedlings present.

**Fire Survival** (9 records): 100% resprouted from underground boles.

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

**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 167 km<sup>2</sup> with 0% conserved and 41% lost; **Occupancy:** 37 km<sup>2</sup> with 0% conserved and 49% lost. **Fragmentation index:** 21%.

**Nature Reserves** (42 records): 0% in Nature Reserves - unconserved.

**Habitat destruction** (42 records): 71% extensive natural habitat, 24% islands, 2% corridors, 2% naturally linear habitats.

**Alien Invasive Species** (42 records): 57% Fabaceae (chiefly alien *Acacia*), 21% Myrtaceae, 19% *Hakea*, 2% *Pinus*.

**Alien Density** (42 records): 81% sparse, 19% abundant.

**Cultivation & Utilization:**

**Picking** (37 records): 100% no sign of picking.

**Cultivation Status:** No noted cultivation.

**Atlassers Notes:**

Far too lanky for *L. salignum* and both occurred in previous plot (AGRY0112627); Not quite right for this species but not normal *L. salignum* and growing with it (AGRY1103123); Suspected *L. flexuosum*. John Rourke says it is *L. salignum* but plants are too lanky and look like *L. flexuosum*. *L. salignum* also present (MAJ92082302); Both species present - this as tall lanky grey plants growing within the shorter yellow *L. salignum* (WIJY0112614);

Grazed off (AGR96042503);

About 150 plants, very localized (NAH92061704); About 200 plants in this the major population (NAH96111501);

**Confusing Species:** Expected confusion with *L. salignum* did not materialize, perhaps because the two species occur together and the differences are therefore obvious *in situ*. Records of identification queries = 4.

**Variation and Taxonomy:** No significant variation noted  
Unlike Williams we found many instances of intermediates with *L. salignum*: these are mapped.

**Distribution:** Add.

<map intermediates>

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*Leucadendron foedum* Williams 1969  
**Hopefield Conebush**  
*Hopefieldtolbos*

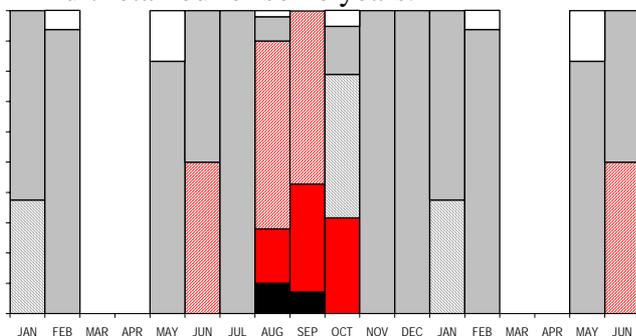
**Other Common Names:** None known.  
**Other Scientific Names:** None.

**147 Records**

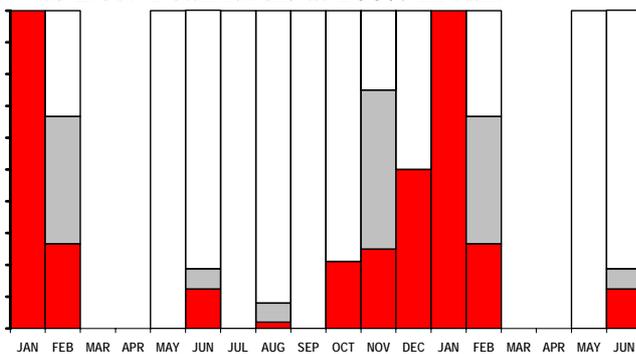
**Population** (145 records): 15% Common, 55% Frequent, 26% Rare, 3% Extinct.

**Dispersion** (120 records): 74% variable, 24% clumped, 2% widespread.

**Flowering** (138 records with: Jan 8, Feb 16, Mar 0, Apr 0, May 6, Jun 16, Jul 1, Aug 50, Sep 14, Oct 19, Nov 4, Dec 4): Buds from Jun to Sep; Flowering from Sep and Oct; Peak Flowering not significant; Over from Jan and Oct; Fruit from Nov to Jul; Nothing not significant. Peak levels at 100% in Sep. Historically recorded as flowering in Sep, fruit retained for some years.



**Growth** (137 records with: Jan 8, Feb 15, Mar 0, Apr 0, May 6, Jun 16, Jul 1, Aug 50, Sep 14, Oct 19, Nov 4, Dec 4): Much from Oct to Feb; Rare from Feb and Nov; None from Feb to Dec. Peak levels at 100% in Jan.



**Seedlings** (86 records): Absent in 95%: fewer seedlings than prefire adults in 1 case, and more in 1 case. Seedlings found in Aug and Oct.

**Fire Survival** (10 records): 50% survived by seedlings only, 40% eliminated from the area by fires, 10% escaped fires in fire-safe areas.

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



**Height** (140 records): 0.7% 0-0.2 m tall, 9% 0.2-1 m tall, 77% 1-2 m tall, 11% 2-5 m tall, 1% taller than 5 m.

**Pollinators** (12 records): 58% flies, 42% beetles.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (146 records): 100% inland - further than 2 km from coast.

**Altitude** (146 records): 20 - 280 m; 60<sub>lq</sub> - 80<sub>med</sub> - 80<sub>uq</sub>m.

**Landform** (146 records): 99% deep soil, 0.7% rocky outcrops.

**Slope** (145 records): 66% platform, 20% gentle incline, 8% dunes, 6% hill top, 0.7% valley bottom.

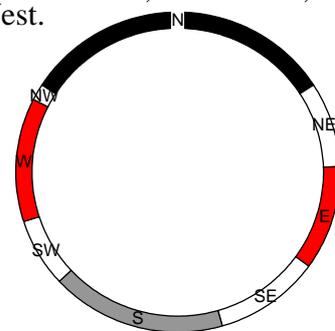
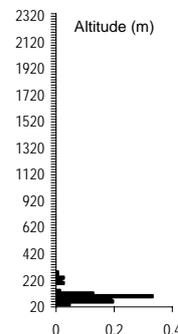
**Aspect** (56 records): 37% North, 27% South, 20% East, 17% West.

**Soil Type** (146 records): 99% sandy, 0.7% loamy.

**Soil Colour** (144 records): 60% white, 17% grey, 10% yellow, 8% brown, 5% orange, 0.7% red.

**Geology** (138 records): 86% Tertiary sands, 13% sandstone, 0.7% shale, 0.7% granite.

**Vegetation** (146 records): 99% shrubland, 0.7% grassland, 0.7% forest.



**Conservation Status and Threat:**

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

**Occurrence** (Fynbos): 1 553km<sup>2</sup> with 2% conserved and 44% lost; **Occupancy:** 208 km<sup>2</sup> with 1% conserved and 35% lost. **Fragmentation index:** 11%.

**Nature Reserves** (146 records): 0% in Nature Reserves - unconserved.

**Habitat destruction** (144 records): 70% extensive natural habitat, 26% islands, 1% road verges, 1% naturally fragmented habitats, 0.7% naturally linear habitats.

**Alien Invasive Species** (144 records): 66% Fabaceae (chiefly alien *Acacia*), 27% none, 3% Myrtaceae, 3% *Pinus*.

**Alien Density** (144 records): 27% alien-free, 65% sparse, 6% abundant, 3% dense.

**Cultivation & Utilization:**

**Picking** (125 records): 100% no sign of picking.

**Cultivation Status:** Plantings - 1 record (0.7%).

**Witch's Broom Infestation:** 1 record (0.7%).

**Atlassers Notes:**

1000s of plants! (AGRY0082512-14);

Moribund (5 males and 1 female living) most females dead (AGR91101303); Senescent 2 dead - needs fire! (AGR96091105); 2 dead - veld needs a burn (AGR96091108); 1 male and 2 females - are approaching senescent stage: 1 dead female observed (NGW96091101); One plant only - natural death? It would have been height over 2 m tall (SMR98082809);

Much cattle damage (APE93060507);

With Witches Broom-like growth of sort in sandveld pincushion (AGR96102517);

**Confusing Species:** Northernmost populations confused when not in flower with *L. procerum* (which has red flowers, densely hairy male bracts, relatively rounded cones – not strongly dimpled, and female involucreal leaves broad and ivory-white).

Records of identification queries = 10.

Records of corrected identification queries = 4.

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

**Distribution:** Add.

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*Leucadendron procerum* (Salisb. ex Kn.) Williams 1809, 1967

**Ivory Conebush**

*Langbeentjie*

**Other Common Names:** Lanky Conebush, Tall Euryspermum, *Katstert*, *Kienabossie*, *Kinabossie*, *Pinangbossie*.

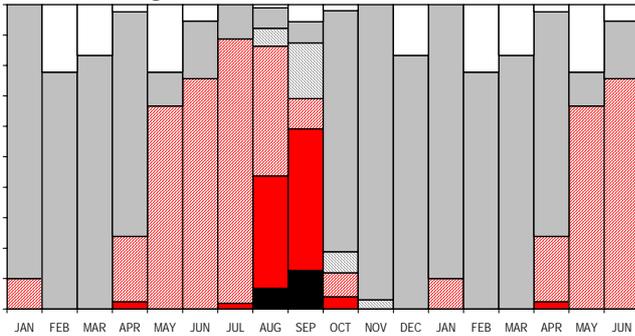
**Other Scientific Names:** *concinnum* R.Br. 1810, *glabrum* var *obtusatum* Meisn. 1856. *lanigerum* (Buek in Drege) 1844.

**566 Records**

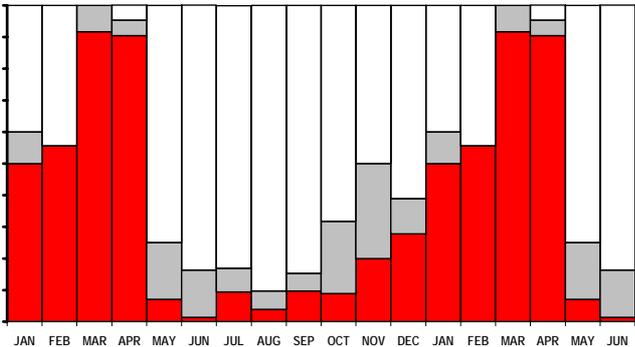
**Population** (559 records): 0.4% Abundant, 29% Common, 56% Frequent, 15% Rare.

**Dispersion** (524 records): 71% variable, 28% clumped, 0.6% evenly distributed, 0.4% widespread.

**Flowering** (553 records with: Jan 10, Feb 9, Mar 12, Apr 42, May 27, Jun 74, Jul 53, Aug 103, Sep 71, Oct 101, Nov 33, Dec 18): Buds from Apr to Aug; Flowering from Aug to Sep; Peak Flowering not significant; Over from Sep; Fruit from Oct to Apr; Nothing from Feb and May. Peak levels at 92% in Aug. Historically recorded as flowering from Aug, fruit retained.



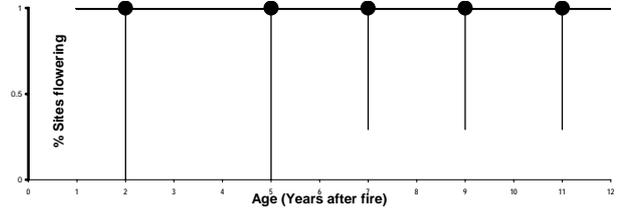
**Growth** (552 records with: Jan 10, Feb 9, Mar 12, Apr 42, May 28, Jun 74, Jul 53, Aug 103, Sep 72, Oct 101, Nov 30, Dec 18): Much from Nov to Apr; Rare from Oct to Nov; None from May to Feb. Peak levels at 100% in Mar.



**Seedlings** (189 records): Absent in 97%: fewer seedlings than prefire adults in 2 cases, and more in 1 case. Seedlings found in Jul, Aug and Sep.

**Fire Survival** (20 records): 85% survived by seedlings only, 5% eliminated from the area by fires, 5% escaped fires in fire-safe areas, 5% resprouted from underground boles.

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



**Height** (558 records): 8% 0.2-1 m tall, 35% 1-2 m tall, 54% 2-5 m tall, 2% taller than 5 m.

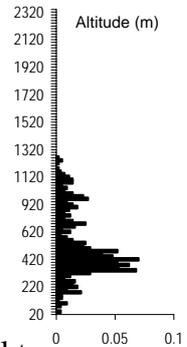
**Pollinators** (20 records): 75% beetles, 15% flies, 10% bees or wasps.

**Detailed Pollinators** (6 records): Monkey Beetle (2), Green Beetle (2), Green Stripy Beetle, Green Monkey Beetle.

**Habitat:**

**Distance to Ocean** (556 records): 100% inland - further than 2 km from coast.

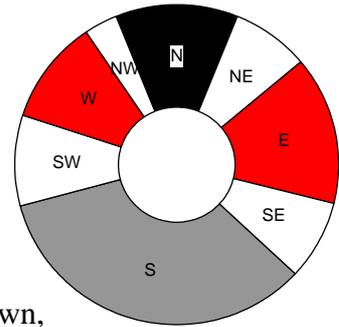
**Altitude** (556 records): 20 - 1160 m; 340 *lq* - 420 *med* - 520 *uq*m.



**Landform** (553 records): 91% deep soil, 8% shallow soil, 0.7% rocky outcrops, 0.2% riverine.

**Slope** (554 records): 68% gentle incline, 17% platform, 10% hill top, 2% steep incline, 2% valley bottom, 0.2% cliff, 0.2% dunes.

**Aspect** (441 records): 43% South, 23% East, 18% North, 17% West.



**Soil Type** (552 records):

89% sandy, 4% gravelly, 4% rocky, 3% loamy, 0.4% clayey.

**Soil Colour** (547 records):

33% brown, 22% yellow, 17% white, 15% grey, 8% orange, 5% red.

**Geology** (542 records): 86% sandstone, 7% Tertiary sands, 5% silcrete or ferricrete, 1% shale.

**Vegetation** (552 records): 99% shrubland, 0.7% agricultural lands, 0.2% thicket.

**Conservation Status and Threat:**

**Red Data List Status:** Vulnerable A4c. Occurrence (Fynbos): 4 490 km<sup>2</sup> with 10% conserved and 23% lost; Occupancy: 547 km<sup>2</sup> with 3% conserved and 25% lost. Fragmentation index: 9%.

**Nature Reserves** (556 records): 4% in Nature Reserves - unconserved.

**Habitat destruction** (549 records):  
69% extensive natural habitat, 26% islands,  
3% naturally fragmented habitats, 1% road  
verges, 1% naturally linear habitats.

**Alien Invasive Species** (541 records):  
76% none, 20% Fabaceae (chiefly alien  
*Acacia*), 3% *Pinus*, 1% Myrtaceae.

**Alien Density** (539 records): 76% alien-free,  
22% sparse, 2% abundant.

**Cultivation & Utilization:**

**Picking** (378 records): 100% no sign of  
picking, 0.3% lightly picked.

**Cultivation Status:** Plantings - 5 records  
(0.9%).

**Witch's Broom Infestation:** 3 records (0.5%).

**Atlassers Notes:**

Very wide leaf and narrow leaf males in this  
small isolated population: leaves twice  
normal width (AGR93071807); Leaf  
dimensions (leaf and cone) very big –  
especially from Gifberg (AGR95081202);  
With very broad leaves (AGRY0102806);  
Males resemble *L. loranthifolium*  
(AMMY2110508);

Some of these would have been over 5 m tall if  
they had been upright (SMRY0062207);  
Some exceeding 5 m (WIJ94041202,  
WIJY0081904);

Appears virtually senescent (NAH95091406);  
Most plants dead, 4 seen dead  
(AGRY0062207); Some bushes half dead  
(AGRY0100106); Many young plants came

up 'through' fallen dead mother  
(AWA97082103); Very mixed in size  
(AWA98082804);

Solitary male (NGW96091109);  
Most female cones aborted this year while still  
very small - no cones this year seen  
(AGRY0103044);

Ants crawling on flowerheads  
(AWA98083002);

Used for firewood - many plants (presumably  
dead) removed (AGRY0092305);

Only on edge of old land (AGR95081210);

Dense woody 'cups' of dead leaves - Witches  
Broom? (AGR95070605);

**Confusing Species:** Confused when not in  
flower with the northernmost populations of  
*L. foedum* (narrower female involucre  
leaves, and yellow, not reddish, flowers).  
Records of identification queries = 39.  
Records of corrected identification queries = 30.

**Variation and Taxonomy:** No significant  
variation known to Williams, but atlassers  
have identified broad-leaved plants on the  
Gifberg.

**Distribution:** Add.

INCLUDEPICTURE

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***Leucadendron salignum* Bergius 1766**  
**Common Sunshine Conebush**  
*Knoppiesgeelbos*

**Other Common Names:** Adscendens, Clustered Euryspermum, Common Yellowbush, Goldentips, Goldtips Conebush, Incisum, Mini Tulip Conebush, Nest-flower Conebush, Red Adscendens, Strictum, Trailing Euryspermum, *Asbos*, *Duineknoppiesbos*, *Geelbos*, *Geelknoppies*, *Geelknoppiesbos*, *Knopbos*, *Knoppiesgeelbos*, *Kraaltolbos*, *Rooibos*, *Stompieknopbos*, *Tolbos*, *Blush*, *Devils Blush*, *Highlights*, *Red Devil*, *Winter Red*, *Yellow Devil*.

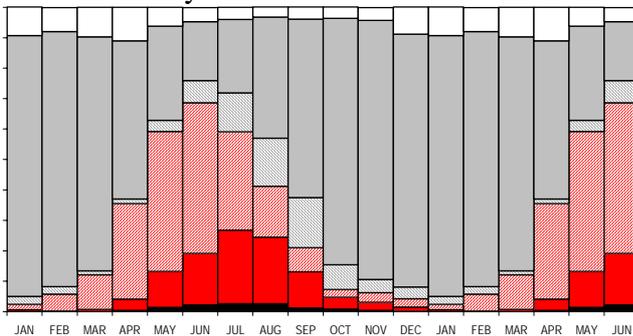
**Other Scientific Names:** *adscendens* R.Br. 1810, *argentea* var.  $\delta$  L. 1753, *conifera* var.  $\epsilon$  L. 1762, *diversifolia* (Willd.) 1809, *frondosum* Salisb. ex Knight 1809, *humifusum* Salisb. ex Knight 1809, *involucratum* Meisn 1856, *involucratum* Roem & Schult 1818, *nudiflorum* Salisb. ex Knight 1809, *pallens* (L.) 1771, *pallens* var. *adscendens* (O.Kuntze) 1898, *pallens* var. *erecta* (O.Kuntze) 1898, *pallida* (Salisb.) 1796, *salignum* (L.) 1771, *virgatum* R.Br. 1810.

**24 657 Records**

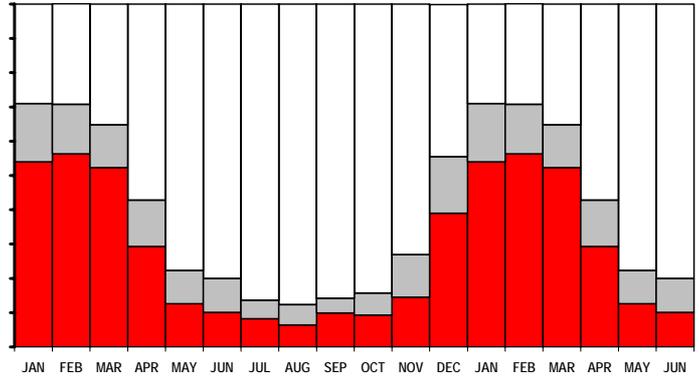
**Population** (24521 records): 0.5% Abundant, 35% Common, 54% Frequent, 10% Rare, 0.0% Extinct.

**Dispersion** (23100 records): 77% variable, 12% clumped, 10% widespread, 1% evenly distributed.

**Flowering** (23819 records with: Jan 1632, Feb 1663, Mar 2435, Apr 1636, May 1697, Jun 1718, Jul 1785, Aug 2246, Sep 2452, Oct 2855, Nov 2147, Dec 1553): Buds from Apr to Jul; Flowering from Jul to Aug; Peak Flowering and Over not significant; Fruit from Jul to May; Nothing not significant. Peak levels at % in. Historically recorded as flowering from Apr to Nov, varying from place to place, fruit not released immediately.



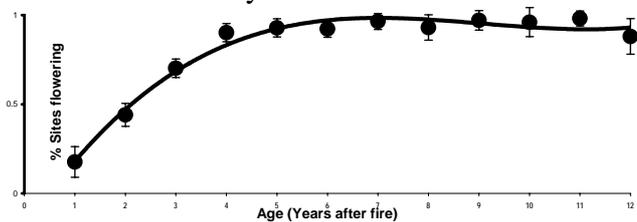
**Growth** (23458 records with: Jan 1622, Feb 1667, Mar 2419, Apr 1600, May 1662, Jun 1681, Jul 1730, Aug 2224, Sep 2402, Oct 2801, Nov 2113, Dec 1537): Much from Dec to Apr; Rare not significant; None from all year round. Peak levels at 71% in Jan.



**Seedlings** (9452 records): Absent in 96%: fewer seedlings than prefire adults in 148 cases, and more in 45 cases. Seedlings found all year round in Jan (19), Feb (7), Mar (15), Apr (12), May (11), Jun (20), Jul (31), Aug (15), Sep (24), Oct (12), Nov (14) and Dec (13).

**Fire Survival** (1825 records): 92% resprouted from underground boles, 5% escaped fires in fire-safe areas, 1% survived by seedlings only, 1% resprouted from aerial trunks, 0.7% eliminated from the area by fires.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 2 years, and 100% recorded at 17 years, with a slight decline after 21 years.



**Height** (24076 records): 4% 0-0.2 m tall, 76% 0.2-1 m tall, 20% 1-2 m tall, 0.4% 2-5 m tall, 0% taller than 5 m.

**Pollinators** (69 records): 49% beetles, 23% flies, 14% bees or wasps, 9% none observed, 3% birds, 1% butterflies or moths.

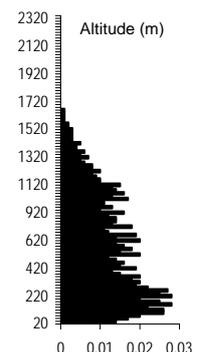
**Detailed Pollinators** (21 records): Monkey Beetle (15), Honey Bee (2), Scarab Beetle, Green Monkey Beetle, Great Protea Beetle, Conebush Beetle.

**Habitat:**

**Distance to Ocean** (24147 records): 91% inland - further than 2 km from coast.

**Altitude** (24149 records): 20 - 1940 m; 220 *lq* - 480 *med* - 800 *uq*m.

**Landform** (23845 records): 74% deep soil, 22% shallow soil, 4% rocky outcrops, 0.3% riverine, 0.2% swamp.



**Slope** (23853 records): 50% gentle incline, 30% steep incline, 11% platform, 6% hill top, 2% valley bottom, 0.8% cliff, 0.3% dunes.

**Aspect** (20373 records): 37% South, 24% North, 20% West, 19% East.

**Soil Type** (23600

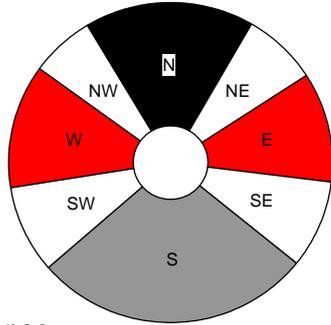
records):  
52% sandy,  
29% loamy,  
9% gravelly,  
5% rocky,  
4% clayey,  
0.3% peaty.

**Soil Colour** (23520

records):  
43% brown,  
40% grey, 5% orange,  
5% white, 3% yellow, 2% black, 2% red.

**Geology** (23031 records): 74% sandstone, 12% shale, 4% Tertiary sands, 3% granite, 3% silcrete or ferricrete, 2% limestone, 2% conglomerate.

**Vegetation** (24049 records): 96% shrubland, 1% grassland, 1% plantations, 0.5% agricultural lands, 0.4% thicket, 0.2% wooded grassland, 0.1% suburban.



**Conservation Status and Threat:**

**Red Data List Status:** Least Concern.  
Occurrence (Fynbos): 50 135 km<sup>2</sup> with 22% conserved and 19% lost; Occupancy: 17 353 km<sup>2</sup> with 26% conserved and 21% lost. Fragmentation index: 9%.

**Nature Reserves** (24149 records): 36% in Nature Reserves.

**Habitat destruction** (23425 records): 86% extensive natural habitat, 9% islands, 2% road verges, 1% naturally linear habitats, 0.7% naturally fragmented habitats, 0.4% corridors, 0.1% patches.

**Alien Invasive Species** (23071 records): 47% none, 22% Fabaceae (chiefly alien *Acacia*), 18% *Pinus*, 10% *Hakea*, 2% Myrtaceae, 0.5% other aliens, 0.2% annual alien grasses.

**Alien Density** (22990 records): 47% alien-free, 39% sparse, 10% abundant, 3% dense, 0.4% impenetrable.

**Cultivation & Utilization:**

**Picking** (16834 records): 100% no sign of picking, 0.1% lightly picked, 0.0% severely picked.

**Cultivation Status:** Plantings - 11 records (0.04%), Augmentations - 1 record (0.00%).

**Witch's Broom Infestation:** 17 records (0.07%).

**Atlasers Notes:**

*Large plants:*

These are the biggest and oldest plants I have seen (AKS95111507); Lots of plants over 2 m (AWA98071303); Some plants up to 1.5 m tall (CVV99031401); Some plants were over 2 m high and 2 m broad (JAG95082201); AH Some plants over 1 m tall (JAT97113004-6, SGAY1020715); Exceptionally Tall And Vigorous (OGM93091507); A couple of female plants over 1 m tall (SHR92042505); Old veld - some plants were over 2 m tall!

(SMRY2050201); Very tall amongst *Protea mundii* up to 5 m (WAM92122901);

*Dwarf forms:*

Cones quite small 15 X 15mm (AJT92071101); Large mat bushes less than 200 mm high (AKS96013104); A small percentage of plants displaying a very sprawling habit much like *Leucospermum prostratum* (CJL98062504); In this area it has a small leaf variety with cones much smaller than normal. these multi-stemmed plants are noticeably smaller than the other *salignum*, though these are also smaller than elsewhere in this neighbourhood (CVV95100803); Very low growing - barely over 200 mm (JAT96032201+2); Small leaved low bush (JAT97050101); There appears to be a dwarf form 300-400 mm tall, as well as the usual one (VJK93101003); Very stunted (VJK93041801);

*Other involucre bract forms:*

Peculiar no 'boat shape' form of involucre bracts! (AGR96042506); Looked quite different had hairy cones and was resprouting but the leaves surrounding cones were very loose (IEB99102711); Open bracts not clasping stem (IEBY0032801); Cones exposed (LYM95071001); Here doesn't have boat shaped involucre leaves around cone or flowerheads (MCG99011901); Unusual: female involucre leaves (70 x 10 mm) were splayed revealing heads with small brown bracts at the base (SHR92042505); Female cones not enclosed by involucre leaves; cone bracts carmine (SHR94123101); Cones not enclosed by involucre leaves (SHR95092301); This is a funny fuzzy form without the involucre leaves (more like *L. pubescens*). it has smooth leaves but dimpled cones resembling *L. lanigerum*. The habit is not *lanigerum* though. It is common on the top of Ezelfontein (AGR99102708);

*Ld flexuosum form:*

Peculiar form approaching *L. flexuosum* (AGR96042507); Normal (AGR96042508); Atypically tall and narrow bushes and unhappy thin leaves - showing some features of *L. flexuosum* but still typically *salignum* (CHE98082007); Some plants are very spindly and do approach *L. flexuosum*! (LYM96102601, SMRY2022810, VDW97020706,8,10); Lanky form (LYMY0080903);

*Ld lanigerum form:*

'Rough' type approaching *L. lanigerum* - impossible to tell intermediates (AGR98082008); *L. lanigerum* type form (AGR98100905, LYM98100902-3, 7-8); Very *L. lanigerum*-like in features! (AGR99060907); Both normal type and *lanigerum* - lookalike type at the site (AGRY0101904+5); Present in normal and *L. lanigerum* types (DJLY0101908); some are *lanigerum* type (GEKY0101905-7); This is a rough leaf growth form - cf *L. lanigerum* of *salignum*: this needs to be looked at more closely (IVM98082008); Form like smooth *L. lanigerum* (SMR98082007);

*Other morphological forms:*

Fine leaved and broad leaved present together - surely more than 1 species! (DJL99040801); Had strange long thin leaves - like *L. eucalyptifolium* - due to it reaching for the light? (HCE96062204); Might be very narrow-leaved

form (OUT93060601); Very variable in general / bushy and scrambly and some very fine leaves - several mature plants of both sexes were single stemmed (SMR99040801); Females have such big leaves and flowerheads that I kept on checking close up whether they really were (AWA96111903); Much broader leaves than usual but also resprouter and hairy cones (HRK96010501); Single-stemmed similar to *L. tradouwense* in colour, only slightly smaller leaves and silver cone (VJK93091201); Had very thin bracts it was therefore 'funny' (NGF96042505-6); Approaching *L. modestum* in appearance (WMP93011606);

#### *Colour forms:*

Red form! (AGR93071716-17, AGR93071729 + 31, AGRY0081705, DOA95050111); Redder form predominant (AGR97022514); Deep red form (DOA95050110); Very deep red (OUT94021904+5, OUT95040103); Very red (OUT95102802,3,5,7,9, OUT96012702); Dramatic red (SMR99092401); Colourful red form (SMRY0072106); Some red leaf (CFRY0072105); Red flower form (TLE94082804); Tall red-stalked Koue Bokkeveld variety (JAT93112101); With some yellow and some red plants (AGR92051601); Red buds on some male buds (AGR92082503); Yellow form predominant (AGR97022513); Mostly yellow heads but some with red along edges of leaves (NJH93082601); 2 forms present - smaller reddish form and large leaved yellow form (AGRY0121222); 2 forms: yellow form typical mainly on sandstone - red form with rounded open head (ie no cup of bracts) on the shale (AGRY3112623); Lovely fertile valley rich in *salignum* many of which were pink rather than yellow (DFJ97030201);

#### *Flowering – geographical differences:*

A small proportion are a bright red form which are still in full flower, yellow forms all finished (AGRY0081216); Buds forming here whereas lower down - on Cloetes Pass - it is already starting to bloom (AWA99061604); Everywhere else is in cone but here in full bud! (AWA99101001); The dwarf is in peak flowering whereas the usual flowering time is June-July (VJK93101003); Has been flowering a long time - since June (VJK96091501); At the bottom of the cliff are still flowering - hard to explain: usually June (VJK97080809); Has flowered and seeded this year which is very early: normal time is June onwards (VJKY0051702); Busy with a second flowering flush this year (AGRY2112118);

#### *Flowering – sexual differences:*

Only males (about half) in flower, females not even in bud (AGR92042504); Females not in bud: males only (APE92051621); Being awkward again - a few male bushes in all its yellow glory majority while female flowerheads eaten by goggas (AWA95101001); Some plants oddly in bud (SHRY1021401); The male plants are starting flower and are changing colour from light green to yellow - seems a bit early! (VJK93040701); The male flowerheads at peak flowering while female plants still in bud stage

(VJK96052602); Only males in flower, females showed no flowering (WIJ92072601); Males in bud (WIJ93051502, WIJ93051609);

#### *Cone predation and opening:*

Most cones destroyed by worms (AWA95091903); Female flowerheads eaten by goggas (AWA95101001); Buds mostly parasitized (PMRY0070101); All cones greater than 3 years old open - seed released (HRKY0071102);

#### *Resprouting:*

*(Records of resprouting, and resprouting after fire omitted)*

High proportion of plants single stemmed - presumably due to plantation and lack of fire (ASP95051710); Many plants have single stems with no evidence of resprouting (PMR96061901); A number of young plants - ones which had not resprouted - were seen (PVR96033001); Several mature plants (both sexes) were single stemmed (SMR99040801); Some single stemmed but not the big old ones (SMR99040806); Several were single stemmed even some of the large ones (SMRY0041202); Several old ones single stemmed - i suspect only one resprouted trunk survives - also noticed old plant with 2 trunks growing and 2 dead trunks lying still attached - and another with 2 old trunks and a few 10cm sprouts from the rootstock (SMRY0041203); Again a few old ones were single stemmed (SMRY0041207); 3 resprouters & one "seedster" (VJK96090101); Some with single stems - probably never burnt (WIJ93082604); FS Several bushes on single stems - in very old veld (WIJ94070101); Non-resprouting - old veld (WIJ95090901); One resprouting from the trunk which was single (WIJ97042607);

Lots of plants killed - not resprouting (AGR92071204); Some plants also had not resprouted and seemed dead (SMRY2062709); Some plants killed by fire (SMRY2062710); Most plants senescent (NAH96090701);

There were a few seedlings as well as the resprouting plants (SMRY2050206);

Heat wave? or wind? killed the above ground portions - which is resprouting (AGRY0112301);

One plant which had been bush cut was resprouting from a stem 1 m up. the stem was lying horizontal to the ground: unusual as it normally resprouts for the bole (NGFY0022001);

#### *Herbivore damage:*

All plants chomped - bits lying around by *Otomys* (AGR96081502); *Otomys* damage (NGF96081005);

Lichen covered shorter ones munched/ browsed by cattle (CFRY0061714); Heavily cropped - eaten! (CFRY2062704); Grazed (SMR96090512); No picking but much horse plucking (VJK95061603);

Green caterpillar eating leaf (LYM97081305); Some female flowers eaten by caterpillars (TLEY0043006);

Piles of plants due to bulldozing (CJL98062001);

Also in pastures (presumably converted by bushcutting and burning) (AGRY1030725); In grassy pasture area (SGAY1010808);

#### *Parasitism:*

Infested with some insects (AJT92080201); Ants present - they appeared to be tending green soft bodied scale insects (BWA94090201); Ladybirds hibernating in old cones (VCH98121702); Diseased browning - black spots on the stems (CFRY0061809); *Mystropetalum* species under bush (SMR97021207);

#### Mortality:

3 dead plants since last fire (AGR99032621); 1 dead female also seen between rd and plantation (AGR91120102); 1/3 Of plants dead - recently - too dry? (AGRY0081208); Lots of dead - see PAN 48 (AGRY0110222); Half plants dead (AGRY0112102); Lots of dieback and regrowth (see Nov SRS) (AGRY0112206); All have high mortality - more dead than living parts in portions of the plot (AGRY1012101); 1 dead plant seen (AGRY1022126); Most dead or resprouting (drought?) (AMMY0112205); Signs of dying (GEKY0101907); Looking very stressed (IEB99120802); Many of the plants dying (OUT97052410); Lots of die-back (OUT98040409); Wide sweep of dieback down centre of valley; (OUT99050705), Lots dead (WMPY1012107);

#### Sex ratios:

Males only (AGR91100608, AGR92012203, AGRY4031008, AJT94040204, ASP94071413+14, CBE92051202, GYC93121604, SMR97012901, SMR99080901); Mostly male (SMRY0030103); Isolated plants are usually males (AGR91121207); Many big healthy males and few straggly female (SMR99030407);

#### Recruitment:

Good recruitment or many young (AGR92122801-2, AGR92123008, AGR92123101, AWA96111905, AWA98091308); An impressively dense stand! (AGRY3103052);

#### Pollination:

Big ants scurrying on flowerheads (AWA98103104); Beetles present has fringe of dense hairs around the abdomen (grey) and white and black markings on the elytra (GNI93102501);

#### Witches Broom:

Some plants have fascination type multiple leaf growth deformity (AKS93062301); Witches Broom fasciation (AGRY4092611, AGRY5082102, ASP95011402, LYM96072101-4, LYM96072107, SMRY0072601); Some fasciation seen - many small leaves: rather attractive (SMR99040805);

#### Miscellaneous:

What I love about *L. salignum* in this game of hide and seek for protea species is that it always give the other species away and sure enough not long after find *L. salignum* we found our prize: *Paranomus roodebergensis* hiding in the fallish fynbos (VJK99060401);

**Confusing Species:** Despite being a resprouter the following non-sprouters were confused with *L. salignum*, mostly by beginners: *coniferum* (1% of mis-identifications, out of 0.3% corrected queries), *eucalyptifolium* (3%), *laureolum* (1%), *meridianum* (1%), *pubibracteolatum* (3%), *salicifolium* (4%),

*strobilinum* (1%), *tinctum* (3%), *xanthoconus* (15% - but has fine, adpressed, silvery-haired leaves).

The following resprouters were misidentified:

*L. flexuosum* (9% of mis-identifications, out of 0.3% corrected queries, but with longer and fewer erect stems and smaller leaves), and the following subspecies of *L. spissifolium* (all of which have hairless cones, a more robust erect habit, and shiny green (not glaucous) leaves): *fragrans* (15%, which is the most similar in leaf-shape), *phillipsi* (21%, which is most similar to males, and indeed female plants are often required to be certain of identification), and *spissifolium* (19%).

Apart from atlassers, many taxonomists have been confused by this species (especially since the easily observed resprouting habit is not detectable on herbarium sheets, not to mention the ignorance of the separate sexes in the genus by early botanists), as attested by the very many scientific synonyms and wrong identifications. In fact, the family probably owes its name "*Protea*" in no small part to this species: Linnaeus himself described it as 5 species and varieties! Salisbury, who did know about the sexes, described 3 species and Brown 2 within this species.

In the herbarium unless resprouting is noted, it is easy to confuse this species with *L. procerum* and *foedum*.

Records of identification queries = 168.

Records of corrected identification queries = 67.

**Variation and Taxonomy:** Williams states that female plants may have very broad or rather narrow involucre leaves often within the same population. However, many atlassers noted that the narrow and broad leaved forms, while intermixing, tended to dominate locally on some geologies, especially those on granite and shale bands were often dominated by a form not so prevalent on adjacent sandstone substrata. Not noted in the literature is that the different forms often are correlated with different levels of glaucescence and propensity to bright colours when flowering, and often more or less sprawling habit, and even detectable differences in flowering time. However, the permutations of these is simply overwhelming and impossible to disentangle without a dedicated study!

Williams notes that there is little variation between populations, but then goes on to note the following forms:

- No apparent variation: coastal belt of Cape Town to Grahamstown;
- Leaves shorter than usual: Nieuwoudtville;
- Populations with red buds mixed with yellow buds: Vanrhynsdorp, Clanwilliam, Piketberg and Ceres divisions;
- Individuals with colourful leaves may occur among those with yellow or green leaves: localities not specified.
- Much larger leaves than normal: north side of Langeberg and Outeniqua Mountains in Riversdale, Outeniqua and George divisions;

- Very colourful big leaves: Langkloof in George and Uniondale divisions;
- Male plants with broad involucral leaves, growing between normal male plants: Langkloof at Noll;

All of these forms have zones in which they blend with the more typical forms. Taxonomy is complicated by herbarium specimens not retaining colour, this thus being a useless taxonomical feature. Most of these characters appear to be genetically fixed (Williams 1972), although it is reputed that the colourful Langkloof forms are constant, whereas the

Koue Bokkeveld forms require a cold snap to bring out the colours.

Atlassers have suggested that these forms are local adaptations to local geologies, but with a very few exceptions, they tend to blend into the more typical and ubiquitous sandstone/quartzite form.

**Distribution:** Add.

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*Leucadendron coniferum* (L.) Meisn. 1781, 1856

**Dune Conebush**

*Duinegeelbos*

**Other Common Names:** Dune Yellowbush, Dusty-pink Conebush, Large Pink Cone, Mucro-leaf Conebush, Narrow Goldtips, Sabulosum, Willow-like Euryspermum, *Geelbos*, *Rooitolbos*.

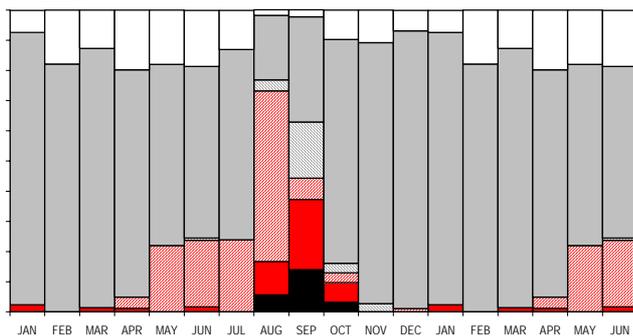
**Other Scientific Names:** *argentea* var  $\beta$  (L.) 1753, *inflexum* Link 1821, *sabulosum* Salter 1943, *salignum* Salisb. ex Knight 1809.

**870 Records**

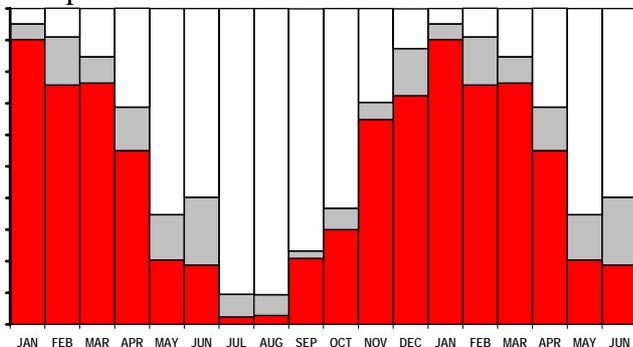
**Population** (790 records): 1% Abundant, 36% Common, 47% Frequent, 15% Rare, 0.1% Extinct.

**Dispersion** (647 records): 75% variable, 20% clumped, 3% widespread, 1% evenly distributed.

**Flowering** (781 records with: Jan 41, Feb 67, Mar 71, Apr 81, May 50, Jun 118, Jul 46, Aug 108, Sep 43, Oct 31, Nov 37, Dec 88): Buds from May to Aug; Flowering from Sep; Peak Flowering and Over not significant; Fruit from all year round; Nothing from Apr to Jun. Peak levels at 77% in Aug. Historically recorded as flowering from late Aug to early Sep, fruit only released after fire.



**Growth** (770 records with: Jan 41, Feb 66, Mar 72, Apr 80, May 49, Jun 117, Jul 42, Aug 106, Sep 43, Oct 30, Nov 37, Dec 87): Much from Sep to May; Rare from Jun; None from Apr to Nov. Peak levels at 95% in Jan.

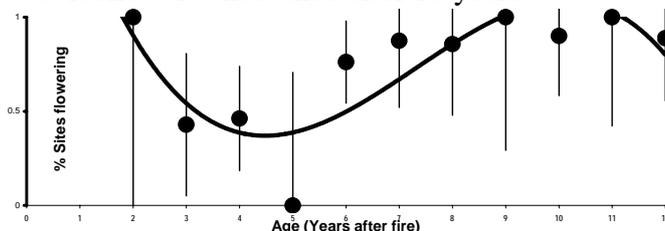


**Seedlings** (245 records): Absent in 92%: fewer seedlings than prefire adults in 5 cases, and more in 5 cases. Seedlings found in Jan (2), Feb, Apr (3), Jun, Jul, Aug and Sep.

**Fire Survival** (39 records): 72% survived by seedlings only, 26% escaped fires in fire-safe

areas, 3% resprouted from underground boles.

**Age to first flowering:** First flowers recorded at 2 years, 50% estimated at 4-5 years, and 100% estimated at 9 years, with some evidence of senescence after 19 years.



**Height** (781 records): 0.9% 0-0.2 m tall, 30% 0.2-1 m tall, 47% 1-2 m tall, 22% 2-5 m tall, 0.4% taller than 5 m.

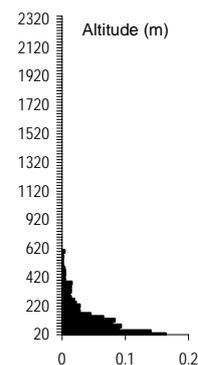
**Pollinators** (3 records): 67% beetles, 33% bees or wasps.

**Detailed Pollinators** (1 record): Honey Bee.

**Habitat:**

**Distance to Ocean** (780 records): 54% inland - further than 2 km from coast.

**Altitude** (780 records): 20 - 600 m; 20<sub>lq</sub> - 60<sub>med</sub> - 100<sub>uq</sub> m.



**Landform** (698 records): 87% deep soil, 8% shallow soil, 3% rocky outcrops, 2% swamp, 0.3% riverine.

**Slope** (700 records): 52% gentle incline, 28% platform, 8% steep incline, 5% dunes, 4% hill top, 3% valley bottom.

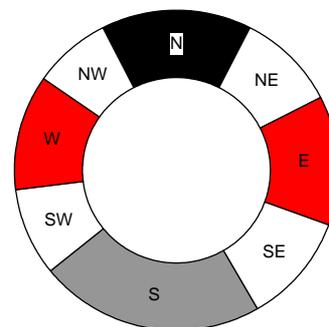
**Aspect** (489 records): 32% South, 25% East, 23% North, 20% West.

**Soil Type** (690 records): 78% sandy, 17% loamy, 2% gravelly, 1% clayey, 1% rocky, 0.9% peaty.

**Soil Colour** (685 records): 61% grey, 23% brown, 13% white, 1% black, 1% orange, 0.4% red, 0.3% yellow.

**Geology** (726 records): 48% sandstone, 26% limestone, 21% Tertiary sands, 2% silcrete or ferricrete, 2% shale, 1% granite.

**Vegetation** (775 records): 98% shrubland, 1% thicket, 0.6% suburban, 0.3% woodland, 0.1% agricultural lands.



**Conservation Status and Threat:****Red Data List Status:** Vulnerable A2c + 4c.Occurrence (Fynbos): 3 566 km<sup>2</sup> with 19% conserved and 33% lost; Occupancy: 705 km<sup>2</sup> with 23% conserved and 31% lost. Fragmentation index: %.**Nature Reserves** (780 records): 42% in Nature Reserves.**Habitat destruction** (690 records):

83% extensive natural habitat, 8% road verges, 6% islands, 1% naturally linear habitats, 1% corridors, 0.4% naturally fragmented habitats.

**Alien Invasive Species** (684 records):71% Fabaceae (chiefly alien *Acacia*), 22% none, 2% Myrtaceae, 2% *Pinus*, 0.4% annual alien grasses, 0.4% other aliens, 0.3% *Hakea*.**Alien Density** (682 records): 22% alien-free, 44% sparse, 19% abundant, 12% dense, 2% impenetrable.**Cultivation & Utilization:****Picking** (559 records): 98% no sign of picking, 1% lightly picked, 0.4% severely picked.**Cultivation Status:** Plantings - 27 records (3%), Augmentations - 3 records (0.3%), Escapes - 43 records (5%).**Witch's Broom Infestation:** 1 record (0.1%).**Atlassers Notes:**

One old tree covers a diameter of 4-5 m (CVV96030805); Some plants higher than 5 m (LYM96062701);

Some appear to be resprouting or at least to have several branches from below soil surface - others have single stems some older unburnt bushes also seen at roadside (WIJ94040403);

*L. coniferum* X *xanthoconus* - just a few hybrid plants - 80% *coniferum* - on upper edge of pure *coniferum* lower down and *xanthoconus* higher up to west (AGRY4082403);Showing slight features of *L. eucalyptifolium* (slight reddening of buds and a bit of a cup around the female, but not on the male) (AGRY1031406);Superficially very similar to *L. meridianum* and easily mistaken, but has much fewer hairs on leaves and less hairy cones: not very pure*coniferum* but unmistakably it (AGRY1031410);

All moribund and 1 dead female (AGR92050901); 2 recently dead plants (AGRY1080903);

Males only (AGRY0090820); Only 1 male (AJT93060506); 1 female and 2 male bushes (CVV97090202); 1 male and 1 female bush (CVV98100901); Female plants isolated - males in clumps of dense bushes (DJL94090505);

Seems To Be Newly Established On This Site Whether By Dumping Of Cut Down plants or seed overflow from populations on sites above (CJL98062001); Also seems planted as it is around a ranger's home - might be "natural" but leaves look too large (DFJ99042101);

Augmented by road verge in regeneration campaign - not supposed to be here? - all seem escaped (AGR96031503); All plants within 5-6 m of the road - seeded from transported cutflower proteas? (SMRY0052410);

Cut off dead branches dumped on the side of the road (LYM97061802);

Large black &amp; yellow beetle seen on some cones (CVV97090201);

One had Witches Broom in the form of a tight bunch of little branches with tiny leaves (SMR99052006);

**Confusing Species:** Confused with *L. xanthoconus* (82% of corrected queries, but has silver-sheen leaves with adpressed hairs, and bilobed cone bracts) and *meridianum* (18%, with leaves more obtuse and with silvery-grey pubescence).

Records of identification queries = 67.

Records of corrected identification queries = 44.

**Variation and Taxonomy:** No variation noted, other than can be attributed to localized hybridization.**Distribution:** Add.

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***Leucadendron meridianum* Williams 1967**  
**Limestone Conebush**  
*Silwertolbos*

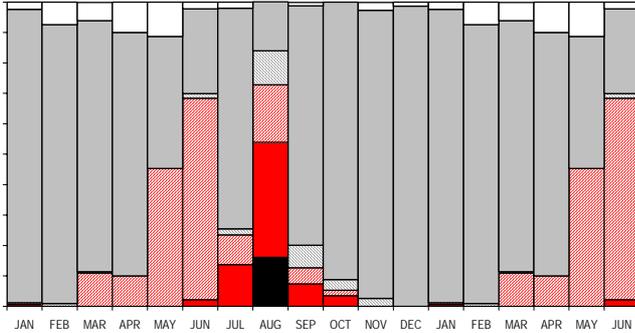
**Other Common Names:** Silky Conebush, Silvercones, Silvertops, *Astolbos*, *Geelbos*, *Kliptolbos*, *Koppiestolbos*.  
**Other Scientific Names:** None.

**1447 Records**

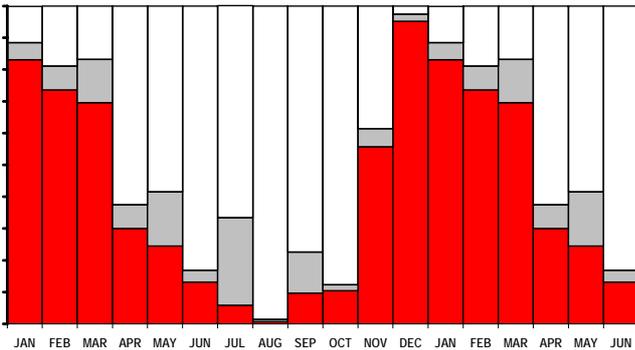
**Population** (1409 records): 3% Abundant, 53% Common, 38% Frequent, 6% Rare.

**Dispersion** (1308 records): 82% variable, 12% clumped, 5% widespread, 1.0% evenly distributed.

**Flowering** (1335 records with: Jan 167, Feb 108, Mar 183, Apr 40, May 53, Jun 136, Jul 51, Aug 143, Sep 94, Oct 57, Nov 76, Dec 227): Buds from May to Jun; Flowering from Aug; Peak Flowering not significant - in Aug; Over not significant; Fruit from Sep to Jul; Nothing from not significant. Peak levels at 84% in Aug. Historically recorded as flowering from Jul, fruit retained until fire.



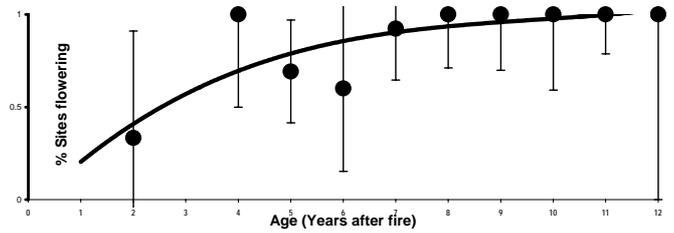
**Growth** (1325 records with: Jan 166, Feb 106, Mar 184, Apr 40, May 53, Jun 136, Jul 51, Aug 142, Sep 93, Oct 57, Nov 70, Dec 227): Much from Nov to May; Rare from Jul; None from Apr to Nov. Peak levels at 97% in Dec.



**Seedlings** (626 records): Absent in 95%; fewer seedlings than prefire adults in 4 cases, and more in 11 cases. Seedlings found in Jan (3), Feb (2), May, Jun, Jul and Dec (7).

**Fire Survival** (30 records): 70% survived by seedlings only, 20% escaped fires in fire-safe areas, 10% eliminated from the area by fires.

**Age to first flowering:** First flowers recorded at 1 years, 50% estimated at 2-3 years, and 100% estimated at 8 years.



**Height** (1354 records): 0.4% 0-0.2 m tall, 20% 0.2-1 m tall, 60% 1-2 m tall, 19% 2-5 m tall, 0.3% taller than 5 m.

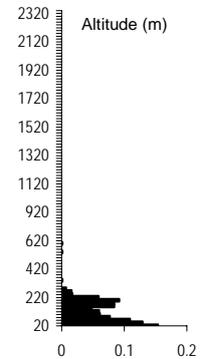
**Pollinators** (5 records): 100% beetles.

**Detailed Pollinators:** No additional data.

**Habitat:**

**Distance to Ocean** (1424 records): 87% inland - further than 2 km from coast.

**Altitude** (1424 records): 20 - 280 m; 20<sub>lq</sub> - 60<sub>med</sub> - 100<sub>uq</sub>m.

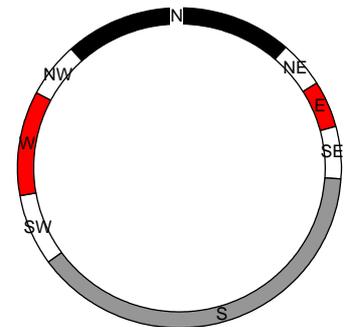


**Landform** (1361 records): 58% deep soil, 40% shallow soil, 2% rocky outcrops, 0.4% swamp, 0.1% lake edge.

**Slope** (1363 records): 36% gentle incline, 30% platform, 13% hill top, 9% dunes, 7% steep incline, 3% valley bottom, 0.6% cliff.

**Aspect** (817 records):

45% South, 28% North, 17% West, 9% East.



**Soil Type** (1340 records):

68% sandy, 22% loamy, 7% rocky, 2% gravelly, 1% clayey, 0.4% peaty.

**Soil Colour** (1325 records): 44% grey, 36% brown, 6% white, 5% black, 4% red, 3% yellow, 2% orange.

**Geology** (1389 records): 86% limestone, 7% Tertiary sands, 4% sandstone, 2% shale, 1% silcrete or ferricrete.

**Vegetation** (1420 records): 97% shrubland, 2% thicket, 0.4% agricultural lands, 0.2% suburban, 0.1% grassland.

**Conservation Status and Threat:**

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

Occurrence (Fynbos): 4 004 km<sup>2</sup> with 16% conserved and 25% lost; Occupancy: 1 308 km<sup>2</sup> with 37% conserved and 20% lost. Fragmentation index: 15%.

**Nature Reserves** (1424 records): 39% in Nature Reserves.

**Habitat destruction** (1336 records): 84% extensive natural habitat, 11% islands, 2% naturally fragmented habitats, 1% road verges, 1% naturally linear habitats, 0.1% corridors.

**Alien Invasive Species** (1321 records): 73% Fabaceae (chiefly alien *Acacia*), 25% none, 0.8% Myrtaceae, 0.7% other aliens, 0.6% *Pinus*, 0.1% annual alien grasses.

**Alien Density** (1318 records): 25% alien-free, 41% sparse, 17% abundant, 13% dense, 3% impenetrable.

**Cultivation & Utilization:**

**Picking** (1004 records): 100% no sign of picking, 0.1% lightly picked, 0.1% severely picked.

**Cultivation Status:** Plantings - 6 records (0.4%), Escapes - 15 records (1%).

**Atlassers Notes:**

Must be an escapee - only one seen all on own - identity not a problem - but where did escape from? These odd escapes will prove a problem to determine origin in years to come (AGRY1030721); Some of the plants looked a bit like stressed *L. xanthoconus* (or a hybrid) - they had escaped presumably from trucks (LYM99052009); A single plant was found on subsequent visit but not frequent - in road verge so probably an escapee (OUTY0072709); Road verge plants - escaped from flower picking trucks?

(SMRY0052401); All plants within 5-66 m of the road - seeded from transported cutflower proteas (SMRY0052410); Old quarry reseeded with this species! (APE92080330);

Almost all chopped out (OUT99060507); This the southernmost protea in Africa? (AJT93070201); southernmost Proteas? (OGM96022204);

Magic! Plot mostly limestone pavement with round potplant-size holes - colonised by Conebushes! (SMRY1031411);

**Confusing Species:** Mistaken for *L. xanthoconus* (73% of cases, which has adpressed silvery-sheen (not grey-silver) leaves, and narrower fruit), *modestum* (as young plants only) and *muirii*. (presumably a typological error).

Evaded detection as a new species due to being misidentified as *L. salignum* (1895) and *uliginosum* (1912), the latter being included in Muirs (1929) species on the Riversdale area.

Records of identification queries = 31.

Records of corrected identification queries = 15.

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

**Distribution:** Add.

**Southernmost protea**

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*Leucadendron xanthoconus* (Kuntze) Schum. 1893, 1898

**Sickle-leaf Conebush**

*Blinkblaartolbos*

**Other Common Names:** Emulous  
Euryspermum, Glossy-leaf Conebush,  
Goldentips, Sabulosum, Salignum,  
Silvercones, Yellow Conebush, *Geelbos*,  
*Knoppiesbos*, *Silvertolbos*.

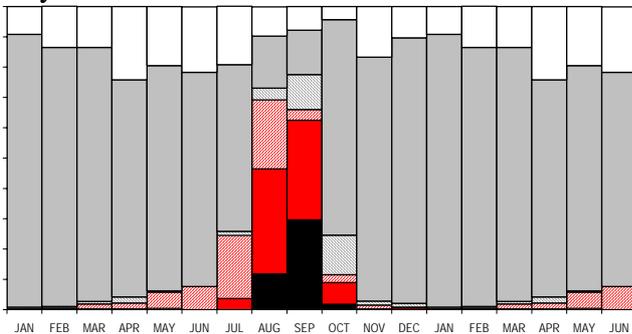
**Other Scientific Names:** *aemulum* Salisb. ex  
Knight 1809, *argentea* var  $\delta$  and  $\gamma$  (L.) 1753,  
*conifera* var  $\delta$  and  $\beta$  (L.) 1764, *cuspidatum*  
Klotzsch (ms), *salignum* (Lam.) 1791,  
*salignum* R.Br. 1810, *salignum* var.  
*linearifolium* Meisn. 1856, *uliginosum* form  
*pungens* Gandoger 1901.

**7224 Records**

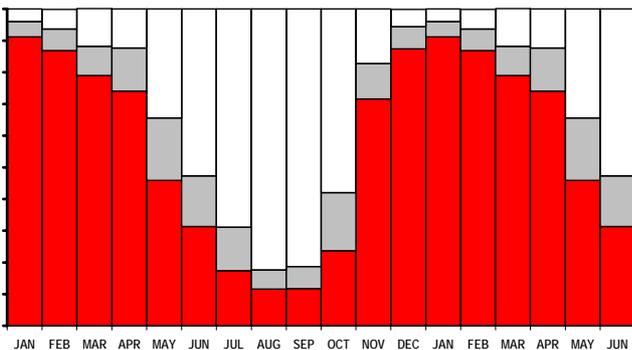
**Population** (7122 records): 8% Abundant,  
55% Common, 31% Frequent, 6% Rare,  
0.1% Extinct.

**Dispersion** (6739 records): 78% variable,  
13% widespread, 8% clumped, 1% evenly  
distributed.

**Flowering** (6998 records with: Jan 629, Feb  
647, Mar 593, Apr 591, May 478, Jun 393,  
Jul 544, Aug 583, Sep 808, Oct 651, Nov  
605, Dec 476): Buds from Jul to Aug;  
Flowering from Aug to Sep; Peak Flowering  
from Sep; Over not significant; Fruit from  
Oct to Jul; Nothing from Apr to Jul. Peak  
levels at 78% in Sep. Historically recorded  
as flowering in Aug, fruit retained for several  
years.



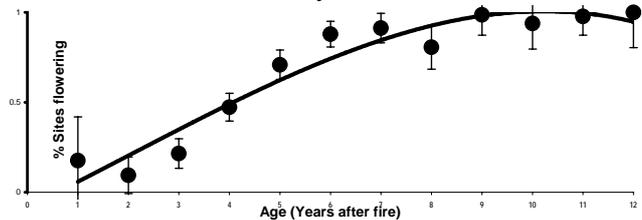
**Growth** (6828 records with: Jan 622, Feb 643,  
Mar 590, Apr 568, May 471, Jun 374, Jul  
517, Aug 568, Sep 776, Oct 634, Nov 596,  
Dec 469): Much from Oct to Jun; Rare from  
May; None from May to Oct. Peak levels at  
96% in Jan.



**Seedlings** (2744 records): Absent in 86%; fewer  
seedlings than prefire adults in 60 cases, and  
more in 130 cases. Seedlings found in Jan  
(30), Feb (11), Mar (5), Apr (9), May (13),  
Jun (15), Jul (23), Aug (18), Sep (24), Oct  
(16), Nov (11) and Dec (15).

**Fire Survival** (411 records): 84% survived by  
seedlings only, 10% eliminated from the area  
by fires, 5% escaped fires in fire-safe areas,  
0.2% resprouted from underground boles,  
0.2% resprouted from aerial trunks.

**Age to first flowering:** First flowers recorded  
at 1 years, 50% estimated at 4 years, and  
100% recorded at 12 years.



**Height** (7018 records): 5% 0-0.2 m tall,  
62% 0.2-1 m tall, 32% 1-2 m tall, 1% 2-5 m  
tall, 0.0% taller than 5 m.

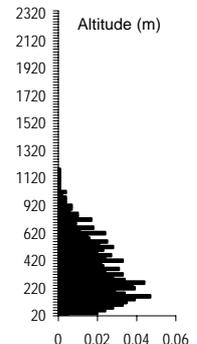
**Pollinators** (35 records): 74% beetles,  
11% flies, 6% birds, 3% bees or wasps,  
3% mites, 3% none observed.

**Detailed Pollinators** (5 records): Monkey  
Beetle (3), Orange-breasted Sunbird, Great  
Protea Beetle.

**Habitat:**

**Distance to Ocean** (6918  
records): 72% inland -  
further than 2 km from coast.

**Altitude** (6918 records): 20 -  
1120 m; 160 *lq* - 300 *med* - 460  
*uq*m.



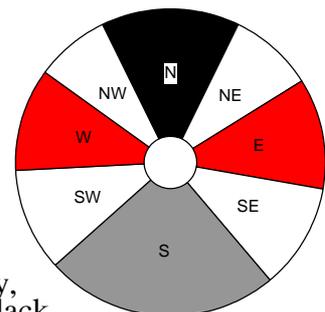
**Landform** (6764 records):  
77% deep soil, 17% shallow  
soil, 5% rocky outcrops,  
1% swamp, 0.3% riverine,  
0.0% lake edge.

**Slope** (6755 records):  
52% gentle incline, 33% steep incline,  
7% platform, 6% hill top, 2% valley bottom,  
0.8% cliff, 0.1% dunes.

**Aspect** (6019 records): 36% South, 23% North,  
21% East, 20% West.

**Soil Type** (6736  
records):  
67% sandy,  
17% loamy,  
7% gravelly,  
4% clayey,  
3% rocky,  
3% peaty.

**Soil Colour** (6718  
records): 61% grey,  
23% brown, 6% black,



6% white, 2% orange, 1% yellow, 0.3% red.  
**Geology** (6692 records): 86% sandstone, 8% shale, 2% silcrete or ferricrete, 1% granite, 1% Tertiary sands, 0.3% limestone, 0.2% conglomerate.  
**Vegetation** (6885 records): 98% shrubland, 0.8% plantations, 0.5% grassland, 0.3% thicket, 0.2% agricultural lands.

### Conservation Status and Threat:

**Red Data List Status:** Least Concern.  
Occurrence (Fynbos): 4 769 km<sup>2</sup> with 26% conserved and 32% lost; Occupancy: 2 523 km<sup>2</sup> with 29% conserved and 32% lost. Fragmentation index: 24%.

**Nature Reserves** (6918 records): 58% in Nature Reserves - well conserved.

**Habitat destruction** (6654 records): 93% extensive natural habitat, 4% islands, 2% road verges, 1% naturally linear habitats, 0.3% naturally fragmented habitats, 0.2% corridors.

**Alien Invasive Species** (6586 records): 39% none, 31% *Pinus*, 20% Fabaceae (chiefly alien *Acacia*), 6% *Hakea*, 3% Myrtaceae, 0.2% other aliens, 0.1% annual alien grasses.

**Alien Density** (6576 records): 39% alien-free, 46% sparse, 11% abundant, 3% dense, 0.5% impenetrable.

### Cultivation & Utilization:

**Picking** (4342 records): 99% no sign of picking, 1% lightly picked, 0.3% severely picked.

**Cultivation Status:** Plantings - 16 records (0.2%), Augmentations - 6 records (0.08%), Escapes - 24 records (0.3%).

### Atlasers Notes:

#### Variation:

Has some features of *L. coniferum* (AGR92042502); Most have hints of *L. coniferum* (AGRY3090710); Tending very much to features of *L. coniferum* (APE92060711);

Fruit were less than 5 mm broad – confusing! But attributed to this site being on the periphery of the distribution (NGF94100301); Fruit very narrow! (OGM97031503,5,7);

Several plants have pinkish leaves surrounding cone (PAP94091403); Odd: *xanthoconus* giss but long thin cones SMR98120909; Quite a bit of variability seen - pale *versus* dark leaved plants - leaves arranged in obvious spiral *versus* not spiralled (WEL94022702);

#### Height:

All the adult plants 2-3m high were killed by last year's fire (PVR92042201); The adult plants 2-4m high were killed by last year's fire (PVR92042203); 4 m tall (WIJ93121801);

#### Flowering post fire:

Flowered for 2nd time after fire - age must be about 3 years after widespread fire: zillions of babies (AWA95092701); It is noticeable that four years after the last fire there are still no cones although the young plants are in abundance (PVR94022301); Noticeable that in the 2.5 years in between they have not coned (PVR94022401); Many young - mostly male - flowered already in second season after fire

(TLE92100406); Flowered only 1-2 times before fire (TLEY1010209);

#### Flowering season:

Only has small buds and males are not yet "bright" whereas it is peak flowering at low alt (TLE95091612);

#### Cones:

Had at least 6 years of cones so perhaps the veld was older than 10 years (NGF94020601); Older cones have shed seeds (TLE97053101);

#### Regeneration:

Seedlings about 40-50 mm high – still with cotyledons (LYM94102303); Could not find any seedlings on this plot - perhaps the seeds all washed away in the flood (LYM99110602); The seedlings were both first and second season (PVR91091101); No young plants visible possibly because of second fire on devil's peak coming so soon after the first (PVR92070202); One live plant many dead – senescent? (AKS92040203); About 10% senescent (NAH94052201);

#### Predation:

Vlei Rat eating plants (CRS96092108); Found a worm in a cone (NGF94100301); Fungus present on about 1/3 of bushes (WEL94103001);

#### Growth:

Only females with new leaves (AGR91120717); One plant showed unusual new growth emanating from centres of male inflorescences (SHR91092901);

#### Harvesting:

In a pile of picker's material we found lots of female cones (AGR91120811); Occasional petty picking along lower slopes along road: pickers previously caught with full bundles from the site (MAJ92032001); Area severely picked for cones - many coneless bushes with foliage remain (STU99052501); Picked for cones (STU99052502); Piles due to bulldozing (CJL98062001);

#### Mortality:

Half dead (AGR99071802); 1/4 population dead! (AGR99071811); Lots of dead in patches - apparently wetter areas that appear to have dried out (AGRY0011410); All dead! (AGRY0052407, AGRY1012803); Many dead (AKS92040205, AKS93042105); Some dead (AKS93042203); About 1/2 dozen dead mature plants with old cones (CVV95021205); Very stunted on dry slope (JID95090402); About 1/3 of plants have turned brown & died this year - too dry a summer? Too much competition for the scarce water? (PVR95051701); 1/3 already dead (VCH98042903);

#### Gender:

Males only (AGRY0090820); could only find female plants (MHR90122203);

#### Ecology:

In this plot was replaced gradually by *L. gandogerii* at higher altitudes (AGR91120711); Playing *L. salicifolium*'s role in river courses! (AGR96081506); Proteas in clear zones around water – *L. xanthoconus* closest (AGR98060619); Common on lower slopes much sparser higher up (JAT93081203); *L. gandogerii* and *xanthoconus* almost completely mutually exclusive in this area (OGM93022804);

*L. coniferum* X *xanthoconus* - just a few hybrid plants - 80% *coniferum* - on upper edge of pure

*coniferum* lower down and *xanthoconus* higher up to west (AGRY4082403);  
Only along the road (AMM99112902); All plants within 5-6m of the road - seeded from transported cutflowers or dried cones? (SMRY0052410);

**Confusing Species:** Most commonly confused with *L. coniferum* (32% of cases corrected, a larger, more rounded shrub, with hairless leaves and broader winged fruit, and redder cones with rounded margin to the cone bracts), *eucalyptifolium* (23%, leaves much longer and hairless), *meridianum* (18%, leaves broader, obtuse and grey-silvery), *salicifolium* (11%, smaller male flowerheads and hairless mature leaves) and *macowanii* (4%, with hairless mature leaves). Less understandably – as these are totally distinct species, also confused with *L. laureolum*, *rubrum*, *salignum* and *strobilinum* (6% of cases corrected).

Quite a few records of hybridization and hybrid zones with *L. coniferum* were noted especially on the central Cape Peninsula (Elses Peak, Karbonkelberg).

Records of identification queries = 107.

Records of corrected identification queries = 71.

**Variation and Taxonomy:** The taxonomy is bedeviled by later synonyms and the earliest valid name – not linked to some other species in the genus, is the 1893 name *xanthoconus*, even though the species had luxuriously been given different names since 1753 (and before, but these are not valid for consideration).

There is variation, but this is of little significance, restricted to the shape of the mature female heads and the fruit:

- Narrowest fruit, triangular in cross-section: Hermanus and Caledon area;
- Broadest, winged fruit: Potberg and Cape Peninsula.

Is it a coincidence that the narrow fruit occurs where it overlaps in distribution with *L. salicifolium*?

**Distribution:** Add.

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