

## UPDATE ON THE GENUS JAEGERIA (COMPOSITAE-HELIANTHEAE)

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### Abstract

Investigation of Jaegeria glabra and immediate relatives revealed that J. purpurascens (treated as a synonym of J. glabra by Torres in his revisional study of 1968) is a well-marked regional species and that J. glabra is divisible into several regional or populational varieties, two of which are described as new. In establishing these changes an overall up-date of the genus was attempted resulting in the recognition of 10 species. A key to all of the taxa is provided and up-dated distribution maps are provided for selected species.

The present study was occasioned by my attempts to recognize several recent collections forwarded to me for identification by Dr. Guy Nesom. One of these appeared, upon casual inspection, to be an undescribed species related to Jaegeria glabra. Because of its consistently small head-size, it would not key to the latter taxon in Torres (1968) revision of the genus. In spite of yet other morphological differences, I was reluctant to describe this collection as new without a careful reevaluation of the entire complex centering about J. glabra. To this end I borrowed material from several herbaria which were studied earlier by Torres; in addition, collections from several herbaria not studied by him were also examined.

The results are presented below. In short, my investigation revealed that J. glabra, as treated by Torres, has within it a well-marked taxon, previously described as J. purpurascens. Additionally, J. glabra, with the latter elements removed, is divisible into three varietal taxa: the var. glabra confined to the Sierra Madre of western Chihuahua; var. australis of south-central Mexico; and var. nana, a dwarf taxon, populationally distinct but apparently too close to the var. glabra to justify specific status. As already noted, material referred here to var. nana was the stimulus for the present study.

Since Torres' revisional study McVaugh (1972) has added an additional species (Jaegeria sterilis) to the genus, a rather remarkable taxon with sterile ray florets which I take to be close to J. pedunculata; McVaugh also suggested such a relationship. Both Jaegeria sterilis and J. pedunculata are in turn related to J. gracilis Hook. f. (including J. crassa Torres) of the Galapagos Islands. The latter, in particular, possessing the convex, striate, very thick and tough phyllaries and similarly built outer paleae (Torres, 1968) of J. sterilis. While Cronquist (1971), in his treatment of the Compositae of the



Galapagos, accepts both J. gracilis and J. crassa as "good" species I am inclined to treat these two taxa as but the ends of a variable group of populations, largely since Torres (1968, p. 71) refers to the existence of transitional forms between the two, and my own experience with the variation extremes found in the Galapagoan populations of Chrysanthellum pusillum Hook. f. (Turner, in mss.).

Turner (1980), in his revisional study of Aphanactis, transferred one other species, Jaegeria standleyi, into the genus from Aphanactis. Specimens of this taxon were not examined by Torres, but these clearly belong to Jaegeria, close to, if not conspecific, with J. hirta.

Overall, Torres recognized 8 species of Jaegeria and no varieties. The present "update" recognizes 10 species: 3 recognized since his treatment (J. sterilis, J. standleyi and J. purpurascens) and 1 submergence (J. crassa) of the Galapagos Islands into J. gracilis. In addition, 3 varietal taxa are recognized within the Jaegeria glabra complex, bringing to 12 the number of taxa given nomenclatural recognition.

I am grateful to my colleague Dr. M. C. Johnston for the Latin diagnoses, and to Dr. Guy Nesom for providing a fine suite of specimens for my studies of the varieties glabra and nana. The present study was based upon material from the following herbaria (the sheets borrowed are indicated parenthetically): CAS-DS (30), GH (42), LL (20), MICH (53), NY (52), TEX (50), WISC (4).

#### Convenient Key to taxa of Jaegeria

1. Plants of the Galapagos Islands.....J. gracilis
1. Plants of Continental North and South America
  2. Plants of South America
    3. Involucral bracts glabrous or nearly so, dorsally convex or plano-convex; herbage glabrous or nearly so.....J. axillaris
    3. Involucral bracts densely pubescent, dorsally flattened; herbage prominently pubescent.....J. hirta
  2. Plants of North America
    4. Annuals with erect stems or acaulescent (forming rosettes); rays pale yellow, the ligules 0.5-1.5 mm long
    5. Plants acaulescent, the leaves rosulate.....J. standleyi
    5. Plants with definite stems, the leaves not rosulate.....J. hirta
    4. Plants not as above
      6. Leaf blades glabrous; petioles 5-30 mm long; dorsal portion of the involucral bracts (alae) glabrous, including the dorsal margins.....J. glabra
      7. Blade length/width ratio 1.5-2.5;



- plants of south-central Mexico.....b. var. australis
7. Blade length/width ratio 3.5-6.5; plants of north-central Mexico (Chihuahua).
8. Ligules of ray 5-10 mm long; peduncles 4-10 cm long.....a. var. glabra
8. Ligules of ray 3-4 mm long; peduncles 1-3 cm long.....c. var. nana
6. Leaf blades glabrous or variously pubescent; petioles absent or weakly developed; dorsal portion of involucral bracts or their rounded margins decidedly pubescent
9. Involucre (pressed) 1.5-2.0 cm wide; aquatics with spongy stems 0.5-2.0 cm thick.....J. bellidiflora
9. Involucre (pressed) 0.5-1.2 cm wide; terrestrial or aquatics with stems 0.1-0.5 cm thick
10. Leaves glabrous or nearly so; rays white to rosy.....J. purpurascens
10. Leaves decidedly pubescent; rays yellow.
11. Ray florets sterile; disc florets glabrous or nearly so; annuals.....J. sterilis
11. Ray florets fertile; disc florets conspicuously pubescent; perennials (rarely + annual)
12. Blades lanceolate or essentially so, widest at or near the base.....J. pedunculata
12. Blades ovate to elliptic, widest at the middle or nearly so.....J. macrocephala

### Jaegeria axillaris Blake

As indicated by Torres, this species of South America clearly belongs to Jaegeria. He could not relate the species to yet others in the genus but it appears to be most closely related to J. purpurascens.

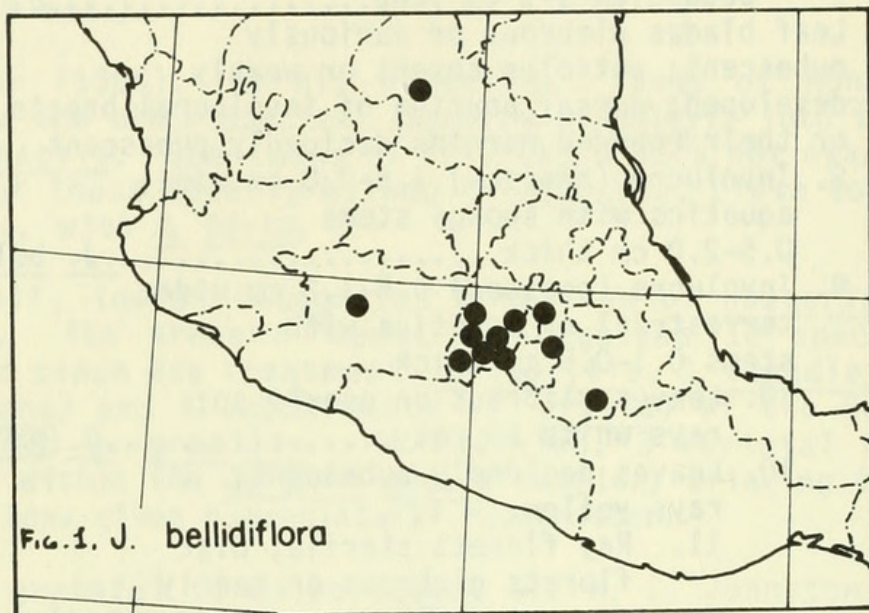
### Jaegeria bellidiflora (Moc. & Sesse ex DC.) Torres & Beaman.

Distribution: Fig. 1.

This species is readily distinguished by a number of features and poses no significant problems. Relatively few new collections have accrued to herbaria since Torres' study. Only a single enigmatic plant was encountered, that being Pringle 7311 (GH) from the valley of Mexico (Federal District). Torres, by penciled annotation in 1965, queried this as a possible hybrid between Jaegeria glabra and J. bellidiflora. It is possible that this plant is a hybrid derivative from such a combination, since



both species occur in the region concerned. Overall, however, it appears to be an aberrant or dwarf form of J. bellidiflora, the species of Jaegeria in general being quite plastic with respect to head size and leaf shape, especially the more aquatic taxa. Torres himself did not comment upon this collection in his revision, nor did he cite it.



Jaegeria glabra (S. Wats.) B. L. Rob.

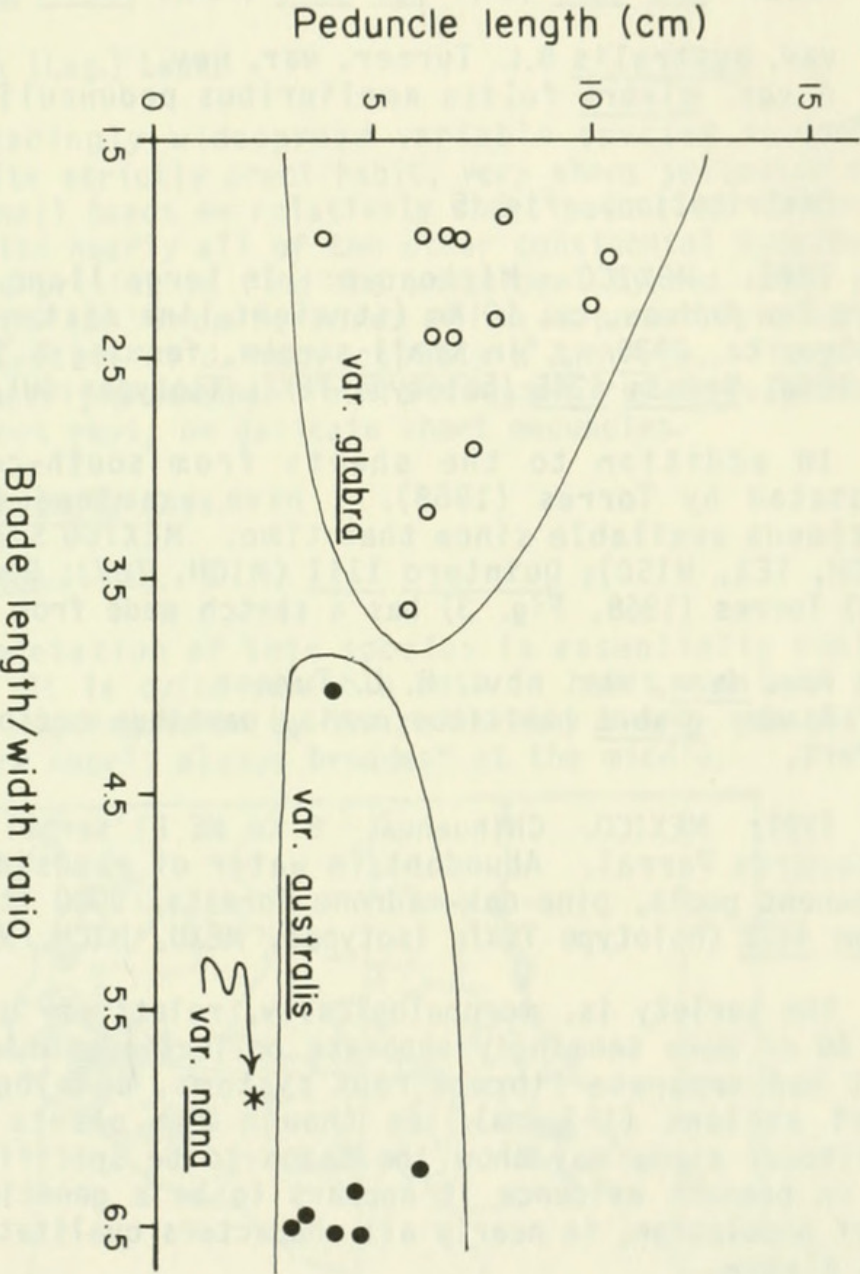
Distribution: Fig. 5

Torres (1968) treated J. purpurascens (type near Durango City, Durango; isotype Palmer 805, NY!) as synonymous with J. glabra. He noted, however, that its type collection "...is quite different from the type of J. glabra. The chief difference is vegetative, in the shape of the leaves, and in that those of J. purpurascens are sessile while those of J. glabra are petiolate, although many specimens are more or less intermediate between them in leaf morphology. In other vegetative, and especially floral, characters the two are not separable." I personally found no difficulty in sorting out the 14 or so sheets cited below under J. purpurascens. Not only were the leaf characters noted by Torres consistent and seemingly without intermediates but, in addition, I found consistent involucre features, as noted in my key to species, which readily distinguish J. purpurascens from J. glabra.

Jaegeria glabra, itself, is readily separable into several regional or populational varieties as noted in Fig. 2. Leaf shape alone can be used to distinguish between the isolated southern populations (var. australis) and those from western Chihuahua. Fig. 2 is a scatter diagram in which leaf shapes and peduncular lengths for all of the collections examined by me were plotted. Leaf length/width ratios clearly discriminate between the varieties glabra and australis and, to some extent, peduncular



Fig. 2. Scatter diagram for the characters separating varieties of *J. glabra*





length. The var. nana is essentially like var. glabra except that the peduncles, heads and ray florets are smaller.

a. var. glabra

In addition to the sheets annotated by Torres (1968), I have examined the following specimens collected since that time: CHIHUAHUA. Bye 3161 (GH); Bye 9869 (TEX); Nesom 4492 (TEX).

b. var. australis B.L. Turner, var. nov.

A var. glabra foliis amplioribus pedunculis longioribus differt.

Distribution: Fig. 5

TYPE: MEXICO. Michoacan: In large llano ca. 4 Km SW of Cerro San Andres, ca. 10 Km (straight line distance) N of Ciudad Hidalgo; ca. 2930 m; "in small stream, forming a large colony", 6 Sep 1960, Beaman 4245 (holotype TEX!; isotypes GH!, MSC, TEX!).

In addition to the sheets from south-central Mexico annotated by Torres (1968), I have examined the following specimens available since that time: MEXICO STATE: Cruz 1040 (MICH, TEX, WISC); Quintero 1111 (MICH, TEX); Rzedowski 19414 (TEX) Torres (1968, Fig. 3) has a sketch made from type material.

c. var. nana, var. nov., B. L. Turner

A var. glabra habitibus nanis, partibus omnibus parvioribus differt.

TYPE: MEXICO. Chihuahua: 5 Km NE El Vergel along highway 24 towards Parral. Abundant in water of roadside ditches and permanent pools, pine-oak-madrone forests, 9000 ft, 21 Aug 1981, Nesom 4472 (holotype TEX!; isotypes, MEXU, MICH, NY, etc.).

The variety is, morphologically, relatively uniform. Among the 40 or more seemingly separate collections which I examined, most had separate fibrous root systems, developing only very short stolons (1-2 cm), as though the plants were annual. Additional study may show the taxon to be specifically distinct but on present evidence it appears to be a genetically-mediated dwarf population, in nearly all characters qualitatively like the var. glabra.

Jaegeria gracilis Hook. f. (including J. crassa Torres)

As noted in the introduction to this paper I recognize but one variable species native to the Galapagos Islands. Torres segregated individuals with clasping, indurate outer pales as J. crassa. Such individuals occur in close proximity with individuals identifiable as J. gracilis (e.g. Tagus Cove Mountain, Albemarle Island, Howell 9551A and 9567, 26 May 1932, CAS) and, according to Cronquist (1980), are closely sympatric on at least 3 of the Galapagos Islands (Albemarle, Santa Cruz and San Cristobal). Along with the fact that intermediates occur, I



accept the possible explanation offered by Torres that the two taxa recognized by him are but the extremes of a single species.

After the above was written I chanced upon an article on Galapagoan plants by van der Werff (1977) who essentially validates the synonymy of *J. crassa* with *J. gracilis*, as expressed above.

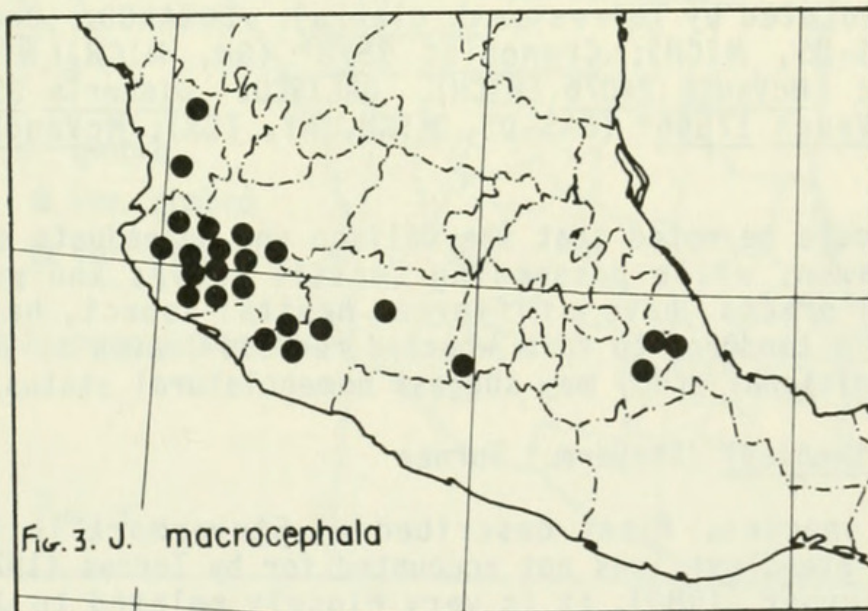
*Jaegeria hirta* (Lag.) Less.

This exceedingly widespread variable species is easily recognized by its strictly erect habit, very short yellowish rays and numerous small heads on relatively short peduncles. Since it is sympatric with nearly all of the other continental species it would not be surprising to find the occasional hybrid. One such plant is Lot 1187 (GH) from Veracruz which is possibly a hybrid or hybrid derivative of *J. macrocephala* x *J. hirta*. The plant concerned is clearly procumbent but possesses relatively small heads, with short rays, on delicate short peduncles.

*Jaegeria macrocephala* Less.

Distribution: Fig. 3

My interpretation of this species is essentially that of Torres (1968). It is quite variable both in habit and leaf size but is readily distinguished by its relatively broad, sessile, blades which are nearly always broadest at the middle.



*Jaegeria pedunculata* Hook. & Arn.

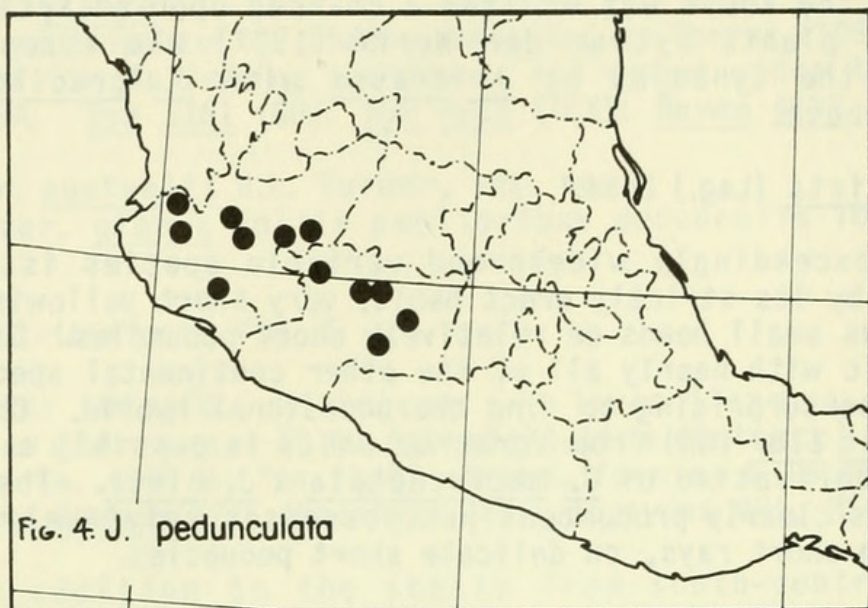
Distribution: Fig. 4

My interpretation of this species is essentially that of Torres (1968). It is relatively close to *J. macrocephala* and occasional specimens appear to approach that species (e.g., King 3670, from Nayarit).



Jaegeria purpurascens B. L. Rob.

Distribution: Fig. 5



As noted under Jaegeria glabra, above, J. purpurascens was not recognized by Torres. However, the taxon is clearly distinct, both vegetatively and by technical characters of the head.

In addition to the type material (Durango: Palmer 805, NY!, US), the following specimens were examined (those indicated by an \* were annotated by Torres as J. glabra): DURANGO: Breedlove 18730 (CAS-DS, MICH); Cronquist 9578\* (GH, MICH, NY, TEX). GUANAJUATO: McVaugh 24076 (MICH). JALISCO: Dieterle 3553 (LL, MICH); McVaugh 17566\* (CAS-DS, MICH, NY, TEX); McVaugh 24370 (MICH).

It should be noted that the Jalisco and Guanajuato specimens of this taxon, while possessing sessile leaves and pubescent involucre bracts, have a different habit, being more erect with a tendency to form whorled reduced leaves at its lower nodes. Additional study may suggest nomenclatural status.

Jaegeria standleyi (Steyermark) Turner

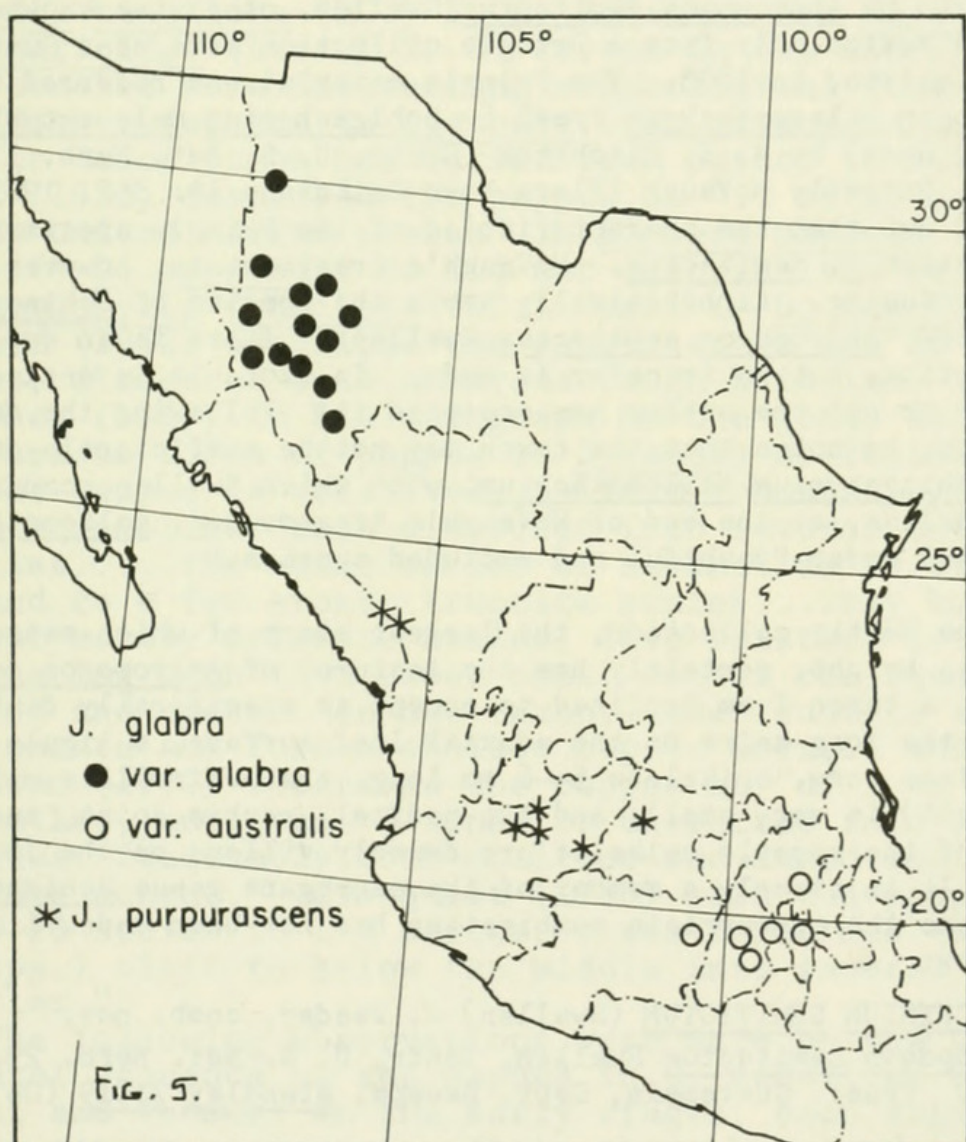
This species, first described by Steyermark in 1940 as Aphanactis standleyi, was not accounted for by Torres (1976). As noted by Turner (1980), it is very closely related to J. hirta and is perhaps an acaulescent timberline element derived out of that variable complex.

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