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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table 3: Comparison of fossil *Abies concolor* with extant species of *Abies* from North America | | | | | | | | | | |
| Plant organ | Morphological/morphometric  character | *A. concolor* (ZRFS) | *A. concolor*  combined | *A. concolor* var. *concolor* | *A. concolor* var. *lowiana* | *A. grandis* | *A. duragensis* | *A. religiosa* | *A. amabilis* | *A. lasiocarpa* |
| Seed cone | Length | NA | 70 – 130 | NA | NA | 50 – 70 | 55 – 100 | 80 – 100 | 90 – 150 | 25 - 122 |
| Width | NA | 30 – 45 | NA | NA | 30 – 40 | 30 – 45 | 40 – 60 | 50 – 80 | 11.9 – 48.2 |
| Shape | NA | Cylindrical-elliptical | NA | NA | Oblong-cylindrical | Cylindrical | Ovoid-oblong | Ovoid-Cylindrical | Oblong-cylindrical |
| Cone scale | Length | 22.7(16.4 – 31.9) | 20 (12.5 – 26.2) | 20.3 (16.5 – 26.5) | 16.5 (12.5 – 19) | 20.2 (20 – 25) | 15 – 20 | 20 – 30 | 24 (20 – 28) | 21 (5.5 – 29.2) |
| Width | 26( 16.4 – 37.3) | 29 (14.3 – 34.3) | 29.3 (14.3 - 34.3) | 21.6 (14.3 – 22.3) | 27.9 (25 – 30) | 20 – 28 | 30 – 35 | 24.3 (25 – 25) | 16.5 (6.3 – 27.8) |
| Shape | Flabellate | Flabellate | Flabellate | Flabellate | Broad flabellate | Flabellate-cuneate | Cuneate-flabellate | Cyanthiform-flabellate | Cuneate-trapeziform |
| Bract | Length | 11( 3.4 – 19.6) | 11.9 (5.3 – 16.4) | 12.3 | 9.3 (5.3 – 10.2) | 9.7 (10 – 15) | 10 – 15 | 18.9 – 20.2 | 10 – 15 | 11.5 (4.5 – 15) |
| Width | 6.2 (3.2 – 8.2) | 6 (4.3 – 6.8) | 6.2 | 4.7 (4.3 – 6) | 4.7 |  |  |  | 4.3 (2.7 – 6.2) |
| Exserted/Inserted | Inserted | Inserted | Inserted | Inserted | Inserted | Exserted | Exserted | Inserted | Inserted |
| Bract Cusps | Both | Both | No | Yes | Yes | No | No | No | No |
| Shape | Ovoid/oblong  cusps | Ovoid-oblong |  |  | Rectangular | Spathulate | Linear-spathulate | Obovate-oblong | Oblong aristate apex |
| Bract apicula | Length | 1.02(0.35 – 1.7) | 0.79 (0.24 – 1.4) | 0.5 (0.24 – 1.2) | 0.95 (0.72 – 1.4) | 0.79 |  |  | 2.1 | 1.98 (1.1 – 3.3) |
| Width | 0.76 (0.27 – 3.3) | 0.6 (0.39 – 0.97) |  | 0.6 (0.39 – 0.97) | 0.73 |  | 1.6 – 1.9 |  | 0.68 (0.38 – 3.17) |

Supplemental Table 4: Morphological and morphometric comparison between plant organs from fossil *Abies concolor* specimens from the Zeigler Reservoir fossil site (ZRFS) and extant species of *Abies* (*A. amabilis, A. concolor* var. *concolor, A. concolor* var. *lowiana, A. grandis, A. durangensis, A. lasiocarpa,* and *A. religosa*) from North America. Morphological/morphometric measurements for all plant organ characters for all specimens were measured in millimeters. The data comes from a combination of primary measurements and a compilation from the following studies: Hunt, 1993; Eckenwalder, 2009; Frajon, 2010; Miller, 2013. For the length and width measurements the median is outside the parenthesis and the range is inside the parenthesis.