

## 2004 ANNUAL SILVERSWORD CENSUS

Forest Starr, Kim Starr, and Lloyd Loope

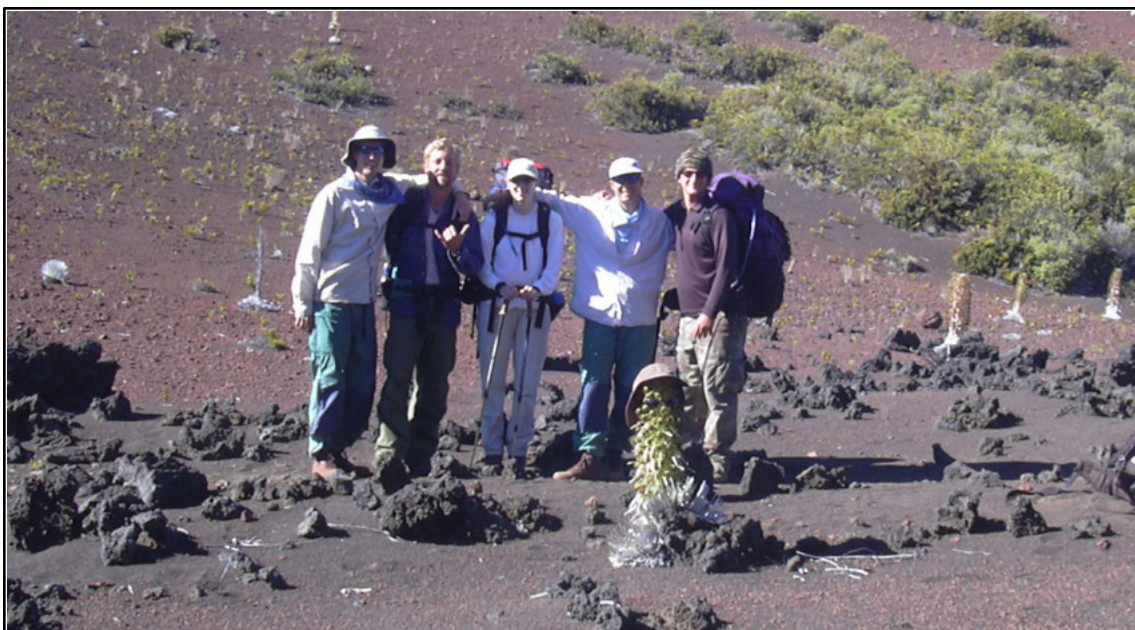
To learn more about the Haleakala Silversword (*Argyroxiphium sandwicense* subsp. *macrocephalum*), and to keep a pulse on this park icon, each year the flowering silverswords are counted, and 11 plots are monitored. Below are the results from the 2004 silversword census.

### **FLOWERING CENSUS** -- Second largest silversword flowering event on record.

- There were 4,257 (not final) blooms in 2004. Last year (2003) had 60 blooms. The largest year ever was 1991 with 6,632 blooms.
- One of the largest silverswords we have ever seen, over 8 ft. tall, was just off the trail in the large patch half way down Sliding Sands trail.
- Though it is not 100% certain what triggers the silversword to flower, there is increasing evidence the mass flowering events are linked with rainfall.

### **PLOTS** -- Lots of blooms and seedling recruitment, after a decade of decline.

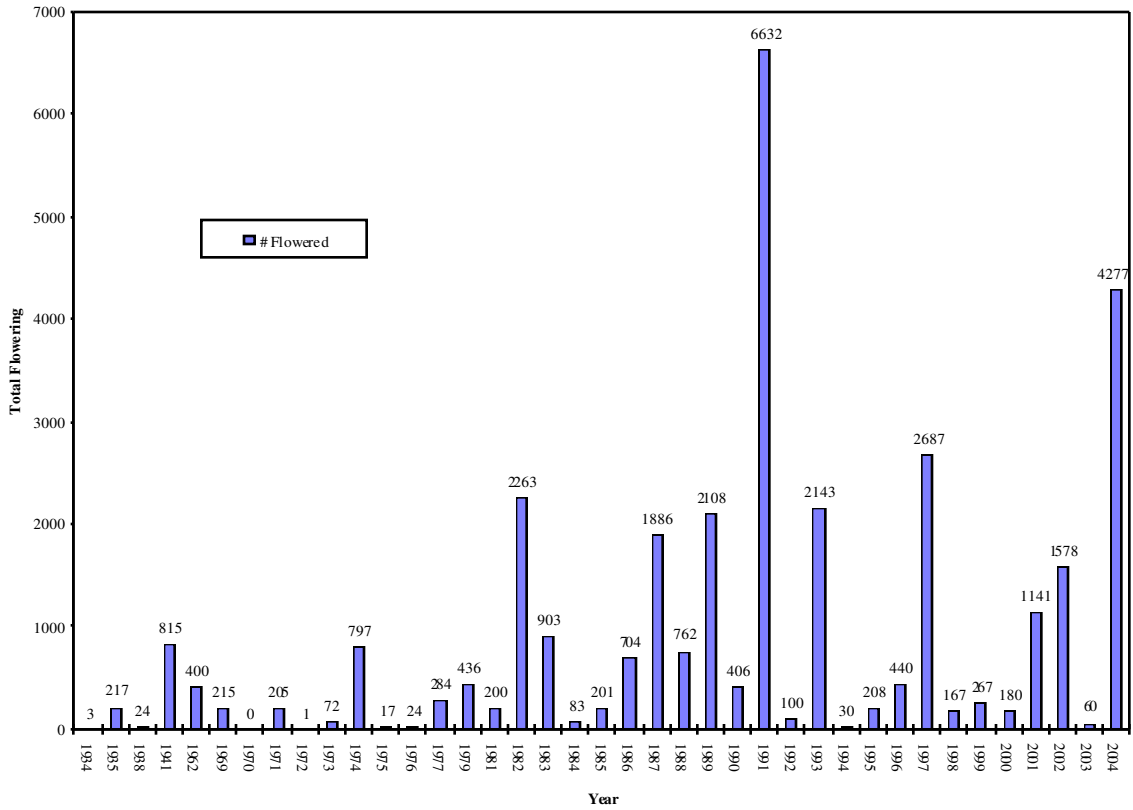
- 22 silverswords flowered in the plots, the previous high was 20 in 1989. Last year (2003) there was one. (plots not done in 1991, the largest flowering year).
- All the silverswords that flowered this year were >20 cm. in diameter.
- 40% of all the silverswords >20 cm. in diameter flowered this year.
- There were 124 new seedlings, two times more than the past seven years combined. Last year (2003) there was one new seedling.
- The number of silverswords increased 52% from last year from 190 to 290.
- The death rate was 5%, the lowest it has been since 1997. The highest death rate recorded was 12% in 1999, during the height of a multi-year drought.
- Two silverswords are twenty-two years old and only two cm. in diameter.
- We still don't know how long silverswords live. All 22 silverswords that flowered this year were alive before the plots were established in 1982.



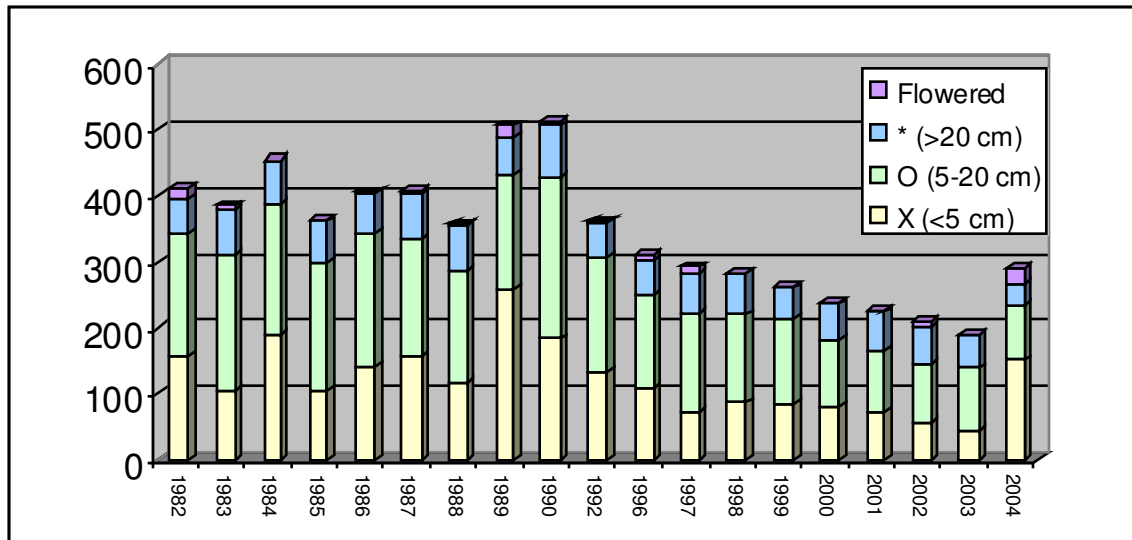
Silversword Census Crew 2004: Forest Starr, Mike Townsend, Susi Roe, Kim Starr, and Sam Aruch.

# FLOWERING TOTALS 1934-2004

## Haleakala National Park: Annual Silversword Flowering Census



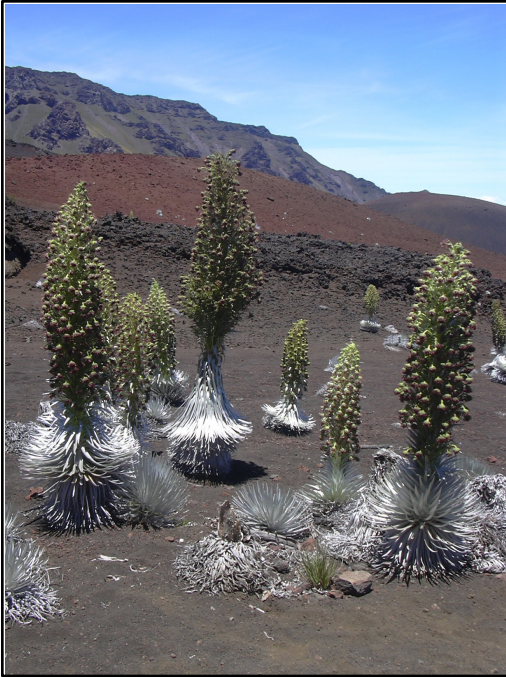
## PLOT TOTALS 1982-2004



Size Class	1982	1983	1984	1985	1986	1987	1988	1989	1990	1992	1996	1997	1998	1999	2000	2001	2002	2003	2004
X (<5 cm)	157	106	190	108	142	157	118	260	185	132	110	71	87	86	83	72	56	45	152
O (5-20 cm)	187	203	198	190	200	177	168	173	245	174	143	151	134	128	98	94	90	94	83
* (>20 cm)	54	71	66	65	62	68	70	55	78	56	52	61	61	48	56	57	57	50	33
Flowered	16	5	0	2	3	6	1	20	4	1	3	9	0	1	1	3	6	1	22
Total #	414	385	454	365	407	408	357	508	512	363	310	292	282	263	238	226	209	190	290



## Images from 2004 Silversword Census



Silverswords on Sliding Sands trail. The large one in the center was over 8 ft. tall.



Collecting plot data on Puu Naue. There are 11 silversword plots in the crater.



Silversword on south rim. This population is rebounding well.