

**Mediated Settlement Agreement for Sequoia National Forest,
Section B. Giant Sequoia Groves
Master Bibliography**

In the process of data compilation for the evaluation of giant sequoia groves under the Mediated Settlement Agreement, we compiled a digital bibliography for giant sequoia groves on the Sequoia National Forest and for the entire Sierra Nevada. This was done using the bibliographic database program EndNote 2. This master bibliography consists of data that we were not able to include in the printed report due to space constraints. There are over 700 references on giant sequoia ecology and management in the database and an output file of them follows. The data are also contained in the ~ADDENDUM/~A_C08DAT directory in three formats: EndNote 2 database (GS_BIB.EN2), ASCII text (GS_BIB.TXT), and Microsoft Word 6.0 (GS_BIB.DOC).

- Agamirova, M. I. (1980). Growth and development of *Cryptomeria japonica*, *Sequoiadendron giganteum* and *Sequoia sempervirens* on the Apsheron Peninsula - Introduction studies. *Biull. Gl. Bot. Sada.* 115: 32-34.
- Agee, J. K. and H. H. Biswell (1967). Christmas tree quality of white fir understory in a giant sequoia forest. *California Agriculture.* 21: 2-3.
- Agee, J. K. (1968). Fuel conditions in a giant sequoia grove and surrounding plant communities, University of California, Berkeley.
- Agee, J. K. and H. H. Biswell (1969). Seedling survival in a giant sequoia forest. *California Agriculture.* 23: 18-19.
- Agee, J. K. (1973). Prescribed fire effects on physical and hydrological properties of mixed-conifer forest floor and soil, UC Berkeley School of Forestry and Conservation, Water Resources Center.
- Agee, J. K., R. H. Wakimoto, et al. (1978). Fire and fuel dynamics of Sierra Nevada conifers. *Forest Ecology and Management* 1: 255-265.
Litterfall, decomposition of fine fuel, calorific value of fuel and fuel reduction by controlled burning were studied in plots in pure stands of ponderosa pine, sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*), and giant sequoia (*Sequoiadendron giganteum*) in California. The implications of the results are discussed for fire management in these forest types.
- Akers, J. P. (1986). Ground water in Long Meadow area and its relation with that in the General Sherman Tree area, Sequoia National Park, California, US Geological Survey.
- Albright, H. M. and F. J. Taylor (1957). How we saved the big trees. *Saturday Evening Post.* February 7.
- Alekseyev, V. A., A. K. Lavrukina, et al. (1975). Variation in radiocarbon content in the annual rings of sequoia (1890-1916). *Geokhimiya* 5: 667-675.
- Aley, T. J. (1963). Final report on the type mapping and regeneration studies in the giant sequoia groves of Kings Canyon and Sequoia National Parks.
- Alvin, K. L. and M. C. Boulter (1974). A controlled method of comparative study for Taxodiaceous leaf cuticles. *Botanical Journal of the Linnaeus Society* 69(4): 277-286.
- American, A. o. S. P. (1973). Field guidebook for Sequoia and Kings Canyon National Parks; the national history, ecology and management of the giant sequoias. Compiled by Richard J. Hartesvelt.
- Anderson, R. H. (1944). The valley of giants. *Trailways.* 9: 6 pages.

- Anderson, A. B., R. Riffer, et al. (1968). Chemistry of the genus *Sequoia*-G V cyclitols from the heart wood of *Sequoia-gigantea*-G. *Phytochemistry* 7(8): 1367-1371.
- Anderson, R. S. (1988). Current research on the paleoecology and biogeography of the giant sequoia in California's national parks. George Wright Society's Fifth Triennial Conference on Research in the National Parks and Equivalent Reserves.
- Anderson, R. S. (1990). Modern pollen rain within and adjacent to two giant sequoia (*Sequoiadendron giganteum*) groves, Yosemite and Sequoia National Parks, California. *Canadian Journal of Forest Research* 20(9): 1289-1305.
- Anderson, R. S. and S. J. Smith (1991). Paleocology within California's Sierra Nevada National Parks: an overview of the past and prospectus for the future. Yosemite Centennial Symposium, El Portal, California, Yosemite Association.
- Anderson, R. S. (1992). Paleohistory of a giant sequoia grove: the record from Log Meadow, Sequoia National Park. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Anderson, M. A., R. C. Graham, et al. (1993). Late season soil water status in a giant sequoia grove.
- Anderson, K. (1993). Indian fire-based management in the sequoia-mixed conifer forests of the central and southern Sierra Nevada.
- Anderson, R. S. and S. J. Smith (1994). Paleoclimatic interpretations of meadow sediment and pollen stratigraphies from California. *Geology* 22: 723-726.
- Andrews, R. W. (1958). *Redwood classic*. Seattle, WA, Superior Publishing Company.
- Antevs, E. (1925). The big tree as a climatic measure. Carnegie Institute of Washington Publication No. 352: 115-153.
- Atchison, T. a. S. F. R. C. (191-). *Big trees: Sequoia and General Grant National Parks*. The Railway. Chicago, IL.
- Attwell, W. G. and A. M. Attwell (1977). *An ancient giant speaks - a legend of the giant sequoia*. Monterey, CA, Angel Press.
- Axelrod, D. I. (1956). Mio-Pliocene floras from west-central Nevada. Berkeley, University of California Publications in Geological Sciences. 33: 1-322.
- Axelrod, D. I. (1959). Late Cenozoic evolution of the Sierra big tree forest. *Evolution* 13: 9-23.
- Axelrod, D. I. (1962). A Pliocene *Sequoiadendron* forest from western Nevada. Berkeley, University of California Publications of the Geological Society. 39: 195-268.
- Axelrod, D. I. (1976). History of the coniferous forests, California and Nevada. Berkeley, University of California Publications in Botany. 70: 1-62.
- Axelrod, D. I. (1986). The sierra redwood (*Sequoiadendron*) forest: end of a dynasty. *Geophytology* 16(1): 25-36.

Baerlocher, F. and J. J. Oertli (1978a). Colonization of conifer needles by aquatic hyphomycetes. *Canadian Journal of Botany* 56(1): 57-62.

Dead needles of *Abies alba*, *Pinus sylvestris*, *P. leucodermis* and *Sequoia gigantea* were immersed in a stream for 28 days and then examined for conidiophores of aquatic hyphomycetes. These fungi colonize untreated needles. Numbers of species and conidiophores were significantly higher on needles treated with steam before immersion than on untreated needles; both values were also higher on cut surfaces (mesophyll) than on intact surfaces (epidermis with cuticle) of longitudinally halved needles. Addition of untreated needle powder (*Sequoia*, *P. leucodermis*) to malt extract agar depressed linear growth of pure cultures of 5 aquatic hyphomycetes [*Anquillospora pseudolongissima*, *Clavariopsis aquatica*, *Lemonniera aquatica*, *Tetracladium marchalianum*, *Tricladium angulatum*]. The inhibition persisted when a 0.1 μm membrane filter was placed between medium and fungal cultures. On water agar, by itself unsuitable for growth, low doses of needle powder allowed growth of the same fungi. At higher doses, inhibition again became predominant. Steam distillation of needle powder yielded 3 fractions: solid residue, soluble residue and steam distillate. Steam distillate did not influence fungal growth on the 2 media, while the other 2 fractions supported growth on water agar but did not lead to a clear dosage-effect curve on malt extract agar

Baerlocher, F. and J. J. Oertli (1978b). Inhibitors of aquatic hyphomycetes in dead conifer needles. *Switz. Mycologia* 70(5): 964-974.

Needle powders of *Pinus leucodermis* and *Sequoia gigantea* were extracted with petroleum ether, ethanol, methanol, or distilled water. After evaporating the solvents, extracts and extracted powder were added to nutrient medium to examine their effect on linear expansion of 5 aquatic Hyphomycetes [*Anquillospora pseudolongissima*, *Clavariopsis aquatica*, *Lemonniera aquatica*, *Tetracladium marchalianum* and *Tricladium angulatum*]. All extracts depressed fungal growth, the inhibition being strongest with the 2 alcoholic extracts. The FeCl_3 test indicated phenolic compounds in the alcohol and water but not in the petroleum-ether extracts. There was no correlation between the colorimetrically determined phenol content of an extract and its antifungal activity. Untreated needle powder strongly inhibited fungal growth, as did petroleum-ether or water-extracted powder. By contrast, alcohol-extracted powder did not inhibit fungal growth. The inhibitory effect of methanol extract was much more pronounced at a pH range of 4.0-4.5 than at 5.5-6.5

Baker, R. S. B. (1943). *The redwoods*. London, England, George Ronald.

Bancroft, W. L., T. Nichols, et al. (1985). Evolution of the natural fire program at Sequoia-Kings Canyon National Parks. Symposium and workshop on wilderness fire, USDA Forest Service.

Bannan, M. W. (1966). Cell length and rate of anticlinal division in the cambium of the sequoias. *Canadian Journal of Botany* 44(2): 209-218.

Barbee, R. D. (1968). Sequoia grove ecosystem administrative brief.

Barton, H. M. (1885). *A trip to the Yosemite Valley, and the Mariposa grove big trees, California*. Dublin, University Press.

Batelka, J. and A. Dockal (1977). Some data on the development of *Sequoiadendron giganteum* seedlings. *Ziva* 25(2): 51-52.

Becker, E. and D. D. Piirto (1980). Environmental assessment - McKinley Grove compartment.

Been, F. (1938?). Big Tree (*Sequoia gigantea*) census survey report.

Beetham, N. M. (1961). The ecological tolerance range of the seedling stage of *Sequoia gigantea*, Duke University.

- Bellue, A. J. (1930a). A technical report on the Sequoia gigantea of Mariposa Grove.
- Bellue, A. J. (1930b). A technical report on the Sequoia gigantea of Merced Grove.
- Bellue, A. J. (1930c). A technical report on the Sequoia gigantea of Tuolumne Grove.
- Benson, N. J. (1985). Management of giant sequoia on Mountain Home Demonstration State Forest. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.
- Berland, O. (1963). Giant forest's reservation: the legend and the mystery. San Francisco, CA.
- Berry, E. W. (1923). Tree ancestors; a glimpse into the past. Baltimore, Williams & Wilkins.
- Berthon, J. Y., N. Boyer, et al. (1987). Sequential rooting media and rooting capacity of Sequoiadendron giganteum in vitro. Peroxidase activity as a marker. Plant Cell Report 6(5): 341-344.
- The rooting capacities of tips of seedling, juvenile and mature shoots of Sequoiadendron giganteum were compared on different rooting media (inductive and expressive media) after passage on an elongating medium. None of the cuttings rooted when continuously kept on medium containing the auxin NAA and vitamin D2. Peroxidase activity of all those cuttings on NAA + D2 first increased during the 7-9 first days and decreased in the days after. Rooting was obtained by transfer of the cuttings after periods longer than 7-9 days from the NAA + D2 inductive medium to a basal medium supplemented or not with rutin (expressive medium). The rooting capacity was emphasized by rutin treatment and was in correlation with the peroxidase peak reached on the NAA + D2 medium. Seedlings, characterised by the highest peroxidase activity, were most performing in rooting
- Berthon, J. Y., R. Maldiney, et al. (1989). Endogenous levels of plant hormones during the course of adventitious rooting in cuttings of Sequoiadendron giganteum (Lindl) in vitro. Biochemie und Physiologie der Pflanzen 184(5-6): 405-412.
- Berthon, J. Y., S. Bentahar, et al. (1990). Rooting phases of shoots of Sequoiadendron giganteum in vitro and their requirements. Plant Physiology and Biochemistry 28(5): 631-638.
- Berthon, J. Y., N. Boyer, et al. (1991). Uptake, distribution and metabolism of 2,4-dichloropheoxyacetic acid in shoots of juvenile and mature clones of Sequoiadendron giganteum in relation to rooting in vitro. Plant Physiology and Biochemistry 29(4): 355-362.
- Bishop, F. E. (1985). A brief history of the big tree and the big stump. (California), F. E. Bishop.
- Biswell, H. H. (1961). Big trees and fire. National Parks Magazine. 35: 11-14.
- Biswell, H. H. (1964). Studies in the development of the Sierra redwood forest, UC Berkeley.
- Biswell, H. H., R. P. Gibbens, et al. (1966a). Big tree understory and hidden views. California Agriculture. 20: 2-3.
- Biswell, H. H., H. Buchanan, et al. (1966b). Ecology of the vegetation of a second-growth sequoia forest. Ecology 47(4): 630-634.
- Biswell, H. H., R. P. Gibbens, et al. (1966c). Litter production by big trees and associated species. California Agriculture. 20: 5-7.
- Biswell, H. and H. Weaver (1968). Redwood Mountain. American Forests: 4 pages.
- Biswell, H. H., R. P. Gibbens, et al. (1968a). Fuel conditions and fire hazard reduction costs in a giant sequoia forest. California Agriculture. 22: 2-4.
- Biswell, H. H., R. P. Gibbens, et al. (1968b). Fuel conditions and fire hazard reduction costs in a giant sequoia forest. National Parks Magazine. 42: 16-19.

Biswell, H. H. (1975). Placer County big tree grove. National Parks and Conservation Magazine: 5.

Blackford, J. L. (1941). Woodpecker of the sequoias. Audubon. 43: 265-269.

Blank, R., A. Buck-Gramcko, et al. (1984). Wood properties of sierra redwood (*Sequoiadendron giganteum* (Lindl.) Buchholz) from plantations in Europe - specific gravity and strength. Forstarchiv 55(5): 199-202.

Blick, J. D. (1963). The giant sequoia: a study in autecology.

Boe, K. N. (1974). *Sequoiadendron giganteum* (Lindl.) Buchholz--giant sequoia. [Seed production]. USDA Agricultural Handbook. 45: 767-768.

Bojarczuk, T., H. Chylarecki, et al. (1980). Regionalization of tree and shrub selections for cultivation in Poland. Arbor Kornickie 25: 329-376.

The selections of trees and shrubs which are most valuable and most adapted to local site conditions were described. The list contained 669 spp. and varieties of woody plants. This is connected with the need to popularize many new ornamental varieties and new varieties adapted to particularly difficult urban environments. The tree plantings in the new open municipal districts require diversification since a greater assortment of various species and varieties is possible. In Poland, 5 climatic regions were delineated: the western zone, the transitory zone, the eastern zone, the southern sub-montane zone and the montane zone. The western climatic zone favored the introduction of many ornamental trees and shrubs known for their sensitivity to winter frosts although exotic trees such as ebony (*Diospyros lotus*), bamboos (*Sinarundinaria nitida*) or sequoias (*Sequoiadendron giganteum*) can be grown. The transitory zone has an intermediate climate. The eastern zone has a cold, more continental climate. The vegetative period is almost 2 mo. shorter than within the neighboring zones (Tarnow, Pszczyna). Only woody plants can grow there which are adapted to long lasting very cold and windy winters, e.g., *Acer negundo*, *Physocarpus opulifolius* and *Rhus typhina*. The submontane zone is defined by other climatic factors. The Subcarpathian valleys and the Silesian lowland belong to the warmest regions of Poland. This characteristic, the abundance of precipitation and the most intense solar radiation throughout Poland permit the introduction of many valuable trees and shrubs from genera *Magnolia*, *Deutzia*, *Weigela*, *Juglans* and others. The montane zone is different, covering the lower reaches of the Carpathian and Sudety Mountains. Successful cultivation of various species including some evergreen ones like those from genera *Rhododendron*, *Pieris* and *Chamaecyparis* is possible

Bon, M. C., M. Genraud, et al. (1988). Role of phenolic compounds on micropropagation of juvenile and mature clones of *Sequoiadendron-giganteum* influence of activated charcoal. Scientific Horticulture (Amsterdam) 34(3-4): 283-292.

The beneficial influence of activated charcoal (AC) (20 gl-1), added to the basal culture medium, was noted for in vitro growth and further rooting of microcuttings collected from juvenile clones of *Sequoiadendron giganteum*. During the elongation phase on the medium containing AC, the growing upper part of the juvenile clone microcuttings contained less polyphenols than the lower part, while this difference was not observed in mature material. Plantlets growing on AC-free medium had almost identical polyphenol levels, which greatly increased after the seventh week of culture both in the tissues and the medium. The effect of AC on microcutting growth as well as the significance of polyphenols for micropropagation are discussed

Bon, M. C. (1988a). J 16: an apex protein associated with juvenility of *Sequoiadendron giganteum*. Tree Physiology 4(4): 381-387.

Bon, M. C. (1988b). Nucleotide status and protein synthesis in-vivo in the apices of juvenile and maturing *Sequoiadendron-giganteum* during budbreak. *Physiologia Plantarum* 72(4): 796-800.

Adenine and guanine nucleotide contents of isolated apices collected from a juvenile and a mature clone of *Sequoiadendron giganteum* (Lindl.) Buchholz during budbreak were determined. GDP and GTP contents were significantly higher in the juvenile clone apex than in the mature ones, whereas there was no difference in ATP concentration between the two materials. In vivo, induction of protein synthesis was similar in the two clones after 10 min of [³⁵S]-methionine labeling. The increase of [³⁵S]-methionine-tRNAs and labeled proteins continued up to 30 min for the juvenile clone. They markedly declined for the mature clone after 10 min. Only the diminution of this in vivo protein synthesis was well correlated with a decrease in GTP content

Bon, M. C. and O. Monteuis (1991). Rejuvenation of a 100-year-old *Sequoiadendron giganteum* through in vitro meristem culture. 2. Biochemical arguments. *Physiologia Plantarum* 81(1): 116-120.

Bonar, L. (1971). A new mycocalicium on scarred sequoia in California. *Madroño*. 21: 62-69.

Bonnicksen, T. M. (1975). Spatial pattern and succession within a mixed-conifer-giant sequoia forest ecosystem, University of California, Berkeley.

Bonnicksen, T. M. and E. C. Stone (1978). An analysis of vegetation management to restore the structure and function of presettlement giant sequoia-mixed-conifer forest mosaics, National Park Service.

Bonnicksen, T. M. and E. C. Stone (1980). Reconstructing presettlement forests in National Parks: a new approach. 2nd Conference on Scientific Research in National Parks, San Francisco, CA, National Park Service.

Bonnicksen, T. and E. C. Stone (1981). The giant sequoia - mixed conifer forest community characterized through pattern analysis as a mosaic of aggregations. *Forest Ecology and Management* 3(4): 307-328.

This hypothesis was examined using 5-point pattern analysis techniques. The results showed statistically significant levels of contagion for most of the tree classes analyzed, thereby demonstrating the presence of aggregations in the giant sequoia-mixed conifer forest community. Both distance and quadrat methods of analysis also showed that older and larger trees have a tendency to be uniformly dispersed. Aggregations tended to decrease in size as the age of the trees increased. However, giant sequoia was unique in that its aggregations did not tend to decrease in size as the trees grew older. The quadrat methods also showed that most aggregations in the giant sequoia-mixed conifer forest community range in size 135-1600 m². These results are compared with the pattern produced by a prescribed burn designed to reduce fuels and restore natural conditions. The prescribed burn reduced the density of trees but it did not significantly alter the pattern of trees in the 41-60 yr and older age classes. The management implications of these findings are discussed

Bonnicksen, T. M. and E. C. Stone (1982a). Managing vegetation within U.S. National Parks: A policy analysis. *Environmental Management* 6(2): 101-102 and 109-122.

The development of management policies is briefly traced from 1872, and ambiguities in legislation are described and partially resolved. Alternative objectives put forward by the Park Service, aiming at restoring or maintaining natural conditions, are evaluated using data from a giant sequoia (*Sequoiadendron giganteum*)/mixed conifer forest in Kings Canyon National Park, California [see FA 43, 2232]. It is concluded that structural maintenance objectives (those aiming to maintain the vegetation in its current state, or restore it to its presettlement state and maintain it there) are not biologically feasible since this forest community is not in a steady state. Process maintenance objectives, allowing succession to continue in the current vegetation, or after restoration to a presettlement condition, are, therefore, preferred. A new option is also presented, based on a high resolution description of the presettlement forest community and named the reconstruction-simulation approach.

Bonnicksen, T. M. and E. C. Stone (1982b). Reconstruction of a presettlement giant sequoia-mixed conifer forest community using the aggregation approach. *Ecology* 63(4): 1134-1148.

The presettlement state of a giant sequoia-mixed conifer forest community in the Redwood Creek watershed, Kings Canyon National Park [USA] is reconstructed using a backward projection in time of plant aggregations. The most conspicuous change in the forest community from the presettlement condition (.apprx. = 1890) was a general increase in the area of aggregations dominated by pole-size trees and mature trees, and a corresponding decrease in the area of aggregations dominated by sapling- and seedling-size trees. Aggregations dominated by white fir had both the greatest decline in area for sapling and seedling aggregations and the greatest increase in area for large mature, mature, and pole aggregations of any species in the watershed. The area of aggregations dominated by shrubs also declined, with manzanita aggregations showing the largest loss in area for any shrub species. Hardwoods were also a far more important part of the presettlement forest community than they are today

Bonnicksen, T. (1994). Reconstruction graphics.

Bosch, C. A. (1971). Redwoods: a population model. [*Sequoia sempervirens*, *Sequoiadendron giganteum*]. *Science* 172(3981): 345-349.

Bowles, J. L. (1973). Management suggestions for *Sequoiadendron giganteum* groves on the Sequoia National Forest, San Jose State University.

Bradley, C. B. (1971). Some problems relating to the giant trees. *American Forests* 77(5): 29-31, 53-56.

Brant, I. (1942). Protect the South Calaveras sequoia grove. New York, NY, Emergency Conservation Committee.

Brenner, J. and R. Bijak (1977). Sequoia [*sempervirens* and *Sequoiadendron giganteum*, history, California]. *Sylwan* 121(4): 61-73.

Briscoe, R. J. (1914). The two oldest trees, one dead, one living. Riverside, CA, Young and McCallister Press.

Brown, P. M., M. K. Hughes, et al. (1992). Giant sequoia ring-width chronologies from the central Sierra Nevada, California. *Tree-Ring Bulletin* 52: 1-14.

Brown, P. M. (1992/93). Proposal for tree-ring sampling (to B. Rogers, Sequoia National Forest), University of Arizona.

Brown III, M. R. and C. M. Elling (1981). An historical overview of redwood logging resources within the Hume Lake Ranger District, Sequoia National Forest, California, Sonoma State University.

- Brussard, P. F., S. A. Levin, et al. (1971). Redwoods: A population model debunked. *Science* 174: 435.
- Bryan, J. Y. (1974). Mountain monarchs. *National Parks and Conservation*. 48: 5-8.
- Bryant, H. C. (1940). The spotted owl nesting in the sequoia belt. *Condor* 42(6): 307.
- Buchanan, H., R. P. Gibbens, et al. (1966a). Checklist of higher plants of Whitaker's Forest, Tulare County, California. Ogden, UT, Weber State College Printing Department.
- Buchanan, H., H. H. Biswell, et al. (1966b). Succession of vegetation in a cut-over Sierra redwood forest. *Utah Academy of Sciences, Arts and Letters*. 43: 43-48.
- Buchholz, J. T. (1937). Seed cone development in *Sequoia gigantea*. *Science* 85: 59.
- Buchholz, J. T. (1938). Cone formation in *Sequoia gigantea*. I. The relation of stem size and tissue development to cone formation. II. The history of the seed cone. *American Journal of Botany* 25(4): 296-305.
- Buchholz, J. T. (1939a). The morphology and embryogeny of *Sequoia gigantea*. *American Journal of Botany* 26(2): 93-101.
- Buchholz, J. T. (1939b). The genetic segregation of the sequoias. *American Journal of Botany* 26: 534-538.
- Buchholz, J. T. and M. Kaeiser (1940). A statistical study of two variables in the sequoias - pollen grain size and cotyledon number. *American Naturalist* May-June: 5 pages.
- Buff, M. and C. Buff (1946). *Big tree*. New York, NY, Viking Press.
- Burns Jr., T. B. (1971). *Sequoiadendron giganteum* in Oregon - its history and potential. . California, G. S. (1868). *The Yosemite book - a description of Yosemite Valley and the adjacent region of the Sierra Nevada and of the big trees of California*. New York, NY, Julius Bien.
- California, D. o. B. a. P. (1964?). *The redwoods of California: coast redwood, Sequoia sempervirens; Sierra redwood, Sequoiadendron giganteum*.
- California, S. D. o. P. a. R. (1990). *Calaveras Big Trees State Park general plan*.
- Canby, H. (1915). *The last stand of the redwoods*. Harpers Magazine.
- Caprio, A. C. and T. W. Swetnam (1993a). *Fire history and fire climatology in the southern and central Sierra Nevada*.
- Caprio, A. C. and T. W. Swetnam (1993b). *Historic fire regimes along an elevational gradient on the west slope of the Sierra Nevada, California. Proceeding of the Symposium on Fire in Wilderness and Park Management, Missoula, MT, USDA, Forest Service*.
- Caprio, A. C., L. S. Mutch, et al. (1994). *Temporal and spatial patterns of giant sequoia radial growth response to a high severity fire in A.D.1297*.
- Carlson, S. T. (1935). (Report of sequoia reproduction studies in Upper Mariposa Grove).
- Castro, K. M. and D. Castro (1968). *South Grove...Calaveras Big Trees State Park*. Murphys, CA, K. M. Castro.
- Caylor, J. G., A. Thorley, et al. (1968). *The use of remote sensing techniques for the detection and evaluation of tree mortality in the Red Fir, Lodgepole, Giant Forest Area of Sequoia National Park, National Park Service, School of Forestry and Conservation, U. C. Berkeley*.
- Chalchat, J. C., R. P. Garry, et al. (1988). *Constituents of Sequoiadendron giganteum Buchh. leaf oils (giant sequoia)*. *Flavour Fragr. J.* 3(2): 69-72.

- Challacombe, J. R. (1953). Redwood epic. Holiday.
- Challacombe, J. R. (1954). When the giants fell. Popular Mechanics.
- Challacombe (1992). Reviving the great forest: An exercise in applied ecology. *Sequoia Watch*. 2: 33 pages.
- Chandler, E. W. (1970). A different kind of Christmas tree. *American Forests* 76(12): 32-34.
- Christensen, N., L. Cotton, et al. (1987). Review of fire management program for sequoia-mixed conifer forests of Yosemite, Sequoia and Kings Canyon National Parks.
- Christensen, N. C. (1988). Succession and natural disturbance: paradigms, problems and preservation of natural ecosystems. *Ecosystem management for parks and wilderness*. J. K. A. a. D. R. Johnson. Seattle, WA, University of Washington Press: 62-86.
- Christensen, N. (1991). Variable fire regimes on complex landscapes: ecological consequences, policy implications, and management strategies.
- Cid del Prado Vera, I. and B. F. Lowensbery (1984). Histopathology and host range studies of the redwood nematode *Rhizonema-sequoiae*. *Journal of Nematology* 16(1): 68-72.
Second-stage larvae of *R. sequoiae* tunnel through the cortex of the redwood *Sequoia sempervirens* (D. Don) Endl. root to the vascular tissue where each developing female induces a single ovoid or occasionally spherical giant cell with a single ovoid to spherical nucleus containing 1-4 enlarged nucleoli. Nematode tunnels are filled with a gel material and often contain 2nd-stage larvae and males. There is tissue necrosis around females, and cortical tissue is destroyed after infection by many 2nd-stage larvae. *R. sequoiae* females developed to maturity on *S. sempervirens*, *Acer macrophyllum* Pursh, *Alnus rhombifolia* Nutt., *Libocedrus Torr*, *Pseudotsuga menziesii* (Mirb.) Franco and *Sequoiadendron giganteum* (Lindl.) Decne. In the Marin County, California [USA], forest mature females were also found naturally infecting *Lithocarpus densiflorus* (Hook and Arn.) Rehd., *Umbellularia californica* (Hook and Arn.) Nutt., and *Arbutus menziesii* Pursh
- Clark, G. (1907). The big trees of California, their history and characteristics. Redondo, CA, Reflex Publishing Company.
- Cloer, C. (1992). Reflections on management strategies of the Sequoia National Forest: A grassroots view. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Cockrell, R. A., R. M. Knudson, et al. (1971). Mechanical properties of southern Sierra old- and second-growth giant sequoia [*giganteum*]. *California Agriculture Experiment Station Bulletin* 854: 1-15.
- Cockrell, R. A. and R. M. Knudson (1973). A comparison of static bending, compression and tension parallel to grain and toughness properties of compression wood and normal wood of a giant sequoia (*gigantea*). *Wood Science Technology* 7(4): 241-250.
Tests on samples removed from bolts cut at 8 ft and 20 ft above stump level from a leaning suppressed tree and tested by ASTM methods indicated that many of the strength properties of compression wood in both the green and dry state were at least equal, if not considerably superior, to those of the matched samples of normal wood. However, when specific strengths and stiffness were compared, the compression-wood samples showed lower values than normal wood, which in turn showed lower values than opposite or tension wood.
- Cockrell, R. A. (1973). The effect of specimen preparation on compression wood and normal latewood pits and wall configurations of giant sequoia. *Bulletin of the International Association of Wood Anatomists* 4: 19-23.

Cockrell, R. A. (1974). A comparison of latewood pits, fibril orientation, and shrinkage of normal and compression wood of giant sequoia (*gigantea*, growth defects). *Wood Science Technology* 8(3): 197-206.

Reports a detailed anatomical study of compression wood in *Sequoia gigantea*, in which it is an uncommon feature. Late-wood tracheids in compression wood had pit canals that flared towards the lumen. Boiling and drying of compression-wood blocks induced split extensions at the pit-aperture grooves. The mean S2 fibril angle of 21-25 deg (maximum 32 deg) was considerably lower than the value (45 deg) reported in other species. The greater fibril angles of compression wood may be responsible for greater axial shrinkage and lower tangential shrinkage. The low tangential/radial shrinkage ratio is an important physical deviation from normal wood. The magnitude of shrinkage is influenced by the manner of drying, and differs between sapwood and heartwood.

Cole, K. (1983). Late Pleistocene vegetation of Kings Canyon, Sierra Nevada, California. *Quaternary Research* 19: 117-129.

Seven packrat midden samples make possible a comparison between the modern and late Pleistocene vegetation in Kings Canyon on the western side of the southern Sierra Nevada. One modern sample contains macrofossils and pollen derived from the present-day oak-chaparral vegetation. Macrofossils from the 6 late Pleistocene samples record a mixed coniferous forest dominated by the xerophytic conifers *Juniperus occidentalis*, *Pinus* cf. *ponderosa* and *P. monophylla*. The pollen spectra of these Pleistocene middens are dominated by *Pinus* sp., *Taxodiaceae-Cupressaceae-Taxaceae* (TCT) and *Artemisia* sp. Mesophytic conifers are represented by low macrofossil concentrations. *Sequoiadendron giganteum* is presented by a few pollen grains in the full glacial. Edaphic and snow dispersal are the most likely causes of these mixed assemblages. The dominant macrofossils record a more xeric plant community than those that now occur on similar substrates at higher elevations or latitudes in the Sierra Nevada. These assemblages suggest that late Wisconsin climates were cold with mean annual precipitation not necessarily greater than modern values. A model of low summer ablation allowing for the persistence of the glaciers at higher elevations during the late Wisconsin was supported. *S. giganteum* may have grown at lower elevations along the western side of the range and *P. monophylla* may have been more widely distributed in cismontane California during the Pleistocene

Coleman, W. and T. A. Thorpe (1976). Induction of buds in tissue cultures of 4 different conifers. *Plant Physiology* 57(5 (suppl.)): 67.

Collings, A. R. (1985). *Redwood empire*. Anaheim, CA, A. R. Collings, Inc.

Collins, B. J. (1975). A visit to the giant sequoias [*Sequoiadendron giganteum*, Sequoia National Park in California]. *Ir. For.* 32(2): 96-100.

Cook, L. F. (1942). *The giant sequoia of California*, U.S. Government Printing Office, Wash., D.C.

Cook, N. W. and D. J. Dulitz (1978). Growth of young Sierra redwood stands on Mountain Home State Forest.

Results are reported from 2 plots out of 9 established in 1952-3 to observe growth and mortality. These contained high proportions of second growth Sierra redwood (*Sequoiadendron giganteum*): 45% in one plot (31-yr-old); and 90% in the other (86-yr-old). Total vol., ingrowth, mortality and p.a.i. and m.a.i. are tabulated for stand ages of 7 to 86 years. Growth rates were similar to those of second growth mixed conifer stands in the Westside Sierra region.

Cook, N. W. and D. J. Dulitz (1979). Measuring the Adam tree, largest Sierra redwood on the Mountain Home State Forest.

The method used involved triangulation from various points on a closed traverse and has been developed during the measurement of other exceptionally large trees. Ht. (76.1 m), vol. and diam. measurements for the Adam tree are given and compared with those of 5 other named Sierra redwoods [*Sequoiadendron giganteum*].

Cotton, L. and H. H. Biswell (1973). Forestscape and fire restoration at Whitaker's Forest. *National Parks and Conservation Magazine*. 47: 10-15.

Cotton, L. and J. R. McBride (1987). Visual impacts of prescribed burning on mixed conifer and giant sequoia forests. Symposium on Wildland Fire 2000, South Lake Tahoe, CA, USDA Forest Service.

Cowell, A. E. (1932). Report on the Grizzly Giant.

Cowell, A. E. (1935). Report on the Grizzly Giant.

Craig, H. (1954). Carbon-13 variations in sequoia rings and the atmosphere. *Science* 119: 141-143.

Croft, W. (1992). Sequoia growth preservation: Natural or humanistic? Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.

Cundy, P. F. (1946). [A chemical] Comparison of ancient and modern Sequoia wood. *Madrono* 8: 145-152.

Currey, L. W. and D. G. Kruska (1992). Bibliography of Yosemite, the central and the southern high Sierra, and the big trees, 1839-1900. Los Angeles, CA, Dawson's Book Shop.

Cutter, B. E. and R. P. Guyette (1993). Anatomical, chemical, and ecological factors affecting tree species choice in dendrochemistry studies. *Journal of Environmental Quality* 22(3): 611-619.

Czaja, A. T. (1981). Microscopical identification of cellulose in wood. *Angew Bot.* 55(5-6): 495-500.

If starch-free wood or timber [from *Abies alba*, *Chamaecyparis lassoniana*, *Pinus sylvestris*, *Sequoiadendron giganteum*, *Casuarina equisetifolia*, *Callitris verrucosa*, *Acer pseudoplatanus*, *Aesculus hippocastanum*, *Buxus sempervirens*, *Catalpa bignonioides*, *Castanea sativa*, *Fagus sylvatica*, *Guaiacum officinale*, *Ochroma lagopus*, *Populus nigra*, *Quercus pedunculata*, *Sarothamnus scoparius*, *Tilia cordata*, *Bambusa* sp. and *Saccharum officinarum*] is sufficiently disintegrated, 2 types of particles are obtained which show either the cellulose or the lignin reaction with suitable reagents, independently of the wood species

Davenport, H. E. (1949). A story of California big trees, largest and oldest living things on earth. Stockton, CA, Calaveras Grove Association.

David, C. T., D. A. Tilles, et al. (1979). Factors associated with tree failure of giant sequoia-entomological aspects. First Conference on Scientific Research in the National Parks, Washington, D. C., USDI National Park Service.

David, C. T. and D. L. Wood (1980). Orientation to trails by a carpenter ant, *Camponotus modoc* (Hymenoptera: Formicidae), in a giant sequoia forest. *Canadian Entomology* 112(10): 993-1000.

The trails of *C. modoc* Wheeler follow perennial routes. The ants orient along these using both chemical and visual cues. If the chemical cues are disrupted the ants reform the trail while orienting by visual cues. They can respond to the same visual cues after at least 12 h, and since no evidence was found that the chemical cues survive the winter, probably after 6 months

- David, C. T. and D. L. Wood (1982a). Studies on the relationship between human use and the size of carpenter ant (*Camponotus* sp.) populations in a giant sequoia ecosystem.
- David, C. T. and D. L. Wood (1982b). The biology of *Camponotus modoc* Wheeler in a giant sequoia ecosystem.
- Davis, O. K. and M. J. Moratto (1988). Evidence for a warm dry early Holocene in the western Sierra Nevada of California: pollen and plant macrofossil analysis of Dinkey and Exchequer Meadows. *Madrono* 35(2): 132-149.
- Dawson, K. J. and S. E. Greco (1987a). Special management area visual resources management study for the Sequoia National Park prescribed fire management program, Department of Environmental Design, University of California, Davis.
- Dawson, K. J. and S. E. Greco (1987b). Visual resources management study for the Sequoia National Park prescribed fire management program.
- Dawson, K. and S. Greco (1990). Prescribed fire and visual response in Sequoia National Park.
- Dawson, K. J. and S. E. Greco (1992). The visual ecology of prescribed fire in Sequoia National Park. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Dayton, W. A. (1943). The names of the giant sequoia. *Leaflets of Western Botany* 3: 209-219.
- Dekker-Robertson, D. L. and J. Svolba (1993). Results of *Sequoiadendron giganteum* ((Lindl.) Buchh) provenance experiment in Germany. *Silvae Genetica* 42(4-5): 199-206.
- DeLeon, D. (1952). Insects associated with *Sequoia sempervirens* and *Sequoia gigantea* in California. *Pan-Pacific Entomology* 28(2): 75-91.
- Delkov, N., S. Yurukov, et al. (1987). Investigations of certain gymnospermous exotic species in the botanical garden of the Higher Institute of Forest Engineering. *Gorkostop Nauka* 24(6): 21-25.
- The establishment of the botanic garden of the Higher Institute of Forest Engineering, Sofia, dates since 1964. Investigations are conducted on the growth in height and diameter of the oldest trees from 19 gymnospermous exotic species: *Abies cephalonica* Loud., *Abies concolor* Lindl. et Gord., *Abies nordmanniana* (Stev.) Spach., *Cedrus libani* Laws., *Chamaecyparis lawsoniana* Parl., *Chamaecyparis pisifera* (S. et Z.) Endl., *Ginkgo biloba*, L., *Libocedrus decurrens* Torr., *Metasequoia glyptostroboides* Hu et Cheng., *Picea pungens* Dougl., *Pinus ponderosa* Dougl., *Pinus strobus* L., *Pseudotsuga menziesii* (Mirb.) Franco, ssp. *glaucescens*, *Pseudotsuga menziesii* (Mirb.) Franco, ssp. *menziesii*, *Sequoiadendron giganteum* (Lindl.) Buchh., *Taxodium distichum* (L.) Rich., *Thuja gigantea* Nutt., *Thuja occidentalis* L., *Thuja orientalis* L. Most intensive growth in diameter is manifested by *Sequoiadendron giganteum*. s.d. 1,25 cm mean annual increment at the age of 20 years and *Cedrus libani*. s.d. 1,00 cm at the same age. Most intensive growth in height is manifested by *Cedrus libani*. s.d. 49 cm mean annual increment at the age of 20 years and *Pinus strobus*. s.d. 14 cm at the same age
- Demetry, A., W. W. Covington, et al. (1995). Regeneration patterns within canopy gaps in a giant sequoia-mixed conifer forest: implications for forest restoration. 1995 Meeting of the Ecological Society of America, Snowbird, Utah.

Department of Biology, F. U., Shanghai (1987). The origin of *Sequoia sempervirens* Taxodiaceae based on karyotype. *Acta Botanica Yunnanica* 9(2): 187-192.

Sequoia sempervirens is an autoallopolyploid with the genomic formula AAAABB. Its complement-AA and -B, that belong to Stebbins' "1A" and "1B" karyotypic type respectively, are quite similar to the karyotypes of *Metasequoia glyptostroboides* and *Sequoiadendron giganteum* (Table 1, 2). So some ancient species of *Metasequoia* and *Sequoiadendron* may be the two hybrid parents of *S. sempervirens*, *M. glyptostroboides* and *S. giganteum* are probably direct descendants of them. The present study supports Stebbins' suggestion that one ancient species of *Metasequoia* would be an ancestor of *S. sempervirens*, but does not agree with his hypothesis that another ancestor is extinct and has not left close relatives. The original process of *S. sempervirens* may be shown as Fig. 1

Dewitt, J. and R. Jaspersen (1986). To: members of the honorable review panel, NPS, sequoia fire management plan, From: Save-the-Redwoods League.

Dhar, D. L. (1975). *Sequoiadendron giganteum*--a report from Kashmir. *Indian Forestry* 101(9): 562-564.

Briefly describes an isolated tree of *S. giganteum* growing in Kashmir and suggests the possibilities of the wider cultivation of the species in the western Himalayas.

Dilsaver, L. M. and W. C. Tweed (1990). Challenge of the big trees. Three Rivers, CA, Sequoia Natural History Association.

Dion, C. R. (1966). Mapping and cruising the Tuolumne and Merced sequoias of Yosemite National Park, California.

Distelbarth, H., U. Kull, et al. (1984). Seasonal trends in energy contents of storage substances in evergreen gymnosperms growing under mild climatic conditions in central Europe. *Flora* 175(1): 15-30.

Dohmen, H., G. Spelsberg, et al. (1984). Root development of *Sequoia gigantea* (Lindl.) Buchh.-on two various localities in lower Rhineland. *Mitteilungen der Deutschen Dendrologischen Gesellschaft* 75: 105-113.

Donaghey, J. L. (1969). The properties of heated soils and their relationship to giant sequoia (*Sequoiadendron giganteum*) germination and seedling growth, San Jose State College.

Dorn, T. F. (1958). A radiocarbon dating system: measurements of the C 14 activity of sequoia rings, University of Washington.

Douglass, A. E. (1909). Weather cycles in the growth of big trees. *Monthly Weather Review* 37: 225-237.

Douglass, A. E. (1917). Climate records in the trunks of trees. *American Forestry* 23: 732-735.

Douglass, A. E. (1919). Climatic cycles and tree-growth I: a study of the annual rings of trees in relation to climate and solar activity. Carnegie Institution of Washington Publication No. 289 I: 127 pages.

Douglass, A. E. (1920). Evidence of climatic effects in the annual rings of trees. *Ecology* 1: 24-32.

Douglass, A. E. (1921). Some aspects of the use of the annual rings of trees in climate study. *The Scientific Monthly* 5: 5-21.

Douglass, A. E. (1922). Some topographic and climatic characteristics in the annual rings of the yellow pines and sequoias of the southwest. *Proceedings of the American Philosophical Society* 61: 117-122.

Douglass, A. E. (1925). Tree rings and climate. *The Scientific Monthly* 21: 95-99.

- Douglass, A. E. (1927). Solar records in tree growth. *Science* 65: 220-221.
- Douglass, A. E. (1928a). Climatic cycles and tree-growth II: a study of the annual rings of trees in relation to climate and solar activity. Carnegie Institution of Washington Publication No. 289 II: 166 pages.
- Douglass, A. E. (1928b). Climate and trees. *Nature Magazine*. 12: 51-53.
- Douglass, A. E. (1933a). Evidence of cycles in tree-ring records. *Proceedings, National Academy of Sciences*.
- Douglass, A. E. (1933b). Tree growth and climate cycles. *The Scientific Monthly* 37: 481-495.
- Douglass, A. E. (1934). Tree growth and climate cycles. Supplementary Publication No. 9 Carnegie Institute of Washington: 1-15.
- Douglass, A. E. (1936). Climate cycles and tree growth. Vol. III: A study of cycles. Carnegie Institute of Washington, Publication 289: 171 pages.
- Douglass, A. E. (1937). Tree rings and chronology.
- Douglass, A. E. (1940). Dendrochronology and studies in 'cycles'. *Proceeding of the University of Pennsylvania Bicentennial Conference*.
- Douglass, A. E. (1944). Tree rings and climate cycles. *Phi Kappa Phi Journal* 24: 21-85.
- Douglass, A. E. (1945a). Survey of sequoia studies. *Tree-Ring Bulletin* 11(4): 26-32.
- Douglass, A. E. (1945b). Survey of sequoia studies, II. *Tree-Ring Bulletin* 12(2): 10-16.
- Douglass, A. E. (1946). Sequoia survey, III: miscellaneous notes. *Tree-Ring Bulletin* 13(1): 5-8.
- Douglass, A. E. (1949). A superior sequoia ring record. *Tree-Ring Bulletin* 16(1): 2-6.
- Douglass, A. E. (1950a). A superior sequoia ring record. II. A.D. 870-1209. *Tree-Ring Bulletin* 16(3): 24.
- Douglass, A. E. (1950b). A superior sequoia ring record. III. A.D. 360-886. *Tree-Ring Bulletin* 16(4): 31-32.
- Douglass, A. E. (1951a). A superior sequoia ring record. IV. 7 B.C. - A.D. 372. *Tree-Ring Bulletin* 17(3): 23-24.
- Douglass, A. E. (1951b). A superior sequoia ring record. V. 271 B.C. - 1 B.C. *Tree-Ring Bulletin* 17(4): 31-32.
- Dowden, D. D. (1988). *The tree giants: the story of the redwoods, the world's largest trees*. Helena, MT, Falcon Press.
- Doyle, W. A. (1943). The names of the giant sequoia, a discussion. *Leaflets of Western Botany* 3: 209-219.
- Du, W. and L. Fins (1989). Genetic variation among 5 giant sequoia populations. *Silvae Genetica* 38(2): 70-76.
- Dudley, W. R. (1913). *The vitality of the Sequoia gigantea*. Dudley Memorial Volume. Stanford, CA, Stanford University Press.
- Dulitz, D. J. (1985). Growth and yield of giant sequoia. *Workshop on Management of Giant Sequoia*, Reedley, CA, U.S.D.A. Forest Service.
- Dulitz, D. (1992). Management of giant sequoia on Mountain Home Demonstration State Forest. *Symposium on Giant Sequoias: Their Place in the Ecosystem and Society*, Visalia, CA, USDA Forest Service.
- Dulitz, D. D. (1993). Arbor Day presentation on giant sequoia: 10 pages.

- Duysen, G. H. (1992). Perspectives of the forest products industry on management strategies. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Ekenwalder, J. E. (1976). A re-evaluation of Cupressaceae and Taxodiaceae: a proposed merger. *Madrono* 23: 237-256.
- El-Dessouki, S. (1974). Some constituents of *Sequoiadendron giganteum* (Lindl.) Buchholz. [Hohenheim? : s.n.] 53.
- Ellsworth, R. S. (1922). The giant sequoia in the Mariposa Grove of big trees. Yosemite, CA, Yosemite National Park Co.
- Ellsworth, R. S. (1924). The giant sequoia, an account of the history and characteristics of the big trees of California. Oakland, CA, J. D. Berger.
- Ellsworth, R. S. (1933). The discovery of the big trees of California, University of California.
- Ellsworth, R. S. (n. d.). The claims of discovery of the big trees of California.
- Engbeck Jr., J. H. (1973). The enduring giants. Berkeley, University Extension, University of California.
- Engel, M. H., J. E. Zumberge, et al. (1977). Kinetics of amino acid racemization in *Sequoiadendron giganteum* heartwood. *Analytical Biochemistry* 82(2): 415-422.
Activation energies and Arrhenius frequency factors were calculated for the racemization reaction of 4 bound amino acids (aspartic acid, glutamic acid, proline and phenylalanine) isolated from sequoia heartwood, by using elevated temperature rate constants. A first-order rate constant of $2.1 \times 10^{-5} \text{ yr}^{-1}$ was calculated for the racemization of bound aspartic acid from the extent of racemization in dendrochronologically dated sequoia heartwood samples. Because the racemization reaction is temperature dependent, an average temperature which the bound aspartic acid in sequoia had experienced during the past .apprx. 2200 yr was obtained. This value agrees with modern temperatures near the sample location and estimated paleotemperatures during the past .apprx. 2000 years
- English, J. (1982). McKinley grove of big trees, USFS.
- Evans, O. M. (1924). Big tree measurements, Calaveras Groves of big trees, USDA Forest Service.
- Evans, O. M. (1926). The Calaveras Grove of big trees. *West Coast Lumberman*. 50: 154.
- Evans, L. S. and M. R. Leonard (1991). Histological determination of ozone injury symptoms of primary needles of giant sequoia (*Sequoiadendron giganteum* Buchh). *New Phytologist* 117(4): 557-564.
- Evarts, B. (1979). Comments for recommendations for future development and management of Nelder Grove.
- Evarts, B. (1989). Walk the sequoia woods. The 1990 Redwoods and Big Trees Calendar, Dream Garden Press.
- Ewan, J. (1973). William Lobb, plant hunter for Veitch and messenger of the big tree. Berkeley, University of California Publications in Botany. 67: 1-36.
- Farmer, L. and D. Parrish (1972). Random survey of redwood dimensions in Calaveras Big Trees State Park.
compare with Evans 1924 measures
- Farquar, F. P. (1927). Vagaries of the big trees. *American Forests and Forest Life*. May.

- Farquar, F. P. (1948). Yosemite, the big trees, and the high Sierra; a selective bibliography. Berkeley, CA, University of California Press.
- Fenn, M. E., P. H. Dunn, et al. (1989). Effects of ozone and sulfur dioxide on phyllosphere fungi from three tree species. *Applied Environmental Microbiology* 55(2): 412-418.
- Findley (1990). Will we save our endangered forests? *National Geographic*. 178: 31.
- Fink, S. (1984). Some cases of delayed or induced development of axillary buds from persisting detached meristems in conifers. *American Journal of Botany* 71(1): 44-51.
In the apparently empty axils of the needles of *Taxus baccata*, *Sequoia sempervirens*, *Sequoiadendron giganteum*, *Cryptomeria japonica*, *Thuja occidentalis* and *Thujopsis dolabrata* persisting detached meristems were found, which are derived from superficial layers of the apical eumeristem. In *T. baccata* delayed development of minute axillary buds occurs from these meristems after 1-4 yr on the intact plant. In the other conifers, development of additional axillary buds from these meristems was induced by natural frost damage or by artificial pruning and disbudding. The discovery of these detached meristems is discussed with regard to the regenerative capacity of the conifers in comparison to other plants
- Fins, L. (1979). Genetic architecture of giant sequoia, University of California, Berkeley.
- Fins, L. (1980). Propagation of giant sequoia *Sequoiadendron giganteum* by rooting cuttings. Combined Proceedings of the International Plant Propagators Society.
Cuttings taken from 6-month-old greenhouse-grown seedlings of *Sequoiadendron giganteum* gave 70% rooting after 6 months with a standard mist propagation technique designed for conifers, and 86-88% when a liquid NPK fertilizer was applied weekly to the rooting medium. Fertilizer use was only beneficial under moist conditions, and can reduce rooting under low-mist conditions. Angled cuts (approx. 45deg) increased speed of rooting and possibly rooting % compared with 90deg cuts. Material from 40-yr-old trees was rooted with difficulty, but survival after rooting was very poor
- Fins, L. (1981). Seed germination of giant sequoia *Sequoiadendron giganteum*. *Tree Plant Notes* 32(2): 3-8.
Sequoiadendron giganteum cones were collected in summer and autumn 1974-76 [in California], and seeds from 2 populations were soaked overnight, and stratified at 2.2-2.8degC for 0-91 days with or without captan. Germination was recorded after 5 wk. The 2 populations were significantly different (av. germination 40.7 and 34.9%). Germination was slower in the presence of captan and after short (0 and 7 days) stratification periods, but final germination percentage were not affected. In a second experiment, seed samples from 5 populations were soaked overnight in aerated water, treated with captan, and stratified for 25 days at 2.8degC. After 5 wk there were significant differences between populations in germination. Av. germination of soaked seeds was 25.6%, compared with 20.2% for unsoaked controls, but the differences were not significant

Fins, L. and W. J. Libby (1982). Population variation in *Sequoiadendron giganteum*: Seed and seedling studies, vegetative propagation, and isozyme variation. *Silvae Genetica* 31(4): 102-110.

Seed samples were collected from 35 natural populations of giant sequoia and examined for seed weight, germination percent, cotyledon number, rootability of cuttings, and isozyme variation. Samples were significantly variable in percent seed germination, cotyledon number, isozyme allele frequencies and observed heterozygosity. Seed germination varied among populations, but did not reveal any clear geographic patterns. Cotyledon numbers (of 871 seedlings) varied among populations and geographic areas. Cuttings (from 608 seedlings) rooted at 94%. Isozyme variation was found in every population sample at one or more loci. Little if any recent gene flow is likely to have occurred between the northern and southern populations. Relatively low heterozygosity among embryo samples suggests that inbreeding and/or population substructuring is likely in giant sequoia populations. Relatively higher levels of heterozygosity are found in the southern parts of the range, suggesting different local selective regimes. Early data suggest that the most northern native population (Placer Grove) may be substantially different from the other populations

Fins, L. and W. J. Libby (1992). Genetics of giant sequoia. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.

Fisher, R. T. (1902). Big trees of California. *World's Work*. 3: 1714-1723.

Flint, W. (1977-current). Miscellaneous correspondence on giant sequoia and measurement of the largest.

Flint, W. D. (1987). To find the biggest tree. Three Rivers, CA, Sequoia Natural History Association.

Florin, R. (1963). The distribution of conifer and taxad genera in time and space. *Acta Horti Bergiani* 20: 121-312.

Fontaine, J. (1985). Recommendations from the Sierra Club for managing giant sequoia. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.

Fox, L. (1990). Remote sensing feasibility analysis, a spectral signature for giant sequoia.

Franchot, A. (1981). A propos d'une recolte de graines de Sequoia Giant et de Calocedre [A proposal to study the seeds of giant sequoia and incense cedar]. *Annales Afocel* 1981: 327-381.

about a seed collection of giant sequoia and insense cedar

Franclet, A., D. X. Destremau, et al. (1980). Quelques especes meconnues: le sequoia geant [Some rare species: the giant sequoia]. : 7 pages.

Franco, F. J. J. (1992). Native American view and values of giant sequoia. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.

Franco, H. (1993). That place needs a good fire. *Native California*. 7.

Fritz, E. (1937). A bibliography on the bigtrees of Califronia (*Sequoia gigantea*) with annotations of literature reviewed, UC Berkeley.

Fry, W. and J. R. White (1930). Big trees. Palo Alto, CA, Stanford University Press.

Fry, W. (1931). The great sequoia avalanche. *Sierra Club Bulletin*. 18: 118-120.

Fry, W. (1937). Nature Guide Service press releases. Nature Guide Service, Sequoia National Park.

- Fuldner, R. (1977). The mammoth tree: its further discovery in forestry and its possible contribution to environmental oriented silviculture (Introduction of *Sequoiadendron giganteum* into West Germany). *Mitteilungen der Deutschen Dendrologischen Gesellschaft* 69: 27-33.
- Gasser, D. P. (1992). Young growth management of giant sequoia. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Geiger, H. and R. Buck (1973). The biflavones of *Sequoiadendron giganteum*. *Phytochemistry* 12(5): 1176-1177.
- Gilmore, V. (1975). Measuring the world's biggest trees. *American Forester* 81(12): 35.
- Given, W. (1928). *The light of the Sierra*. Boston, MA, The Christopher Publishing House.
- Glassman, D. (1935). The tree of the ages. *American Forests*. 41: 56-58.
- Godfrey, W. C. (1929). Among the big trees in Mariposa Grove. *Yosemite Nature Notes - Special Edition*. 8: 16 pages.
- Graumlich, L. J. (1990). Long-term climate variation in the southern Sierra Nevada as reconstructed from tree rings, *Sequoia Natural History Association*.
- Graumlich, L. J. (1991). A 1000-year record of temperature and precipitation in the Sierra Nevada. *Quaternary Research* 39: 249-255.
- Gray, A. (1872). The sequoia and its history. *American Naturalist* 6: 577-596.
- Gray, F. (1964). And the giants were named. Three Rivers, CA, *Sequoia Natural History Association*.
- Green, L. W. (1987). *Historic resource study: Yosemite, the park and its resources*.
- Green, L. (1990). They are raping the giant sequoias. *Audubon*.
- Greenlee, J., G. Wilcox, et al. (1978). Fire history of Sequoia and Kings Canyon National Parks.
- Gregonis, D. E., R. D. Portwood, et al. (1968). Volatile oils from foliage of Coast Redwood-G and Big Tree Sequoia-sempervirens-G *Sequoiadendron-giganteum-G* inst. IR Spectroscopy, inst. Gas Chromatography. *Phytochemistry* 7(6): 975-981.
- Gromyko, D. V. and V. L. Komarov (1982). A comparative anatomical study of wood in the family Taxodiaceae. *Bot. Zh. (Leningrad)* 67(7): 898-906.
A xylotomic study of wood was made on members of the Taxodiaceae. The wood of 10 spp. [*Athrotaxis cupressoides*, *Cryptomeria japonica*, *Cunninghamia lanceolata*, *Glyptostrobus pensilis*, *Metasequoia glyptostroboides*, *Sequoia sempervirens*, *Sequoiadendron giganteum*, *Taiwania cryptomerioides*, *Taxodium distichum* and *T. mucronatum*] was studied and described. Microscopic characters of anatomical wood structure changed along the annual ring. The latter is divided into 4 zones, which are characterized by a complex of characters. The change in the anatomical characters in the zones of the annual ring is described. A detailed method was used for the description of wood according to variations in characters. Diagnostic characters, which allow the wood of the genera of the family Taxodiaceae to be distinguished, were established
- Grulke, N. E. and P. R. Miller (1989). Photosynthetic response of giant sequoia seedlings and rooted branchlets of mature foliage of ozone fumigation. *Effects of Air Pollution on Western Forests Symposium*, Air and Waste Management Association.
- Grulke, N. E. and P. R. Miller (1990?). Physiological effects of atmospheric ozone on giant sequoia, PSW.

- Grulke, N. E. and P. R. Miller (1994). Changes in gas exchange characteristics during the life span of giant sequoia - implications for response to current and future concentrations of atmospheric ozone. *Tree Physiology* 14(7-9): 659-668.
- Guinon, M., J. B. Larsen, et al. (1982). Frost resistance and early growth of *Sequoiadendron giganteum* seedlings of different origins. *Silvae Genetica* 31(5-6): 137-177.
- Frost resistance in 2 yr old giant sequoia seedlings was analyzed by an artificial freezing test, in which detached twigs are placed in freezing chambers at different temperatures. The temperature that kills 50% of the twig foliage is called the frost-killing-point and is denoted LT50%. The results were compared to damage sustained outdoors by seedlings and support the reliability of the testing methods employed. The experiment included the open-pollinated offspring of 2 trees growing in Hermeskeil, West Germany, and seedling samples of 22 provenances representing the entire natural range of giant sequoia. Significant and substantial differences were found in frost resistance, winter damage and in early height. Frost resistance is correlated with outdoor winter damage and elevation, however not with latitude, longitude nor seedling height. Shoot tip hardness measured by touch is unrelated to frost hardiness
- Gulliver, R. L. (1987). Upper crown death of *Wellingtonia* in North Yorkshire. *Quarterly Journal of Forestry* 81(3): 178-180.
- Of 41 mature specimens [of *Sequoiadendron giganteum*] at Grantley Hall, 83% had dead leaders in Aug. 1986, whereas none showed these symptoms in a previous survey in 1982. It is suggested that recent increases in atmospheric pollution may be responsible
- Guppy, E. L. (1925). *The story of the sequoias*. San Francisco, CA, A. M. Robertson.
- Guthrie, J. E. (1904). Forest conditions in the Dinkey Grove of big trees, Fresno County, Sierra Forest Reserve, California.
- Guthrie, J. D. (1906). The Dinkey Grove of bigtrees. *Forestry and Irrigation*. 12: 454-458.
- Hall, A. F. (1921). *Guide to Giant Forest - Sequoia National Park*. Yosemite, CA, A. F. Hall.
- Hamilton, G. B. (1978). *Sequoiadendron giganteum* [Exotic tree in New Zealand]. *Farm For* 20(2): 50-51.
- Hammon, J. a. W. (1951-53). Timber reports on the South Calaveras Grove.
- Hammon, J. a. W. (1964). *Sequoia tree inventory*, Hammon, Jenson, and Wallen Mapping and Forestry Services, Oakland CA.
- Hammon, J. a. W. (1973). *Sequoia tree inventory*, Hammon, Jenson and Wallen Mapping and Forestry Services, Oakland, CA.
- Hammon, J. a. W. (197?). *Tule River Indian Reservation timber management plan and forest improvement program*.
- Hamrick, J. L., J. B. Mitton, et al. (1979). Levels of genetic variation in trees: influence of life history characteristics. *Symposium on isozymes of North American forest trees and forest insects*, Berkeley, California, USDA Forest Service.
- Isozyme variation was examined in 22 species of forest trees, and the variation in 20 conifer species analysed with respect to geographical range, stage of succession, habitat type, cone type and distribution (in the USA). Open-cone trees showed a significantly higher av. polymorphic index than trees with closed cones. The results are discussed and compared with those of a previous study of 113 vascular plant taxa in which species were classified for 12 life history and ecological traits and 3 measures of variation calculated. The study showed that plants with large ranges, high fecundities, an outcrossing mode of reproduction, wind pollination, a long generation time and from habitats representing later stages of succession had more isozyme variation than species with other characteristics.

- Hannum, W. T. and o. F. A. Meyer (1952). The status of *Sequoia gigantea* in the Sierra Nevada.
- Hansen, G. (1895). Where the big trees grow: flora of the Sequoia region: collected in the counties of Amador, Calaveras and Alpine, state of California. San Francisco, CA, Bacon Printing Co.
- Harmon, M. E., K. Cromack Jr., et al. (1987). Coarse woody debris in mixed-conifer forests - Sequoia National Park, California, USA. *Canadian Journal of Forest Research* 17(10): 1265-1272.
- The decay rate of *Abies concolor* (Gord. & Glend.) Lindl. logs and cover, mass, and volume of logs and snags in six midelevational forest stands of Sequoia National Park, California, are reported. Based on a chronosequence, *Abies concolor* boles have a decay rate-constant of 0.05 year⁻¹ and a half-life of 14 years. A decay classification system was developed for *Abies concolor*, *Calocedrus decurrens* (Torr.) Florin, *Pinus jeffreyi* Grev. & Balf., and *Pinus lambertiana* Dougl. logs. Dimensions taken from maps of six permanent plots were combined with decay-class information to estimate volume, mass, and projected cover of logs and snags. Total mass ranged from 29 Mg ha⁻¹ in a *Pinus jeffreyi* forest to 400 Mg ha⁻¹ in a *Sequoiadendron giganteum* (Lindl.) Buchh. dominated stand. Volume, projected cover, and nitrogen storage exhibited patterns similar to mass, ranging from 84 to 1160 m³ ha⁻¹, 3.1 to 9.3%, and 41 to 449 kg ha⁻¹, respectively
- Harrison, W. (1985). Management of giant sequoia at Calaveras Big Trees State Park. Workshop on Management of Giant Gequoia, Reedley, CA, USDA Forest Service.
- Hart, J. A. (1987). A cladistic analysis of conifers. *Journal of the Arnold Arboretum* 68: 269-307.
- Hart, J. A. and R. A. Price (1990). The genera of Cupressaceae (including Taxodiaceae) in the southeastern United States. *Journal of the Arnold Arboretum* 71: 275-322.
- Hartesveldt, R. J. (1962). The effects of human impact upon *Sequoia gigantea* and its environment in the Mariposa grove, Yosemite National Park, California, University of Michigan.
- Hartesveldt, R. J. (1963). Reconnaissance study of the effects of human impacts upon moderately to heavily used sequoia groves in Sequoia and Kings Canyon National Parks.
- Hartesveldt, R. J. (1964a). Fire ecology of the giant sequoia: controlled fires may be one solution to survival of the species. *Natural History Magazine*. 73: 12-19.
- Hartesveldt, R. J. (1964b). Sequoia-human impact soil analyses.
- Hartesveldt, R. J. (1965). An investigation of the effect of direct human impact and of advanced plant succession on *Sequoia gigantea* in Sequoia and Kings Canyon National Parks, California, National Park Service.
- Hartesveldt, R. J., H. T. Harvey, et al. (1966). The effects of various forest management techniques and animal coactions on giant sequoia reproduction and initiation of studies on the effects to sequoia rates of growth.
- Hartesveldt, R. J. (1966a). Atwell Grove Redwood Creek Grove.
- Hartesveldt, R. J. (1966b). Study of the possible changes in the ecology of sequoia groves in Sequoia National Park to be crossed by the new Mineral King Highway.
- Hartesveldt, R. J. and H. T. Harvey (1967). The fire ecology of sequoia regeneration. Annual Tall Timbers Fire Ecology Conference.
- Hartesveldt, R. J., H. T. Harvey, et al. (1967). Final contract report on sequoia-fire relationships.
- Hartesveldt, R. J. (1967). The ecology of human impact upon Sequoia groves. *Bulletin of the Ecological Society of America* 48: 86.
- Hartesveldt, R. J. (1969). Sequoias in Europe.

- Hartesveldt, R. J. (1972). The ageless giants. *Naturalist*. 23: 13-23.
- Hartesveldt, R. J. (1975). The "discoveries" of the giant sequoias [*Sequoiadendron giganteum*]. *Forest History* 19(1): 15-21.
- Hartesveldt, R. J., H. T. Harvey, et al. (1975). Giant sequoias of the Sierra Nevada. Washington, D.C., U.S. Department of the Interior, National Park Service.
A book on *Sequoiadendron giganteum*, based on results from field studies started in 1956, and also incorporating other published work. There are 7 chapters: Introduction (including discussions on discovery, timber operations, public reservations of sequoia land, varieties and nomenclature); The tree as an individual; Distribution of the giant sequoia and its relatives; Ecological concepts; Life history; Sequoia community interrelationships; and Man, fire, and the future. Also included are a reference section, an index and 6 appendices listing sequoia relatives and groves in California, and giving common and scientific names of vascular plants, vertebrates, insects and other arthropods, and thallophytes found as associates of sequoian communities.
- Hartesveldt, R. J., H. T. Harvey, et al. (1981). Giant sequoias. Three Rivers, Calif., Sequoia Natural History Association.
- Harvey, H. T., H. S. Shellhammer, et al. (1977). Giant forest ecology: fire and reproduction (manuscript).
- Harvey, H. T. (1978). The Sequoias of Yosemite National Park. Yosemite, CA, Yosemite Natural History Association.
- Harvey, H. T., H. S. Shellhammer, et al. (1980). Giant sequoia ecology: fire and reproduction. Washington, D.C, U.S. Dept. of the Interior, National Park Service.
A study (carried out 1964-75) concentrating on the role of fire in succession and survival of *Sequoiadendron giganteum* seedlings in the mixed conifer forests of the Sierra Nevada, California. There are 10 chapters: Introduction; Objectives, design, study areas and methods; Environmental factors; Vegetational changes; Giant sequoia reproduction, survival and growth; Arthropods associated with the giant sequoia; The role of insects in giant sequoia reproduction; Birds and mammals, fire, and giant sequoia reproduction; Douglas squirrels [*Tamiasciurus douglasi*] and sequoia regeneration; and Conclusions and management implications. It is suggested that prescribed burning should be used carefully in giant sequoia management: hot, localized fires appeared to be the best for seedling development. Appendices are given listing flowering plants found in the area studied, and insects associated with giant sequoia, and a reference section and an index are included
- Harvey, H. T. (1985). Evolution and history of giant sequoia. Workshop on Management of Giant Sequoia, Reedley, CA, U.S.D.A. Forest Service.
- Harvey, H. T. and H. S. Shellhammer (1991). Survivorship and growth of giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchh.) seedlings after fire. *Madrono* 38(1): 14-20.
- Harwell, C. A. (1933). Mariposa Grove of big trees. Special Bulletin of the Yosemite Natural History Association: 8 pages.
- Hastings, C. (1928). Naming the sequoia. *American Forests*. 34: 203-205.
- Hawksworth, W. J. (1977). Historical brief and recommendations for management of Nelder Grove.
- Hawksworth, W. J. and M. M. Hawksworth (1979). Historical overview of Nelder Grove.
- Heald, R. C. (1985). Management of giant sequoia at Blodgett Forest Research Station. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.

- Hebant, C. (1975). Lack of incorporation of tritiated uridine by nuclei of mature sieve elements in *Metasequoia glyptostroboides* and *Sequoiadendron giganteum*. *Planta* 126(2): 161-163.
The failure of the majority of nuclei that persist in 'mature' sieve elements of *M. glyptostroboides* and *S. gigantea* to incorporate tritiated uridine is interpreted as further evidence for the degenerated condition of these nuclei.
- Hellwig (1911). *Sequoia gigantea*. *Mitteilungen der Deutschen Dendrologischen Gesellschaft*: 402.
- Henley-Smith, P. and D. A. Whiting (1976). New norlignans of *Sequoiadendron-gigantea*; phytochemical comparisons with *Sequoia-sempervirens*. *Phytochemistry* 15(8): 1285-1288.
The permethyl ethers of 3 new norlignans (sequirins-E, -F, and G) from *S. gigantea* heartwood have been characterized by NMR and MS [mass spectrometry] as 2-(3,4-dimethoxyphenyl)-4-(4-methoxyphenyl)-, 2,4-(3,4-dimethoxyphenyl)-, and 2-(3,4-dimethoxyphenyl)-4-(3,4,5-trimethoxyphenyl)-5-hydroxytetrahydropyran; respectively, with the 2,5-trans,4,5-trans stereochemistry. Squirins A-D, characteristic norlignans of *Sequoia sempervirens* Endl., could not be detected in *S. gigantea* heartwood, nor could squirins E-G be found in *Sequoia sempervirens* heartwood. Agatharesinol was a common constituent
- Hewes, J. J. (1981). *Redwoods, the world's largest trees*. New York, NY, Gallery Books.
- Hickman, J. C. e. (1993). *The Jepson Manual: Higher plants of California*. Berkeley and Los Angeles, University of California Press.
- Hill, C. L. (1916). *Forests of Yosemite, Sequoia, and General Grant National Parks*. Washington, D.C., U.S. Government Printing Office.
- Holland, W. R. (1972). *Nelder grove resource inventory and report*.
- Horvath, A. (1987). *Redwood census of south grove*.
- Howell, J. W. (1968). *Research studies on the giant sequoia trees*. *Parks and Recreation*. 5: 29-33.
- Hughes, M. K., B. J. Richards, et al. (1990). *Can a climate record be extracted from giant sequoia tree rings?* 6th Annual Pacific Climate Workshop, California Department of Water Resources Interagency Ecological Studies Program.
- Hughes, M. K. and P. M. Brown (1992). *Drought frequency in central California since 101 B. C. recorded in giant sequoia tree rings*. *Climate Dynamics* 6: 161-167.
- Hull, K. L. (1989). *The 1985 South Entrance and Mariposa Grove archeological excavations*.
- Huntington, E. (1912). *The secret of the big trees*. *Harper's Magazine*. July, 1912.
- Huntington, E. (1914). *The climatic factor as illustrated in arid America*, Carnegie Institution of Washington, Washington D. C.
- Huntington, E. (1920). *The secret of the big trees*. Washington, DC, USDI US Government Printing Office.
- Hutchings, J. M. (1875). *The Yosemite valley, high Sierra, big trees, etc*. San Francisco, CA, Alta California Book and Job Printing Establishment.
- Hutchings, J. M. (1886). *In the heart of the Sierras, Yo Semite Valley, the big trees*. Oakland, CA, Pacific Press Publishing House.
- Hutchings, J. M. (18??). *Summer rambles to the Calaveras big trees and Yo Semite valley*. San Francisco, Brunt & Co. Printing.

- Iakovleva, L. V. (1980). Concrescence of intraspecific and interfamilial grafts of *Sequoiadendron giganteum* - Anatomical studies. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada* 2: 46-51.
- Iaroslavtsev, G. D. and Z. G. Kovalenko (1974). Experience from introducing the giant sequoia [*Sequoiadendron giganteum*] in Krasnodar. *Biull. Gl. Bot. Sada*. 93: 29-31.
- Iaroslavtsev, G. D. and L. V. Iakovleva (1978). Graftings of the ornamental *Sequoiadendron giganteum* (Lindl.) Buchholz on the southern coast of the Crimea. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada* 2: 31-34.
- Iaroslavtsev, G. D. and T. N. Vishniakova (1978). Physical and mechanical properties of wood of *Metasequoia glyptostroboides*, *Sequoia sempervirens* and *Sequoiadendron giganteum* grown in the USSR. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada* 1: 20-22.
- Iaroslavtsev, G. D. (1981). *Sequoiadendron giganteum* in Odessa and the Odessa Region: Frost injury. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada* 3: 35-39.
- Iaroslavtsev, G. D. and R. N. Kazimirova (1984). *Sequoiadendron giganteum* in Central Asia. *Biull. Gl. Bot. Sada*. 133: 16-20.
- Iaroslavtsev, G. D. and A. A. Kholov (1985). Reproduction of *Sequoiadendron giganteum* by cuttings under conditions of Dushanbe. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada*(58): 31-35.
- Jeffrey, E. C. (1904). A fossil sequoia from the Sierra Nevada. *Botanical Gazette* 38: 321-322.
- Jepson, W. L. (1910). (*Sequoia sempervirens* and *gigantea*). Berkeley, CA, University Press.
- Jepson, W. L. (1921). The fire-type forest of the Sierra Nevada. *Intercollegiate Forestry Club Annual*. 1: 7-10.
- Jepson, W. L. (1923). *The trees of California*. Berkeley, Associated Students Store.
- Jiang, I. and W. L. Libby (1981). Growth and form of 16-yr old seedlings and cuttings of *Sequoiadendron*, UC Berkeley.
- Jiang, I. B.-J. (1982). Growth and form of seedlings and juvenile rooted cutting of *Sequoia sempervirens* and *Sequoiadendron giganteum*, University of California, Santa Cruz?
- Johnson, P. C. (1961). *Sierra album*, Doubleday & Company, Inc.
- Johnston, V. R. (1970). The ecology of fire. *Audubon*. 72: 76-119.
- Johnston, H. (1983). *They felled the redwoods: a saga of flumes and rails in the high Sierra*. Glendale, Trans-Anglo Books.
- Keeler-Wolf, T. (1989). An ecological survey of the Moses Mountain candidate Research Natural Area, Sequoia National Forest, Tulare County, California.
- Keifer, M. (1995). Changes in stand density, species composition and fuel load following prescribed fire in the southern Sierra Nevada mixed conifer forest. 1995 Meeting of the Ecological Society of America, Snowbird, Utah.
- Kercher, J. R. and M. C. Axelrod (1984). A process model of fire ecology and succession in a mixed-conifer forest. *Ecology* 65(6): 1725-1742.
- Keylwerth, R. (1954). Das Holz der *Sequoia gigantea* [The wood of the *Sequoia gigantea*]. *Holz als Roh- und Werkstoff* 12(3): 105-107.
- Kilgore, B. M. (1968). *Breeding bird populations in managed stands of Sequoia gigantea*, University of California, Berkeley.

- Kilgore, B. M. (1970). Restoring fire to the sequoias. *National Parks and Conservation*. 44: 16-22.
- Kilgore, B. M. and H. H. Biswell (1971). Seedling germination following fire in a giant sequoia forest. *California Agriculture* 25(2): 8-9.
- Kilgore, B. M. (1971a). Response of breeding bird populations to habitat changes in a giant sequoia forest. *American Midland Naturalist* 85(1): 135-152.
- Kilgore, B. M. (1971b). The role of fire in a giant sequoia-mixed conifer forest. *Research in Parks*: 93-116.
- Kilgore, B. M. (1972a). Fire's role in a sequoia forest. *Naturalist* 23(1): 26-37.
- Kilgore, B. M. (1972b). Impact of prescribed burning on a sequoia-mixed-conifer forest. 12th Annual Tall Timbers Fire Ecology Conference, Lubbock, TX.
- Kilgore, B. (1973). The ecological role of fire in Sierran conifer forests: its application to National Park management. *Journal of Quaternary Research* 3(3): 496-513.
- Kilgore, B. M. and R. W. Sando (1975). Crown-fire potential in a sequoia forest after prescribed burning [*Sequoiadendron giganteum*]. *Forest Science* 21(1): 83-87.
Prescribed burning in a Sequoia gigantea/mixed-conifer forest in Kings Canyon National Park, California, reduced fuel on the ground from 203.5 to 30.1 t/ha and crown fuels [cf. FA 34, 7055] from 18.0 to 7.8 t/ha. The mean height of the crown base increased substantially. Analysis of the data by a wildland-fire-spread model showed that, after prescribed burning, the rate of spread and reaction intensity of a ground fire would decrease; surface fuel would again accumulate rapidly, but in the longer term, killing of the smaller trees and the lower parts of live crowns of larger trees would remove fuel in the layer between surface and crown fuels.
- Kilgore, B. M. (1976a). From fire control to fire management: an ecological basis for policies. *Proceedings of the Trans. North Amer. Wildlife and Nat. Res. Conf.*
- Kilgore, B. M. (1976b). The role of fire in a giant sequoia-mixed-conifer forest. *Symposium on Research in the Parks, USDI National Park Service Series No. 1.*
- Kilgore, B. M. and D. Taylor (1979). Fire history of a sequoia-mixed conifer forest. *Ecology* 60(1): 129-142.
- Kilgore, B. M. (1985). Restoring fire to National Park wilderness. *American Forests*: 16-19 and 57-59.
- Kimmey (1952). Cull and breakage factors...for redwoods, USFS.
- Kitanov, G. B. (1984). Pliocene flora composition in the Gotce-Delchev region in Bulgaria. *Bulgarian Fitologiya* 25: 41-70.
Plant species (58) are described mainly by leaf prints collected in Pliocene deposits near Garmen. Some are reported for the 1st time for the fossil flora of Bulgaria. They are the following: *Sphaerites castaneae*, *Cephalotaxus fortunei*, *Cedrus atlantica*, *Pinus pallasiana*, *Sequoiadendron giganteum*, *Metasequoia glyptostroboides*, *Persea pliocenica*, *Carpinus marmaroschica*, *Ostrya carpinifolia*, *Corylus insignis*, *Betula pubescens*, *Fagus longipetiolata*, *Quercus sosnowskyi*, *Q. pontica*, *Populus pliobolleana* and *Cornus mas*
- Kleinschmit, J. (1984). Der Mammutbaum (*Sequoiadendron giganteum* (Lindl) Buchholz), nur eine faszinierende Exotenart? [The bigtree (*Sequoiadendron giganteum* (Lindl) Buchholz), only one fascinating exotic?]. *Beiheft sur Schweizerischen Zeitschrift fur Forstwesen* 72(61-77).

- Knigge, W., P. Pellinen, et al. (1983). Untersuchungen von Zuwachs, Astigkeit, Verkernung und Rindenstärke westeuropäischer Anbauten des Mammutbaumes (*Sequoiadendron giganteum* (Lindl.) Buchholz) [Investigations on growth, branch formation, heartwood formation and bark diameter of giant sequoia trees (*Sequoiadendron giganteum* (Lindl.) Buchholz) grown in Europe]. *Forstarchiv* 54(2): 54-61.
- Knigge, W. and B. Wenzel (1983). Über die Variabilität der Faserlänge innerhalb eines Stammes von *Sequoiadendron giganteum* (Lindl.) Buchholz [Variability of fiber length within a tree of *Sequoiadendron giganteum* (Lindl.) Buchholz]. *Forstarchiv* 54(3): 94-99.
- Knigge, W. and S. Lewark (1984). Investigations on wood quality of giant sequoias from second-growth stands in California (*Sequoiadendron giganteum*). *Forstarchiv* 55(1): 21-27.
- Knigge, W. (1992). Giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchholz) in Europe. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Knigge, W. (1993). Giant sequoia (*Sequoiadendron-giganteum* (Lindl.) Buchholz) in Europe. *Holz Als Roh-Und Werkstoff* 51(3): 145-155.
- Kobayashi, T. (1980). Needle blight of *Taxodium mucronatum* in the Philippines. *Annals of the Phytopathological Society of Japan* 46(2): 258-262.
A severe needle blight found on potted seedlings of *T. mucronatum* imported from the USA was caused by a fungus very similar morphologically to *Cercospora sequoiae* which is the pathogen of a needle blight of *Cryptomeria japonica*, *Sequoiadendron giganteum* and *T. distichum* in Japan. Evidence is presented that the fungus was introduced on exotic conifers from the USA to Japan at the beginning of the 20th century.
- Koehler, P. A. and R. S. Anderson (1994). The paleoecology and stratigraphy of Nichols Meadow, Sierra National Forest, California, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 112: 1-17.
- Koford, C. B. (1953). *The California Condor*: 5.
- Kolbe, W. (1977). Comparative studies on the occupation of miscellaneous conifer species by Coleoptera in the state forest, Burgholz, West Germany. *Decheniana Beih* 20: 75-79.
- Kough, J. L., R. Molina, et al. (1985). Mycorrhizal responsiveness of *Thuja*, *Calocedrus*, *Sequoia*, and *Sequoiadendron* species of western North America. *Canadian Journal of Forest Research* 15(6): 1049-1054.
Four western conifers inoculated or not inoculated with three species of vesicular-arbuscular mycorrhizal fungi [*Glomus deserticum*, *G. epigaeum*, *Acaulospora trappei*] were grown in pasteurized soil and maintained at 11 or 43 ppm phosphorus. Compared with controls, vesicular-arbuscular mycorrhizal colonization increased biomass more of younger than older seedlings. In young seedlings, species with large seeds responded less to phosphate addition or vesicular-arbuscular mycorrhizal colonization than smaller seeded species. Vesicular-arbuscular mycorrhizal seedlings with low phosphorus were always larger than noninoculated low phosphorus controls and comparable in size or larger than nonmycorrhizal controls at moderate phosphorus. Vesicular-arbuscular mycorrhizal plants produced from 100 to 2000% more biomass than noninoculated plants at low phosphorus, and from equality to 500% at moderate phosphorus. Vesicular-arbuscular mycorrhizal fungal species did not differ in plant growth enhancement or root colonization at any seedling age or phosphorus fertility examined. Tree species' responsiveness ranged as follows: *Thuja plicata* > *Sequoia sempervirens* > *Calocedrus decurrens* > *Sequoiadendron giganteum*. Vesicular-arbuscular mycorrhizal fungi enhanced seedling uniformity and size in all the tree species

- Kritchevsky, G. and A. B. Anderson (1955). Chemistry of the genus *Sequoia* I. The cone solid of coast redwood (*Sequoiasempervirens*) and giant sequoia (*Sequoia gigantea*). *Journal of Organical Chemistry* 20: 1402-1406.
- Kruska, D. G. (1985). *Sierra Nevada big trees: history of the exhibitions*. Los Angeles, CA, Dawson's Book Shop.
- Kunzing, R. (1989). These woods are made for burning. *Discover*. 10: 86-95.
- Lambert, S. and T. J. Stohlgren (1988). Giant sequoia mortality in burned and unburned stands. *Journal of Forestry* 86(2): 44-46.
- Landesanstalt fur Okologie, L. u. F. N.-W. L. (1982). Merkblatt fur fremdlandische Baumarten: *Sequoiadendron giganteum* (Lindl.) Buchholz.
- Larson, G. B. (1966). Whitaker's Forest. *American Forests* 72: 22-25, 40-42.
- Larson (n.d.). Logging of the giant sequoia and surrounding mixed-conifer forest.
- Lavrukhina, A. K., V. A. Alekseyev, et al. (1973). Radiocarbon in sequoia growth rings. *Doklady Akademii Nauk SSSR* 210(4): 238-240.
- Lawlor (1972). Animals in redwoods. *Symposium on Redwood Ecology*.
- Lawrence, G. and H. Biswell (1972). Effect of forest manipulation on deer habitat in giant sequoia [*Sequoiadendron giganteum*]. *Journal of Wildlife Management* 36(2): 595-605.
- Leisz, D. R. (1992). Remarks for the giant sequoia symposium. *Symposium on Giant Sequoias: Their Place in the Ecosystem and Society*, Visalia, CA, USDA Forest Service.
- Leitch, B. M. (1906). *A short history of the Mariposa big trees and Yosemite Valley*. Wawona, CA, B. M. Leitch.
- Leitch, B. M. (1910). *Mariposa Grove of big trees, California*. Wawona, CA, B. M. Leitch.
- Levinson, A. S., G. Lemoine, et al. (1971). Volatile oil from foliage of *Sequoiadendron-giganteum*-G change in composition during growth. *Phytochemistry* 10(5): 1087-1094.
- Lewis, D. J. (1980). The Nation's Christmas Tree. *American Forests*(December): 5 pages.
- Lewis, D. J. (1981). Our National Christmas tree. *National Wildlife* 19: 44-47.
- Libby, W. J. (1981). Some observations on *Sequoiadendron* and *Calocedrus* in Europe. *California Forestry and Forest Products*. 49: 11.
- Libby, W. J. (1985). Genetic variation and early performance of giant sequoia in plantations. *Workshop on Management of Giant Sequoia*, Reedley, CA, USDA Forest Service.
- Libby, W. J. (1988, 91). *USFS-UC cooperative giant sequoia and incense cedar research*.
- Libby, W. J. (1992). Mitigating some consequences of giant sequoia management. *Symposium on Giant Sequoias: Their Place in the Ecosystem and Society*, Visalia, CA, USDA Forest Service.
- Lindley, J. (1853a). [Untitled]. *Gardeners' Chronicle* 52: 819-820.
- Lindley, J. (1853b). New plants. *Gardeners' Chronicle* 52: 823.
- Litton, R. B. (1988). The forest landscape and fire management.
- Liubimirescu, A., M. Guriianu, et al. (1972). Physical and mechanical properties of the wood of *Sequoia gigantea*. *Revista Padurilor* 87(12): 613-616.
- Lobree, F. (1969). Tall tree in Nelder. *Tehipite Topics*.

- Loffler, J. (1985). Mammutbaume und der Landkreis Calw [Big trees and the Calw rural district]. *Jahrbuch des Landreises*: 85-92.
- Looby, W. J. and J. Doyle (1937). Fertilization and pro-embryo formation in sequoia. *Scientific Proceedings of the Royal Dublin Society* 21: 457-476.
- Looby, W. J. and J. Doyle (1942). California sequoias. *Scientific Proceedings of the Royal Dublin Society* 23: 35-54.
- Lotova, L. I. (1977). Anatomy of annual shoots and secondary phloem in Taxodiaceae. *Vestn. Mosk. Univ. Ser. XVI Biol.* 4: 21-29.
The anatomical features of the annual stems and the phloem structure of the old trunks of 6 spp. [*Sequoia sempervirens*, *Sequoiadendron giganteum*, *Metasequoia glyptostroboides*, *Taxodium mucronatum*, *Cryptomeria japonica* and *Cunninghamia lanceolata*] were investigated. The annual stems are characterized by the presence of resin vertical canals, the subepidermal and protophloem fibers. The main feature of the secondary phloem is the alternation of the vividly expressed tangential layers of the sieve cells, parenchyma cells and fibers. Some of the axial and ray parenchyma cells are sclerotized in nonconducting phloem. The phloem structure of the Taxodiaceae is similar to the structure of the same tissue in the other families of conifers except Pinaceae and Araucariaceae
- MacDougall, R. (1986). Report on 1985 sequoia inventory of East Fork grove unit.
- Mackenzie, G. G. (1888). Yosemite, where to go and what to do: A plain guide to the Yosemite valley, the high Sierra, and the big trees. San Francisco, CA, C. A. Murdock and Co., Printers.
- Maggenti, A. R. and D. R. Viglierchio (1975). *Sequoia sempervirens* and *Sequoiadendron giganteum*: hosts of common plant-parasitic nematodes of California. *Plant Disease Report* 59(2): 116-119.
Reports the results of experiments in which 1-month-old seedlings of *Sequoia sempervirens* and *S. gigantea* were exposed to seven species of plant-parasitic nematodes. *Heterodera schachtii* was the only species that had not infected the trees after 2 months. The top-growth of both tree species was reduced by *Pratylenchus penetrans* and *P. vulnus*. The development of these nematodes on both tree species may hinder natural or artificial regeneration.
- Mahalovich, M. F. (1985). A genetic architecture study of giant sequoia: early growth characteristics, University of California, Berkeley.
- Markham, K. R., C. Sheppard, et al. (1987). ¹³C NMR studies of some naturally occurring amentoflavone and hinokiflavone biflavonoids. *Phytochemistry* 26(12): 3335-3337.
From *Sequoiadendron giganteum*, *Taxodium distichum*, *Ginkgo biloba*, *Metasequoia glyptostroboides* and *Cycas revoluta*

Marshall, J. T. (1988). Birds lost from a giant sequoia forest during fifty years. *Condor* 90(2): 359-372.

Not all forest bird species breeding on Redwood Mountain, Tulare County, California [SA] in the 1930s are still there in the 1980s. Over the 50 years virgin giant sequoia forest of the saddle and east slope (within Kings Canyon National Park) remains unchanged but has lost the Olive-sided Flycatcher (*Contopus borealis*). The mixture of old and second-growth sequoias of Whitaker's Forest, where pines and undergrowth were removed and snags eliminated, is missing the Mountain Quail (*Oreotyx pictus*), Flammulated Owl (*Otus flammeolus*), North Pygmy-Owl (*Glaucidium gnoma*), Spotted Owl (*Strix occidentalis*), Hairy Woodpecker (*Picoides villosus*), and Olive-sided Flycatcher. Though unchanged today, the riparian alders of Eshom Creek on the west slope have lost Swainson's Thrush (*Catharus ustulatus*). Drastic logging by Sequoia National Forest has driven all of the above from the west slope ponderosa pine forest that surrounds Whitaker's Forest. New birds established at Whitaker's Forest by 1986 are the Common Raven (*Corvus corax*), House Wren (*Troglodytes aedon*), and Lincoln's Sparrow (*Melospiza lincolni*). Intrusion of Brown-headed Cowbirds (*Molothrus ater*) has begun within yet affecting two abundant species of vireos. The Pileated Woodpecker (*Dryocopus pileatus*) is reduced; the Winter Wren (*Troglodytes troglodytes*) has greatly increased. I attempt to explain avifaunal changes by comparing habitats over the 50-year interval. Disappearance of the flycatcher and thrush from unchanged, prime habitat must be caused by destruction of corresponding forests in Central America, where these birds maintain their winter territories

Martin, E. J. (1958). Die sequoien und ihre anzucht [The sequoia and their cultivation]. *Mitteilungen der Deutschen Dendrologischen Gesellschaft* 60.

Martin, I. (1984). Re-introduction of the giant sequoia (*Sequoiadendron giganteum*) into the German forestry was realized in 1952 by two members of the German Dendrology Society. *Mitteilungen der Deutschen Dendrologischen Gesellschaft* 75: 57-75.

McCain, A. H. and P. C. Smith (1978). Evaluation of fungicides for control of *Botrytis* [cinerea] blight of container-grown redwood seedlings (*Sequoia sempervirens*, *Sequoiadendron giganteum*, *Pseudotsuga menziesii*). *Tree Plant Notes* 29(4): 12-13.

McDonald, J. E. (1992). The Sequoia Forest Plan Settlement Agreement as it affects *Sequoiadendron giganteum*: A giant step in the right direction. Symposium on Giant Sequoia: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.

McFarland, J. W. (1949). A guide to the giant sequoia of Yosemite National Park. *Yosemite Nature Notes*. 28.

McGee, L. (1982). Mills of the sequoias. Visalia, CA, Tulare County Historical Society.

McGraw, D. J. (1982). The tree that crossed a continent. *California History*. LXI: 120-139.

McIntyre, R. N. (1954). Report on the effects of human impact upon the giant sequoia of the Mariposa and Tuolumne Groves - Yosemite National Park.

McLaughlin, J. S. (1972). Restoring fire to the environment in Sequoia and Kings Canyon National Parks. 12th Annual Tall Timbers Fire Ecology Conference, Lubbock, TX.

Meinecke, E. P. (1926). Memorandum on the effects of tourist traffic on plant life, particularly big trees, Sequoia National Park, California.

Mejstrik, V. and A. P. Kelley (1979). Mycorrhizae in *Sequoia gigantea* and *Sequoia sempervirens*. *Ceska Mykol.* 33(1): 51-54.

The endophytous mycorrhizae of vesicular-arbuscular type were described in fine roots of *S. gigantea* and *S. sempervirens*. Fine roots were of 2 types: thin smooth white, and thick and of a brown color. The mycorrhizal infection was intense in thick brown roots, whereas white roots had light infection. The optimal development of endophyte hyphae was observed in the central and inner cortical cell layers of root. There were arbuscules and vesicles in the root parenchyma. Coiled intracellular hyphae measured 3.45-8.95 μm in diameter. The roots had no root hairs

Melchior, G. H. and S. Herrmann (1987). Differences in growth performance of four provenances of giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchh.). *Silvae Genetica* 36(2): 65-68.

Four provenances of giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchh.) originating from the counties Fresno, Calaveras, Tulare and from Sequoia National Forest in California [USA] were tested on three sites in the Federal Republic of Germany (Rengsdorf/Rhineland Palatinate; Reinhausen/Lower Saxony; and at Grosshansdorf/Schleswig-Holstein). At age 14 years differences in survival between locations and provenances were ascertained. At the trial in Grosshansdorf survival was influenced particularly by frost damage in a frost pocket and a following infection by *Armillaria mellea* (Vahl) Karst. In spite of the small number of provenances there were significant differences in height, d.b.h. and diameter at half tree height between provenances and locations. The provenance Tulare which is known from other trials to perform well proved to have inferior growth and survival up to age 14 years. At the trial at Rengsdorf height growth was slightly negatively correlated with the altitude at the seed origin. A prerequisite for establishing stands of giant sequoia at a commercial scale is the choice of frost hard (and well performing) provenances. Such stands might be promising at suited sites in the Federal Republic of Germany

Metcalf, W. (1948). Youthful years of the big tree. *Pacific Discovery* 1(3): 4-10.

Metcalf, W., P. C. Passof, et al. (1975). Growing coast and sierra redwoods [*Sequoia sempervirens*, *Sequoiadendron giganteum*]--outside their natural range. Leaflet, Division of Agricultural Science University of California, Berkeley Cooperative Extension 2706: 3.

Michael, H. N. and E. K. Ralph (1973). Discussion of radiocarbon dates obtained from precisely dated sequoia and bristlecone pine samples. 8th International Radiocarbon Conference, Lower Hutt, New Zealand, Royal Society of New Zealand.

Miller, P. R. and A. A. Millecan (1971). Extent of oxidant air pollution damage to some pines-G and other conifers-G in California. *Plant Disease Report* 55(6): 555-559.

Miller, P. R. (1973). Susceptibility to ozone of selected western [US] conifers. 2nd International Congress of Plant Pathology, Minneapolis, MN.

Seedlings of 12 species and two hybrids were grown in greenhouses with carbon-filtered air at Lake Arrowhead, S. California. Fumigation treatments were begun at 2 years old. The conditions of growth and fumigation simulated those of a mountainous area of severe O₃ damage to native species. Evaluation of needle injury (mottle, necrosis and abscission) required not less than 42 seedlings of each species. In *Pinus ponderosa*, one-year-old needles were damaged 3 times as much as current-year needles, and fumigations begun in mid-Aug. resulted in the greatest injury. The

species were, in order of decreasing susceptibility: *P. monticola*, *P. jeffreyi* X *P. coulteri*, *Abies monticola* [*A. magnifica* ?], *P. radiata* X *P. attenuata*, *P. ponderosa* [Californian], *P. coulteri*, *Pseudotsuga menziesii*, *Pinus jeffreyi*, *P. ponderosa* (Rocky Mountain), *A. concolor*, *Pseudotsuga macrocarpa*, *Pinus attenuata*, *Libocedrus decurrens*, *Pinus lambertiana*, and *Sequoia gigantea*

- Miller, P. R., K. W. Stolte, et al. (1984). Ozone effects on important tree species of the Sequoia-Kings Canyon National Parks, USDA Forest Service, Riverside.
- Miller, P. (1985). The impacts of air pollution on forest resources. *Forestry Research West*: 1-5.
- Miller, P. R. (1987). Root and shoot growth during early development of *Sequoiadendron giganteum* seedlings stressed by ozone. XIVTH International Botanical Congress, Berlin, West Germany, PSW Experiment Station, Riverside.
- Miller, P. R., S. L. Schilling, et al. (1991). Ozone injury to important tree species of Sequoia and Kings Canyon National Park.
- Miller, P. R., N. E. Grulke, et al. (1992). Air pollution effects on giant sequoia ecosystems. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Mitchell, J. N. (1935). The comparative histology of the secondary xylem of *Sequoia gigantea* and *Sequoia sempervirens*, UC Berkeley.
- Mitchell, J. N. (1936). The detailed structure of stem wood of the two sequoias. *Journal of Forestry* 34: 988-993.
- Mitchell, A. F. (1971). Recent measurements of big trees in Scotland, part 31. *Scottish Forestry* 25(4): 277-285.
- Mitchell, A. (1981). *Sequoiadendron giganteum* in England. *The Garden, Journal of the Royal Horticultural Society* 106: 30-32.
- Mohlenbrock, R. H. (1985). This land. *Natural History*. 94: 78-81.
- Molina, R. (1992). The role of mycorrhizal symbioses in the health of giant sequoia and forest ecosystems. Symposium on Giant Sequoia - Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Monteuuis, O. (1986). Micrografting of one hundred year old vegetative points of *Sequoiadendron giganteum* Buchholz on young seedlings cultured in vitro. *C. R. Acad. Sci. Ser. III Sci. Vie.* 302(6): 223-225.
- Monteuuis, O. (1987). In vitro meristem culture of juvenile and mature *Sequoiadendron giganteum*. *Tree Physiology* 3(3): 265-272.
- A total of 7000 meristems were used in experiments to investigate the possibility of cloning *Sequoiadendron giganteum* Buchholz by in vitro meristem culture of juvenile (2-year-old) and mature (100-year-old) ortets. Cultures were initiated on a low-salt medium containing 0.1 mg l⁻¹ l-naphthaleneacetic acid to stimulate meristematic activity. Benzylamino purine (0.01-0.5 mg l⁻¹) inhibited meristematic activity, whereas gibberellic acid (0.01-0.5 mg l⁻¹) had no effect on meristematic development. The mature ortet showed more specific mineral requirements and a lower capacity for cloning than the juvenile ortet. Rooted plants were obtained only from the juvenile clone. There was a marked seasonal effect on meristematic activity, especially for the mature clone, the most active material being obtained during budbreak

- Monteuuis, O. and M. Gendraud (1987). Nucleotide and nucleic acid status in shoot tips from juvenile and mature clones of *Sequoiadendron giganteum* during rest and growth phases. *Tree Physiology* 3(3): 257-263.
- Nucleoside triphosphate and nucleic acid contents of shoot tips of juvenile and mature clones of *Sequoiadendron giganteum* Buchholz were analyzed during rest and growth phases. In both juvenile and mature clones, shoot growth activity was characterized by significant increases in ATP, non-adenylic nucleoside triphosphate (NTP) and RNA levels. During the rest period, both ATP/NTP and RNA/DNA ratios were significantly higher in the juvenile clone than in the mature clone. However, during the growth phase, only the ATP/NTP ratio was higher in the juvenile than in the mature clone. The results suggest that the physiological differences between shoot tips of juvenile and mature tissues during the rest phase tend to decline as active shoot growth commences. This conclusion is consistent with morphological observations and with the varying organogenetic capacities of in vitro cultures of explants removed from stock plants at different times
- Monteuuis, O., M. C. Bon, et al. (1987). Micropropagation aspects of *Sequoiadendron giganteum* juvenile and mature clones. *Acta Horticulturae*(212): 489-497.
- Monteuuis, O. and M. C. Bon (1989). Rejuvenation of a 100 yr old giant sequoia (*Sequoiadendron giganteum* Buchholz) through in vitro meristem culture. *Annales des Sciences Forestieres* 46: 183-186.
- Monteuuis, O. (1989). Microscopic analyses of apical meristems of young and mature *Sequoiadendron giganteum* during rest phase and bud-break. *Bulletin de la Societe Botanique de France - Lettres Botaniques* 136(2): 103-107.
- Monteuuis, O. and S. Genestier (1989). Comparative cytophotometric analysis of mesophyll cell walls of leaves belonging to young and mature *Sequoiadendron giganteum*. *Bulletin de la Societe Botanique de France - Lettres Botaniques* 136(2): 103-107.
- Monteuuis, O. and M. C. Bon (1990). Phase change in *Sequoiadendron giganteum*. *NATO ASI Ser* 186: 377-382.
- Monteuuis, O. (1991). Rejuvenation of a 100-year-old *Sequoiadendron giganteum* through in vitro meristem culture. 1. Organogenic and morphological arguments. *Physiologia Plantarum* 81(1): 111-115.
- Muir, J. (1877). On the post glacial history of *Sequoia gigantea*. Meeting of the American Association for the Advancement of Science, Salem, MA.
- Muir, J. (1878). The new sequoia forests of California. *Harper's Magazine*. 57: 813-827.
- Muir, J. (1901a). Hunting big redwoods. *Atlantic Monthly*. 88: 304-320.
- Muir, J. (1901b). *Sierra Big Trees*, US Department of the Interior, National Parks.
- Muir, N. (1978a). The evergreen conifers. Amenity trees for town planting. *Gardeners Chronicle and Horticultural Trade Journal* 183(13): 24-27.
- Pines are considered the most important group of conifers and *Cedrus deodara* the most important individual species for urban planting. *C. libani* and *C. atlantica*, *Sequoiadendron giganteum* [*Sequoia gigantea*] and *Tsuga heterophylla* are most likely to produce large specimens. *C. atlantica*, *T. canadensis* and *Abies grandis* are recommended for thin soils over chalk. *Pinus nigra* is excellent for screening and general landscaping. The advantages of 11 other *Pinus* species are discussed. *Abies*, *Picea*, *Cryptomeria*, *Calocedrus* [*Libocedrus*] and *Thuja* are more useful in formal plantings than in landscaping, but are not suitable for industrial or exposed areas. *Abies homolepis* and *A. numidica* are fairly successful under urban conditions.

- Muir, N. (1978b). Ornamental conifers. *Gardeners Chronicle and Horticultural Trade Journal* 183(15): 14-16.
- Species considered for amenity planting in towns are: *Sequoia sempervirens*, *Sequoiadendron giganteum* [*Sequoia gigantea*], *Picea smithiana*, *P. breweriana*, *P. omorika*, *P. orientalis*, *P. pungens*, *P. abies*, *P. likiangensis*, *Chamaecyparis lawsoniana*, *C. nootkatensis*, *C. obtusa*, *Cryptomeria japonica*, *Calocedrus* [*Libocedrus*] *decurrens*, *Thuja plicata*, *T. orientalis*, *T. koraiensis* and *T. standishii*.
- Munz, P. A. (1959). *A California flora*. Berkeley and Los Angeles, University of California Press.
- Murphy, R. W. (1967). Experimental burning in park management. Annual Tall Timbers Fire Ecology Conference.
- Mutch, L. S. and T. W. Swetnam (1993). Effects of fire severity and climate on ring-width growth of giant sequoia after burning. Proceedings of the Symposium on Fire in Wilderness and Park Management, Missoula, MT, USDA Forest Service.
- Mutch, L. S. (1994). Growth responses of giant sequoia to fire and climate in Sequoia and Kings Canyon National Parks, California, University of Arizona.
- National Park Service, D. o. t. I. (1979). Giant Forest/Lodgepole Area, Sequoia and Kings Canyon National Parks. Three Rivers, California, Department of the Interior, National Park Service.
- National Park Service, D. o. t. I. (1980). The fire management program in Sequoia and Kings Canyon National Parks.
- Nelson, T. a. S. P. (1870's). *The Yosemite Valley and the mammoth trees and geysers of California*. New York, NY, Thomas Nelson and Sons.
- Neumann, H. (1984). Up-to date experience in North Rhine Westphalia with cultivation and silviculture of *Sequoiadendron giganteum* (Lindl.) Buchh. *Mitteilungen der Deutschen Dendrologischen Gesellschaft* 75: 77-104.
- Nichols, H. T. (1989). Managing fire in Sequoia and Kings Canyon National Parks. *Fremontia*. 16: 11-14.
- Nikolaeva, L. F., N. B. Florova, et al. (1979). Spectral forms of chlorophyll synthesized in the absence of light by seedlings of relict coniferous plants. *Zh. Obsch. Biol.* 40(1): 128-137.
- Many phylogenetically ancient plant forms can synthesize chlorophyll in the absence of light at early ontogenetic stages. This ability was studied in the representatives of Gymnospermae, both relict and phylogenetically advanced forms. Using low-temperature fluorometry, 12 [*Ginkgo biloba*, *Podocarpus macrophyllus* D., *Picea abies* Karts., *Cedrus deodara* Lond., *Pinus sylvestris* L., *Larix sibirica* L., *Cryptomeria japonica* L., *Sciadopitys verticillata* L., *Sequoia sempervirens* Lamb., *Sequoiadendron giganteum* Linde., *Metasequoia glyptostroboides* Hu et Hung, *Cercediphyllum manigifum* Kai., *Zelcova serrata* Spach, *Arbutus andrachue* A. L. de Juss and *Callistemon lanceolata* A. L. de Juss spp. of Coniferophyta were compared. Representatives of all the families studied (Ginkgoaceae, Pinaceae, Taxodiaceae, Podocarpaceae) are able, at a stage of primary leaves, to accumulate in the dark chlorophyll forms differing in the degree of molecular aggregation. In the relict angiosperms studied this ability was absent. A nonphotochemical pathway of chlorophyll biosynthesis is apparently present at the earliest stages of the evolution of Gymnospermae, which might be connected with germination conditions of the latter. Preservation of the ability for chlorophyll synthesis in the darkness at the seedling stage in now living species of Pinaceae and Taxodiaceae might point to a considerable adaptive lability of these plants. Further investigation into the peculiarities of formation of the pigment apparatus of coniferous plants will contribute to elucidation of some plant evolution problems

- Norris (1963). *Sequoia gigantea* (Sierra redwood) groves within boundaries of Sequoia National Forest, USDA Forest Service: 11.
- Norton, E. (1895). The famous sequoia mills. *Pacific Wood and Iron*.
- Nuorteva, M. (1979). Preservation problems of redwoods *Sequoia sempervirens*, *Sequoiadendron giganteum* in California. *Silva Fenn.* 13(1): 51.
- Olmstead, F. L. (1952). The Yosemite Valley and the Mariposa big trees: a preliminary report, 1865. *Landscape Architecture* 43: 12-25.
- Ornduff, R. (1992). A botanist's view of the big tree. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Osborn, H. F. (1919?). *Sequoia--the auld lang syne of trees*. US.
- Otrosina, W. J., T. E. Chase, et al. (1992). Allozyme differentiation of intersterility groups of *Heterobasidion annosum* isolated from conifers in the western United States. *Phytopathology* 82(5): 540-545.
- Otter, F. L. (1963). *The men of mammoth forest*. Ann Arbor, MI, Edward Brothers.
- Pacyniak, C. (1974). Dendrological singularities of Slovakia. *Rocz. Sekc. Dendrol. Pol. Tow. Bot.* 28: 11-117.
- The Mlynany Arboretum, founded in 1892, is the richest in respect to the number of species among the numerous parks, botanical gardens and arboreta in Slovakia [Czechoslovakia]. In 1967 there were 1658 species, varieties and forms in this arboretum. At present there are over 2000 spp. in the collection. The Kysihybel Arboretum contains 197 spp., varieties and forms. The Bratislava (638 spp.), Martin (273 spp.), Kosice (265 spp.), and Banska Stiavnica (264 spp.) Botanical Gardens and J. Kral Gardens in Bratislava (254 spp.) are worth visiting. The Topolcianky (299 spp.) and Piestany (216 spp.) parks are notable. A dendrological singularity in Slovakia, and possibly in Czechoslovakia, is a specimen of *Citrus trifoliata* L. growing in the open. The largest and oldest sequoia (*Sequoiadendron giganteum* Buchholz) is in a small park in Antol, and in Banska Stiavnica there are the largest cedars, *Cedrus atlantica* Man. and *C. libani* Loud.
- Pacyniak, C. (1974). A splendid specimen of *Sequoiadendron-giganteum* in Brwice, Poland. *Roca. Sekc. Dendrol. Pol. Tow. Bot.* 28: 119-121.
- Panshin, A. J. and C. deZeeuw (1970). *Textbook of wood technology*, McGraw-Hill Book Co.
- Parde, J. (1983). The largest tree in the world [*Sequoiadendron giganteum*, California]. *Review of Forestry in France* 35(3): 244-245.
- Parmeter Jr., J. R. (1985). Diseases and insects of giant sequoia. Workshop on Management of Giant Sequoia, Reedley, CA, U.S.D.A. Forest Service.
- Parsons, D. J. (1975). Fire in Sequoia and Kings Canyon National Parks. *Fremontia* 3(1): 13-14.
- Parsons, D. J. (1978). Fire and fuel accumulation in a giant sequoia forest [Prescribed burning]. *Journal of Forestry* 76(2): 104-105.
- Studies of fallen woody fuel and of litter and duff accumulation in the sequoia (*Sequoiadendron giganteum*)/conifer forest of Kings Canyon National Park, California, showed that prescribed burning removed most of the fuel which had accumulated during 60 years of fire suppression. Measurements 1, 4 and 7 years later showed that sufficient fuel had accumulated after 7 yr to support further fire. Fire management is discussed.

- Parsons, D. J. and S. H. DeBenedetti (1979). Impact of fire suppression on a mixed-conifer forest. *Forest Ecology and Management* 2(1): 21-33.
- Fire suppression (100 yr) in a mixed-conifer forest which evolved with frequent natural fires has shifted successional patterns, increased the density of small trees, and produced an unnatural accumulation of ground fuels. Analysis of species composition, vegetation structure and age distribution in each of 4 forest types within the mixed-conifer zone of Sequoia and Kings Canyon National Parks, California, USA, has documented a substantial increase in young, shade tolerant white fir [*Abies concolor*] in each type. The original dominant species have decreased in relative abundance in most cases. The sequoia type has been most affected by the fire suppression policy. Giant sequoia [*Sequoiadendron giganteum*] show poor reproduction in the absence of fire. The sequoia type also exhibits the greatest accumulation of ground fuels. The ponderosa pine [*Pinus ponderosa*], white fir and mixed forest types also show successional changes as well as significant accumulations of flammable ground fuels following a century of fire exclusion. The management implications of these findings are discussed.
- Parsons, D. J. and T. J. Nichols (1985). Management of giant sequoia in the National Parks of the Sierra Nevada, California. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.
- Parsons, D., L. Bancroft, et al. (1985). Information needs for natural fire management planning. Proceedings of the Symposium and Workshop on Wilderness Fire, USDA Forest Service.
- Parsons, D. J. (1988a). Managing fire as a natural process in the sequoia mixed-conifer ecosystem: questions of science and policy. George Wright Society's Fifth Triennial Conference on Research in the National Parks and Equivalent Reserves.
- Parsons, D. J. (1988b). The giant sequoia fire controversy: a case study of the role of science in natural ecosystem management. Third Biennial Conference of Research in California's National Parks, National Park Service Transactions and Proceedings Series.
- Parsons, D. J. (1989). Prescribed fire review sparks studies of giant sequoia-fire interactions. *Park Science* 9(2): 19.
- Parsons, D. J., D. M. Graber, et al. (1990). Planning for global climate change. The Sixth George Wright Forum.
- Parsons, D. J. (1990a). Restoring fire to the Sierra Nevada mixed conifer forest: Reconciling science, policy and practicality. Proceedings of the 1st Annual Meeting of the Society for Ecological Restoration, Madison, WI.
- Parsons, D. J. (1990b). The giant sequoia fire controversy: the role of science in natural ecosystem management.
- Parsons, D. J. (1992). Objects or ecosystems? Giant sequoia management in National Parks. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Parsons, D. J. (1993). 25 years of restoring fire to giant sequoia groves: What have we learned? Symposium on Fire in Wilderness and Park Management, Missoula, MT, USDA Forest Service.
- Perl, J. (1970). The vertical landscape in the redwood forest dense. *Art in America*.

Peters, M. D. and D. C. Christophel (1978). AUSTROSEQUOIA-WINTONENSIS new-genus new-species Taxodiaceous cone from Queensland Australia. *Canadian Journal of Botany* 56(24): 3119-3128.

A new taxodiaceous ovulate cone, AUSTROSEQUOIA wintonensis gen. et sp. nov., is described from the area of Winton, Queensland, Australia. The material is believed to come from the Upper Cretaceous but may be younger. The cones have 29-49 cone scales arranged helically around the axis. Each scale has 4-7 ovules arranged in a single row. Reproductive shoot leaves are rhomboidal with an incurved apex and a distinct keel. Comparison with extant taxodiaceous genera indicate a strong similarity to Sequoia sempervirens (D. Don) Endl. and Sequoiadendron giganteum (Lindl.) Buchholz. Only limited similarities are observed with species of the Australian endemic Athrotaxis. The deposit also contains conifer pollen cones, ferns, and angiosperm remains which are yet to be described

Pharis, R. P. and W. Morf (1969). Precocious flowering of coastal and giant redwood-G Sequoia-sempervirens-G, Sequoia-gigantea-G with Gibberellins A-3 A-4-7 and A-13. *Bioscience* 19(8): 719-720.

Phillips (1993). Saving sequoias. *Sunset*. 191: 66-73.

Piirto, D. D., J. R. Parmeter, Jr., et al. (1974). Fomes annosus in giant sequoia [gigantea]. *Plant Disease Report* 58(5): 478.

Describes observations made in national parks in California on 20 trees of Sequoia gigantea that had fallen over: 16 trees showed signs of attack by F. annosus, in the form of sporophores and/or decay in roots and butt.

Piirto, D. D. (1974). Structural failure of giant sequoia: properties of the wood of giant sequoia as related to tree failure, University of California Forest Products Laboratory.

Piirto, D. D., J. R. Parmeter, et al. (1977). Poria incrassata in giant sequoia [Sequoia gigantea]. *Plant Disease Report* 61(1): 50.

P. incrassata was associated with 2 recently fallen old-growth sequoia trees (Sequoia gigantea). The fungus caused root and butt rot.

Piirto, D. D. (1977). Factors associated with tree failure of giant sequoia, University of California, Berkeley.

Piirto, D. D. and W. W. Wilcox (1978). Critical evaluation of the pulsed-current resistance meter for detection of decay in wood. *Forest Products Journal* 28: 52-57.

The 'Shigometer' Model 7950 manufactured by Northeast Electronics, Concord, New Hampshire was used to measure the electrical resistance of blocks of Sequoia gigantea and Abies concolor subjected to attack by Poria placenta in a decay chamber. Meter readings decreased with increase in decay. Resistance readings of decayed wood were lower when measured immediately after removal from the decay chamber than when air-dried and rewetted with deionised water. Variability in meter readings may affect detection of decay where the decrease in resistance of decayed wood is small, as in A. concolor. The meter is unsuitable for detecting decay in dry timber, since the effect on resistance of the water necessary to take a reading would be greater than the effects of decay. Improvements in meter design are suggested.

Piirto, D. D. (1979a). Factors associated with tree failure of giant sequoia - pathological aspects. First Conference on Scientific Research in National Parks, Washington, D. C., USDI National Park Service Trans. and Proc. Series No. 5.

Piirto, D. D. (1979b). Guidelines for management of giant sequoia groves, USDA Forest Service.

Piirto, D. D. (1981). Comparative properties of old- and young-growth giant sequoia of potential significance to wood utilization [Sequoia gigantea]. *Bulletin of the University of California, Berkeley Cooperative Extension Service* 36(4): 1-26.

- Piirto, D. D. and W. W. Wilcox (1981). Comparative properties of old-growth and young-growth giant sequoia of potential significance to wood utilization. University of California, Berkeley, Division of Agricultural Sciences Bulletin. 1901: 168.
- Piirto, D. D., J. R. Parmeter, et al. (1984). Basidiomycete fungi reported on living or dead giant sequoia or coast redwood, University of California.
Seventy four species found on giant sequoia (*Sequoia gigantea*) and coast redwood (*Sequoia sempervirens*) are listed alphabetically, with synonyms, under the name currently used by the USDA Forest Products Lab. Center for Forest Mycology
- Piirto, D. D., J. R. Parmeter, et al. (1984). Causes of uprooting and breakage of specimen giant sequoia trees. University of California Division of Agriculture and Natural Resources Bulletin. 1909: 13.
Recently fallen old growth *Sequoia gigantea* trees in California were examined. In 21 of the 33 study trees 33% or more of the wood in the failure zone had advanced decay. Basal fire scars were found on 27 trees, of which 26 fell towards the scarred side. Nine basidiomycete fungi were associated with decayed wood, including *Fomes annosus* [*Heterobasidion annosum*], *Poria albipellucida*, *P. incrassata*, and *Armillaria mellea*. Carpenter ants (*Camponotus* sp.) were found in or near the failure zones of 16 trees; in most cases they make their galleries in decayed wood, and no evidence was found that they are vectors of decay fungi. Physical disturbances such as roads, trails and streams were associated with 22 tree failures but their role in failure was not clear
- Piirto, D. D. (1985). Wood of giant sequoia: Properties and unique characteristics. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.
- Piirto, D. D., W. J. Hawksworth, et al. (1986). Giant sequoia sprouts: Does thinning trigger stump sprouting? *Journal of Forestry* 84(9): 24-25.
In Sep. 1982, coppice shoots were found on 2 stumps of *Sequoiadendron giganteum*, 8 yr after thinning in Nelder Grove, Mariposa Ranger District, Sierra National Forest, California. This is the first known report of coppicing in this species. By Sep. 1985, total ht. of the shoots was 13.0 and 36.8 cm
- Piirto, D. D., J. R. Parmeter, et al. (1991). Biological and management implications of fire/pathogen interactions in the giant sequoia ecosystem. Society of American Foresters National Convention, Bethesda, MD.
- Piirto, D. D. (1991). Giant sequoia groves, a relic to be preserved or a resource to be managed?
- Piirto, D. D., F. W. Cobb Jr, et al. (1992). Biological and management implications of fire/pathogen interactions in the giant sequoia ecosystem: Part II-- Pathogenicity and genetics of *Heterobasidion annosum*, California Polytechnic State University, San Luis Obispo.
- Piirto, D. D., K. L. Piper, et al. (1992). Biological and management implications of fire/pathogen interactions in the giant sequoia ecosystem: Part I--Fire scar/ pathogen studies, California Polytechnic State University, San Luis Obispo.
- Piirto, D. D. (1992). Giant sequoia insect, disease, and ecosystem interactions. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Pillsbury, N. H., M. J. DeLasaux, et al. (1991). Young-growth sierra redwood volume equations for Mountain Home Demonstration State Forest, California Department of Forestry and Fire Protection.
- Pinchot, G. (1900). A short account of the big trees of California. Washington, D.C. : Dept. of Agriculture, Forestry Division Bulletin 28.

- Platt, G. C. (1980). Production of *Sequoiadendron giganteum* by cuttings. Combined Proceedings of the International Plant Propagators Society.
Reports the successful propagation of shoot cuttings taken in mid winter from the lower branches of a young tree approx. 15 ft high and rooted in washed scoria in an unheated greenhouse. Approx. 80% showed active growth by autumn and were root pruned to fit into propagation tubes containing 100% granulated pine bark, with fertilizer spread over the surface 2-3 wk after pricking out. Once established in the tubes, trees were potted on into pine bark in 1-gal containers and many had to be staked to prevent them continuing to grow as lateral shoots. Overall success rate has averaged 75% over several yr, with the use of hormone (IBA) offering no advantage
- Plummer, F. G. (1905). Report on an estimate of the North Calaveras Grove of big trees, California.
- Plummer, F. G. (1906). Report on the Calaveras Groves of big trees.
- Presnall, C. C. (1933a). Translating the autobiography of a big tree. Yosemite Nature Notes. 12: 5-7.
- Presnall, C. C. (1933b). Fire studies in the Mariposa Grove. Yosemite Nature Notes. 12: 23-24.
- Price, W. W. (1892). Description of a new grove of *Sequoia gigantea*. Zoe. 3: 32.
- Ralph, E. K. and H. N. Michael (1970). MASCA radiocarbon dates for sequoia and bristlecone-pine samples. Radiocarbon Variations and Absolute Chronology. I. U. Olsson. New York, NY, John Wiley and Sons: 619-623.
- Ralph, E. K. and H. N. Michael (1974). Twenty-five years of radiocarbon dating. American Scientist 62(5): 553-560.
Describes the development of radiocarbon (C14) dating and the use of dendrochronology for the preparation of tree-ring chronologies, based on *Sequoia gigantea* and *Pinus longaeva*, to calibrate C14 dates. Possible reasons for disparities between the two data scales are discussed.
- Ralph, E. K. and J. Klein (1979). Composite computer plots of 14 C dates for tree-ring-dated bristlecone pines and sequoias. Radiocarbon Dating. R. Berger and H. E. Suess. Berkeley, CA, University of California Press: 545-553.
- Rannert, H. (1955). [On the stem form and volume of *Sequoia gigantea*]. Zbl. ges Forstw 74: 19-26.
- Redd (1976). A proposed management plan for Red Hill Grove, USDA Forest Service, Tule River Ranger District.
- Rejmanek, M. and J. J. Messina (1989). Predicting conifer growth reduction from the analysis of neighborhood weed competition. Proceedings of the 10th Annual Forest Vegetation Management Conference, Redding, CA.
- Reynolds, R. D. (19??). Effect of natural fires and aboriginal burning upon the forest of the central Sierra Nevada, University of California.
- Richter, H., G. Halbwachs, et al. (1972). Determination of xylem tensions in the crown of a giant sequoia *Sequoiadendron-giganteum*. Flora 116(4): 401-420.
- Rickett, H. W. (1950). The botanical name of the big tree. Journal of the New York Botanical Garden 51: 15.
- Riegel, G. M., S. E. Greene, et al. (1988). Characteristics of the reference stands in Sequoia National Park, Cooperative National Parks Resources Studies Unit, Davis, CA.

- Ritter, J. T. (1992). Management perspective of the symposium on giant sequoia. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Roberts, C. K. (1989). California Spotted Owl (*Strix occidentalis occidentalis*) inventory and demography study, Sequoia and Kings Canyon National Parks: preliminary results, 1988, CSU Sacramento.
- Robinson, C. D. (1882). The two redwoods. *Californian*. 5: 481-491.
- Rogers, R. R. (1985). Management of giant sequoia in the National Forests of the Sierra Nevada. Workshop on Management of Giant Sequoia, Reedley, CA, USDA Forest Service.
- Rogers, R. R. (1988). Giant sequoia management on the Sequoia National Forest. *Journal of Forestry* 86(8): 2.
- Rueger, B. (1992). Giant sequoia management strategies on the Tule River Indian Reservation. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Rundel, P. W. (1967a). The influence of man and fire on the vegetation of the Calaveras Groves of *Sequoiadendron giganteum*, Duke University.
- Rundel, P. W. (1969a). Aestival cycles in the soil and plant water relations of the giant sequoia-G ecosystem of the Sierra-Nevada, California, USA. The XI International Botanical Congress and the International Wood Chemistry Symposium, Seattle, Washington, XI International Botanical Congress.
- Rundel, P. W. (1969b). The distribution and ecology of the giant sequoia ecosystem in the Sierra Nevada, California, Duke University.
- Rundel, P. W. (1971). Community structure and stability in the giant sequoia groves of the Sierra Nevada, California. *American Midland Naturalist* 85(2): 478-492.
- Rundel, P. W. (1972a). An annotated check list of the groves of *Sequoiadendron giganteum* in the Sierra Nevada, California. *Madrono* 21(5, pt. 1): 319-328.
Discusses the definition of the term 'grove' as applied to the disjunct distribution of *Sequoia gigantea* along the western slope of the Sierra Nevada, and presents a list in which geographical distribution is maintained as a primary criterion in defining particular groves but where historical tradition is not ignored. Some outliers are considered to be colonizers rather than relict groves, and some contiguous groves have been lumped under a single name.
- Rundel, P. W. (1972b). Habitat restriction in giant sequoia: the environmental control of grove boundaries. [*Sequoiadendron giganteum*]. *American Midland Naturalist* 87(1): 81-99.
Discusses edaphic and temperature restrictions, and details of seedling ecology, and gives results of studies of soil moisture stress and measurements of water potential. The maintenance of the remarkably stable grove boundaries is controlled by an interaction of moisture availability, temperature, and the tolerances of the seedling stage of *Sequoia gigantea*.

- Rundel, P. W. (1973). The relationship between basal fire scars and crown damage in giant sequoia [*Sequoiadendron giganteum*]. *Ecology* 54(1): 210-213.
Describes a study showing that a strong correlation exists between the presence of basal scars in *Sequoia gigantea* and the occurrence of snag tops (consisting of the dead top of the main stem plus remnants of the uppermost branches) in mature trees. The % of snag-top trees was directly related to the size of the basal scar. Ca. 50% of trees with fire scars > 100 ft² in area had a snag top. The evidence indicates that the physiological basis of this phenomenon is a response to high water stresses in the uppermost crown of a mature tree. Fire damage at the base of the tree destroys large amounts of active xylem, thereby reducing the rate of water absorption. When water stress exceeds the physiological tolerance limits for the species, the top of the stem is the first part damaged. The critical water potential at the top of mature *S. gigantea* indicates that trees may survive xylem pressure potentials somewhat lower than -20 bars for short periods at midday without damage. Water potentials lower than this may be a significant limiting factor in determining the upper height limits of these trees.
- Rundel, P. W. and T. St John (1975). The effects of fire on nutrient status of sequoia-mixed-conifer forest soils, National Park Service.
- Rundel, P. W. and R. E. Stecker (1977). Morphological adaptations of tracheid structure to water stress gradients. *Oecologia* 27(2): 135-139.
Mean radial diameter of tracheids in young branches of a 90 m *S. giganteum* decreases linearly with height along a gradient correlated linearly with decreasing xylem pressure potential. These smaller tracheid diameters provide strength to resist strong mechanical tensions in the xylem column and hypothetically allow greater efficiencies of water conduction. Tracheid length is not significantly correlated with either water stress or tracheid diameter
- Sagreiya, K. P. (1968). World's tallest trees. *Indian Forester* 94(11): 853.
- San Miguel, G. L. (1990). A history of the General Grant Grove area of Kings Canyon National Park.
- Sandlin, C. M., D. M. Ferrin, et al. (1991). Foliar blight and branch dieback of container-grown giant redwood in California caused by *Phytophthora citrophthora*. *Plant Disease* 75: 1074.
- Sandlin, C. M. and D. M. Ferrin (1993). Foliar blight and root rot of container-grown giant redwood caused by *Phytophthora citrophthora*. *Plant Disease* 77(6): 591-594.
- Sanger, L. C. (1905). Report of lumber sales for year ending March 31, 1905.
Converse Basin Mill operation 1898-1904 data
- Sargent, S. (1976). Through and through. *Westways*. September: 1 page.
- Schlarbaum, S. E. and T. Tsuchiya (1975). The chromosome study of giant sequoia, *Sequoiadendron giganteum*. *Silvae Genetica* 24(1): 23-26.
Confirms the description by Jensen and Levan [see FA 4, p. 90] of $2n = 22$ with two metacentric (M-type) pairs of chromosomes, eight nearly metacentric (m-type) pairs and one submetacentric (sm-type) pair. In the smallest m-type pair, each chromosome has a potential region that takes up little Feulgen stain or acetocarmine at late prophase and is almost completely unstained at metaphase; this region constitutes ca. 30% of each chromosome.
- Schlobohm, D. F. and F. A. Meyer (1952). The status of *Sequoia gigantea* in the Sierra Nevada.
- Schlobohm, D. F. (1986). Your giant sequoias: Their past, present, and future.
- Schonberger, C. F. (1948). Biological survey of the South Grove area.

- Schubert, G. H. and r. b. N. M. Beetham (1962). Silvical characteristics of giant sequoia, PSW Berkeley.
- Scott, A. H. A. and H. R. Walt (1988). A Californian abroad. *Fremontia*. April: 22-23.
- Sequoia, N. F. (1988). Sequoia National Forest Land and Resource Management Plan. latest LMP of the forest
- Sequoia, N. F. (1990). Sequoia National Forest Mediated Settlement Agreement. ammendment to the 1988 LMP
- Sequoia, N. H. A. (various years). Trail guides and short informational handouts on giant sequoia groves, Sequoia National Park. Three Rivers, CA, Sequoia Natural History Association.
- Serre, F. (1974). The tallest, widest, and oldest trees in the world. *Bull. Soc. Linn. Provence*. 27: 95-108.
Some trees are gigantic; sequoias (*Sequoia gigantea* and *S. sempervirens*) are among the most famous. They can be multimillennarians, but as far as age is concerned, they are at the present time supplanted by high altitude pines belonging to the species *P. aristata*, which are also confined to the western parts of the USA
- Shellhammer, H. S. (1966). Cone-cutting activities of Douglas squirrels in sequoia groves. *Journal of Mammalogy* 47(3): 525-526.
- Shellhammer, H. S., R. E. Stecker, et al. (1970). Unusual factors contributing to the destruction of young giant sequoias-G. *American Journal of Botany* 20(8): 408-410.
- Sherwood, G. H. (1927). *The big tree and its story*. New York, NY, American Museum of Natural History.
- Sherwood, K. E. (1994). The role of rock chemistry in controlling local and regional scale habitat boundaries of *Sequoiadendron giganteum*, Department of Geology and Geophysics, Yale University.
- Shinn, C. H. (1889). The great sequoia. *Garden and Forest*. 2: 614-615.
- Shirley, J. C. (1947). *The redwoods of the Coast and Sierra*. Berkeley and Los Angeles, CA, University of California Press.
- Sierra, R. C. (1909?). *The Bret Harte country: Calaveras big trees, Yosemite and Hetch-Hetchy Valleys, Mercers Cave, Lake Eleanor, Tuolumne Meadows, etc., reached by Sierra Railway*.
- Sierra, C. (1949). The Calaveras big tree region. *Sierra Club Bulletin*.
- Sierra, C. (1963). Dennison Ridge big trees, Sequoia. *Sierra Club Bulletin*. 48.
- Sierra, N. F. (1991). *Forest and Land Management Plan*.
- Silverberg, R. (1969). *Vanishing giants; the story of the sequoias*. New York, NY, Simon and Schuster.
- Skenfield, M. W. (1986). Increment boring study, South Grove Calaveras Big Trees State Park.
- Skok, J. (1961). Photoperiodic responses of *Sequoia gigantea* seedlings. *Botanical Gazette* 123(1): 63-70.
- Smith, E. C. (1942). *Mariposa big tree survey*.

- Smith, R. S., A. H. McCain, et al. (1973). Control of *Botrytis* [cinerea] storage rot of giant sequoia seedlings [*Sequoiadendron giganteum*]. *Plant Disease Report* 57(1): 67-69.
Benomyl was the most effective of several fungicides tested for controlling the development of *Botrytis cinerea* on *Sequoia gigantea*. A full evaluation of the effectiveness of the fungicides was not possible, owing to a remission of the disease with the onset of winter.
- Smith, R. S., Jr. (1975). Grey mold of giant sequoia [*Sequoia gigantea*], *Botrytis cinerea* (Fr.) Pers. *Agricultural Handbook U. S. Department of Agriculture* 101(9): 562-564.
- Snyder, N. F. R., R. R. Ramey, et al. (1986). Nest-site biology of the California Condor *Gymnogyps californianus*. *Condor* 88(2): 228-241.
A study of 72 historical and recent nests of the California Condor (*Gymnogyps californianus*) has revealed considerable variability in nest-site characteristics. This paper primarily summarizes the data on nest elevations and dimensions, entrance orientations, nest longevity and re-use, vulnerability of sites to natural enemies, and use of sites by other species. Although all known nests have been natural cavities, some have been little more than overhung ledges on cliffs, while others have been deep, dark caves with nest chambers completely concealed from the outside. Two sites have been cavities in giant sequoias (*Sequoiadendron giganteum*). Contrary to previous assumptions, condors do modify the characteristics of their nest sites significantly and commonly construct substrates of coarse gravel on which to rest their eggs. Many nests have been completely accessible to terrestrial predators, many have been poorly protected from avian predators, and some have had structural flaws leading directly to nesting failure. The use of suboptimal sites has not been clearly related to a scarcity of better quality sites
- Southern-Pacific, C. (1901). The giant forest: Kern River canyons and the high Sierras.
- Southern-Pacific, C. (c1914). Big trees of California.
- St. John, H. and R. W. Krauss (1954). The taxonomic position and the scientific name of the big tree known as *Sequoia gigantea*. *Pacific Science* 8: 341-358.
- St. John, T. V. and P. W. Rundel (1976). The role of fire as a mineralizing agent in a Sierran coniferous forest. *Oecologia* 25(1): 35-45.
Studies on plots in a *Sequoiadendron giganteum*/mixed conifer forest in California are reported. It was concluded that fire is an effective but not a conservative mineralizing agent (the increases in soluble N were at the expense of losses of total N).
- St. John, T. V. (1976). The dependence of certain conifers on fire as a mineralizing agent, University of California, Irvine.

Stafford, H. A. and H. H. Lester (1986). Proanthocyanidins in needles from six genera of the taxodiaceae. *American Journal of Botany* 73(11): 1555-1562.

Proanthocyanidin contents of needles ranged from a mean of 150 to 300 μg per mg dry wt in five species from five genera of the Taxodiaceae, *Sequoiadendron giganteum* (Lindl.) Buchh., *Metasequoia glyptostroboides* H. Hu and Cheng, *Sequoia sempervirens* (D. Don) Endl., *Taxodium distichum* L. Rich., and *Sciadopitys verticillata* Siebold and Zucc. However, significantly lower amounts (70 μg per mg dry wt) were found in *Cryptomeria japonica* (L.f.) D. Don. This latter species as well as *Sciadopitys verticillata*, contained little or no prodelphinidin, while the other four species contained a ratio of procyanidin to prodelphinidin up to about 1:5. These data were based on analyses from three trees from each species. In addition, one tree from each species was examined in more detail. The major flavan-3-ol in all cases was (+)-catechin, with only non-detectable or trace amounts of (-)-epicatechin. The triphenolic flavan-3-ol, (+)-gallocatechin, was a minor constituent in all species, except *Sciadopitys* and *Cryptomeria*. The (-)-epigallocatechin was detected in *Metasequoia*, *Sequoiadendron* and *Sequoia*. All contained either (-)-epicatechin-(+)-catechin or (+)-catechin-(+)-catechin as the major procyanidin dimer. Prodelphinidin dimers were only tentatively identified

Stagner, H. R. (1952). *The Giants of Sequoia and Kings Canyon*. Visalia, CA, Commercial Printing Co.

Stangenberger, A. G. (1971). Mechanical properties of southern Sierra old- and second-growth giant sequoia [*Sequoia gigantea*, wood]. *California Agricultural Experiment Station Bulletin* 854: 14.

Stark, N. (1968a). The environmental tolerance of the seedling stage of *Sequoiadendron-giganteum*. *American Midland Naturalist* 80(1): 84-95.

Stark, N. (1968b). Seed ecology of *Sequoiadendron-giganteum*. *Madrono* 19(7): 267-277.

Stebbins, G. L. (1948). Chromosomes and relationships of *Metasequoia* and *Sequoia*. *Science* 108: 95-98.

Stecker, R. E. (1967). An entomological reconnaissance survey of selected *Sequoia gigantea* groves.

Stecker, R. E. (1969). *Giant sequoia insect ecology*, National Park Service.

Stecker, R. E. (1973). *Insects and reproduction of Sequoiadendron giganteum* (Lindl.) Buchholz, University of California, Davis.

Stephenson, N. L. (1987). Use of tree aggregations in forest ecology and management. *Environmental Management* 11: 1-5.

Stephenson, N. L. (1988). Climatic control of vegetation distribution: the role of water balance with examples from North America and Sequoia National Park, California, Cornell University.

Stephenson, N. L., D. J. Parsons, et al. (1990). Effects of fire history on forest structure in sequoia-mixed conifer forests. *Bulletin of the Ecological Society of America* 71(2): 336.

Stephenson, N. L., D. J. Parsons, et al. (1991). Restoring natural fire to the sequoia-mixed conifer forest: Should intense fire play a role? 17th Tall Timbers Fire Conference: High Intensity Fire in Wildlands: Management Challenges and Options, Tallahassee, FL, Tall Timbers Research Station.

Stephenson, N. L. (1992). Long-term dynamics of giant sequoia populations: Implications for managing a pioneer species. *Symposium on Giant Sequoias: Their Place in the Ecosystem and Society*, Visalia, CA, USDA Forest Service.

Stephenson, N. L. and A. Demetry (1995). Estimating ages of giant sequoias. *Canadian Journal of Forest Research* 25: 223-233.

Stewart, G. W. (1930). *Big trees of the giant forest*. San Francisco, CA, A. M. Robertson.

Stewart, R., S. H. Key, et al. (1992). *Giant sequoia management in the National Forests of California*. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.

Stohlgren, T. J. (1988a). Litter dynamics in two Sierran mixed conifer forests. I. Litterfall and decomposition rates. *Canadian Journal of Forest Research* 18(9): 1127-1135.

Litterfall was measured for 4 years and leaf litter decomposition rates were studied for 3.6 years in two mixed conifer forests (giant sequoia - fir and fir-pine) in the southern Sierra Nevada of California. The giant sequoia - fir forest (GS site) was dominated by giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchh.), white fir (*Abies concolor* Lindl. & Gord.), and sugar pine (*Pinus lambertiana* Dougl.). The fir-pine forest (FP site) was dominated by white fir, sugar pine, and incense cedar (*Calocedrus decurrens* (Torr.) Florin). Litterfall, including large woody debris < 15.2 cm in diameter, at the GS site averaged 6364 kg .cntdot. ha-1 .cntdot. year-1 compared with 4355 kg .cntdot. ha-1 .cntdot. year-1 at the FP site. Compared with other temperate coniferous forests, annual variability in litterfall (as computed by the ratio of the annual maximum/minimum litterfall) was extremely high for the GS site (5.8:1) and moderately high for the FP site (3.4:1). In the GS site, leaf litter decomposition after 3.6 years was slowest for giant sequoia (28.2% mass loss), followed by sugar pine (34.3%) and white fir (45.1%). In the FP site, mass loss was slowest for sugar pine (40.0%), followed by white fir (45.1%), while incense cedar showed the greatest mass loss (56.9%) after 3.6 years. High litterfall rates of large woody debris (i.e., 2.5-15.2 cm diameter) and slow rates of leaf litter decomposition in the giant sequoia - fir forest type may result in higher litter accumulation rates than in the fir-pine type. Leaf litter times to 95% decay for the GS and FP sites were 30 and 27 years, respectively, if the initial 0.7-year period (a short period of rapid mass decay) was ignored in the calculation. A mass balance approach for total litterfall (< 15.2 cm diameter) decomposition yielded lower decay constants than did the litterbag study and therefore longer times to 95% decay (57 years of the GS site and 62 years for the FP site)

Stohlgren, T. J. (1988b). Litter dynamics in two Sierran mixed conifer forests. II. Nutrient release in decomposing leaf litter. *Canadian Journal of Forest Research* 18(9): 1136-1144.

The factors influencing leaf litter decomposition and nutrient release patterns were investigated for 3.6 years in two mixed conifer forests in the southern Sierra Nevada of California. The giant sequoia - fir forest was dominated by giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchh.), white fir (*Abies concolor* Lindl. & Gord.), and sugar pine (*Pinus labertiana* Dougl.). The fir-pine forest was dominated by white fir, sugar pine, and incense cedar (*Calocedrus decurrens* (Torr.) Florin). Initial concentrations of nutrients and percent lignin, cellulose, and acid detergent fiber vary considerably in freshly abscised leaf litter of the studied species. Giant sequoia had the highest concentration of lignin (20.3%) and the lowest concentration of nitrogen (0.52%), while incense cedar had the lowest concentration of lignin (9.6%) and second lowest concentration of nitrogen (0.63%). Long-term (3.6 years) foliage decomposition rates were best correlated with initial lignin/N ($r^2 = 0.94$, $p < 0.05$), lignin-concentration ($r^2 = 0.92$, $p < 0.05$), and acid detergent fiber concentration ($r^2 = 0.80$, $p < 0.05$). Patterns of nutrient release were highly variable. Giant sequoia immobilized N and P, incense cedar immobilized N and to a lesser extent P, while sugar pine immobilized Ca. Strong linear or negative exponential relationship existed between initial concentrations of N, P, K, and Ca and percent original mass remaining of those nutrients after 3.6 years. This suggests efficient retention of these nutrients in the litter layer of these ecosystems. Nitrogen concentrations steadily increase in decomposing leaf litter, effectively reducing the C/N ratios from an initial range of 68-96 to 27-45 after 3.6 years

- Stohlgren, T. J. (1990a). Resilience of an 85 year old clear-cut grove of giant sequoia. *Bulletin of the Ecological Society of America* 71(2): 337-338.
- Stohlgren, T. J. (1990b). Size distributions and spatial patterns of giant sequoia (*Sequoiadendron giganteum*) in Sequoia and Kings Canyon National Parks, California, University of California, Davis.
- Stohlgren, T. J., J. M. Melack, et al. (1991). Atmospheric deposition and solute export in giant sequoia--mixed conifer watersheds in the Sierra Nevada, California. *Biogeochemistry* 12(3): 207-230.
- Stohlgren, T. J. (1991). Size distributions and spatial patterns of giant sequoia (*Sequoiadendron giganteum*) in Sequoia and Kings Canyon National Parks, California, Cooperative National Park Resources Studies Unit, UCD, Institute of Ecology.
- Stohlgren, T. J. (1992). Resilience of a heavily logged grove of giant sequoia (*Sequoiadendron giganteum*) in Kings Canyon National Park, California. *Forest Ecology and Management* 54(1-4): 115-140.
- Stohlgren, T. J. (1993a). Intra-specific competition (crowding) of giant sequoias (*Sequoiadendron giganteum*). *Forest Ecology and Management* 59(1-2): 127-148.
- Stohlgren, T. J. (1993b). Spatial patterns of giant sequoia (*Sequoiadendron-giganteum*) in 2 Sequoia groves in Sequoia National Park, California. *Canadian Journal of Forest Research* 23(2): 120-132.
- Stone and Cavallaro (1989). Yes! Restoration ecology in our National Parks does require vegetation targets. First annual meeting of the Society for Ecological Restoration and Management, Oakland, CA.
- Stranger, H. R. (1954). The giants of Sequoia and Kings Canyon National Parks. Visalia, CA, Commercial Printing Company.
- Strong, D. H. (1968). Trees - or timber? Three Rivers, CA, Sequoia Natural History Association.
- Strong, D. H. (1975). To save the big trees. *National Parks and Conservation Magazine*. 49: 10-14.
- Sudworth, G. B. (1900a). Report on the big trees of California.
- Sudworth, J. B. (1900b). Report on the Stanislaus and Lake Tahoe forest reserves, California, and adjacent territory.
- Sunset, E. S. (1969). Redwood country and the big trees of the Sierra. Menlo Park, CA, Lane Books.
- Sutcliffe, J. (1981). Sap in the treetops *Sequoiadendron giganteum*, *Acer saccharum*, guttation. *New Scientist* 90(1257): 682-684.
- Sveshnikova, I. N. and V. L. Komarov (1978). Method for studying the needle epidermis of conifers using a scanning electron microscope. *Bot. Zh. (Leningrad)* 63(8): 1168-1171.
- A maceration method was developed in which needles were cut along the edges, boiled in water 1-2 min and submersed in a 30% CrO₃ solution at 20.degree. C for 10-20 h. Comparative maceration times are given for *Athrotaxis selaginoides*, *Cryptomeria japonica*, *Cunninghamia lanceolata*, *Glyptostrobus lineatus*, *Metasequoia glyptostroboides*, *Sequoia sempervirens*, *Sequoiadendron giganteum*, *Taiwania cryptomerioides* and *Taxodium distichum*. This method was applied in a study of upper and lower epidermis of leaf surfaces with particular emphasis on the form of the upper wall in the guard cells in all genera of the family Taxodiaceae. Cuticles from the upper wall of the guard cells, when stored in this preparation, have a highly standard form which can be used as a good classification characteristic

- Swetnam, T. W. (1988). Millennial fire history in giant sequoia. George Wright Society's Fifth Triennial Conference on Research in the National Parks and Equivalent Reserves.
- Swetnam, T. W. and C. H. Baisan (1988). Giant sequoia fire history: A feasibility study.
- Swetnam, T. W., C. H. Baisan, et al. (1990). Late holocene fire and climate variability in giant sequoia groves. *Bulletin of the Ecological Society of America* 71(2): 342.
- Swetnam, T. W., F. Touchan, et al. (1991). Giant sequoia fire history in Mariposa Grove, Yosemite National Park. Yosemite Centennial Symposium, El Portal, CA, Yosemite Association.
- Swetnam, T. W. (1992). Tree-ring reconstruction of giant sequoia fire regimes.
- Swetnam, T. W. (1993). Fire history and climate change in giant sequoia groves. *Science* 262(5): 885-889.
- Swift, S. Z. (1975). Observations on mycorrhizae of *Sequoiadendron giganteum*, San Jose State University.
- Swift, W. S. (1975). An investigation of the seedling pathology of giant sequoia, San Jose State University.
- Tahoe, N. F. (1977). Placer County sierra redwood grove, botanical area.
- Tarasova, Z. G. (1977). Mycorrhizae in plants of the family Taxodiaceae. *Biol. Zh. Arm.* 30(2): 37-44.
- Taylor, N. (1962). The ageless relicts; the story of sequoia. New York, NY, St. Martin's Press.
- Taylor, R. (1968). Fire in the redwoods. *Westways*. August: 36-37.
- Taylor, D. (1992). Reflections of the Audubon Society-Giant sequoias: Their place in the ecosystem and society. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Teale, E. W. (1943). The wilderness world of John Muir. Boston, MA, Houghton Mifflin Co.
- Teasdale, A. (1977). The *Sequoiadendron* [*giganteum*] story [California]. *American Horticulture* 56(1): 22-25.
- Teasdale, A. (1979). *Sequoiadendron giganteum* Sierra redwood tree--The very god of the woods (includes propagation in Great Britain). *Arboric Journal* 3(6): 433-436.
- Temple, P. J. (1988). Injury and growth of Jeffrey pine and giant sequoia in response to ozone and acidic mist. *Environmental and Experimental Botany* 28(4): 323-333.
- Terstegge, M. A. (1990). Creating a park to save the big trees. *Los Tulares*. 169 and 170: 3 pages.
- Thorpe, T. A. (1977). Plantlet formation of conifers in vitro. Symposium on vegetative propagation of forest trees - physiology and practice, Uppsala, Sweden.
A review of experiments with *Pinus palustris*, *Pseudotsuga menziesii*, *Tsuga heterophylla*, *Picea glauca*, *Thuja plicata* and *Sequoia gigantea*.
- Tilles, D. A. (1979). The symbiotic interrelationships between the carpenter ant, *Camponotus modoc*, and aphids in the genus *Cinara* in a giant sequoia ecosystem, University of California, Berkeley: 98.

Tilles, D. A. and D. L. Wood (1982). The influence of carpenter ant (*Camponotus modoc*) (Hymenoptera: Formicidae) attendance on the development and survival of aphids (*Cinara* spp.) (Homoptera: Aphididae) in a giant sequoia forest. *Canadian Entomology* 114(12): 1133-1142.

Camponotus modoc was associated with numerous species of Homoptera in Giant Forest, Sequoia - Kings Canyon National Park, California [USA]. Ant-exclusion experiments and field observations indicated that survival of the abundant *Cinara occidentalis* Davidson on white fir depends on attendance by *Camponotus modoc*. More of the predators, *Neomysia oblonguttata* (Mulsant), *Deraeocoris brevis* Uhler, *Passaloecus cuspidatus* F. Smith, *Pityophyphantes* sp., were found on ant-unattended than on attended aphid colonies. As aphid populations decreased, ant attendance per aphid and number of predators/aphid increased. Attended aphid colonies were more likely to survive to produce oviparae and a lower proportion of alates

Tilles, D. A. and D. L. Wood (1986). Foraging behavior of the carpenter ant, *Camponotus modoc* (Hymenoptera: Formicidae), in a giant sequoia forest. *Canadian Entomology* 118(9): 861-867.

The proportion of large *Camponotus modoc* workers returning to the nest with solid food was significantly less than that of smaller workers. The average weight of ants collected at colonies of the aphid *Cinara occidentalis* was significantly less than the average weight of ants collected in the vicinity of the ant nest. These data and additional observations suggest that small ants are more likely to attend aphids and transport solid food than are large ants. Some large ants may specialize in honeydew transport. Mark-and-recapture studies showed that workers of *Camponotus modoc* returned to the same trunk trails and aphid colonies from which they had previously been removed. When relocated to either the base of the tree or to the nest entrance, some workers demonstrated a capacity to recognize the original aphid colony from among as many as eight other colonies in the same tree. Some ants were observed on the same aphid colony for long periods

Tobiessen, P., P. W. Rundel, et al. (1971). Water potential gradient in a tall Sequoiadendron. *Plant Physiology* 48: 303-304.

Toda, Y., K. Nagano, et al. (1986). Cytogenetical studies on Taxodiaceae VI. Karyotype of Taxodiaceae 2. *Fac Agric Kyushu Tokai Univ.*

Comparative studies on the karyotype of different genera were performed in order to determine the positioning in a karyological classification of *Cryptomeria japonica* in Taxodiaceae. Karyotypes of *Metasequoia glyptostroboides* Hu et Cheng., *Taiwania cryptomerioides* Hayata and *Sequoiadendron giganteum* Lindl. were determined:

Metasequoia glyptostroboides, K (22) =

2Am+2Bm+2Cm+2Dm+2Em+2Fm+2scGm+2Hm+2scIm+2J+m+2sc Km; *Taiwania*

cryptomerioides, K (22) = 2Am+2Bm+2scCm+2Dm+2Em+2Fm+2Gm+2Hsm+2

Ism+2Jm+2Ksm+2Ksm;

Sequoiadendron

giganteum,

K

(22)

= 2Am+2Bm+2Cm+2Dm+2Em+2Fm+2Gm+2Hm+2Ism+2Jm+2SscKm. The

karyotype of *Sequoia sempervirens* Endl. has not been determined yet, but this species has been confirmed to have 6 telomeres trabsants just like *Cunninghamia lanceolata* (Lamb.) Hook.

Tweed, W. C. (1980). *Sequoia-Kings Canyon, the story behind the scenery*, KC Publications.

Tweed, W. C. (1987). *Born of fire: Prescribed burns will be the salvation of the sequoia groves*. *National Parks*. 61: 23-27.

- Tweed, W. C. (1992). Public perceptions of giant sequoia over time. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Ul'ianov, V. V. (1984). Biological fundamentals of vegetative propagation of *Sequoiadendron giganteum*. Tr. Gos. Nikitsk. Bot. Sad. 92(71-77).
- unknown (1856). Description of the mammoth tree from California. London, R. S. Francis.
- unknown (1858). The big trees of California. Harper's Weekly. June 6.
- unknown (1870). (Deep Creek big trees). Fresno Weekly Expositor. Millerton, CA.
- unknown (1870). The new grove of big trees. Fresno Weekly Expositor. Millerton, CA.
- unknown (1908). Bigtree. *Sequoia washingtoniana* (Winsl.) Sudw. Wahington, D.C., US Govt. Printing Office.
- unknown (1951). Saving Earth's oldest living trees. National Geographic.
- unknown (1969). Whitaker's Forest. California Forester. 14: 1-6.
- unknown (1970). Giant sequoia, bigtree (*Sequoia gigantea*), Sequoia National Forest: 3 pages.
- USFS (1954-71). Special interest/management areas - giant sequoia groves.
- USFS (1963). Recreation management plan, McKinley Grove recreation area.
- USFS (1963). Nelder Grove scenic area proposal.
- USFS (1990). Giant sequoia management on the Sequoia National Forest.
- USFS (1991). Sequoia National Forest giant sequoia management.
- USFS (1992, 93). Research: Tree-ring sampling in giant sequoia groves, Sequoia National Forest.
- USFS (1993). Decision memo, research: tree-ring sampling in the McKinley giant sequoia grove.
- USFS (19??). Giant sequoia (*Sequoia gigantea* (Lindl.)).
- USFS (various). Environmental assessments for management plans, timber sales or prescribed burns, Sequoia National Forest.
- Vale, T. R. (1970). Objectivity, values, and the redwoods. *Landscape* 19(1): 30-33.
- Vale, T. R. (1975). Ecology and environmental issues of the Sierra Redwood (*Sequoiadendron giganteum*), now restricted to California. *Environmental Conservation* 2(3): 179-188.
- Van Name, W. G. (1927). The Redwood Mountain sequoia grove: the third largest grove of big sequoia in the world: excelled only by the Garfield and Giant Forest groves.
- Vancon, S. (1993). Fertilization affects growth and incidence of grey mold on container-grown giant sequoia. *Tree Plant Notes* 44(2): 68-72.
- Vankat, J. L. (1968). The early history of the Sequoia and Kings Canyon National Parks as it pertains to the vegetation.
- Vankat, J. L. (1977). Fire and man in Sequoia National Park. *Annals of the Association of American Geographers* 67(1): 17-24.
- various_authors (1882-1946). A collection of clippings, largely from San Francisco Bay newspapers pertaining to California trees and forests, conservation in general, Sequoia in particular, forest fires, etc.: Assembled by Willis, housed at UC Berkeley Biosciences Library.
- various_authors (1949). Catalog of books, pamphlets & broadsides, prints, paintings & photographs pertaining to Yosemite and the California big tree, 1839-1900. New York, NY, Edward Eberstadt.

- various_authors (1975). Special feature - conifers. *Forest and Timber*. 11: 16.
Conifers are the world's major timber producers; Pine planting programme [in Australia] closely related to demand for timber; The first experiment in Pine planting [in New South Wales]; Notable conifers [the world's tallest (*Sequoia sempervirens*), largest (*Sequoia gigantea*) and oldest (*Pinus aristata*) trees - all in the USA]; Cypress Pine: the timber tree of the inland [of New South Wales]; The mystery of the dying [Norfolk Island] Pines; and Hoop Pine reflects its pre-historic origins.
- various_authors (various years). Fire-related articles and management issues. Good selection at Sequoia-Kings Canyon National Park.
- various_authors (various years). Official collections of materials about giant sequoia, Paul Spivey Collection at UC Berkeley Bancroft Library, Harold G. Schutt Collection at Cal. State Univ., Fresno library, Hackley-Hume Collection at Michigan State University library.
- various_authors (various years). Timber cruise reports.
- various_authors (various years). Photo collections.
- various_authors (various years). Newspaper articles on giant sequoia and related issues. San Francisco Chronicle, Fresno Bee, Calaveras Californian, other local county papers: Good variety housed at Yosemite National Park Library.
includes: Champion, D. 1986; Rose, G. 1975; Mayo, J. M. 1949
- various_authors (various years). Maps of giant sequoia groves, available at all grove locations.
- various_authors (various years). Bibliographies for articles on giant sequoia cultivation/giant sequoia in other countries. See bibliographies in: Martin, E. J. 1958 and Hartesveldt, R. J. 1969, available at Sequoia-Kings Canyon National Park Library.
see bibliographies in: Martin, E. J. 1958 *Die Sequoien und ihre Anzucht*;
Hartesveldt, R. J. 1969 *Sequoias in Europe*
- various_authors (various years). Letters and notes on giant sequoia issues from the public and park employees.
includes: Clayton, J. E. 1856; Harwell, C. A. 1940; Beck, S. 1975
- various_authors (various years). Letters, notes, and memos on giant sequoia issues from the public and forest employees.
includes: Rogers, R. R. 1985 (multiple notes); Rogers, R. R. 1987; Sackett, S. S. 1991; many USFS memos, some on timber sales
- various_authors (various years). Children's books on giant sequoia, C. Arnold, L. N. Baker, M. M. Buff, K. Baron, and others.
- Vazhov, V. I. and G. D. Iaroslavtsev (1983). Dependence of annual increment of *Sequoiadendron giganteum* on some meteorological elements in the Mountain Crimea. *Biulleten' Gosudarstvennogo Nikitskogo Botanicheskogo Sada* 52: 56-59.
- Vischer, E. (1862). Vischer's views of California: the mammoth tree grove, Calaveras County, California, and its avenues. San Francisco, CA, E. Vischer.
- Vischer, E. (1862?). The forest trees of California. *Sequoia gigantea*. Calaveras mammoth tree grove. San Francisco, CA, Agnew and Deffebach, Printers.
- Waksdal, H. E. (1979a). Environmental assessment management plan for Nelder Grove of giant sequoias.
- Waksdal, H. E. (1979b). Management plan for Nelder Grove of giant sequoias.
- Walker, F. J. (1890). The sequoia forests of the Sierra Nevada - their location and area. *Zoe: A Biological Journal* 1: 198-204.

- Wallis, O. L. (1951). More summer vertebrates of Mariposa Grove. *Yosemite Nature Notes*. 30: 93-95.
- Wason, R. (1958). Guide to the Mariposa Grove nature trail, Yosemite National Park. *Yosemite Nature Notes - Special Edition*. 37.
- Weatherspoon, C. P. (1985). Silvics of giant sequoia. Workshop on Management of Giant Sequoia, Reedley, CA, U.S.D.A. Forest Service.
- Weatherspoon, P. C. (1986). *Sequoiadendron giganteum* ((Lindl.) Bucholz) giant sequoia. *Silvics of North America, USDA, Forest Service Handbook*. 1: 654.
- Weaver, H. (1966). Field trip to the Whitaker Forest of California.
These photos further illustrate the profound ecological changes that have occurred in the mixed conifer forest of California since coming of the white man. All of the larger Sequoias that I have examined show evidence of past fires. Practically all of them bear fire scars that extend into the heart wood. On the summit ridge of Redwood Mountain, however, in Section 22, Township 14 South, Range 28 East, I did find a large Sequoia with no scars, though the bark about the base showed charring from past fires.
- Weaver, H. and H. Biswell (1969). How fire helps the big trees. *National Parks Magazine*. 43: 16-19.
- Weaver, H. E. (1975). *Adventures in the redwoods*, Chronicle Books.
- Weaver, H. E. (1983). *Redwood country*, Chronicle Books.
- Weber, F. J. (1989). *Nation's Christmas tree*. San Fernando, CA, Junipero Serra Press.
- Welch, H. and S. Mizrock (1973). *A biological survey of Long Meadow Grove*.
- Wells, A. J. (1906a). Helping the Sierra sequoias. *Sunset*. 16: 280-283.
- Wells, A. J. (1906b). *The Yosemite Valley and the Mariposa Grove of big trees of California*. San Francisco, CA, Southern Pacific Railway Company.
- Wells, A. J. (1907). *Kings and Kern canyon and the giant forest of California*. San Francisco, CA, Southern Pacific Railway Company.
- Wensel, L. C. and R. L. Schoenheide (1971). Tree volume equations and tables from dendrometer measurements Part 2: Young growth gross volume tables for Sierra Redwood-G Sequoia gigantea-G. *Hilgardia* 41(4): 65-76.
- Western Timber Service (1970). *Sequoia tree inventory*, Western Timber Service, Inc., Arcata, CA.
- Wetmore, C. M. (1986). *Key to sequoia lichens*.
- White, C. A. (192?). *The Mariposa Grove of big trees*. Brochure: 16 pages.
- White, J. R. (1934). Among the big trees of California. *National Geographic*. 66: 219-232.
- Whited, N. (1980). *Interpretive suggestions for Nelder Grove*.
- Whitehead, J. (1978). The giants [*Sequoiadendron giganteum*, notable trees, California]. *Gardeners Chronicle and Horticultural Trade Journal* 183(24): 31-33.
- Whitney, J. D. (1868). *The Yosemite book: a description of the Yosemite Valley and the adjacent region of the Sierra Nevada and of the big trees of California*. New York, New York, J. Bien.
- Williams, J. O. (1871). *Mammoth trees of California*. Boston, MA, A. Mudge & Son, printers.
- Willard, D. (1992a). Black Mountain Grove, a relatively unknown giant sequoia grove. *Fremontia*. 20: 11-14.

- Willard, D. (1992b). Selected perspectives on the giant sequoia groves. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Willard, D. (1992c). The natural giant sequoia (*Sequoiadendron giganteum*) groves of the Sierra Nevada, California - An updated annotated list. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Willard, D. (1995). Giant sequoia groves of the Sierra Nevada: A reference guide. Berkeley, CA, Willard, D.
- Wilson, H. F. (1928). The lore and lure of sequoia. Los Angeles, CA, Wolfer Publishing Company.
- Wilson, R. A. (1992). Symposium results: Views from the agency leadership. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.
- Winchell, L. A. (1933). McKinley grove of sequoias. History of Fresno County and the San Joaquin Valley. A. H. Cawston. Fresno, CA: 161-162.
- Wolford, J. L. (1975). Rooting of *Sequoiadendron giganteum*.
- Wolford, J. L. and W. J. Libby (1976). Rooting giant sequoia cuttings. *The Plant Propagator* 22(2): 3.
- Wood, R. C. (1960). Big tree bulletin; history and botany facts about the north and south grove of Calaveras big trees. Murphys, CA.
- Worrall, J. J., J. C. Correll, et al. (1986). Pathogenicity and teleomorph-anamorph connection of *Botryosphaeria dothidea* on *Sequoiadendron giganteum* and *Sequoia sempervirens*. *Plant Disease* 70(8): 757-759.
- Pathogenicity of *Botryosphaeria dothidea* (= *B. ribis*) to giant sequoia (*Sequoiadendron giganteum*) and coast redwood (*Sequoia sempervirens*) was demonstrated in greenhouse inoculations of both hosts and in field inoculations of giant sequoia. Both the teleomorph and anamorph were found on giant sequoia, and their identity was confirmed by single-ascospore isolations and inoculations. No evidence for host specificity was found
- Wright, H. A. and A. W. Bailey (1982). Fire ecology. United States and southern Canada. New York, USA, John Wiley & Sons.
- A book describing the effects of fire on the major ecosystems of the United States and southern Canada. After an introduction, there are 15 further chapters: Temperature and heat effects; Soil and water properties; Wildlife; Grasslands; Semidesert grass-shrub; Sagebrush-grass; Chaparral and oakbrush; Pinyon-juniper; Ponderosa pine; Douglas-fir and associated communities; Spruce-fir; Red and white pine; Coastal redwood and giant sequoia; Southeastern forests; and Prescribed burning. Subject, plant and animal indexes are included.
- Wulff, J. V., G. W. Lyons, et al. (1911). A study of the reproduction of *Sequoia washingtonia*. Yosemite (various). Reports and documents on giant sequoia measurements.
- Yosemite, N. H. A. (various years). Trail guides and short informational handouts on giant sequoia groves, Yosemite National Park. Yosemite, CA, Yosemite (Natural History) Association.
- Zinke, P. J. and R. L. Crocker (1962). The influence of giant sequoia on soil properties. *Forest Science* 8(1): 2-11.
- Zinke, P. J. and A. G. Stangenberger (1992). Soil and nutrient element aspects of *Sequoiadendron giganteum*. Symposium on Giant Sequoias: Their Place in the Ecosystem and Society, Visalia, CA, USDA Forest Service.