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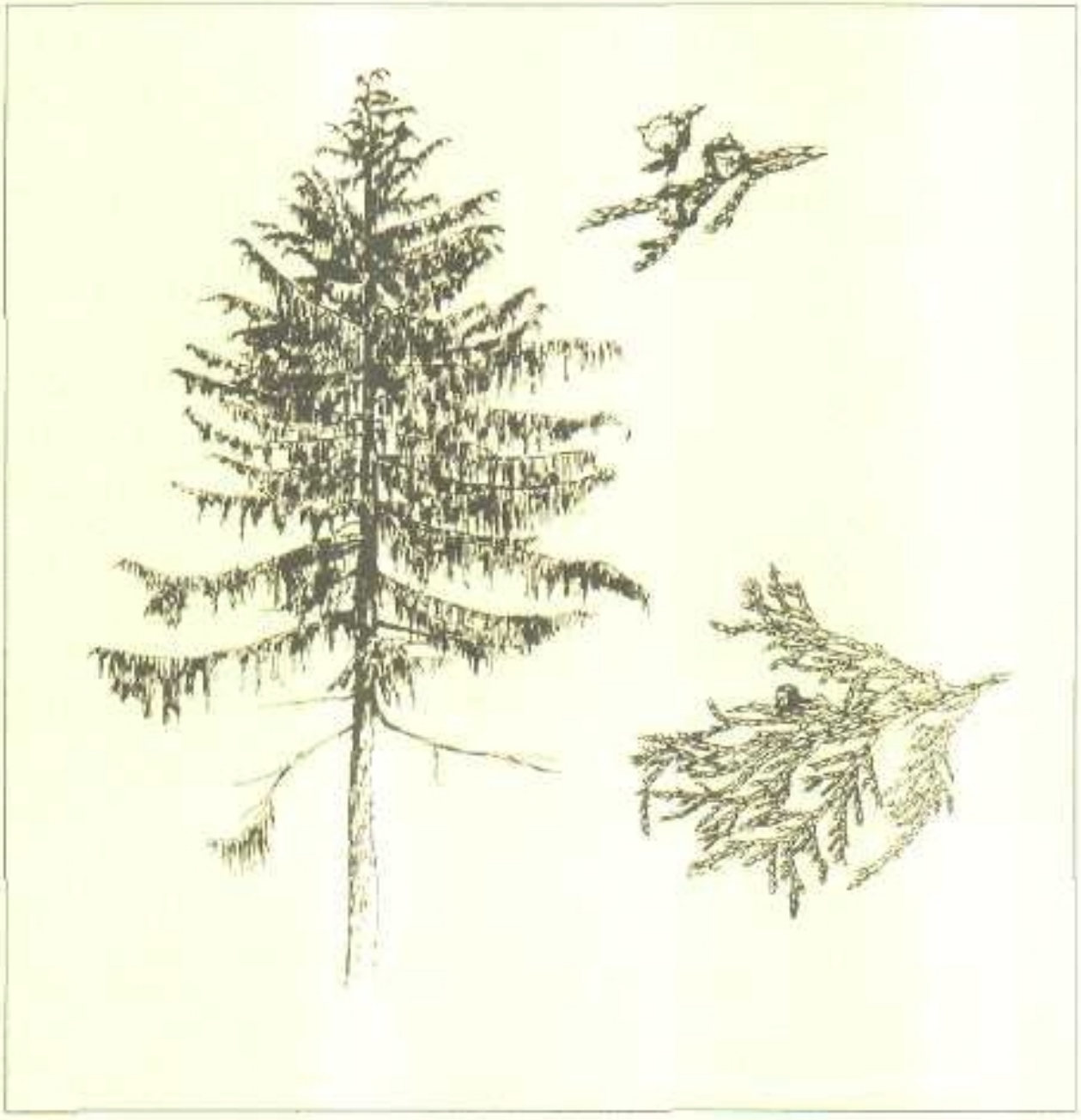
Annotated Bibliography of *Chamaecyparis nootkatensis*



Compilers

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Annotated Bibliography of *Chamaecyparis nootkatensis*

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Compilers

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Abstract

Hennon, P.E ; Harris, A.S., comps. 1997. Annotated bibliography of *Chamaecypans nootkatensis* Gen Tech Rep PNW-GTR-413 Portland, OR US Department of Agriculture, Forest Service, Pacific Northwest Research Station 112 p

Some 680 citations from literature treating *Chamaecypans nootkatensis* are listed alphabetically by author in this bibliography Most citations are followed by a short summary A subject index is included

Key words Yellow-cedar, Alaska-cedar, Alaska yellow-cedar, bibliography

Foreword

A considerable amount of material has been published on *Chamaecypans nootkatensis* (D Don) Spach in the 28 years since the 1969 printing of "Alaska-cedar, a bibliography with abstracts The current bibliography is a revision and expansion of the initial 1969 publication, now out of print The original 301 citations are included here with new ones to form a single bibliography of 680 citations for quick access to literature on yellow-cedar

Citations are listed alphabetically by author and are numbered A subject index refer ences the citation numbers so that users can find literature on a range of topics about this tree species

A brief summary, the majority written by the compilers, follows most of the citations Note that the common name "yellow-cedar[1] is used throughout these summaries Many common names have been used for this tree, but "yellow-cedar" seems to be the one most frequently used within the natural range and refers to the distinctive heartwood color of the tree The accepted U S common name, "Alaska-cedar" (Little 1953), was not used because it refers to only one end of the natural range of the tree Interestingly, even the scientific name has not been universally accepted Penhallow (1896), Camus (1914), Wolf (1948), and Bartel (1993) question whether there are sufficient differences between species of *Chamaecypans* and *Cupressus to* warrant Spach's (1842) construction of the genus *Chamaecypans* Several authors, most notably Penhallow, would return members of *Chamaecypans* to *Cupressus* (e g , *Cupressus nootkatensis* D Don) but maintain these taxa in a small subgenus of formally *Chamaecyparis* species

References on yellow-cedar were found by searching eight major databases, botany and forestry sections of libraries, and the World Wide Web Some were found in the reference or literature cited sections from these papers Others were found by merely collecting photocopies and reprints of papers as we came across them over the years **Please send citations or copies of new literature or older literature that we may have overlooked to one of the authors** (addresses are on the inside front cover) We intend to maintain a consistently updated version of this bibliography

We thank Lillian Petershoare for assistance with literature searches, Karen Esterholdt for help with formatting citations and a thorough review, and Ellen Anderson for the cover illustration We are also grateful to our yellow-cedar colleagues in British Columbia and Oregon who were encouraging, sent reprints of their research, and gave reviews James Arnott, Steven Grossnickle, George Edwards, John Russell, Joe Antos, John Owens, Ingemar Karlsson, Michael McWilliams, and Don Zobel

Contents

Bibliography

1. **Anon. 1929.** Properties and uses of Alaska cypress. The Timberman. 30(11). 39-40

   Discusses briefly the nomenclature, description, character of stands, working qualities, and uses of yellow-cedar Log and lumber grading rules also are discussed.

2. **Anon. 1959.** Canadian building timbers: British Columbia species Wood 24(8)- 322-325

   Yellow-cedar wood is highly regarded in Canada and the United States for interior woodwork and paneling. The wood has a fine texture and is responsive to finishing treatments. Freshly cut wood has a strong but pleasant aromatic scent generally absent in seasoned material. The wood weighs about 29 lb/ft^3 in seasoned condition Shrinkage in drying is slight, and the wood is noted for dimensional stability in service. It is used for both construction and decoration.

3. **Anon. 1985.** Neue Importholzkunde T. 3. Nordamerika. Alaska cedar, yellow cedar *(Chamaecypans nootkatensis-Familie* der Cupressaceen) New knowledge on imported wood. Pt. 3- North America Alaska cedar, yellow cedar *(Chamaecyparis nootkatensis-Family* Cupressaceae Holz-Zentralblatt 111(115). 1646

4. **Abrams, Leroy. 1923.** An illustrated flora of the Pacific States, Washington, Oregon, and California. Vol. 1. Ophioglossaceae to Aristolochiaceae. Palo Alto, CA- Stanford University 557 p (Second printing with minor corrections 1940 538 p.)

   Gives a brief description and illustrations of yellow-cedar's foliage, flowers, and cones

5. **Ackers, C.P. 1947.** Practical British forestry 2d ed. London Oxford University Press 394 p.

   Suggests that yellow-cedar would perform well at high elevations as an introduced tree species.

6. **Adams, Gerard C; Klomparens, Karen L.; Hennon, Paul E. 1995.** Unusual reticulated parenthosomes surround the dolipore of a hyphomycete with clamp connections, *Ditangifibulae dikaryotae* gen et sp nov Mycologia 87' 909-921

   A new genus and species are described for a fungus isolated from a wound on a yellow-cedar tree growing in Alaska.

7. **Akers, H.A.; Browne, S.D.; Scott, J.S. 1982.** Chelators in Cupressaceae as iron transport agents for salmonella-typhimurium. Phytochemistry (Oxford). 21-509-512.

8. **Alaback, Paul B. 1991.** Yellow cypress: an overview of biology and evolution In Lousier, J D., ed. Proceedings of a symposium. Yellow cypress: Can we grow it ? Can we sell it? 1990 March 26-28; Richmond, BC. FRDA Rep. 171 Victoria, BC. Forestry Canada; British Columbia Ministry of Forests: 21-22.

   Provides some general comments on the ecology of yellow-cedar. Classifies yellow-cedar as a stress tolerator. It allocates relatively more resources to defense and less to growth and reproduction than many other conifers. Yellow-cedar would be a good candidate for studies on climate change because of its longevity and responsiveness to environmental changes.

9. **Alden, Harry A. 1995.** *Chamaecyparis nootkatensis* (D. Don) Spach. Wood Technical Fact Sheet. Madison, WI U.S Department of Agriculture, Forest Service, Forest Products Laboratory. 3 p.

   Provides density values and strength properties for the wood of yellow-cedar.

10. **Allen, G.F. 1916.** The forests of Mount Rainier National Park. [Place of publication unknown] U.S. Department of the Interior 32 p

    Yellow-cedar occurs in the park up to 7,000-ft elevation It is common on northern exposures, along streams, and in basins at the head of canyons. It also grows on crests and ridges where frequent showers and fog supply the moisture it demands. In sheltered localities, it grows to a height of 80 ft, but is commonly small with a bent and twisted stem and somewhat scrubby appearance. A general description is given.

11. **Aller, Alvin R. 1956.** A taxonomic and ecological study of the flora of Monument Peak, Oregon. American Midland Naturalist. 56- 454-472.

    Vegetation is described in the Williamette National Forest near Mount Jefferson, Oregon, and yellow-cedar is found sparingly. A small stand of yellow-cedar is reported at the summit of New Monument. Its occurrence is assumed to represent a relic of a larger range that has not been favored by the modern dry climate.

12. **American Forestry Association. 1955.** These are the champs. American Forests. 61(9): 31-40.

    The largest yellow-cedar known is located in Olympic National Park, Washington: circumference at 4-1/2 ft is 21 ft; height 175 ft; spread 27 ft 5 in Reported by Robert L. Wood, Poulsbo, WA.

    [Note. An unpublished report in the World Wide Web (Olympic National Park homepage) describes a yellow-cedar tree in the park to have a 452-in circumference (12-ft diameter) diameter, height of 120 ft, and spread of 27 ft.]

13. **American Forestry Association. 1996.** National register of big trees. American forests 102 (winter): 11-55.

    Mentions that the largest known yellow-cedar occurs in the state of Washington.

14. **American Plywood Association. 1966.** U S product standard PS 1-66 for softwood plywood-construction and industrial, together with DFPA grade marks Tacoma WA 28 p

15. **American Plywood Association. 1995.** The great cover-up, engineered wood products cover reservoir Tacoma, WA Alaska Plywood Association, Engineered Wood Association 2 p

    A huge roof structure was built in Los Angeles to completely cover a 15-acre reservoir Yellow cedar Glulam beams were chosen for all support pieces because of their strength and their durability without using wood preservatives The unique domelike roof reduces evaporation and protects 90 percent of the drinking water for the City of Los Angeles

16. **Andersen, Harold E. 1959.** Silvical characteristics of Alaska-cedar *(Chamaecyparis nootkatensis)* Juneau Sta Pap 11 Juneau, AK US Department of Agriculture, Forest Service, Alaska Forest Research Center 10 p

    Describes the distribution, habitat, life history, and varieties of yellow-cedar

17. **Andersen, N.H.; Falcone, M.S.; Syrdal, D.D. 1970.** Sesquiterpenes-identification of dehydrogenation products Phytochemistry 9 1341-1343

    Leaf-oil of *Chamaecyparis nootkatensis* is examined by using a technique of small-scale dehydrogenation and gas-liquid chromatography The absence of eualalene confirms the difference between heartwood oil and leaf oil

18. **Andersen, N.H.; Syrdal, D.D.; Graham, C. 1972.** The absolute stereochemistry of the calamenenes Tetrahedron Letters 10 905-908

    Reports on the cis and trans structures of calamenenes from the leaf oil of yellow-cedar Includes the artificial synthesis of these compounds

19. **Andersen, Niels H.; Syrdal, Daniel D. 1970.** Terpenes and sesquiterpenes of *Chamaecyparis nootkatensis* leaf oil Phytochemistry 9 1325-1340

    The composition of leaf oil extracted from yellow cedar is reported The sesquiterpenes valencene and nootkatene from the heartwood of yellow-cedar are not found in leaf oil

20. **Andersen, Niels H.; Syrdal, Daniel D. 1970.** The alaskenes—precursors of tricyclic sesquiterpenes Tetrahedron Letters 26 2277-2280

    Reports on the stereochemistry of the sesquiterpene leaf fraction and discusses the biogenetic importance of these stereo assignments

21. **Andersen, Niels H.; Syrdal, Daniel D. 1972.** The absolute stereochemistry of the alaskenes and acorone related sesquiterpenes, *Chamaecypans nootkatensis, Juniperus rigida* Tetrahedron Letters 10 899-902

    Determines the structure of several constituents of leaf oil from yellow-cedar

22. **Anderson, J.P. 1918.** Plants of southeastern Alaska Proceedings of the Iowa Academy of Science 25 427-432

Indicates that yellow-cedar is common around Sitka and many other parts of southeast Alaska, where it occurs from sea level to about 2,000 ft elevation

23. **Anderson, J.P. 1959.** Flora of Alaska and adjacent parts of Canada Ames, IA Iowa State University Press 543 p (Reprinted 1973 Provo, UT Brigham Young University Press)

Provides a brief description of yellow-cedar The 1973 reprint contains illustrations of foliage and cones

24. **Anderson, Jacob Peter. 1916.** Notes on the flora of Sitka, Alaska Proceedings of the Iowa Academy of Science 23 427-482

Describes the growth and form of yellow-cedar and other vegetation in the vicinity of Sitka Includes a plate and a caption illustrating a dying yellow-cedar

25. **Anderson, James R. 1925.** Trees and shrubs, food, medical, and poisonous plants of British Columbia Victoria, BC King's Printer 165 p

A brief description of the tree's appearance, uses, and range in Alaska and British Columbia The odor of the wood is described as "strong and pleasant"

26. **Anderson, P.M.; Brubaker, L.B. 1993.** Holocene vegetation and climate histories of Alaska In Wright, H E , Jr, ed Global climates since the last glacial maximum Minneapolis, MN University of Minnesota Press 386-400

27. **Andrews, Clarence L. 1934.** Russian shipbuilding in the American colonies Washington Historical Quarterly 25 3-10

Describes the use of yellow-cedar for shipbuilding in Alaska by the early Russian colonists, including the construction of the famous *Politofsky,* a steamer ultimately purchased by the United States after the transfer of the Alaska Territory Sitka was a center of shipbuilding during the end of the period of Russian control of Alaska 'Russian writers state with pardonable pride that there was no establishment for shipbuilding in San Francisco fit for handling vessels, that there was only one on the whole stretch of Northwest Coast, the one at Sitka, and that to it all ships requiring repair must come "

28. **Antos, Joseph A.; Zobel, Donald B. 1986.** Habitat relationships of *Chamaecyparis nootkatensis* in southern Washington, Oregon, and California Canadian Journal of Botany 64 1898-1909

Provides detailed information on the ecology of yellow-cedar in the southern portion of its range, including growth form, reproduction, and occurrence related to physical parameters and associated flora Compares these characteristics with growth in the northern portion of its range Illustrates study sites in Washington, Oregon, and California, which may be the best distribution map for yellow-cedar in this part of its range Describes reproduction from seed and from layering Provides a correlation of height-age for yellow-cedar trees Indicates that the current populations may be relicts of those more widespread in moister times Competing

trees of other species may limit its distribution today. The most consistent characteristic of yellow-cedar's occurrence is its proximity to moderate- and high-elevation sites that lack a closed forest canopy, rock outcrops, avalanche tracks, and the margins of meadows, lakes, and streams

29. **Archer, C.F. 1952.** Kiln-drying schedules for British Columbia woods [Mimeograph]. V-1012. [Place of publication unknown]. Forest Products Laboratory, Canada.

    Yellow-cedar seasons readily, and 1- and 1-1/2-in stock may be dried successfully by the same schedule as that for western redcedar. Two-inch stock, particularly wide clear wood, requires more careful treatment, and a schedule is given

30. **Arno, Stephen F. 1966.** Interpreting the timberline an aid to help park naturalists to acquaint visitors with the subalpine-alpine ecotone of western North America. San Francisco: Western Research Office, U S. National Park Service; [Missoula]: University of Montana. 206 p. M.F. thesis.

    Yellow-cedar is the highest reaching tree species, ascending beyond 7,000 ft and growing out of rock cliffs in the Olympic National Park rain shadow Krummholz of this species have advantages over others in severe alpine environments because of extremely durable wood and more flexible branchlets that are less apt to be scoured off. Roots of Krummholz yellow-cedar may extend 100 ft. Root sprouting and layering probably explain scrubline development of yellow-cedar shrubs whose foliage may form circles nearly 50 ft in diameter. Its wood is very durable; trees killed nearly 50 yr in the past were used to build much of the interior of a well-known administration building. The condition of yellow-cedar at timberline throughout its range is discussed.

31. **Arno, Stephen F.; Hammerly, Ramona P. 1977.** Northwest trees. Seattle, WA: The Mountaineers. 222 p.

    Gives a line drawing of yellow-cedar, a description of the tree, and information on the range and habitat requirements. Describes Krummholz growth of yellow-cedar. Mentions the construction of buildings from the wood of yellow-cedars dead nearly 50 years.

32. **Arnott, J.T.; Beese, W.J.; Mitchell, A.K.; Peterson, J. 1995.** Proceedings of the montane alternative silviculture systems workshop; 1995 June 7-8; Courtenay, BC FRDA Rep. 238. Victoria, BC Canadian Forest Service; British Columbia Ministry of Forests. 122 p.

33. **Arnott, J.T.; Grossnickle, S.C.; Puttonen, P.; Mitchell, A.K.; Folk, R.S. 1993.** Influence of nursery culture on growth, cold hardiness, and drought resistance of yellow cypress. Canadian Journal of Forest Research. 23: 2537-2547.

    Studies the influence of short and long photoperiods and three levels of moisture stress on shoot morphology and physiology of yellow-cedar rooted cuttings. Moisture stress reduced growth, but short photoperiod did not. Short days or moisture stress had little effect on cold hardiness. Gas exchange rates were reduced significantly by low root temperature. Shoot growth can be controlled in the nursery by using 9-hr photoperiods and specific predawn shoot water potentials.

34. Arnott, J.T.; Pendl, FT. 1994. Field performance of several tree species and stock types planted in montane forests of coastal British Columbia Inf Rep BC-X-347 Victoria, BC Canadian Forest Service, Pacific Forestry Centre 45 p

Reports on the survival and growth of yellow-cedar and other tree species 13 years after planting in British Columbia Yellow-cedar had the best survival and second best height growth of species planted in montane environments Yellow-cedar suffered the greatest form problems, which were attributed primarily to snow breakage and, to a lesser degree, browsing

35. Arnott, J.T.; Puttonen, P.; Mitchell, A.K. 1992. Short and long-term responses of yellow cypress cuttings to different environmental regimes in the nursery Acta Horticulturae 2(319) 377-382

Several treatments were given to rooted cuttings of yellow-cedar to induce dormancy and prepare stock for transplanting Short daylength and water stress reduced shoot growth, but responses were transitory Short daylength increased cold hardiness but water stress did not Implications for short- and long-term treatment effects on survival and growth are given

36. Arnott, J.T.; Scagel, R.K.; Evans, R.C.; Pendl, FT. 1995. High elevation regeneration strategies for subalpine and montane forests of coastal British Columbia FRDA Rep 229 Victoria, BC Canadian Forest Service, British Columbia Ministry of Forests 30 p

An assessment was made of artificial and natural regeneration with several endemic tree species at 12 different locations at middle and high elevations (e g , 500-1000 m) in southwestern British Columbia Survival for planted yellow-cedar seedlings was high (over 90 percent after 13 yr), but this species had the highest frequency (55 percent) of stem and form defects Most damage was attributed to breakage from snow The authors speculated that this problem would subside as seedlings grew larger The most common causes of seedling mortality for yellow-cedar seedlings were drought and winter desiccation (for the first 3 yr) and competing vegetation (for yr 4 to 13)

37. **Arthur, J.C. 1916.** A *Gymnosporangium* with repeating spores American Journal of Botany 3 40-45

The foliar rust fungus is formally described from a specimen collected from a yellow-cedar tree growing on Mount Jefferson, Oregon The fungus was first collected by Trelease while on the Harriman expedition near Sitka, Alaska This fungus is unique for the genus in having a uredial stage

38. Arthur, J.C. 1926. Additions and corrections North American Flora 7 733-796

Discusses the foliar rust of yellow-cedar, *Gymnosporangium nootkatense*

39. Atzet, Thomas; McCrimmon, Lisa A. 1990. Preliminary associations of the southern Oregon Cascade mountain province Grants Pass, OR U S Department of Agriculture, Forest Service, Siskiyou National Forest 330 p

40. Atzet, Thomas; Wheeler, David L. 1984. Preliminary plant associations of the Siskiyou Mountain province Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Region 278 p

41. **Auclair, Allan N.D.; Martin, Hans C; Walker, Sherry L. 1990.** A case study of forest decline in western Canada and the adjacent United States Water, Air, and Soil Pollution 53(1-2) 13-31

Contrasts the two major forest declines of western North America, including that of yellow-cedar, and several minor declines with 20 characteristics and symptoms of forest decline Presents an hypothesis that yellow-cedar decline and pole blight of western white pine were both initiated by extreme winter weather events that led to cavitation in the xylem of affected trees

42. **Aulin-Erdtman, Gunhild. 1950.** Studies of the tropolone series I Thujaplicins and nootkatin Acta Chemica Scandinavica 4 1031-1041

Ultraviolet absorption spectra and molecular weight determinations are given for a new natural compound, nootkatin, which was isolated from the heartwood of *Chamaecypans nootkatensis* Nootkatin is shown to be a tropolone derivative

43. **Babb, M.F. 1959.** Ornamental trees and shrubs for Alaska Bull 24 [Place of publication unknown] Alaska Agricultural Experiment Station 39 p

Contains a brief description of yellow-cedar The species has only limited suitability for landscaping in southeast and extreme southern Alaska

44. **Baerg, Harry J. 1955.** How to know tne western trees, pictured keys to the native and cultivated trees found growing in the Rocky Mountains and westward, with suggestions and aids for their study Dubuque W C Brown Co 170 p

45. **Bailey, Harold E.; Bailey, Virginia Long. 1941.** Forests and trees of the western national parks Conserv Bull 6 [Place of publication unknown] U S National Park Service 129 p

46. **Bailey, L. H. 1933.** The cultivated conifers in North America, comprising the pine family and the taxals (successor to the cultivated evergreens) New York Macmillan 404 p (2d printing, 1948)

Contains a brief description of yellow-cedar and describes four varieties var *compacta,* var *glauca,* var *lutea,* and var *pendula*

47. **Bailey, Virginia L; Bailey, Harold E. 1949.** Woody plants of the western national parks, containing keys for the identification of trees and shrubs American Midland Naturalist, Monogr 4 Notre Dame, IN University Press 274 p

Contains a key that includes yellow-cedar

48. **Baillaud, L; Courtot, Y. 1961.** Nouvelles remarques sur le rythme de la repartition des rameaux du *Chamaecypans nootkatensis* New remarks on the rhythm of distribution of branchlets of *Chamaecypans nootkatensis* Annales Scientifiques de I Universite Besancon 17 63-68

Reports on a study of the branching habits of yellow-cedar Spacing between leaf axils increased from the base to the apex of branches

49. Baillaud, Lucien; Courtot, Yvette. 1955. Correlations et polarities dans la morphologie d un cypres Correlations and polarities in the morphology of a cypress Annales Scientifiques de l'Universite de Besancon 6 83-93

A study on the morphology of yellow-cedar

50. Baker, Frederick S. 1949. A revised tolerance table Journal of Forestry 47 179-181

Yellow-cedar is classed as "tolerant" on a scale including very tolerant, tolerant, intermediate, intolerant, and very intolerant It is also marked as a species for which there are few data, and Baker cautions that this classification is highly uncertain

51. Baker, William H. 1951. Plants of Fairview Mountain, Calapooya Range, Oregon American Midland Naturalist 46 132-173

Yellow-cedar and mountain hemlock are characteristic trees in the Hudsonian zone, ranging from about 5,000- to 6,000-ft elevation

52. Balfour, F.R.A. 1932. The history of conifers in Scotland and their discovery by Scotsmen In Conifers in cultivation Conifer Conference, Royal Horticultural Society Report 1931 177-211

Cupressus nootkatensis was discovered by Menzies and named by Lambert after the sound on the west of Vancouver Island where Captain Colnett's ship, Prince of Wales, anchored in July 1787 The tree was brought into cultivation in 1853 No cypress is of more symmetrical habit or hardier constitution

53. Bancroft, Hubert Howe. 1886. History of Alaska, 1730-1885 San Francisco The History Co Publishers 775 p (Reprinted, New York Antiquarian Press)

Yellow-cedar is the most valuable timber found on some of the islands in the Alexander Archipelago and in the neighborhood of Sitka and frequently attains a height of 100 ft and diameters of 5 or 6 ft The wood is in demand by shipbuilders and cabinetmakers because of its fine texture, durable quality, and aromatic odor

54. Bandegee, T.S. 1910. Partial list of plants, chiefly shrubs and trees In Heller, Edmund, ed Mammals of the 1908 Alexander Alaska expedition, with descriptions of the localities visited and notes on the flora of the Prince William sound region Berkeley, CA University Press University of California Publications in Zoology 5(11) 349-360

Notes that yellow-cedar is found on the northeast point of Hinchinbrook Island in Prince William Sound It grows close to the shore at low elevation It was not seen elsewhere, but is known from Hawkins and Glacier Islands The distribution of yellow-cedar in this area is thought to be very sporadic Other vegetation encountered is described

55. Banerjee, Mishtu; Maze, Jack. 1991. Within-population variation in yellow cypress forestry implications In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it? Can we sell it ? 1990 March 26-28, Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 49-50

Reports on the morphology and growth of open-pollinated progeny from two sites (swamp and upland) in British Columbia Results indicate that inbreeding occurs in some portions of tree crowns where they are isolated horizontally or vertically from neighboring yellow-cedars Recommends seed collections from codominant trees rather than dominant trees, because the former are more likely to be outcrossing

56. Banerjee, Satindranath Mishtu. 1991. The ontogeny of morphological variation an example from yellow-cedar, *Chamaecyparis nootkatensis* (D Don Spach) Vancouver University of British Columbia M S thesis

57. Bannan, M.W. 1950. Abnormal xylem rays in *Chamaecypans* American Journal of Botany 37 232-237

Abnormal rays, such as reported previously for *Thuja, Juniperus,* and *Libocedrus,* occur also in *Chamaecypans* They are larger than ordinary rays and differ in the arrangement and structure of the cells The abnormal rays are described in detail Three species of *Chamaecypans* were studied *C lawsoniana, C thyoides,* and *C nootkatensis*

58. Bannan, M.W. 1950. The frequency of anticlinal divisions in fusiform cambial cells of *Chamaecypans* American Journal of Botany 37 511-519

Frequency of anticlinal divisions in fusiform cambial cells of *Chamaecypans lawsoniana, C thyoides, and C nootkatensis* was studied Nearly all anticlinal divisions were of the pseudotransverse type and occurred as often as three or four times a year when growth was vigorous

59. Bannan, M.W. 1951. The annual cycle of size changes in the fusiform cambial cells of *Chamaecypans* and *Thuja* Canadian Journal of Botany 29 421-437

In stems exceeding a few inches in diameter, most of the pseudotransverse divisions involved in the multiplication of fusiform cambial cells occur toward the end of the growing season Often these aestival transverse divisions are immediately followed by extensive elongation of the newly formed cambial cells, especially at their overlapping tips In the succeeding year, relatively slight elongation ensues during the development of the first quarter of the annual ring, but through the succeeding quarters the amount of extension increases and is usually maximal in the final quarter The actual rates of elongation remain undetermined The multiplication of fusiform initials is accompanied by loss, most of the failure taking place during the last quarter Generally the fusiform initials with the most extensive ray contacts survive and enlarge, and those with poor ray associations fail or are reduced to potential ray initials The elongations and multiplication of fusiform initials tend to produce local ray deficiencies Reduction of the fusiform initials with the poorest ray contacts to ray initials, rectifies to a varying extent the ray shortages in those areas (Bannan's summary)

60. Bannan, M.W. 1951. The reduction of fusiform cambial cells in *Chamaecypans* and *Thuja* Canadian Journal of Botany 29 57-67

The loss of fusiform initials from the cambium which is of frequent occurrence in all parts of the tree, takes place in different ways Some cambial cells seem gradually to fail and are shortly lost from the cambium by maturation into more or less imperfect xylem or phloem elements The majority are transversely subdivided by one or a succession of anticlinal divisions that begin near the center of the fusiform initial and usually extend to the daughter cells The resulting segments shorten through the following periclinal divisions, some disappearing during the process of shortening and others undergoing transformation to rays initials Nearly all new rays in the secondary body originate in this manner

61. Bannan, M.W. 1952. The microscopic wood structure of North American species of *Chamaecypans* Canadian Journal of Botany 30 170-187

The trends in variation in different parts of the tree with regard to tracheid and ray cell dimensions size and distribution of rays, size and arrangement of pits, and thickness of cell walls were compared between three species of American *Chamaecypans* and other Cupressaceae Intraspecific variability is usually so extensive that specific ranges overlap widely No single microscopic character is entirely diagnostic, but certain structural features are valuable when used together Despite this variability, Penhallow (1896) uses these characteristics to organize these species taxonomically

62. Bannan, M.W. 1966. Spiral grain and anticlinal divisions in the cambium of conifers Canadian Journal of Botany 44 1515-1538

Discusses the orientation of pseudotransverse divisions in the cambium of conifers and presents in tabular form the sequels to 40 000 pseudotransverse divisions, with reference to failure or lineal continuation of sister fusiform initials arising therefrom in 25 conifer species, including yellow-cedar

63. Bannan, M.W.; Bayly, Isabel L. 1956. Cell size and survival in conifer cambium Canadian Journal of Botany 34 769-776

Discusses the process of division and survival of fusiform initials in conifers Length of fusiform initials at pseudotransverse division, and information on surviving and failing fusiform initials of 15 conifers, including yellow-cedar, are tabulated

64. Bannan, M.W.; Whalley, Barbara E. 1950. The elongation of fusiform cambial cells in *Chamaecypans* Canadian Journal of Forest Research 28C 341-355

After their origin, sister fusiform initials usually elongate rapidly Rate and amount of extension differ, often proceeding in a somewhat periodic fashion Growth appears to be apical, 'intrusive' in the sense that the elongating tips thrust between other cells No evidence was found to support the theory of simultaneous elongation of considerable portions of adjoining walls by "symplastic" growth

65. Banner, A. 1985. Classification and successional relationships of some bog and forest ecosystems near Prince Rupert, British Columbia Forestry Abstracts 46(10) 633

66. Banner, A.; Pojar, J.; Rouse, G.E. 1983. Postglacial paleo ecology and successional relationships of a bog woodland near Prince Rupert, British Columbia, Canada Canadian Journal of Forest Research. 13: 938-947

The historical abundance of vegetation of the north coast of British Columbia is reconstructed by using pollen analysis, peat stratigraphy, and radiocarbon dating Pollen grains from western redcedar and yellow-cedar were not distinguished from one another and were grouped as cedars. Cedars were present during the entire sequence (e g , from 8700 yr BP to present) and began to dominate vegetation from their zone III. A cooler wetter climate about 7000 to 6000 yr BP to the present may have triggered this development. These floristic patterns indicate a successional complex in continual flux, with climate playing an important controlling role. The authors mention Heusser's (1960) comment that cedar pollen does not preserve well, but they suggest that cedar pollen found in their deeper (older) samples appeared as well preserved as those found near the surface.

67. Bannister, M.H. 1962. Prospects for selection in the cypresses. New Zealand Journal of Forestry. 8: 545-559.

Reviews the distribution and characteristics of *Cupressus* and *Chamaecyparis,* the occurrence of natural hybrids, and the possibility of breeding for superior qualities.

68. Banthorpe, D.V.; Duprey, R.J.H.; Janes, J.F.; Voller, CM. 1977. Distribution of longibornane sesquiterpenes. Part 1: Reexamination of some reported sources. Planta Medica. 31(3): 278-285.

Yellow-cedar leaf oils and several other plant extracts were tested as possible sources of longifolene and related compounds. The concentrations of these compounds from yellow-cedar leaf oil are given. A pine and a liverwort are more likely sources.

69. Barbour, Michael G.; Major, Jack. 1977. Terrestrial vegetation of California. New York: John Wiley and Sons

Mentions the occurrence of yellow-cedar in the subalpine communities around the Siskiyou Mountains in California and gives specific locations (p. 729) A table lists yellow-cedar as a minor forest component on mesic and xeric slopes in both a Shasta [red] fir and a mountain hemlock series. A figure suggests that yellow-cedar has a wide range of moisture tolerance. Yellow-cedar is listed with other conifers having low fire resistance and very low colonizing ability. It apparently persists in open areas because of its ability to reproduce vegetatively

70. Barker, J.E. 1991. Operational use of yellow cypress in coastal British Columbia. In. Lousier, J.D., ed. Proceedings of a symposium. Yellow cypress: Can we grow it? Can we sell it ? 1990 March 26-28; Richmond, BC. FRDA Rep. 171 Victoria, BC Forestry Canada; British Columbia Ministry of Forests: 44-48.

Summarizes the planting program for yellow-cedar in British Columbia. Presents results on the growth of yellow-cedar plantings. Recommends more work on tree improvement.

71. Bartel, Jim A. 1993. CupressacGae, Cypress family In Hickman, James C , ed. The Jepson manual, higher plants of California. Berkeley, CA. University of California Press 111-115

Gives a key to the family Cupressaceae, its genera, and species in California. Interestingly, the author chooses to use *Chamaecyparis* as a subgenus of *Cupressus* and to place Port-Orford-cedar and yellow-cedar in this section of *Cupressus,* the latter under the name *Cupressus nootkatensis* D. Don.

72. Barton, G.M. 1976. A review of yellow cedar *{Chamaecyparis nootkatensis* [D. Don] Spach) extractives and their importance to utilization. Wood and Fiber 8 172-176

Reviews known information and literature on the chemistry of extractives from foliage and heartwood of yellow-cedar by providing a chronological sequence of discovery Indicates that the extractives from heartwood are solely responsible for the excellent durability of yellow-cedar wood.

73. Barton, G.M.; MacDonald, B.F. 1971. Chemical reactions in green wood Ottawa- Canadian Forestry Service, Department of Fisheries and Forestry Bi-Monthly Research Notes. 27(6). 41.

Of western conifers, only western redcedar and yellow-cedar contain both 6- and 7-carbon ring structures in wood

74. Bauger, E.; Smitt, A. 1960. Et treslags-og proveniensforsok på Stad An experiment on tree species and provenances on Stad. Meddelelser fra Vestlandets Forstlige Forsoeksstasjon 11(2)34- 61-121

Yellow-cedar from Chichagof Island, Alaska, was planted in 1922 as 2-2 planting stock Seventy percent survived. Most were about 40-50 cm high but a few were 1 5 m when sheltered They are green and look healthy but have not been able to grow above the surrounding vegetation because of wind. Cones with seed were found on even the small plants. The species is not suitable for planting along the outer coast because of wind

75. Becking, Rudy W. 1956. Die naturlichen Douglasien-Waldgesellschaften Washingtons und Oregons: The forest associations of Douglas-fir in its natural range in Washington and Oregon Allgemeine Forst- und Jagdzeitung. 127(2/3) 42-56. In German, English summary.

Yellow-cedar is included in the tree species found in the subalpine salal-Pseudotsuga *(Gaultherieto-Pseudotsugetum Subalpinum)* association characteristic for elevations from 3,000 ft to timberline (7,000-8,000 ft) in Oregon and Washington

76. Beese, W.J. 1992. Third-year assessment of prescribed burning on forest productivity of some coastal British Columbia sites. FRDA Rep. 181. Victoria, BC. Forestry Canada, British Columbia Ministry of Forests. 46 p

77. Bender, F. 1963. Cedar leaf oils Publ 1008 [Place of publication unknown] Canadian Department of Forestry, Forest Products Research Branch 16 p

Describes methods of producing oil from leaves of *Thuja occidentalis T plicata, Juniperus virginiana,* and *Chamaecypans nootkatensis,* and gives data on yields, production, and prices Some properties of the oil are tabulated and a brief description is given of the industry in Canada and the United States with details of the main commercial outlets in Canada

78. Benson, Gilbert Thereon. 1930. The trees and shrubs of western Oregon Contributions to Dudley Herbarium Stanford University, CA Stanford University Press 170 p Vol 2

Briefly reviews nomenclature and distribution of yellow-cedar in Oregon Yellow-cedar is listed, along with *Pinus albicaulis, Abies lasiocarpa,* and *Tsuga mertensiana,* as the most distinctive trees in the Hudsonian zone in the high peaks of the Cascade Range, Siskiyou Mountains, and Coast Range

79. Bernard, Stephen R.; Brown, Kenneth F. 1977. Distribution of mammals, reptiles, and amphibians by BLM physiographic regions and A W Kuchler's associations for the eleven Western States Tech Note 301 Denver, CO U S Department of the Interior, Bureau of Land Management 169 p

80. Berry, James B. 1924. Western forest trees New York Dover Publishers 212 p (Corrected reprint of original publication by World Book Co , 1964)

81. Betts, H.S. 1929. The strength of North American woods Misc Publ 46 Washington, DC U S Department of Agriculture 17 p

Contains tables showing the properties of various woods, actual and comparative, with explanations

82. Betts, H.S. 1954. Alaska-cedar *(Chamaecyparis nootkatensis)* American woods series Washington, DC U S Department of Agriculture 4 p

Summarizes the supply, growth, wood properties, and uses of yellow-cedar Provides a map of the natural range known at the time

83. Beyse, R. **1990.** Nadelhoelzer aus Nordamerika Conifers from North America Forst- und Holzwirtschaft (Germany) 45 610-612

84. Bilderback, T. 1983. Leyland cypress propagation (x *Cupressocyparis leylandu,* an intergeneric hybrid between *Cupressus macrocarpa* and *Chamaecyparis nootkatensis)* International Plant Propagators' Society 32 410-413

Gives results on rooting cuttings of Leyland cypress Describes a few ornamental uses Mentions that the hybrid is sometimes attacked by a bagworm, and in the San Francisco Bay area, it is susceptible to *Phomopsis* canker Claims that several of the clones of Leyland cypress may be the fastest growing conifers in the world

85. **Blackerby, Alva W. 1945.** Opportunities for minor wood product industries in Alaska Juneau, AK U S Forest Service, Alaska Region 20 p

86. **Bloome, R.; van Hulle, J. 1967.** Vegetative propagation of trees *Chamaecyparis nootkatensis* No 42 Wetteren, Belgium B V O Madelelingen 5 p

Reported little success in early attempts to root cuttings of ornamental yellow-cedar trees

87. **Bones, J.T. 1963.** Relating outside- to inside-bark diameter at top of first 16-foot log for southeast Alaska timber Tech Note 52 Juneau AK U S Forest Service, Northern Forest Experiment Station 2 p

Shows conversion factors relating diameter outside bark to diameter inside bark for western hemlock, Sitka spruce, yellow-cedar and western redcedar, with information on the number and size of sample trees measured

88. **Bongard, M. 1833.** Observations sur la vegetation de I lie de Sitcha Comments on the flora of Sitka Island Memoires de L'Academie Imperiale des Sciences de St Petersbourg 6(2) 119-177

Yellow-cedar is formally described as a new species under the scientific name *Thuja excelsa* Bong from specimens collected near Sitka A translation of the introduction to this paper suggests that Mertens (1833) may have made the plant specimen collections Probably unknown to Bongard, yellow-cedar was described by David Don 9 years earlier under the name *Cupressus nootkatensis* (see Don 1824) Under the rules of botanical nomenclature, the first valid description takes precedence, but the name *Thuja excelsa* is commonly used early in the 1900s, especially in Europe

89. **Borchers, Susan L.; Wertheim, Charles. 1992.** Forest plant identification guide, Chugach National Forest R-10-MB-189 Anchorage, AK US Department of Agriculture, Forest Service, Chugach National Forest 124 p

Gives a brief description of yellow-cedar and mentions that it can be found in association with birch in Prince William Sound

90. **Bower, R.C.; Ross, S.D.; Dunsworth, B.G. 1989.** Effect of GA_3 treatment timing in relation to natural day length on flowering and sex expression in *Chamaecypans nootkatensis* Canadian Journal of Forest Research 19 1422-1428

Reports on a study of hormone gibberelin GA_3 applied to field-grown small trees and potted trees The timing of application had more influence on seed cone formation than did the number of weekly sprays The optimum timing appeared to be linked to a specific stage of ontogeny during development of the bud apex This occurs shortly after resumption of shoot elongation in spring and seems to be triggered by accumulation of heat sum (degree days) rather than photopenod A higher concentration of gibberelhn was required to initiate seed cones than pollen cones

91. Bowers, Nathan A. 1942. Cone-bearing trees of the Pacific coast New York, London. Whittlesey House, McGraw-Hill. 169 p. (Reprinted in 1956, Palo Alto, CA- Pacific Books)

Gives a description, distribution, elevational limits within the range, and some general information about yellow-cedar. Both editions give the same information on yellow-cedar

92. Brand, D.G.; Leckie, D.G.; Cloney, E.E. 1991. Forest regeneration surveys: design, data collection, and analysis. Forestry Chronicle. 67: 649-657.

Principles and methods are given for designing regeneration surveys The use of aerial photography for measuring stocking levels is described. Case studies from British Columbia are used, which involve sites with natural regeneration of yellow-cedar Height growth for these seedlings is reported

93. Brasier, C.M.; Hamm, P.B.; Hansen, E.M. 1993. Cultural characteristics, protein patterns and unusual mating behaviorof *Phytophthora gonapodyides* isolates from Britain and North America Mycological Research. 97. 1287-1298.

Provides evidence that the identify of the fungus isolated by Hansen et al. (1988) from yellow-cedar forests is *Phytophthora gonapodyides*

94. British Columbia Forest Service. 1957. Continuous forest inventory of British Columbia. Victoria, BC: Department of Lands and Forests. 223 p.

95. British Forestry Commission. 1967. Nootka cypress trials. In: Extract from report on forest research. London British Forestry Commission' 62-64.

96. British Standards Institute. 1955. Nomenclature of commercial timbers including sources of supply London: Waterlow and Sons, Ltd. 144 p.

Lists scientific, standard, and common names, sources of supply, and wood properties of many woods, including yellow-cedar.

97. Britton, Nathaniel Lord; Shafer, John Adolph. 1908. North American trees, being descriptions and illustrations of the trees growing independently of cultivation in North America, north of Mexico and the West Indies. New York. Henry Holt and Co. 894 p.

Gives a key to the three species of *Chamaecypans* in North America and a description of yellow-cedar using the name, "Sitka cypress." Indicates that yellow-cedar is cultivated widely in Europe under the name *"Thujopsis borealis*"

98. Brix, H.; van den Driessche, R. 1977. Use of rooted cuttings in reforestation- a review of opportunities, problems and activities. Joint Rep. 6. Victoria, BC. British Columbia Forest Service; Canadian Forestry Service 16 p

Discusses the history, advantages, and problems of using rooted cuttings for reforestation. Planting rooted cuttings for reforestation dates back to at least 1400 AD in Japan. Mentions that difficulty in obtaining seed and poor seed germination have prompted the testing of rooted cuttings for regenerating high-elevation sites in British Columbia.

99. **Brockman, C. Frank. 1947.** Flora of Mt Rainier National Park [Place of publication unknown] US Department of the Interior 170 p

Yellow cedar is a conspicuous tree of the Canadian zone between 3,000 and 5,000 ft Foliage is scalelike, the bark is ash gray and flaky, cones are small and globular, and the branches have a characteristic drooping appearance as if wilted This latter character is particularly noticeable along the Paradise Valley highway between Ricksecker Point and Narada Falls

100. **Brockman, C. Frank. 1949.** Conifers of the Cascades University of Washington Arbor Bulletin 12 11 13

Just below the subalpine meadow country in the Cascades, the most characteristic tree association is composed of noble fir, yellow-cedar, and western white pine Intermingled with these principal species are Douglas-fir and western hemlock

101. **Brockman, C. Frank. 1949.** Trees of Mount Rainier National Park Seattle University of Washington Press 49 p

Yellow-cedar is a component of the intermediate forest in elevations from 4,000 to 5,200 ft, the subalpine forest, from 5,000 to 6,500 ft, and the timberline forest from 6,500 to 7,000 ft In the park, it is found most easily along the Paradise Valley highway in the vicinity of Canyon Rim and Narada Falls It is a medium-sized tree from 75 to 100 ft tall and from 1-1/2 to 2 (occasionally 3) ft in diameter, but smaller in exposed situations A general description is given

102. **Brooke, R.C. 1965.** The subalpine mountain hemlock zone Part II Ecotopes and biogeocoenotic units In Krajina V J , ed Ecology of western North America Vancouver BC University of British Columbia, Department of Botany 79-101 Vol 1

The subalpine mountain hemlock biogeoclimatic zone occurs on the crests and slopes of innumerable peaks or ridges forming the Coast Ranges, and in the study area which includes part of Garibaldi Park and the North Shore Mountains, it is found at elevations between about 3,000 and 5,500 ft The zone is characterized in detail Within the forested biogeocoenotic units, yellow-cedar occurs in association with *Tsuga mertensiana* and *Abies amabilis* Understory vegetation also is listed

103. **Brooke, R.C; Peterson, E.B.; Krajina, V.J. 1970.** The subalpine mountain hemlock zone In Krajina, V J , Brooke, R C , eds Ecology of western North America No 2 Vancouver, BC Department of Botany, University of British Columbia 349 p Vol 2

A detailed synthesis on the climate, soils, and ecosystems of the subalpine zone in British Columbia Yellow-cedar has a varied distribution in this zone and, as a productive tree, is confined to habitats with abundant moisture and those with seepage supply Yellow-cedar does not grow well or is absent from mesic habitats where seepage is lacking and deep organic accumulation is extremely acidic

104. Brown, H.P.; Panshin, A.J. 1934. Identification of the commercial timbers of the United States. New York: McGraw-Hill. 223 p.

Describes general characteristics and minute anatomy of many woods. Yellow-cedar has an odor resembling that of raw potatoes with a faint, bitter, somewhat spicy taste. The wood is comparable to that of *Chamaecypans lawsoniana.*

105. Brown, H.P.; Panshin, A.J.; Forsaith, C.C. 1949. Textbook of wood technology. Vol. 1: Structure, identification, defects, and uses of the commercial woods of the United States. New York: McGraw-Hill. 652 p.

106. Browne, J.E. 1962. Standard cubic-foot volume tables for the commercial tree species of British Columbia, 1962. Victoria, BC: British Columbia Forest Service. 107 p.

Appendices contain standard cubic-foot volume tables and merchantable volume factors for yellow-cedar.

107. Brush, Warren D. 1950. Alaska yellow-cedar. American Forests. 56(6): 28-29.

Provides descriptions of yellow-cedar's general appearance, foliage, flowers, cones, seeds, bark, and wood. Gives a map of the known distribution.

108. Butler, Robert A., inventor; County Wood Products, Ltd., assignee. 1987. Processes for extracting fungitoxic material from wood material of a decay-resistant species. U.S. patent 4,645,536 A. February 24. 5 p. 106015050; B05D-001/18A; C09D-005/14B.

109. Calder, James A.; Taylor, Roy L. 1968. Flora of the Queen Charlotte Islands: systematics of the vascular plants. Monogr 4, Part 1. Ottawa: Canada Department of Agriculture, Research Branch.

Notes the occurrence of yellow-cedar on Graham and Moresby Islands in the Queen Charlotte Islands of British Columbia.

110. Campbell, R.B.; Robertson, J. Monteath. 1952. The structure of nootkatin; an X-ray determination. Chemistry and Industry. 52: 1266-1267.

The probable structure of nootkatin is described and illustrated.

111. Camus, A. 1914. Les cyprés (Genre Cupressus). Encyclopédie Économique de Sylviculture II. Pans: Paul Lechevalier. In French.

A detailed description of the genus *Cupressus* and its members. The author suggests that yellow-cedar and other *Chamaecypans* species should reside in the genus *Cupressus.* The author does recognize the similarity among species often referred to *Chamaecypans* and groups them together in a subgenus (section) of *Cupressus.* Morphology, horticultural varieties, and uses are discussed.

112. Canada, Dominion Forest Service. 1961. Native trees of Canada. 6th ed Bull. 61. Ottawa: Canada Department of Mines and Resources, Dominion Forest Service. 291 p

113. Carl, G. Clifford; Guiguet, C.J.; Hardy, George A. 1952. A natural history survey of the Manning Park area, British Columbia Occas Pap 9 Victoria, BC British Columbia Provincial Museum 130 p

114. Carlsson, Blenda; Erdtman, H.; Frank, A.; Harvey, W.E. 1952. The chemistry of the natural order Cupressales VIII Heartwood constituents of *Chamaecyparis nootkatensis*—carvacrol, nootkatin and chamic acid Acta Chemica Scandinavica 6 690-696

A preliminary study of the steam-volatile constituents of the heartwood of yellow cedar resulted in the isolation of carvacrol, the sesquiterpene type tropolone nootkatin, $C_{15}H_{20}0_2$, and a new acid, $C_{10}H_{14}0_2$, for which the name "chamic acid' is proposed

115. Carpenter, Steven E. 1976. Taxonomy, morphology and ontogeny of *Gelatmodiscus flavidus* Mycotaxon 3 209-232

A new family is erected for a fungus found infecting yellow-cedar foliage and twigs in the Cascade Range Details of the fungus' morphology and growth in culture are given

116. Chafe, S.C. 1974. Cell wall thickenings in the ray parenchyma of yellow cypress Bulletin of the International Association of Wood Anatomists 2 3-10

Reports on a study of ray parenchyma cells in yellow-cedar wood Thickenings in the ray parenchyma wall adjacent to the tangential boundaries of longitudinal tracheids are described and illustrated

117. Chafe, S.C; Chauret, G. 1973. Cell wall structure in the xylem parenchyma of trembling aspen Protoplasma 80 129-147

Mentions the presence of an isotropic layer in xylem parenchyma cell walls for various tree species Yellow-cedar is among other conifers in lacking these layers in both axial and ray parenchyma

118. Cheng, Y.S.; von Rudloff, E. 1970. The volatile oil of the leaves of *Chamaecypans nootkatensis* Phytochemistry 9 2517-1527

Analysis of the leaf oil from yellow-cedar indicates that a-pinen, 3-carene, and limonene are the main constituents A number of minor constituents were identified, some of them common in the Cupressaceae, some unique to yellow-cedar

119. Cheng, Y.S.; von Rudolph, E. 1970. Two new diterpenoid oxides from the leaf oil of *Chamaecypans nootkatensis* Tetrahedron Letters 14 1131-1132

Two new compounds are reported from leaf oil of yellow-cedar 8-epimanoyl oxide and 8,13-diepimanoyl oxide

120. Cherry, M.L.; Lester, D.T. 1992. Genetic variation in *Chamaecyparis nootkatens/s* from coastal British Columbia. Western Journal of Applied Forestry. 7: 25-29.

Genetic variation in growth, morphology, and frost hardiness was measured in the progeny from seven open-pollinated families in coastal British Columbia. Provenances differed in percentage germination, shoot dry weight, shoot-to-root dry weight ratio, number of lateral branches per stem, and cold injury Families differed in height, root collar diameter, and the number of nodes of primary foliage.

121. Chittenden, F.J. **1892.** Sundry statistics. Journal of the Royal Horticultural Society (London). [Volume unknown]: 572-574

Tables contain consensus as to conifers suited for particular uses. Yellow-cedar is shown suitable for the following situations parks, large gardens and pleasure grounds, smaller gardens, rock gardens, and windbreaks.

122. Chittenden, F.J. **1931**. Conifers in cultivation: the report of the conifer conference held by the Royal Horticultural Society. London: Royal Horticultural Society. 634 p.

Contains a series of papers that include information on yellow-cedar grown in Great Britain. Also lists statistics on notably large trees.

123. Clark, R.H.; Lucas, Colin C. 1926. The essential oil content of *Chamaecyparis nootkatensis* Transactions of the Royal Society of Canada, Section III. 20: 423-428.

The appearance and some properties of oils distilled from both the foliage and heartwood of yellow-cedar are described. The major constituents of leaf oil seem to be a-pinene, b-pinene mixed with sabine, limonene, and p-cymene.

124. Clark, Wendell P. 1982. Integrated utilization of cedar in southeast Alaska. Seattle, WA: Pan Sylvan. 80 p. [plus 5 appendices]

A report on supply and market conditions for western redcedar and yellow-cedar growing in Alaska, prepared for the USDA Forest Service.

125. Clifford, N. 1957. Timber identification for the builder and architect. London. Leonard Hill Ltd. 141 p.

Describes briefly the color, characteristics, durability, and suitable uses of yellow-cedar wood.

126. Colangeli, Anna M. 1991. Reproductive biology: pollen/seed/seed orchards In: Lousier, J.D., ed. Proceedings of a symposium: Yellow cypress: Can we grow it ? Can we sell it ? 1990 March 26-28; Richmond, BC. FRDA Rep. 171. Victoria, BC: Forestry Canada; British Columbia Ministry of Forests. 29-30.

Describes pollen production in yellow-cedar and feeding damage by a mite. Cones and seeds can develop to maturity in 1 yr with warmer and drier conditions at lower elevations in British Columbia. Germination rates from these first-year cones are reported.

127. Coleman, Babette Brown; Muenscher, Walter C; Charles, Donald R. 1956. A distributional study of the epiphytic plants of the Olympic Peninsula, Washington. American Midland Naturalist. 56. 54-87.

The Hudsonian zone from 3,500- to 5,000-ft elevation is characterized by the yellow-cedar, subalpine fir, mountain hemlock climax. Yellow-cedar is shown to be host to 17 species of lichens and two species of mosses

128. Coleman, W. 1889. On conifers. Journal of the Royal Horticultural Society 11 • 320-339

Describes horticultural uses and culture of many conifers, including yellow-cedar.

129. Collingwood, G.H.; Brush, W.D. 1964. Knowing your trees. Washington, DC. American Forestry Association 349 p

Gives a description and some general information on yellow-cedar Includes photographs, a line drawing of foliage and cones, and a distribution map.

130. Coltman-Rogers, Charles. 1920. Conifers and their characteristics. London John Murray. 333 p.

131. Cooke, Wm. Bridge. 1962. On the flora of the Cascade mountains. Wasmann Journal of Biology. 20. 1-67.

Briefly mentions plant communities where yellow-cedar is found in the Cascade Range

132. Cooley, Grace E. 1892. Impressions of Alaska. Bulletin of the Torrey Botanical Club. 19 178-189.

Mentions observing yellow-cedar under the name *Tsuga excelsa* but does not give the specific location in southeast Alaska.

133. Cooper, G.A. 1969. Durable rustic wooden signboards. Res. Pap. NC-29 St Paul, MN. U S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 15 p.

134. Cooper, P.A. 1971. Quality of treatment of yellow cypress poles pressure impregnated with pentachlorophenol. U.S. Natl. Tech. Infor. Serv. PB Rep. 206206 Vancouver, BC Western Forest Products Laboratory. 13 p

135. Cooper, William S. 1939. Additions to the flora of the Glacier Bay National Monument, Alaska, 1935-1936 Bulletin of the Torrey Botanical Club. 66. 453-456.

Includes yellow-cedar in a list of plants collected by David Brink near Crillon Lake on the west flank of the Fairweather Range, Alaska.

136. Cooper, William S. 1942. Vegetation of the Prince William Sound region, Alaska, with a brief excursion into post-Pleistocene climatic history Ecological Monographs. 12. 1-22.

The author observed yellow-cedar in the Prince William Sound region at its northwestern limit on Glacier Island, where it is locally abundant and thrifty A resident fox farmer reported yellow-cedar trees with diameters up to 3 ft. The isolated occurrences in the Prince William Sound area present an interesting phytogeographic problem, but the species is said to be of little importance ecologically.

137. Cooper, William S. 1957. Vegetation of the Northwest-American province. Pacific Science Congress Proceedings 8(4)- 133-138

Yellow-cedar is listed as one of the 12 character trees of the province

138. Courtot, Y.; Baillaud, L. 1955. Sur la repartition des sexes chez un *Chamaecyparis.* Sex distribution in a *Chamaecypans.* Annales Scientifiques de l'Université de Besancon 6 75-81.

Examination of a branch of *C. nootkatensis* showed a definite sexual "spectrum," with the apex sterile, the female conelets borne on the intermediate portion of the branch, and the male on the oldest, basal part. (From Courtot and Baillaud's summary)

139. Coville, Frederick Vernon; Funston, Frederick. 1895. Botany of Yakutat Bay, Alaska, with a field report. Contributions from the United States National Herbarium 3(6) 325-353

One small yellow-cedar tree was reported near the Native village on Khantaak Island across from Yakutat.

140. Crosby, David. 1965. Conditions of forest insects in forest regions, Alaska. In Forest insect conditions in the United States, 1964 Washington, DC- U S. Department of Agriculture, Forest Service 37

The cedar bark beetle, *Phloeosinus squamosus,* continued activity over much of southeast Alaska in 1964. The rather considerable tree killing was confined to stands of yellow-cedar with low commercial value.

141. Cserjesi, A.J.; Smith, R.S. 1968. Anthraquinone production by a fungus causing black heartwood stain in yellow cedar Mycopathologia et Mycologia Applicata. 35 91-96

A fungus associated with black heartwood in yellow-cedar produces abundant yellow crystals when grown in culture The major constituent of these crystals was identified as 1-hydroxy-3-methyl anthraquinone. The compound was synthesized and tested for its toxicity against various fungi Very negligible toxicity was found, but it did reduce the conidial sporulation of the fungus *Trichoderma virgatum*

142. Czeczuga, B. 1986. Investigations on carotenoids in Embryophyta Part 6: Carotenoids in gymnosperms. Biochemical Systematics and Ecology. 14: 13-15.

The following carotenoid compounds were found from leaf oil of yellow-cedar, lutein epoxide (the most abundant, comprising 33 percent of carotenoids), rubixanthin, B-carotene, B-cryptoxanthin, violaxanthin, heoxanthin, mutatoxanthin, and rhodoxanthin.

143. Dale, Virginia H.; Hemstrom, Miles A.; Franklin, Jerry F. 1984. The effect of disturbance frequency on forest succession in the Pacific Northwest In: New forests for a changing world: Proceedings of the 1983 convention of the Society of American Foresters; 1983 October 16-20; Portland, OR. Bethesda, MD: Society of American Foresters: 300-304.

144. Dallimore, W.; Jackson, A. Bruce. 1923. A handbook of Coniferae including Ginkgoaceae. 3d ed. London: Edward Arnold and Co. 570 p

Includes a general description of yellow-cedar, its wood, uses, silvical characteristics, list of varieties, and experience with plantings in Great Britain.

145. Dastur, K.P. 1974. A stereoselective approach to eremophilane sesquiterpenes: a synthesis of (plus/minus)-nootkatone and (plus/minus)-alpha-vetivone *[Chamaecyparis nootkatensis].* Journal of the American Chemical Society. 96. 2605-2608.

The synthesis of nootkatone and vetivone are used to exemplify a new method of stereoselective construction of eremophilane sesquiterpene skeletons The former compound, nootkatone, has been isolated from both the heartwood of yellow-cedar and the peel oil of grapefruit.

146. Davidson, J.; Abercrombie, I. 1927. Conifers, junipers, and yew: gymnosperms of British Columbia. London: T. Fisher Unwin, Ltd. 72 p.

Description of yellow-cedar with comments on range, uses. Beautiful illustrations of foliage (in color), flowers, cones, and seeds.

147. Day, R.J. 1967. A plea for standard tree name abbreviations. Forestry Chronicle. 43: 121-134.

The author proposes a system for abbreviating tree names in the vernacular. Simple rules are set forth and a list of abbreviations presented. The following is proposed for *Chamaecyparis nootkatensis:* abbreviation—CHn; English vernacular—yellow cypress; French vernacular—*Chamaecyparis jaune.*

148. Dayton, William A. 1953. Geography of commercially important United States trees. Journal of Forestry. 51: 276-279.

Yellow-cedar is listed among trees with natural ranges that are restricted to Western States of the United States.

149. DeMars, Donald J. 1996. Board-foot and cubic-foot volume tables for Alaska-cedar in southeast Alaska Res Note PNW-RN-516 Portland, OR US Department of Agriculture, Forest Service, Pacific Northwest Research Station 14 p

Four tables give cubic-foot and board-foot volume estimates for yellow-cedar in southeast Alaska

150. DeMeo, Tom; Martin, Jon; West, Randolph. 1992. Forest plant association management guide, Ketchikan Area, Tongass National Forest R10-MB-210 Juneau, AK U S Department of Agriculture, Forest Service, Alaska Region 405 p

Describes the occurrence of yellow-cedar in several plant association series in the southern portion of southeast Alaska Provides details regarding associated vegetation and site factors for each series

151. Department of Navy, Bureau of Ships. 1957. Wood a manual for its use as a shipbuilding material Navships 250-336 Washington, DC Government Printing Office 63 p Vol I

Lists shrinkage values for lumber of different tree species including yellow-cedar

152. Department of Navy, Bureau of Ships. 1958. Wood a manual for its use as a shipbuilding material Navships 250-336 Washington, DC Government Printing Office 67 p Vol II

Lists drying schedules for lumber of different tree species including yellow-cedar

153. Dirr, Michael A.; Frett, John J. 1983. Rooting of Leyland cypress as affected by indolebutync acid and boron treatment Hortscience 18(2) 204-205

The effect of using hormone and boron dips on the rooting success of cuttings from Leyland cypress is reported Indolebutyric acid (IBA) treatment used at 0 8 and 1 6 percent resulted in 90 percent rooting compared to low percentages for boron treatment or controls Plant survival was best at concentrations of 0 3 to 0 8 percent IBA for root dips The highest levels of IBA caused foliar necrosis

154. Dixon, Dorothy. 1961. These are the champs American Forests 67(1) 41-50

The largest yellow-cedar reported is located in Olympic National Park, Washington Circumference at 4-1/2 ft is 21 ft, height is 175 ft, and spread is 27 ft 5 in

155. Dodwell, Arthur; Rixon, Theodore F. 1902. Forest conditions in the Olympic Forest Reserve, Washington Prof Pap 7, Series H, Forest 4 Washington, DC US Geological Survey 110 p

Yellow-cedar is found on mountain ridges below 3,500 ft in the Olympic Mountains in Washington

156. Doesburg, J. van. 1960. Stekproeven: Trials with cuttings. Jaarboek Proefstation voor de Boomwekerij te Boskoop- 29-32

Summarizes results of cutting trials for 1959 and 1960 Two varieties of *Chamaecypariswere* tested, var. *glauca* and var. *pendula.*

157. Don, David. 1824. *Cupressus nootkatensis.* In. Lambert, Aylmer Bourke. A description of the genus *Pinus* 1st ed. London John Gale, Bruton Street, Bond Street and R Jennings. Vol. 2. (Reprinted as 2d ed. in 1833, London Weddell Press)

This is the original botanical description for yellow-cedar under the scientific name *"Cupressus Nootkatensis."The* only common name used is "Nootka cypress " The formal description is made from a specimen collected by Archibald Menzies in 1793 on the shores of Nootka Sound on Vancouver Island in British Columbia while circumnavigating the world with Captain Vancouver David Don apparently wrote the species description as Lambert states in the preface of his book, "I have here to acknowledge my obligations to Mr Don, for the pains he has taken forming the Descriptions, and the accurate manner in which the whole has been executed " Thus, David Don is the authority and the species is referred to as *Cupressus nootkatensis* D Don rather than *Cupressus nootkatensis* Lambert The latter authority, sometimes abbreviated as "Lamb.," is used frequently in older literature The most commonly accepted current scientific notation adds the name Spach because in 1842 the French botanist Edouard Spach placed the taxon in the newly erected genus *Chamaecyparis- Chamaecyparis nootkatensis* (D Don) Spach In an appendix, Don also describes the collection of the Lambertian Herbarium with a list of the sources of herbarium specimens The 21st entry mentions plants that were collected by Menzies, this probably includes the type specimen for yellow-cedar

158. Douglas, George W.; Ballard, T.M. 1971. Effects of fire on alpine plant communities in the north Cascades, Washington. Ecology 52. 1058-1064

Describes the Krummhotz forest canopy, which includes yellow-cedar, on an alpine ridge in the North Cascades National Park. Yellow-cedar did not occur in the burned portion of the area 29 yr after fire.

159. Downing, G.L. 1960. A cedar bark beetle outbreak, Petersburg Ranger District, North Tongass National Forest, October, 1960. For. Insect Surv. Rep. 6. Juneau, AK U S Department of Agriculture, Forest Service, Alaska Forest Research Center 2 p.

Reports an infestation of western redcedar and yellow-cedar by the bark beetle *Phloeosinus squamosus* The outbreak was confined to scrub cedar stands on poorly drained slopes and muskeg bottoms on Kuiu Island, Alaska.

160. Downing, G.L. 1961. Conditions of forest insects in forest regions, Alaska. In. Forest insect conditions in the United States, 1960. Washington, DC. U S. Department of Agriculture, Forest Service: 3.

A cedar bark beetle, *Phloeosinus squamosus* Blkm., is reported to be responsible for the death of large numbers of yellow-cedar and western redcedar on Kuiu and Kupreanof Islands The outbreak extended over several thousand acres and was confined primarily to scrub cedar stands.

161. Duff, S.R.; Erdtman, H. 1954. The chemistry of the natural order of Cupressales X: Nootkatin Chemistry and Industry. 15: 432-433.

From X-ray evidence, describes the chemical structure for the tropolone nootkatin, $C_{15}H_{20}0_2$, from the heartwood of *Chamaecyparis nootkatensis.*

162. Duff, S.R.; Erdtman, H.; Harvey, W.E. 1954. The chemistry of the natural order Cupressales XI Heartwood constituents of *Chamaecypans nootkatensis* (Lamb.) Spach Nootkatin. Acta Chemica Scandinavica. 8: 1073-1082.

Describes the isolation and chemical structure of nootkatin, a tropolone compound from the heartwood of yellow-cedar Outlines reactions used to demonstrate its structure.

163. Duncan, R.W. 1983. Common insects damaging junipers, cedars and cypress in British Columbia. Pest Leafl. FPL 70. Victoria, BC. Pacific Forest Research Centre. 11 p.

Describes the appearance, life histories, and damage of three moths, a scale insect, and a bark beetle that attack members of the Cupressaceae in British Columbia. The cypress tip moth, cypress leaf tier, and redwood bark beetle may be the most damaging to yellow-cedar.

164. Duncan, Robert W. 1994. Bionomics and life history of the gall midge *Chamaediplosis nootkatensis* Gagne & Duncan (Diptera[1] Cecidomyiidae) on yellow cypress in British Columbia. The Pan-Pacific Entomologist. 70. 103-112.

Reports a study on the biology and impact of the gall midge of yellow-cedar. Provides information on the life cycle of the midge, distribution in British Columbia, history of damage, and hosts that it infects

165. Dunn, Malcolm. 1892. The value in the British Islands of introduced conifers. Journal of the Royal Horticultural Society. 14 73-102.

Cupressus nootkatensis (yellow-cedar), or as it is perhaps better known, *Thuyopsis borealis,* is one of the hardiest and most beautiful of the cypresses, and appears to thrive everywhere in the British Isles It is somewhat branchy for a timber tree, but when planted close, it forms a clean straight stem. The tallest tree recorded in Britain is at Murthyly: 50 ft high and 1 ft 9 in in girth. Dimensions of several other large trees are given.

166. Dunsworth, Glen. 1987. Yellow cedar working group newsletter. Vol. 1., No. 1. Nanaimo, BC MacMillan Bloedell Limited 2 p.

Announces the yellow-cedar working group Contains objectives of the group and mentions plans for a workshop.

167. Dunsworth, Glen. 1987. Yellow cedar working group newsletter. Vol. 1., No. 2. Nanaimo, BC MacMillan Bloedell Limited 5 p.

Lists ongoing research topics and interests among the group in operational topics. Contains news and brief articles on common and scientific names for yellow-cedar, questions of planting trials, and tissue culture

168. Dunsworth, Glen. 1989. Yellow cypress working group newsletter Vol. 1 , No. 3. Nanaimo, BC: MacMillan Bloedell Limited 6 p.

Contains news and brief articles on a gall midge, dieback of stands in Alaska, wood properties, tree breeding, log sales, and several aspects of rooted cuttings.

169. Dunsworth, Glen. 1991. Yellow cypress working group newsletter. Vol 1., No. 5. Nanaimo, BC: MacMillan Bloedell Limited. 10 p.

Contains news and brief articles on micropropagation, clone transfer, and frost hardiness, wood properties, market development, longevity, a meeting in Japan, and clonal studies

170. Dunsworth, Glen; Steele, Liz. 1990. Yellow cypress working group newsletter. Vol 1., No. 4. Nanaimo, BC: MacMillan Bloedell Limited. 7 p.

Contains brief articles on genetic variation, donor stock registry, cone and seed development, growth and yield, monthly timber prices, micropropagation, and names for yellow-cedar.

171. Dunwiddie, Peter W. 1986. A 6000-year record of forest history on Mount Rainier, Washington. Ecology 67: 58-68

Macrofossil evidence, especially from foliage, was used to reconstruct the composition of the forests on Mount Rainier Yellow-cedar has been abundant since 3400 and 5000 yr BP at two sites and present in small numbers since 1500 yr BP at another site. The occurrence of yellow-cedar and other species is used to interpret the past climate and fire conditions.

172. Durand, Elias. 1869. Report of the superintendent of the United States Coast Survey, showing the progress of the survey during the year 1867. Washington, DC. Government Printing Office: 322-324. Appendix M.

Lists a specimen of yellow-cedar from Sitka, Alaska, under the name *"Cupressus nutkatensis* Hook" among many plants collected by Albert Kellogg of the United States Coast Survey.

173. Dyrness, C.T.; Franklin, J.F.; Moir, W.H. 1974. A preliminary classification of forest communities in the central portion of the western Cascades in Oregon Bull 4 Seattle, WA University of Washington, Ecosystem Analysis Studies, Coniferous Forest Biome 123 p

Discusses the occurrence of yellow-cedar in forest communities along the central portion of the west side of the Cascade Range in Oregon

174. Eades, H.W. 1932. British Columbia softwoods, their decays, and natural defects Bull 80 Ottawa Canada Department Interior, Forest Service 126 p

175. Earl, Derek. 1958. Yellow cedar *(Chamaecyparis nootkatensis* (D Don) Spach) Quarterly Journal of Forestry 52(3) 204-207 [plus 1 plate]

Discusses the silvics of yellow-cedar in its natural range, particularly in British Columbia Includes notes on its timber characteristics and the history of the species in Great Britain

176. Ebell, L.F.; Schmidt, R.L. 1964. Meteorological factors affecting conifer pollen dispersal on Vancouver Island Publ 1036 [Place of publication unknown] Canada Department of Forestry, Forest Research Branch 28 p

177. Ebell, Lorne F.; Schmidt, Ralph L. 1960. Effect of elevation and climatic factors on production and dispersal of coniferous-tree pollen [Abstract] In Society of American Foresters proceedings 1959 Washington, DC Society of American Foresters 39

In a test of daily and seasonal flowering during 1958 and 1959 on Vancouver Island, the following order of flowering among conifers was observed *Tsuga heterophylla, Chamaecypans nootkatensis, Pseudotsuga menziesu, Abies grandis, A amabilis, Pinus contorta, P monticola, A lasiocarpa,* and *T mertensiana* Flowering began later with increasing elevation, but pollen production did not decrease with elevation

178. Eckblad, F.E. 1968. The genera of the operculate Discomycetes a re-evaluation of their taxonomy, phylogeny, and nomenclature Nutt Magasin for Botanikk (Oslo) 15 1-191

Mentions that the fungus *Gelatinodiscus flavidus* occurs on yellow-cedar in British Columbia

179. Edlin, Herbert L. 1964. A modern "sylva" or "a discourse of forest trees" cypresses conifers of the *Cupressus* and *Chamaecyparis* genera Quarterly Journal of Forestry 58(3) 208-217

Yellow-cedar appears well suited for growth in the colder districts of Great Britain, although it is little used as a plantation tree, possibly because of its slow rate of growth This is a common feature of all trees from the far North The tree is described briefly The intergenenc hybrid, Leyland cypress, also is mentioned briefly The largest tree at Leighton Hall, planted in 1911, is 82 ft tall and 8-1/2 ft in girth

180. Edmonds, R.L.; Thomas, T.B.; Maybury, K.P. 1993. Tree population dynamics, growth, and mortality in old-growth forests in the western Olympic Mountains, Washington Canadian Journal of Forest Research 23-512-519

Patterns of tree death, growth and replacement in old-growth forests of the Hoh River valley in Washington are reported Yellow-cedar was common (36 percent of the tree population) at the Hoh Lake study site It appeared to be underrepresented in the smallest diameter class (<5 cm) Yellow-cedar experienced an annual mortality rate of 3 percent in this area

181. Edwards, D.G.W. 1973. Polaroid film for rapid seed radiography *[Pseudotsuga menziesu Tsuga heterophylla, Pinus flexilis, Chamaecyparis nootkatensis]* In International symposium on seed processing seed problems, [dates of meet ing unknown], [location of meeting unknown] Pap 6 Bergen, Norway International Union of Forestry Research Organisations 8 Vol 1

Discusses the advantages of using Polaroid film to quickly determine the propor tion of filled seed of yellow-cedar and other conifers with small seed

182. Edwards, Stephen Walter. 1983. Cenozoic history of Alaskan and Port-Orford *Chamaecypans* cedars Berkeley, CA University of California 271 p Ph D dissertation

Provides detailed analyses of foliage characteristics that aid in the distinction of species of *Chamaecypans, Cupressus, Thuja,* and others Suggests that the closest relative of yellow-cedar is the now-extinct *Chamaecyparis cordillerae* Shows the Tertiary distribution of yellow-cedar fossil allies, which includes locations in Nevada, Idaho, Wyoming, Montana, Oregon, Washington, and British Columbia

183. Eis, S.; Craigdallie, D. 1981. Reproduction of conifers a handbook for cone crops assessment Inf Rep BC-X-219 Victoria, BC-Pacific Forest Research Centre 24 p

Provides morphological descriptions of the reproductive cycle of conifers Gives specific details regarding yellow-cedar, including color illustrations of male and female flowering, female cones, and seeds of yellow-cedar

184. Eis, Slavoj. 1962. Statistical analysis of several methods for estimation of forest habitats and tree growth near Vancouver, B C For Bull 4 Vancouver University of British Columbia 76 p

185. Eliot, Willard Ayres; McLean, G.B. 1948. Forest trees of the Pacific coast New York G P Putnam's Sons 565 p

186. El-Kassaby, Y.A. 1995. The fitness of reproductive-cycle plasticity in yellow-cedar *(Chamaecypans nootkatensis)* Silvae Genetica 44(4) 217-218

The development of an abbreviated reproductive cycle by yellow-cedar (i e , producing seed in first-year cones) is viewed as a plastic response by individuals to a favorable environment rather than a genotypic adaptation A large range of

germination success was found among genotypes of yellow-cedar that produced first-year cones. Variance was greatest among seedlots from high elevations, thereby implying there is greater cost for fitness in those sites Phenotypic plasticity may be a trait by itself that is genetically variable and responsive to selection

187. El-Kassaby, Y.A.; Chaisurisri, K.; Edwards, D.G.W.; Taylor, D.W. 1993. Genetic control of germination parameters of Douglas-fir, Sitka spruce, western redcedar, and yellow-cedar and its impact on container nursery production In˜ Dormancy and barriers to germination" Proceedings of an international symposium of IUFRO project group P2.04-00 (seed problems), 1991 April 23-26, Victoria, BC Victoria, BC Pacific Forestry Centre- 37-42

The genetic control of germination is reported from a study of yellow-cedar and three other tree species. Seeds collected from 12 open-pollinated trees were used for the tests for yellow-cedar Yellow-cedar had the lowest germination rate and germination capacity (27 to 68 percent of seeds) and showed broad-sense heritability in the variation of germination

188. El-Kassaby, Y.A.; Maze, J.; MacLeod, D.A.; Banerjee, S. 1991. Reproductive plasticity in yellow-cedar *(Chamaecyparis nootkatensis)* Canadian Journal of Forest Research 21:1360-1364.

The properties of seed from mature-appearing, but 1 -year-old, cones were studied from yellow-cedar trees growing in a seed orchard at low elevation on Vancouver Island, BC Germination of seed from first-year cones ranged from 10 to 42 percent for pollinated cones, and embryos appeared similar to those from second-year cones The authors concluded that cone development in yellow-cedar is temperature dependent and that viable seed can be produced in first-year cones in warm climates.

189. Enari, Leonid. 1956. Plants of the Pacific Northwest Portland, OR Binfords and Mort 315 p

190. England, R.F.; Stahl, E. 1963. Marine laminating properties of selected wood species, outdoor exposure—Alaska-cedar *(Chamaecypans nootkatensis),* western larch *(Larix occidentalis)* Bureau of Ships Index SR007-03-02, Identification 37-1004-2, Progr. Rep. E-412-L3. Bremerton, WA. Puget Sound Naval Shipyard 5p

Wood laminates of yellow-cedar and western larch, adhesive bonded with three commercial phenol resorcinol formaldehyde adhesives, were exposure tested Based on 18 mo outdoor exposure, the authors concluded that laminates of yellow-cedar and western larch made according to described specifications should be satisfactory for marine service use.

191. English, Edith Hardin. 1951. The flowering season on Mount Baker University of Washington Arboretum Bulletin 14(3): 8-12

Yellow-cedar occurs only occasionally on Mount Baker and in association with mountain hemlock and subalpine fir.

192. Erdtman, H. 1952. Chemistry of some heartwood constituents of conifers and their physiological and taxonomic significance In Cook, J W , ed Progress in organic chemistry London Butterworth Scientific Publishers 22-63

Yellow-cedar heartwood was found to contain at least one new tropolone derivative called nootkatin The wood also contains carvacrol LII, a terpenoid phenol, formerly known among conifers only in the genus *Tetraclinis*

193. Erdtman, H. 1955. Natural tropolones In Paech, K , Tracey, M V , eds Modern methods of plant analysis Berlin Springer 351-358 Vol 3

Indicates that several of the constituents of yellow-cedar heartwood are fungicidal nootkatin, chamic acid, and chaminic acid Discusses the structure of nootkatin and other tropolones from wood

194. Erdtman, H.; Harvey W.E. 1952. The chemistry of the natural order Cupressales IX Nootkatin Chemistry and Industry 71 1267

Results of different reactions are given as evidence for determining the chemical structure of nootkatin

195. Erdtman, H.; Harvey, W.E.; Topliss, J.G. 1956. The chemistry of the natural order Cupressales XVI Heartwood constituents of *Chamaecyparis nootkatensis* (Lamb) Spach the structure of chamic and chaminic acids Acta Chemica Scandinavica 10 1381-1392

Describes the structure of chamic and chaminic acids, derived from the heartwood of yellow-cedar Chaminic acid is been shown to be the optical antipode of isochamic acid

196. Erdtman, H.; Norin, T. 1966. The chemistry of the order Cupressales Progress in Chemistry of Organic Natural Products 24 257-287

The authors suggests that yellow-cedar be separated in its taxonomy from other *Chamaecypans* based on the manner in which its heartwood constituents differ from the other species

197. Erdtman, H.; Topliss, J.G. 1957. The chemistry of the natural order Cupressales XVIII Nootkatene, a new sesquiterpene type hydrocarbon from the heartwood of *Chamaecypans nootkatensis* (Lamb) Spach Acta Chemica Scandinavica 11 1157-1161

A preliminary study of the neutral constituents from the wood of yellow-cedar describes terpenoid hydrocarbons, alcohols, compounds containing carbonyl, and carvacrol methyl ether Nootkatene is isolated in an apparently pure state

198. Erdtman, Holger; Hirose, Yoshiyuki. 1962. The chemistry of the natural order Cupressales 46 The structure of nootkatone Acta Chemica Scandinavica 16 1311-1314

Nootkatone, a new eudalenoid sesquiterpene ketone, is isolated from heartwood of *Chamaecypans nootkatensis*

199. Eyre, F.H. 1980. Forest cover types of the United States and Canada Washington, DC Society of American Foresters 148 p

Mentions the occurrence of yellow-cedar in several cover types along the northern Pacific Coast

200. Farr, David F.; Bill, Gerald F.; Chamuris, George P.; Rossman, Amy Y. 1989. Fungi of plants and plant products in the United States St Paul, MN American Phytopathological Society Press 1252 p

Lists the fungi known to occur on *Chamaecyparis* in the United States, including those on yellow-cedar

201. Farr, Wilbur A.; LaBau, Vernon J. 1971. Volume tables and equations for old-growth western redcedar and Alaska-cedar in southeast Alaska Res Note PNW-167 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 18 p

Gives cubic-foot volume tables for *Thuja plicata* and *Chamaecypans nootkatensis* and board-foot volume tables for the two species combined

202. Feller, M.C. 1982. The ecological effects of slashburning with particular reference to British Columbia a literature review Rep 13 Victoria, BC Ministry of Forests, Land Management 60 p

203. Feller, M.C. 1988. Relationships between fuel properties and slashburning-induced nutrient losses Forest Science 34 998-1015

Reports on nutrient loss associated with slash burning as influenced by slash and forest composition Nutrient loss was highest with increasing slash loads of western redcedar and yellow-cedar

204. Fernow, B.E. 1910. Forests of Alaska In Harriman Alaska Series Vol II History, geography, resources Washington, DC Smithsonian Institution 247

Briefly describes uses of yellow-cedar and its occurrence near the limits of its range in Prince William Sound, Alaska Wood and bark were used at the Native village at the foot of Copper Mountain Direct observations were not made on the occurrence of yellow-cedar trees, but information from fur traders suggested that yellow-cedar grows on Hawkins Island, 6 or 7 mi from Orca on Glacier Island opposite Columbia Glacier, and in a few other localities

205. Fink, S. 1991. Comparative microscopical studies on the patterns of calcium oxalate distribution in the needles of various conifer species Botanica Acta (Germany) 104(4) 306-315

The distribution of calcium oxalate crystals is described in the foliage of a number of conifers including yellow-cedar Yellow-cedar and other members of Cupressaceae have numerous crystals in radial phloem, mesophyll, and epidermal cells Crystals may form when excessive calcium is pumped out of protoplasm

206. Fitzpatric, H.M. 1965. Conifers keys to the genera and species, with economic notes Royal Dublin Society Science Proceedings 2(7) 67-129 [plus 10 plates]

Presents a comprehensive description of the conifers, based on foliage morphology, in the form of an artificial key Eighteen species *of Cupressus and Chamaecyparis* are listed, including yellow-cedar

207. Flynn, James H., Jr. 1994. *Chamaecyparis nootkatensis*-Alaska-cedar In Flynn, James H , Jr, ed A guide to useful woods of the world Portland, ME King Philip Publishing Co 111-112

Gives common names, the distribution, a general description of the tree, and comments on the properties and uses of wood for yellow-cedar Mentions that the wood sells for $3000 to $5000 per thousand board feet and is mostly exported to Japan The wood can reportedly be found among driftwood along the Oregon coast

208. Folk, Raymund S.; Grossnickle, Steven C; Arnott, James T.; Mitchell, Alan K.; Puttonen, Pasi. 1996. Water relations, gas exchange, and morphological development of yellow-cedar seedlings Forest Ecology and Management 81 197-213

The effects of nursery treatments and spring or fall planting were assessed for yellow-cedar rooted cuttings Cultural treatments produced no significant effect on physiology during the first growing season Moisture stress resulted in smaller stecklings (rooted cuttings) than well-watered treatments, but there were no differences after the first year Extreme conditions soon after fall planting reduced survival compared to planting in spring After the second year, both populations were similar in shoot development, but spring-planted cuttings had greater root development

209. Folk, Raymund S.; Grossnickle, Steven C; Russell, John H. 1995. Gas exchange, water relations and morphology of yellow-cedar seedlings and stecklings before planting and during field establishment New Forests 9 1-20

Seedlings and steckhngs (rooted cuttings) were compared for their response to limited environmental conditions Steckhngs had equal or greater growth, similar gas exchange under moderate conditions, and higher gas exchange under high evaportive conditions than did seedlings Under cold soil or drought conditions, seedlings had greater gas exchange Seedlings generally had greater root development The planting of seedlings rather than steckhngs is recommended on sites with cold soils or limited soil moisture in British Columbia

210. Fonda, R.W. 1966. Ecology of montane and subalpine forests in Olympic National Park Ecological Society of America Bulletin 47(3) 140

211. Forest Products Laboratories Division (Canada). 1951. Canadian woods, their properties and uses 2d ed Ottawa King's Printer 367 p

Tabulations of physical and mechanical properties are included in the appendix

212. Forest Products Research. 1957. A handbook of softwoods London Stationery Office, Department of Science, Industry Research. 73 p.

213. Fosberg, M.A. 1970. Drying rates of heart wood below fiber saturation. Forest Science 16 57-63

Reports on a study of drying rates of woody fuels from six tree species including yellow-cedar.

214. Fowells, H.A., comp. 1965. Silvics of forest trees of the United States. Agric. Handb 271 Washington, DC U S Department of Agriculture 762 p

Contains a revision of silvical characteristics of yellow-cedar from Andersen (1959).

215. Franklin, J.F. 1966. Vegetation and soils in the subalpine forests of the southern Washington Cascade Range Pullman, WA Washington State University Ph D dissertation

216. Franklin, J.F.; Moir, W.H.; Hemstrom, M.A. [and others]. 1988. The forest communities of Mount Rainier National Park. Scien. Monogr. 19. Washington, DC U S Department of the Interior, National Park Service.

The occurrence of yellow-cedar in several plant communities is described. Yellow-cedar is of intermediate importance among possible climax species. The park's oldest tree is a yellow-cedar over 1200 yr old

217. Franklin, J.F.; Moir, W.H.; Hemstrom, M.A.; Greene, S.E. 1979. The ecosystem of Mount Rainier National Park. Corvallis, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory.

218. Franklin, Jerry F. 1961. A guide to seedling identification for 25 conifers of the Pacific Northwest Portland, OR U S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 65 p

An illustrated key to seedling identification. Yellow-cedar seedlings have two (rarely three) cotyledons that are flat in cross section and less than 12 mm long, juvenile needles are not glaucous

219. Franklin, Jerry F. 1965. Tentative ecological provinces within the true fir-hemlock forest areas of the Pacific Northwest. Res. Pap. PNW-22. Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 31 p.

Yellow-cedar is listed as a minor tree species occurring in the true fir-hemlock zones of 6 of 11 ecological provinces of Oregon and Washington

220. Franklin, Jerry F.; Dyrness, C.T. 1973. Natural vegetation of Oregon and Washington Gen Tech Rep PNW-8 Portland OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 417 p (Reprinted in 1988 Corvallis, OR Oregon State University Press 452 p)

Includes a discussion on the occurrence, size, longevity, plant communities associated vegetation, and successional status of yellow-cedar in Oregon and Washington Yellow-cedar occurs in the *Tsuga mertensiana* zone where it is a major component along the west side of the Cascades and in the Olympic Mountains Yellow-cedar is a minor component of the upper limits of the *Abies amabilis* zone in western Washington It is noted along the Columbia Gorge with other tree species between 1000 and 1500 m elevation Yellow-cedar is a timberline tree species in some areas, especially as a major Krummholz cover in the Washington Cascade Range and northeastern Olympic Mountains The only conifer tree species capable of surviving and reproducing on recurrent avalanches is yellow-cedar Yellow-cedars longevity is estimated to be 1000+ years, and it is listed as shade tolerant

221. Franklin, Jerry F.; Hemstrom, Miles A. 1981. Aspects of succession in the coniferous forests of the Pacific Northwest In Forest succession concepts and application New York Springer-Verlag 212-229

222. Franklin, Jerry F; Mitchell, Russel G. 1967. Successional status of subalpine fir in the Cascade Range Res Pap PNW-46 Portland OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 16 p

A table indicates the forest provinces in which subalpine fir grows with yellow-cedar in Oregon and Washington

223. Franklin, Jerry F.; Trappe, James M. 1963. Plant communities of the northern Cascade Range a reconnaissance Northwest Science 37 163-164

Yellow-cedar joins silver fir and mountain hemlock as the climax of a community at high elevation in the north Cascade Range of Washington Yellow-cedar is also part of an avalanche community maintained as a topographic climax

224. **Frenkel,** R.E. **1974.** An isolated occurrence of Alaska-cedar *(Chamaecyparis nootkatensis* [D Don] Spach) in the Aldrich Mountains, central Oregon Northwest Science 48 29-37

A disjunct 4 3-ha stand of yellow-cedar is described from the Aldrich Mountains in central Oregon Associated vegetation is listed The author suggests that this occurrence is a relic that resulted from fragmentation of a previously more extensive distribution for yellow-cedar

225. Frear, Samuel T. 1982. What's killing the Alaska yellow-cedar? American Forests 88(11) 41-43,62-63

Describes the yellow-cedar mortality problem in Alaska and early efforts to determine its cause

226. Frost, F. 1951. Forsok med sneskjermplantninger på Saltjellet: Investigations on planting snowbreaks on Saltfjell. Tidsskrift for Skogbruk. 59(6): 176-185.

Discusses the planting of snowbreaks along the railroad, which reaches an altitude of 680 m, across Saltfjell, north of the Arctic Circle.

227. Fukuda, Kiyoharu. 1996. Quality of water stored in model wood tanks. Mokuzai Kogyo (Japan). 51: 348-351

Water quality improves when the water is stored in tanks constructed of yellow-cedar and three other tree species.

228. Funk, A. 1973. Some mycoparasites of western bark fungi. Canadian Journal of Botany. 51: 1643-1645.

The new species *Engelhardtia alba* is described as a mycoparasite on the fungus *Cytospora abietis,* which itself occurs on the bark of yellow-cedar.

229. Funk, A. 1974. Microfungi associated with dieback of native Cupressaceae in British Columbia. Canadian Plant Disease Survey. 54(4): 166-168.

Fungi on yellow-cedar and two other members of Cupressaceae are reported from British Columbia Those on yellow-cedar are *Kabatina thujae, Cytospora abietis, Pleospora laricina, Pestalotia funerea,* and *Pestalotia thujae. Kabatina thujae* caused a severe dieback on yellow-cedar in nurseries and ornamental plantings.

230. Funk, A. 1981. Parasitic microfungi of western trees. Inf. Rep. BC-X-222. Victoria, BC: Canadian Forestry Service, Pacific Forest Research Centre 190 p.

Describes four fungi that occur on the stems of yellow-cedar.

231. Funk, A. 1985. Foliar fungi of western trees. Inf Rep BC-X-265. Victoria, BC Canadian Forestry Service, Pacific Forest Research Centre. 159 p.

Describes four fungi that occur on the foliage of yellow-cedar.

232. Funk, A.; Molnar, A.C. 1972. *Kabatina thujae* on yellow cedar in British Columbia nurseries. Bi-Monthly Research Notes. Ottawa: Canadian Forestry Service, Department of Fisheries and Forestry; 28(2/3): 16-17.

Describes dieback of young yellow-cedar in nurseries in the Fraser Valley. The pathogen is the fungus *Kabatina thujae,* the cause of a similar disease in Europe.

233. Furniss, R.L.; Carolin, V.M. 1977. Western forest insects. Misc. Publ 1339. Washington, DC: U.S Department of Agriculture, Forest Service. 654 p.

Describes insects that attack yellow-cedar, including several *Phloeosinus* bark beetle species and the roundheaded borer, *Atimia hoppingi.*

234. Fyles, J.W.; Fyles, I.H.; Beese, W.J.; Feller, M.C. 1991. Forest floor characteristics and soil nitrogen availability on slash-burned sites in coastal British Columbia Canadian Journal of Forest Research 21 1516-1522

Forest floor organic materials were surveyed 2 yr after spring and fall slash burning on sites with yellow-cedar and other conifers on Vancouver Island Slash burning did not reduce nitrogen availability below levels required to support plantation growth, except in situations of severe burns on coarse-textured soils

235. Gagne, R.J.; Duncan, R.W. 1990. A new species of Cecidomyndae (Diptera) damaging shoot tips of yellow cypress, *Chamaecyparis nootkatensis,* and a new genus for two gall midges on Cupressaceae Proceedings of the Entomological Society of Washington 92 146-152

A new genus and species of midge are described from specimens that attack and form galls on yellow-cedar in British Columbia The life cycle of the midge is outlined Illustrations of the galls caused by the insect are given

236. Garman, E.H. 1953. Pocket guide to the trees and shrubs of British Columbia 2d ed Bull 28 [Place of publication unknown] British Columbia Forest Service, Department of Lands, Forests, and Water Resources 102 p (Reprinted in 1963)

Gives a description of yellow-cedar, growth rates, elevational limits, and specific locations of large old specimens in British Columbia

237. Garrison, George A.; Bjugstad, Ardell J.; Duncan, Don A. [and others]. 1977. Vegetation and environmental features of forest and range ecosystems Agric Handb 475 Washington, DC U S Department of Agriculture, Forest Service 68 p

Lists and describes the major forest ecosystems of the United States

238. Garth, Coward. 1992. Tree book, learning to recognize trees of British Columbia Victoria, BC Province of British Columbia, Forest Service Information Division, Forestry Canada

Gives a brief description of yellow cedar Includes illustrations of the tree, foliage, cones, and bark

239. Gass, Charles R.; Billings, Richard F.; Stephens, Freeman R. [and others]. 1967. Soil management report for the Hollis area Juneau, AK U S Department of Agriculture, Forest Service, Alaska Region, Tongass National Forest 118 p

Describes soils and vegetation on a portion of Prince of Wales Island, Alaska Yellow-cedar grows from sea level to about 1,500 ft and occurs on the following soils series Maybeso, McGilvery, St Nicholas, and Wadleigh

240. Gensler, W. J.; Solomon, P.H. 1973. Synthesis of chaminic acid *[Chamaecyparis nootkatensis]* Journal of Organic Chemistry 38 1726-1731

Chamic acid, a chemical component of yellow-cedar heartwood, is synthesized and the steps for synthesis are given

241. Gibson, Henry H. 1913. American forest trees. Chicago. Hardwood Record. 708 p.

Lists common names and describes the appearance and range of yellow-cedar Discusses the properties and uses of yellow-cedar wood and speculates about market applications

242. Gibson, I.A.S.; Sutton, B.C. 1976. *Kabatina thujae.* CMI Descrip Path. Fungi Bact 489 Kew [London], Great Britain- Commonwealth Mycological Society 2 p

Describes *K thujae,* the cause of shoot dieback of several cedar species, including yellow-cedar, in western Europe and Canada.

243. Gorman, M.W. 1896. Economic botany in southeastern Alaska. Pittonia. 3- 8-75

Mentions that yellow-cedar is probably the most valuable tree grown in southeast Alaska The wood is used for making oil crates, boxes, bowls, dishes, bailers, masks, spoons, and household utensils. Roots are split and used in basket making

244. Gorman, M.W. 1907. Vegetation of the northeast slope of Mount Baker Mazama 3 31-48.

Yellow-cedar was observed above 4,000 ft, but only around Slate Mountain. Only small trees were seen, some of these bearing fertile cones Dead trees, up to 20 in in diameter, were remnants of a stand previously destroyed by fire

245. Gorman, M.W. 1920. The flora of Mount Hood. Oregon Out-of-Doors. 1(1) 64-96

Yellow-cedar, formerly thought to reach its southern limit in Oregon, is now known to be fairly common on Mount Jefferson and Whiskey Peak (Josephine County) 3 mi from the California border On Mount Hood, yellow-cedar is found on moist slopes on the south and west sides up to 4,000 ft.

246. Gorman, Martin W. 1899. Eastern part of Washington Forest Reserve Part 5 19th ann rep ,1897-98 Forest reserves Washington, DC- U S Geological Survey 315-350.

Within the region described, yellow-cedar is found only in moist ravines or canyons that head in or about the main divide of the Cascade Range. Its elevational range is from 2,100 ft on the Stehekin to 6,000 ft about the headwaters of the Methow River and Rattlesnake Creek. Finest specimens range from 50 to 75 ft tall and 10 to 25 in in diameter. At its upper limits, the tree is stunted with an alpine appearance.

247. Gorman, Martin W. 1929. New stations for trees in Oregon Madrono 1 275

The author collected a specimen of yellow-cedar from Whiskey Peak, Josephine County, Oregon, 3 mi from the California border

248. Grace, J. Kenneth; Yamamoto, Robin T. 1994. Natural resistance of Alaska-cedar, redwood, and teak to Formosan subterranean termites Forest Products Journal 44(3) 41-45

The susceptibility of yellow-cedar wood and that of several other species by feeding of the Formosan subterranean termite was evaluated in laboratory tests Significantly less feeding occurred on yellow-cedar and redwood than on Douglas-fir and southern pine Reduced feeding often resulted in termite mortality indicating heartwood compounds are toxic to termites Feeding on yellow-cedar resulted in the highest termite mortality When presented with redwood and yellow-cedar, termites preferred feeding on redwood

249. Grant, John A.; Grant, Carol L. 1943. Trees and shrubs for Pacific Northwest gardens Seattle Frank McCaffrey, Dogwood Press 335 p

250. Grant, U.S.; Higgins, D.F. 1910. Reconnaissance of the geology and mineral resources of Prince William Sound, Alaska U S Geol Surv Bull 443 Washington DC U S Government Printing Office 89 p

Gives the occurrence of yellow-cedar at the limits of its range around Prince William Sound, Alaska

251. Greaves, C; Schwartz, H. 1951. The chemical utilization of wood In Canadian woods their properties and uses 2d ed Ottawa King's Printer 209-234

Compounds from wood are tabulated (mean values obtained in percentage of ovendry wood)

252. Green, George Rex. 1933. Trees of North America (exclusive of Mexico) Vol 1 The conifers Ann Arbor Edward Brothers, Inc 186 p

Gives a concise description of yellow-cedar, including silvics, morphology, and uses

253. Greguss, Pal. 1955. Identification of living gymnosperms on the basis of xylotomy Budapest Akademiai Kiado 263 p [plus 350 plates and 8 summary key sheets in pocket] In German

Provides anatomical key and illustration of yellow-cedar

254. Greig, E.J. 1964. Some notes on the mountain flora of Vancouver Island University of Washington Arboretum Bulletin 27 98-99,112-113

Yellow-cedar is a component of the Hudsonian zone near timberline at 5,000 ft and one of the dominant trees where the transition zone merges into the Canadian zone at 4,000 ft

255. Griffin, James R.; Critchfield, William B. 1972. The distribution of forest trees in California Res Pap PSW-82 Berkeley CA U S Department of Agriculture Pacific Southwest Forest and Range Experiment Station

Describes several disjunct populations of yellow-cedar that occur in the Siskiyou Mountains of northern California

256. Griffith, Randy Scott. 1992. *Chamaecyparis nootkatensis* In Fischer, William C , comp The fire effects information system [Database] Missoula, MT U S Department of Agriculture, Forest Service, Intermountain Research Station, Intermountain Fire Sciences Laboratory Magnetic tape reels, 9 track, 1600bpi, ASCII with Common LISP present

Provides a good deal of general information on yellow-cedar with an emphasis on ecology and fire effects Discusses the occurrence of yellow-cedar in major plant community classifications Reviews studies of fire on sites where yellow cedar was present Contains numerous references on yellow-cedar Available on the World Wide Web at http //www fs fed us/database/feis/plants/tree/chanoo

257. **Gripenberg, Jarl. 1953.** The constituents of the heartwood of the genus *Thuja* and some related genera Journal of Scientific and Industrial Research (India) 12A(5) 233-237

Reviews information on the constituents of *Thuja plicata, T occidentalis, Chamaecypans obtusa C nootkatensis,* and *Thujopsis dolabrata*

258. Grossnickle, Steven C. 1991. Physiological and environmental tolerances of yellow cypress In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it ? Can we sell it? 1990 March 26-28 Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 31-33

Summarizes information on the physiology of yellow-cedar regeneration Frost hardiness, drought tolerance, and stomatal control are discussed

259. **Grossnickle,** S.C.; **Russell,** J.H. **1990.** Water movement in yellow-cedar seedlings and rooted cuttings comparison of plant and root system pressurization methods Tree Physiology 6 57-68

Water movement in rooted cuttings and seedlings of yellow-cedar was studied in a controlled environment Seedlings developed root growth more quickly Root resistance to water movement initially decreased as new root area was produced but then leveled off Water stress in newly planted stock can be reduced by increased root development because of improved root-soil contact and by decreased root water resistance

260. Grossnickle, Steven; Russell, John. 1989. Rooting of yellow cypress cuttings Part 1 Influence of donor plant maturation Res Memo 083 Victoria, BC Forest Research Development Agreement 2 p

Reports on a study designed to test the effect of donor plant maturity on rooting process and identify when rooted cuttings begin to respond in a manner similar to seedlings Juvenile stock experienced less physiological stress and rooted more quickly than older material Rooted cuttings showed photosynthetic activity comparable to seedlings 20 weeks after rooting

261. Grossnickle, Steven C; Russell, John H. 1991. Gas exchange processes of yellow-cedar *(Chamaecyparis nootkatensis)* in response to environmental variables Canadian Journal of Botany 69 2684-2691

Gas exchange in rooted cuttings of yellow-cedar was measured in response to light levels, vapor pressure deficit, root temperature, and soil moisture Results indicated that yellow-cedar requires a high level of photosynthetically active radiation to reach light saturation and is more sensitive to increased vapor pressure deficit, low root temperatures, and reduced soil moisture than are other associated conifer species

262. Grossnickle, Steven C; Russell, John H. 1993. Water relations and gas exchange processes of yellow-cedar donor plants and cuttings in response to maturation Forest Ecology and Management 56 185-198

Rooted cuttings from donor plants with different levels of maturation were measured for physiological response and morphological development during the rooting process Hedging reduced donor plant water stress patterns and increased their foliage conductance Cuttings taken from donor hedges (compared with open grown trees) had improved rooting and speed of rooting capability

263. Grossnickle, Steven C; Russell, John H. 1996. Changes in shoot water relations parameters of yellow-cedar *(Chamaecypans nootkatensis)* in response to environmental conditions Canadian Journal of Botany 74 31-39

Reports results from a study on the effect of photoperiod, air and soil temperature, and soil moisture on water relations of rooted cuttings Yellow-cedar maintained turgor maintenance through elastic and osmotic control, but primarily through osmotic adjustments when exposed to limited soil moisture or low temperature The shoot water potential of yellow-cedar was comparable to other Northwest conifers

264. Guiguet, C.J. 1953. An ecological study of Goose Island, British Columbia, with special reference to mammals and birds Occas Pap 10 Victoria, BC British Columbia Provisional Museum 78 p

On Goose Island, two plant associations are included in the general heading of coniferous forest, the typical coast climax association of western redcedar, western hemlock, and Sitka spruce, and another that includes western redcedar,

western hemlock in association with lodgepole pine, yellow-cedar, and Pacific yew. The latter is a stunted forest forming an ecotone between spruce, hemlock, and muskeg associations; it predominates in rocky areas. Floral composition is described by the Aldous method. Yellow-cedar occurred in 45 percent of bog-forest ecotones and 38 percent of bogs, with 15 percent and 5 percent canopy covers, respectively.

265. Hagem, Oscar. 1931. Forsok med Vestamerikanske Traeslag. Studies on Western American tree species Meddelanden fran Forstl Forsokssta 12. 4(2) 1-127 [plus 4 maps].

Describes yellow-cedar provenance trials in Norway from Alaska, British Columbia, Washington, and California.

266. Hagvar, Sigmund; Kvamme, Torstein. 1977. *Legnotus picipes* (Fall.) new to Norway, and some notes on *Cyphostethus tristriatus* (F.) and *Eurygaster testudinuria* (Geoffr.) (Hem., Pentatomoidea). Norweigan Journal of Entomology 24 179-180

Juvenile and adult insects of the species *Cyphostethus tnstnatus* (F.) were recorded on yellow-cedar and Port-Orford-cedar growing in Norway This is the first report of the insect on any host other than *Juniperus communis.* The insect is not known to occur in the native range of yellow-cedar or anywhere in North America

267. Hale, J.D. 1951. The structure of wood In Canadian woods, their properties and uses. 2d ed. Ottawa: King's Printer: 57-104.

Contains a key to the identification of woods commonly used in Canada Features that distinguish yellow-cedar include the absence of resin ducts in unwounded wood, a nonwaxy or nonresinous appearance of wood, and heartwood that has a spicy, aromatic odor and sulphur-yellow color.

268. Halliday, W.E.D. 1937. A forest classification for Canada Bull 89. [Place of publication unknown] Department of Mines and Resources, Canadian Forest Service. 50 p [plus map].

Yellow-cedar is a component of the coast forest region. Pacific silver fir and yellow-cedar occur generally, their ability to tolerate drier conditions being shown by their presence toward the upper limits of tree growth.

269. Hamilton, Ronald C. 1991. Single-tree selection method an uneven-aged silviculture system. In: Genetics/silviculture workshop proceedings; 1990 August 27-31, Wenatchee, WA. Washington, DC: U.S. Department of Agriculture, Forest Service, Timber Management Staff: 46-84.

Indicates that yellow-cedar will respond favorably to single-tree selection method of timber harvesting.

270. Hamm, P.; Hansen, E.M.; Hennon, P.E.; Shaw, C.G., III. 1986. Pears, bears, and *Phytophthora* in S E. Alaska; the indication that *P drechsleri* is endemic to S.E Alaska. In: Cooley, S., ed. Proceedings of 34th western international forest disease work conference; 1987 Sept 8-12; Juneau, AK Portland, OR- U S Department of Agriculture, Forest Service, Pacific Northwest Region, Forest Pest Management- 68-71

Reports on attempts to recover species of *Phytophthora* from yellow-cedar forests in southeast Alaska. Pears were used as bait in the isolation process for these fungi A species of *Phytophthora* was isolated seven times from the five locations. The fungus is presumed to be endemic in Alaska, but is probably not the cause of decline and mortality of yellow-cedar.

271. Hamm, P.B.; Hansen, E.M.; Hennon, P.E.; Shaw, C.G., III. 1988. *Pythium* species from forest and muskeg areas of southeast Alaska. Transactions of the British Mycological Society. 91: 385-388.

Five fungal taxa in the genus *Pythium* are reported from southeast Alaska, most of the successful sampling was from soils in dead and dying yellow-cedar forests and some from within 50 cm of dying yellow-cedar trees.

272. Hanan, A.M.S. 1967. Species trials and silvicultural control of mixed species. Forest Research Review, 1957/64. Dublin, Ireland Department of Lands, Forest Division 43-59.

Describes trials of *Cupressocyparis leylandii,* which so far has proved to be a vigorous, reasonably hardy tree.

273. Hanley, Thomas A. 1984. Relationships between Sitka black-tailed deer and their habitat. Gen. Tech. Rep. PNW-168. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 21 p.

Yellow-cedar comprised 0, 16, and 0.6 percent of the rumen contents from 14 Sitka black-tailed deer on Admiralty and Chichagof Islands collected in January, February, and March, respectively.

274. Hanley, Thomas A.; McKendrick, Jay D. 1983. Seasonal changes in chemical composition and nutritive value of native forages in a spruce-hemlock forest, southeastern Alaska. Res. Pap. PNW-312. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 41 p.

The nutritive value of yellow-cedar and other browse species is analyzed and reported. Yellow-cedar has high values for in vitro dry matter digestibility, total ash, calcium, zinc, and low values for neutral detergent fiber, potassium, and manganese.

275. Hanley, Thomas A.; Robbins, Charles T.; Spalinger, Donald E. 1989. Forest habitats and the nutritional ecology of Sitka black-tailed deer a research synthesis with implications for forest management Gen. Tech. Rep. PNW-GTR-230. Portland, OR U S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 52 p

States that yellow-cedar foliage is an especially important winter food for Sitka black-tail deer in southeast Alaska

276. Hanley, Thomas A.; Rogers, J. 1989. Estimating carrying capacity with simultaneous nutritional constraints. Res. Note PNW-RN-485. Portland, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station 29 p

Values of digestible dry matter and digestible protein (47 and 2 percent, respectively) are given for yellow-cedar available for browse by Sitka black-tailed deer. A value of 12 kg/ha for yellow-cedar is used in a model of carrying capacity for deer in low-volume hemlock, mixed-conifer forests.

277. Hanley, Thomas A.; Spalinger, Donald E.; Hanley, Kathleen A.; Schoen, John W. 1985. Relationships between fecal and rumen analyses for deer diet assessments in southeastern Alaska. Northwest Science. 59: 10-16

Yellow-cedar foliage comprised 14 percent of the feces and 11 percent of the rumen taken from 13 Sitka black-tailed deer in a study on their diet on Admiralty and Chichagof Islands in southeast Alaska Maximum values for yellow-cedar taken from an individual deer were 51 percent of feces and 47 percent of rumen

278. Hansen, Carl. 1892. Pinetum Danicum. Conifers collected and observed by Professor Carl Hansen. Journal of the Royal Horticultural Society. Copenhagen; 14:257-480.

"Mr. Menzies was the first discoverer of this species. He obtained specimens from Nootka Sound, when Vancouver (with whom he sailed as surgeon and naturalist) stopped there in his celebrated voyage round the world; and from his specimens Lambert described it in his 'Genus Pinus ' Yellow-cedar was introduced from the Botanic Garden of St. Petersburg into Europe, under the name of *Thuyopsis borealis,* about 1850, and is now plentifully distributed. Mr R Brown, who collected for the Edinburg[h] 'British Columbia Botanical Association' in one of his letters says, 'Next morning looking about our neighborhood, we re-entered our canoe, hollowed out of *Cupressus nutkaensis,* the mats we sat upon being made of the fibre of the same tree, ropes of the same material, and occasionally of *Thuya plicata.'"* Notes on habits and habitat are given. Indicates that yellow-cedar was introduced into Denmark in 1870.

279. Hansen, E.M.; Hamm, P.B.; Shaw, C.G., III; Hennon, P.E. 1988. *Phytophthora drechsleri* in remote areas of southeast Alaska. Transactions of British Mycological Society. 91: 379-388.

A *Phytophthora* species is isolated from yellow-cedar forests of southeast Alaska, but evidence from an inoculation trial is presented that suggests that this fungus is not the cause of widespread tree mortality.

280. Hansen, Henry P. 1950. Pollen analysis of three bogs on Vancouver Island, Canada Journal of Ecology 38 270-276

Yellow-cedar occurs at high elevations near timberline, but not at low elevations on the east side of southern Vancouver Island where this pollen analysis study was conducted. Yellow-cedar pollen was not found in peat deposits

281. Hanzlik, E.J. 1925. A site classification scheme for the western Cascades forest region. University of Washington Forestry Club Quarterly (Seattle). 4(1): 5-8

Yellow-cedar is a component of sites designated as IV and V. Generally these sites are from 2,500 ft to 4,500 ft in northern Washington and from 3,500 to 4,000 ft in Oregon. Site IV associates are western hemlock, Pacific silver fir, noble fir, and mountain hemlock. Site V associates are Pacific silver fir, mountain hemlock, and subalpine fir

282. Hanzlik, Edward John. 1928. Trees and forests of Western United States Portland, OR. Dunham Printing Co. 128 p.

283. Hard, J.S. 1967. Identification of destructive Alaska forest insects. Portland, OR U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 19 p.

Notes the occurrence of western hemlock looper, cedar bark beetles, roundheaded borers, and ambrosia beetles on western redcedar and yellow-cedar in southeast Alaska.

284. Harlow, William M.; Harrar, Elwood S. 1950. Textbook of dendrology. 3d ed New York: McGraw-Hill. 555 p.

Gives a general description of yellow-cedar. The second edition of this book, published in 1941, gives a distribution map that indicates an occurrence of yellow-cedar in northern Idaho.

285. Harrar, E.S. 1957. Hough's encyclopaedia of American woods. New York. Robert Speller and Sons. 204 p.

Briefly describes the discovery, uses, habits, and morphology of yellow-cedar, diagnostic features of the wood, and its microscopic anatomical features. Physical and mechanical properties are tabulated.

286. Harris, A.S. 1962. Cone crops in coastal Alaska—1960 and 1961. Tech. Note 53. Juneau, AK: U.S. Department of Agriculture, Forest Service, Northern Forest Experiment Station. 4 p.

A report on yellow-cedar indicated a "medium" crop of both 1- and 2-year cones near Petersburg, Alaska. The only report from the Sitka district showed a crop failure.

287. Harris, A.S. 1967. Alaska's last Russian steamer Alaska Sportsman August 24-25

Discusses the construction and history of the ship *Politkofsky,* built of yellow-cedar timber in Sitka in 1863

288. Harris, A.S. 1969. Alaska-cedar a bibliography with abstracts Res Pap PNW-73 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 47 p

Contains 301 references, most with brief summaries, arranged alphabetically by author Gives a subject index and a list of other tree species mentioned

289. Harris, A.S. 1970. The loners of Alaska American Forests 76(6) 20-23, 55-56

Illustrated article about yellow-cedar Contains information on general appearance, range, nomenclature, stature, grow rates, flowering, cones and historic and modern uses

290. Harris, A.S. 1971. Alaska-cedar American Woods Series FS-225 Washington, DC U S Department of Agriculture, Forest Service 7 p

Provides a summary of the silvicultural and ecological knowledge on yellow-cedar Covers a range of topics including common names, general appearance, wood supply in several regions, characteristics of bark, cones, seed and foliage and the appearance, properties, and uses of wood

291. Harris, A.S. 1974. *Chamaecyparis* Spach white cedar In Schopmeyer, C S , ed Seeds of woody plants in the United States Washington, DC U S Department of Agriculture 316-320

Discusses flowering, cones, and seeds for the three North American species of *Chamaecypans,* including yellow-cedar Gives notes on flowering and seed dispersal dates, seed-bearing age, seed yields, and stratification for germination

292. Harris, A.S. 1984. Alaska-cedar an American wood FS-224 [Place of publica tion unknown] U S Department of Agriculture, Forest Service 6 p

Describes the distribution, elevation, associated plants, growth forms, common names, supply, production, wood characteristics, and uses of yellow-cedar

293. Harris, A.S. 1990. *Chamaecypans nootkatensis* (D Don) Spach Alaska-cedar In Burns, Russell M , Honkala, Barbara H , tech coords Silvics of North America Volume 1 Conifers Agric Handb 654 Washington, DC U S Department of Agriculture, Forest Service 97-102

Summarizes a wide range of ecological and silvicultural information on yellow-cedar Includes range, climate, soils, associated plants, flowering, seed produc tion, vegetative reproduction, growth and yield, rooting, shade tolerance, damage agents, uses, and genetics

294. Harris, Arland S.; Farr, Wilbur A. 1974. The forest ecosystem of southeast Alaska 7 Forest ecology and timber management Gen Tech Rep PNW-25 Portland OR U S Department of Agriculture, Forest Service Pacific Northwest Forest and Range Experiment Station 109 p

Describes the occurrence of yellow-cedar in the forests of southeast Alaska Yellow-cedar occurs in pure stands but more often is found scattered with other tree species Its best development is on thin soils over bedrock or on well-drained soils On the latter sites, however, it has difficulty competing with faster growing trees Trees may reach 8 ft in diameter and over 120 ft tall Shade tolerance in this part of its range is probably less than further south Little is known about its silviculture or management but yellow-cedar wood is very valuable

295. Harris, Arland S.; Hutchmson, O. Keith; Meehan, William R. [and others]. 1974. The forest ecosystem of southeast Alaska 1 The setting Gen Tech Rep PNW-12 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 40 p

Describes the use of yellow-cedar by Native people in Alaska and by Russians and Americans in Sitka Yellow-cedar was used for hull construction in boat-building in the 1800s because of the wood's durability Selective harvesting of yellow-cedar for this purpose exhausted supplies along beaches as far from Sitka as the Peril Strait area

296. Hartman, Kay. 1982. National register of big trees American Forests 88(4) 17-31,34-48

Lists the largest known yellow-cedar in the United States as a tree with a diameter of 3 7 m (12 0 ft), height of 37 m (120 ft), and crown spread of 8 2 m (27 ft)

297. Hawkins, B.J. 1992. The response of *Chamaecyparis nootkatensis* stecklings to seven nutrient regimes Canadian Journal of Forest Research 22 647-653

Rooted cuttings (stecklmgs) of yellow-cedar were grown in inert rooting medium and fertilized with seven nutrient solutions The complete nutrient mix supplied in increasing volumes produced the maximum response in growth and photosynthesis Deficiency of nitrogen resulted in the greatest reduction in growth Nutrients supplied in excess resulted in luxury consumption and eventually led to plant death

298. Hawkins, B.J. 1993. Photoperiod and night frost influence the frost hardiness of *Chamaecyparis nootkatensis* clones Canadian Journal of Forest Research 23 1408-1414

Frost hardiness was studied in yellow-cedar during winter to determine the influence of photoperiod and subzero temperatures on the processes of hardening and losing frost hardiness Significant difference in frost hardiness of clones existed throughout the experiment Frost hardiness was greater in stecklings

(rooted cuttings) treated with a 6-hour than a 12-hour photopenod Night frost also significantly increased frost hardiness in controlled experiments Stecklings in all treatments began to lose frost hardiness between January and March Both photopenod and temperature appear to influence hardening, but losing frost hardiness seemed to be affected primarily by temperature Losing frost hardiness proceeded at a much faster rate in steckhngs formerly exposed to night frosts than in plants not subjected to subzero temperatures

299. Hawkins, B.J.; McDonald, S.E. 1993. Photoperiod influences dehardening of *Chamaecyparis nootkatensis* seedlings Canadian Journal of Forest Research 23 2452-2454

Seedlings subjected to increasing day lengths began to lose frost hardiness immediately and at a greater rate than seedlings under a constant photopenod Seedlings in a decreasing photoperiod treatment maintained maximum frost hardiness for 42 days, then began to lose frost hardiness spontaneously Results indicated that photoperiod influences the initiation and rate of losing frost hardiness in yellow-cedar, and maximum hardiness cannot be maintained indefinitely

300. Hawkins, B.J.; Russell, J.; Shortt, R. 1994. Effect of population, environment, and maturation on the frost hardiness of yellow-cedar *(Chamaecypans nootkatensis)* Canadian Journal of Forest Research 24 945-953

Seedlings and steckhngs (rooted cuttings) grown at high elevation were consistently more cold hardy than those at low elevation Frost hardiness appears to have a genetic component as seedlings and steckhngs of parents from certain families and populations developed greater hardiness than stock of parents from other areas Frost hardiness was not significantly different among seedlings and rooted cuttings taken from 4- and 12-yr-old hedges

301. Hay, I.; Lachance, D.; Von Aderkas, P.; Charest, P.J. 1994. Transient chimeric gene expression in pollen of five conifer species following microparticle bombardment Canadian Journal of Forest Research 24 2417-2423

Mature pollen of yellow-cedar and several other species was bombarded with gold and bacterial plasmids to attempt gene transfer Of the four conifers tested, yellow-cedar had the lowest level of gene transfer

302. Hazard, John W. 1963. Forest statistics for Chelan and Douglas Counties, Washington, 1959-60 Resour Bull PNW-5 Portland, OR US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 26 p

Forest statistics for Chelan and Douglas Counties are given as of 1959-60 On commercial forest land, the volume of yellow-cedar growing stock 5 0 in in diameter at breast height (d b h) and larger was 3 million ft^3 Volume of yellow-cedar sawtimber 11 0 in d b h and larger was 10 million board ft (Scribner)

303. Hazard, John W. 1965. Timber resource statistics for southwest Washington. Resour Bull PNW-15 Portland, OR-U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment. 32 p.

Forest statistics for southwest Washington, which includes Clark, Cowlitz, Lewis, Pacific, Skamania, and Wahkiakum Counties, are given as of January 1, 1964 On commercial forest land, the volume of yellow-cedar growing stock 5.0 in (diameter at breast height) (d b.h.) and larger was 24 million ft^3. Volume of yellow-cedar sawtimber 11.0 in d.b.h. and larger was 120 million board ft (Scribner).

304. Hazard, John W.; Metcalf, Melvin E. 1965. Forest statistics for west central Oregon. Resour Bull PNW-10 Portland, OR U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment. 35 p.

Forest statistics for west-central Oregon, which includes Benton, Lane, Lincoln, and Linn Counties, are given as of 1963 On commercial forest land, the volume of yellow-cedar growing stock 5.0 in diameter at breast height (d.b.h.) and larger was 3 million ft^3 Volume of yellow-cedar sawtimber 11.0 in d b.h. and larger was 7 million board ft (Scribner).

305. Hebda, R.J. 1983. Late glacial and postglacial vegetation history at Bear Cove Bog, northeast Vancouver Island, British Columbia. Canadian Journal of Botany. 61.3172-3192.

Describes the vegetation at a site on Vancouver Island about 13,000 yr BP from analysis of profiles containing pollen and macrofossils. Pollen grains from western redcedar and yellow-cedar are "indistinguishable." From about 3000 yr BP to present, members of the Cupressaceae, presumed to be both western redcedar and yellow-cedar, shared canopy dominance with western hemlock. The author suggests that humus accumulation under cool and moist summers have favored the development of the two cedars.

306. Hebda, Richard J.; Mathews, Rolf W. 1984. Holocene history of cedar and Native Indian cultures of the North American Pacific Coast. Science. 225 711-713.

Indicates that pollen of several members of Cupressaceae (western redcedar, yellow-cedar, junipers) are easily confused, thereby complicating estimates of historic abundance based on analyses of pollen profiles.

307. Hegnauer, R. 1962. Chemotaxonomie der Pflanzen: Eine Ubersicht uber die Verbreitung und die systematische Bedeutung der Pflanzenstoffe: Chemotaxonomy of plants, a survey of the distribution and systematic significance of plant constituents Thallophytes, Bryophytes, Pteridophytes and Gymnosperms Basel, Switzerland; Stuttgart, Germany: Birkhauser Verlag. 517 p. Vol. 1.

308. Hemstrom, Miles A.; Franklin, Jerry F. 1982. Fire and other disturbances of the forests in Mount Rainier National Park Quaternary Research 18 32-51

Yellow-cedar is included in a study of disturbance and vegetation in Mount Rainier National Park Yellow-cedar was found to be less useful for dating disturbances than less tolerant tree species owing to its habit of sometimes regenerating under a forest canopy The authors state that individual yellow-cedar trees may survive to be more than 1200 yr old in the park

309. Hennon, P.E. 1986. Pathological and ecological aspects of decline and mortality of *Chamaecyparis nootkatensis* in southeast Alaska Corvallis, OR Oregon State University, Department of Botany and Plant Pathology 279 p Ph D dissertation

Dissertation on the pathology and ecology of yellow-cedar decline in southeast Alaska Includes chapters on background information of yellow-cedar, dating tree death, epidemiology, fungi, pathogen testing, basal scars, foliar and soil nutrients, and reproduction

310. Hennon, P.E. 1990. Etiologies of forest declines in western North America In Proceedings of Society of American Foresters Are forests the answer[7] 1990 July 29-August 1, Washington, DC Bethesda, MD Society of American Foresters 154-159

Describes the decline and mortality phenomenon of yellow-cedar in Alaska and contrasts it with forest declines of ohia in Hawaii and of western white pine in Idaho and surrounding areas

311. Hennon, P.E. 1990. Fungi on *Chamaecypans nootkatensis* Mycologia 82 59-66

Lists the fungi reported on yellow-cedar throughout its natural range Includes fungi from previous publications and those recovered during isolations and col lections made on the host in Alaska A total of 77 fungal taxa are reported from yellow-cedar

312. Hennon, P.E. 1991. Survival, growth, grazing, and shoot blight of planted seedlings of Alaska yellow-cedar in southeast Alaska Tech Publ R10-90-20 Juneau, AK U S Department of Agriculture, Forest Service, Alaska Region 14 p

Reports progress on the first planting trials of yellow-cedar in Alaska for regeneration Survival was high on most sites except those with limited light or soil drainage Height and diameter growth were best on burned clearcut sites Grazing by deer and a shoot blight fungus caused form problems and some mortality

313. Hennon, P.E. 1992. Current knowledge of ecology and silviculture of yellow-cedar in southeast Alaska information exchange at Sitka, Alaska, November 1991 Tech Publ R10-TP-24 Juneau, AK US Department of Agriculture, Forest Service, Alaska Region 31 p

Summarizes discussions on the biology and management of yellow cedar made during a meeting held in Sitka, Alaska Provides background information on yellow-cedar, then describes current knowledge and management practices related to occurrence, natural reproduction, planting trials, animal damage, and decline and mortality Future management considerations are discussed Notes from a field trip are included

314. Hennon, P.E. 1992. Diseases, insects, and animal damage of yellow cypress In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it? Can we sell it? 1990 March 26-28, Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 36 43

Lists and discusses the destructive biotic agents of yellow-cedar, including fungi, nematodes, insects, and bears A total of 80 fungi are listed Also describes the widespread decline and mortality of yellow-cedar in Alaska

315. Hennon, P.E. 1992. Survival and growth of planted Alaska-cedar seedlings in southeast Alaska Tree Planters' Notes 43(3) 60-66

Reports on the survival and growth of yellow-cedar seedlings planted in different combinations of exposure to light and soil drainage in southeast Alaska Survival and growth are highest with maximum light and soil drainage Damage to seedlings includes browsing by deer and shoot mortality caused by a pathogen Planting recommendations include evaluating site characteristics, protecting seedlings from deer, and planting soon after timber harvest

316. Hennon, P.E. 1993. Cedar decline [Pamphlet] Tech Publ R10-TP-36 Juneau, AK U S Department of Agriculture, Forest Service, Alaska Region

A pamphlet with color illustrations summarizes knowledge on yellow-cedar decline and mortality in Alaska

317. Hennon, P.E. 1995. *Chamaecyparis nootkatensis* In Schutt, P , Schuck, H J , Aas, G , Lang, U M , eds Enzyklopadie der Holzgewachse Landsberg, Germany Ecomed Verlag 10 p In German

Information on the morphology and ecology of yellow-cedar as part of a treatment of woody plants of the world

318. Hennon, P.E.; Hansen, E.M.; Shaw, C.G., III. 1990. Causes of basal scars on *Chamaecypans nootkatensis* in southeast Alaska Northwest Science 64(2) 45-54

Basal wounds occur on over one-half of yellow-cedar trees sampled in some forests of southeast Alaska Wounds generally face upslope, do not girdle the tree's circumference, and are most common in productive forest communities Evidence is presented that implicates brown bears as the cause of most of the wounding

Bole wounding is independent from the serious forest decline problem in Alaska but can cause loss of timber value through staining and wood decay. Includes photographs of bear scars and those caused during bark collection by humans.

319. Hennon, P.E.; Hansen, E.M.; Shaw, C.G., III. 1990. Dynamics of decline and mortality of *Chamaecyparis nootkatensis* in southeast Alaska. Canadian Journal of Botany. 68: 651-662.

Reports on studies that reconstruct mortality patterns of yellow-cedar decline from the 1880s to the 1980s in southeast Alaska. Mortality began on wet, poorly drained sites, and subsequent spread has been confined to 100 m on adjacent sites with better drainage. No long-range spread was found. Yellow-cedar is the primary species affected On average, 65 percent of the basal area of yellow-cedar is dead on declining sites, these high levels are the result of slow intensification of mortality and the long persistence of cedar snags.

320. Hennon, P.E.; Loopstra, E.M. 1991. Persistence of western hemlock and western redcedar trees 38 years after girdling at Cat Island in southeast Alaska. Res Note PNW-RN-507 Portland, OR: U S Department of Agriculture, Forest Service, Pacific Northwest Research Station. 5 p.

Contrasts the persistence of yellow-cedar snags with those of western hemlock and western redcedar.

321. Hennon, P.E.; Newcomb, G.B.; Shaw, C.G., III; Hansen, E.M. 1986. Nematodes associated with dying *Chamaecypans nootkatensis* in southeast Alaska. Plant Disease. 70-352.

Reports the recovery of nematodes *(Pratylenchus, Aphelenchoides, Sphaeronema,* and *Crossonema)* from soils around yellow-cedar in southeast Alaska Although several parasitic taxa were recovered, none was strongly associated with dying trees or dying forests, and nematodes were found in low concentrations.

322. Hennon, P.E.; Shaw, C.G., III. 1985. A management strategy for stands suffering from Alaska-cedar decline. In. Proceedings of the 36th Alaska science conference; 1985 Sept 27-29; Fairbanks, AK. Fairbanks University of Alaska 161

Evidence from epidemiological studies indicates that management of yellow-cedar will not spread the decline problem to new sites. Recommends studies on the feasibility of salvage.

323. Hennon, P.E.; Shaw, C.G., III. 1993. Possible trigger of climatic warming on onset and development of cedar decline in southeast Alaska. In: Fox, D G., ed. Proceedings of 86th annual air and waste management association; 1993 June 13-18; Denver, CO. Pap. 93-WA-85 02. [Place of publication unknown]. Air and Waste Management Association. 19 p.

Argues that yellow-cedar decline is a naturally occurring phenomenon that began in remote locations before 1900. The timing of onset seems to coincide with the end of the so-called Little Ice Age. Possible triggers of yellow-cedar decline, initiated by a changing climate, are discussed

324. Hennon, P.E.; Shaw, C.G., III. 1994. Did climatic warming trigger the onset and development of yellow-cedar decline in southeast Alaska? European Journal of Forest Pathology. 24. 399-418.

Summarizes knowledge on the ecology of yellow-cedar, symptoms of declining trees, associated insects and pathogens, bear damage, plant communities affected by decline, age structure of declining stands, mortality spread patterns, cedar reproduction, ecological effects of decline, estimates of decline onset, and the distribution of decline. Discusses the site and abiotic factors associated with decline, presents two hypotheses for the primary cause of decline (freezing damage and soil toxicity), and describes the possible involvement of a warming climate with these hypotheses.

325. Hennon, P.E.; Shaw, C.G., III; Hansen, E.M. 1990. Dating decline and mortality of *Chamaecyparis nootkatensis* in southeast Alaska Forest Science 36-502-515.

Methods used for dating the onset of decline include the use of 1927 aerial photography, historical records, and two techniques for dating the death of individual yellow-cedar snags A system for classifying dead yellow-cedars is presented based on the degree of retained foliage, twigs, branches, and the condition of the bole Estimates are given for time-since-death for each of five snag classes. The fifth class, composed of trees that died an average of 81 yr previously, seems to represent the onset of extensive tree mortality in southeast Alaska.

326. Hennon, P.E.; Shaw, C.G., III.; Hansen, E.M. 1990. Symptoms and fungal associations of declining *Chamaecypans nootkatensis* in southeast Alaska Plant Disease 74. 267-273.

Reports on a study of symptoms, fungal isolation, and pathogen testing in a search for the cause of yellow-cedar decline. Symptom development in 35 root-excavated trees indicated that death of the fine root system initiates tree decline Dead coarse roots, necrotic root and stem lesions, and thinning of crowns develop as decline progresses. Over 1,800 attempted isolations were made from symptomatic tissues and led to a number of identified potential pathogens. No isolated fungus showed strong pathogenicity, however. Vesicular-arbuscular mycorrhizae were observed in declining and healthy trees from live root samples There is no evidence to support a biotic primary cause of yellow-cedar decline.

327. Hennon, Paul E.; Shaw, Charles G., III. 1986. Noteworthy forest diseases in Alaska. In. Cooley, S., ed. Proceedings of 34th western international forest disease work conference; 1986 Sept. 8-12; Juneau, AK. Portland, OR U.S. Department of Agriculture, Forest Service, [Pacific Northwest Region], Forest Pest Management: 13-19.

Discusses a foliar rust pathogen, a shoot blight pathogen, and the decline and mortality problem of yellow-cedar in Alaska.

328. Hennon, Paul E.; Shaw, Charles G., III; Hansen, Everett M. 1984. Is a pathogen the primary cause of decline and mortality of *Chamaecyparis nootkatensis* in southeast Alaska? In Hunt, R., ed. Proceedings of the 32nd western international forest disease work conference; 1986 Sept 9-12; Juneau, AK Victoria, BC. Pacific Forest Research Centre 15-23.

Reports the sequence of root and aboveground symptoms of declining yellow-cedar trees based on a study involving 40 declining or healthy yellow-cedar trees that were root-excavated. Fungi associated with each symptomatic tissue are discussed Fungal succession occurs in necrotic lesions on boles of dying trees A map showing the concentration of mortality from aerial photographs taken in 1927, 1948, 1965, and 1976 of declining sites illustrates the patterns of mortality spread

329. Hennon, Paul E.; Shaw, Charles G., III; Hansen, Everett M. 1987. Onset, spread and community relationships of decline of *Chamaecypans noofkatensis* in southeast Alaska. In. Laderman, A., ed. White Cedar Wetlands. London. Westview Press 331-337

Describes the plant communities affected early and late in the development of the decline phenomenon. Decline began in communities on very wet, poorly drained sites and has subsequently spread to adjacent communities on sites with better drainage.

330. Hennon, Paul E.; Shaw, Charles G., III; Hansen, Everett M. 1992. Age structure and estimated mortality rate of *Chamaecypans nootkatensis* in declining forests of southeast Alaska. Bulletin of the Ecological Society America. 73(2). 205.

Declining stands have multiple cohort structure and most individual yellow-cedars are from 100 to 450 yr old Death is not associated with tree age Since decline onset, an estimated annual mortality rate of this slow-growing species has been 0 5 to 0 7 percent and 0 08 percent in declining and nondeclining stands, respectively. Coupled with negligible regeneration on some sites, decline is markedly altering the yellow-cedar ecosystem

331. Hennon, Paul E.; Shaw, Charles G., III; Hansen, Everett M. 1992. Cedar decline distribution, epidemiology, and etiology. In. Manion, P D , Lachance, D , eds Forest decline concepts St Paul, MN American Phytopathological Society Press. 108-122.

Chapter on yellow-cedar decline in a book on forest declines. The distribution of decline involving more than 200 000 ha in southeast Alaska is illustrated and discussed Includes information on tree species affected by decline, the initiation, development, and ecological effects of decline; and biotic and abiotic factors as possible causes of mortality Small changes in climate, thought to have triggered several forest declines, may have initiated yellow-cedar decline The long duration and pristine nature of much of the decline distribution suggests that yellow-cedar decline is a natural phenomenon independent of human activity

332. Henry, J.K. 1915. Flora of southern British Columbia and Vancouver Island: with many references to Alaska and northern species Toronto: W.J Gage and Company, Ltd. 363 p

333. Hepting, George H. 1971. Diseases of forest and shade trees of the United States Agric Handb. 386. Washington, DC. U.S. Department of Agriculture 658 p.

Discusses the common diseases of yellow-cedar, including those of seedlings, foliage, stems, roots, and boles.

334. Herder, F. 1892. Plantae Raddeanae Apetalae. Acta Horti Petropohtani. 12(1). 31-132.

Briefly describes the occurrence of yellow-cedar at Nootka Sound in British Columbia and near Sitka in Alaska Mentions specimens with and without cones from several herbaria.

335. Heusser, C.J. 1960. Late-Pleistocene environments of north Pacific North America Spec Publ 35 New York American Geographical Society 308 p

Describes the distribution, habitat, and plant associates of yellow-cedar throughout its range. Gives a detailed distribution map. Includes a plate (plate IX) of a mature yellow-cedar tree at Lituya Bay, Alaska

336. Heusser, Calvin J. 1964. Palynology of four bog sections from the western Olympic Peninsula, Washington. Ecology. 45: 23-40

Shows the occurrence of yellow-cedar along with mountain hemlock and two fir species in a climax community of the Hudsoninan zone of today's flora in the Olympic Peninsula area. Yellow-cedar and western redcedar were not included in pollen analyses of bog communities "because the pollen of these trees not only preserves poorly but is also difficult to identify." The presence of these species may need documentation by macrofossils. The author speculates that yellow-cedar may have survived glaciation in Washington refugia along with mountain hemlock because both thrive at higher elevations where ice-free conditions prevailed

337. Heusser, Calvin J. 1965. A Pleistocene phytogeographical sketch of the Pacific Northwest and Alaska In Wright, H.E., Jr., Frey, David G , eds.The quaternary of the United States. Princeton, NJ: Princeton University Press: 469-483.

338. Heusser, Calvin J. 1983. Holocene vegetation history of the Prince William Sound region, south-central Alaska. Quaternary Research. 19: 337-355

Reports on the historical abundance of vegetation in Prince William Sound at the northwest limits of the natural range of yellow-cedar by using pollen-profile analysis Heusser comments that yellow-cedar is currently present at some sampling stations, but the history of this conifer cannot be recounted because of the "absence of recognizable [pollen] grains "

339. Hibberson, R.W. 1921. Yellow-cedar in British Columbia. The Timberman. 22(12): 138

Gives a brief description of yellow-cedar in British Columbia and comments on uses of the wood

340. Hickman, J.C. 1970. Seasonal course of xylem sap tension Ecology. 51 1052-1060.

Measurements of xylem sap-tension were made during the summer with a pressure chamber on 44 species of herbaceous and woody plants Yellow-cedar showed seasonally constant or slightly increasing maxima, with minima slowly increasing until there was little diurnal fluctuation Responses apparently represent alternative adaptations to a seasonally decreasing moisture supply.

341. Hickman, James Craig. 1968. Disjunction and endemism in the flora of the central western Cascades of Oregon: an historical approach to plant distribution Eugene, OR: University of Oregon. Ph.D. dissertation.

Yellow-cedar occurs in the high-elevation boreal forest of the Cascade Range with *Tsuga mertensiana* and *Abies lasiocarpa,* where it typically occupies areas of heavy snowfall and wind-swept ridges Its distribution is highly disjunct. Yellow-cedar displays relatively little variation in sap tension during drought conditions; measurements were taken from a vegetative clone with many boles that had grown through layering. Seed collected from yellow-cedar did not germinate in any field or in laboratory tests. The author states that yellow-cedar's occurrence is similar to *Menziesia ferruginea* in that it is found in the north Coast Mountains and in the same areas in the high Cascades. The occurrence of yellow-cedar and other species at 37 locations in the Cascades is noted, and a general distribution is displayed on a map.

342. Higinbotham, N.; Higinbotham, Betty Wilson. 1954. Quantitative relationships of terrestrial mosses with some coniferous forest at Mount Rainier National Park Butler University Botanical Studies 11-149-168

Characterizes the terrestrial plant communities of typical climax stands Above the *Abies amabilis-Tsuga mertensiana* forest, *T. mertensiana* and *Chamaecypans nootkatensis* assume dominance, generally at elevations between 4,000 and 5,000 ft The plant community is described.

343. Hiorth, G. 1956. Allverdens traer i norsk jord. Trees of the world on Norwegian soil. S. Bern. Hegland-Flekkefjord. Tryktog Bundet Hos. 245 p. In Norwegian

344. Hitchcock, C. Leo; Cronquist, Arthur. 1973. Flora of the Pacific Northwest Seattle University of Washington Press. 730 p.

Gives a brief description and small illustration of yellow-cedar.

345. Hitchcock, C. Leo; Cronquist, Arthur; Ownbey, Marion; Thompson, J.W. 1969. Vascular plants of the Pacific Northwest. Part 1 Vascular cryptogams, gymnosperms, and monocotyledons Seattle University of Washington Press 914 p

Describes the general appearance, form, bark, and wood of yellow-cedar. Describes and illustrates foliage, flowering, cones, and seeds. Gives elevational limits in Oregon and Washington.

346. Hoffman, B.E. 1913. Alaska woods, their present and prospective uses. Forestry Quarterly. 11(2). 185-200

Uses and characteristics of yellow-cedar wood are described from early in the 20th century. Chief uses are for constructing cabinets and small boats, but yellow-cedar wood is also used for fuel, pencil stock, furniture, and cigar boxes

347. Holsten, E.; Hennon, P.; Wittwer, D.; Matthews, K. 1996. Forest insect and disease conditions in Alaska—1995. Tech. Publ. R10-TP-61. Anchorage, AK. U S. Department of Agriculture, Forest Service, Alaska Region 40 p

An annual publication describing the forest health conditions of Alaska. Includes a map and acreage estimates of yellow-cedar decline, which totals over 1/2 million acres

348. Holsten, E.H.; Hennon, P.E.; Werner, R.A. 1985. Insects and diseases of Alaskan forests. Alaska Reg. Rep. 181. Anchorage, AK. U.S. Department of Agriculture, Forest Service, Alaska Region 217 p.

Illustrates and briefly describes several insects and diseases of yellow-cedar in Alaska.

349. Holubcik, M. 1960. Prispevok kotazke pestovania cudzokra nych drevin v nasich porastoch Raising exotics in Czechoslovak stands. Lesnicky Casopis. 6(1). 64-75

Gives a brief discussion on experience with growing 14 conifers including *Chamaecyparis nootkatensis* and a few broad-leaved species.

350. Hooker, William Jackson. 1840. Flora Boreali-americana, or, the botany of the northern parts of British America, compiled principally from the plants collected by Dr. Richardson & Mr. Drummond on the late northern expeditions, under command of Captain Sir John Franklin, R N to which are added those of Mr. Douglas, from North-west America, and of other naturalists. London. Henry G Bohn Vol II

Lists yellow-cedar as *"Cupressus Nutkatensis* Lamb." on page 165. Gives a short description and indicates that the natural distribution is along the northwest coast of North America. Notes occurrences at Observatory Inlet (probably located north of Prince Rupert, BC) and at Sitka Hooker may have examined Bongard's (1833) specimen because he indicates that it is the same species as described here He also compares yellow-cedar to Atlantic white-cedar, which he refers to as *Cupressus thyoides.*

351. Hosie, R.C. 1969. Native trees of Canada. 7th ed. Ottawa: Canadian Forestry Service, Department of Environment. 380 p.

Describes the form, habit, size, foliage, cones, bark, wood, and uses of yellow-cedar. Includes a distribution map for British Columbia

352. Howell, Thomas. 1901. A flora of Northwest America Vol 1- Phanerogamae. Portland, OR: [Publisher unknown]. 792 p. Reprinted in 1903.

Gives a brief description of yellow-cedar

353. Hultén, E. 1937. Outline of the history of arctic and boreal biota during the Quaternary period, their evolution during and after the Glacial period as indicated by the equiformal progressive areas of present plant species. Stockholm- Bokforlags Aktiebolaget Thule. 168 p [plus 43 plates]. (Reprinted 1972, New York- Verlag).

Lists yellow-cedar with other plant species that are distinctly oceanic plants and extend from Washington and California to southeast Alaska.

354. Hulten, E. 1941. Flora of Alaska and Yukon. 1: Pteridophyta, Gymnospermae and Monocotyledoneae. Lund, Sweden. Lunds University Arsskrift, Botanical Museum 127 p.

Provides a number of early citations on the occurrence of yellow-cedar in Alaska. Gives a brief description of the tree. Mentions that the type for a synonym, *Thuja excelsa,* was taken in Sitka.

355. Hultén, Eric. 1968. Flora of Alaska and neighboring territories Stanford University, CA Stanford University Press. 1008 p.

Gives a brief description, an illustration, and location occurrences in Alaska for yellow-cedar.

356. Humphrey, C.J. 1923. Decay of lumber and building timbers due to *Pona incrassata* (B &C.) Burt. Mycologia. 15: 258-277

The wood of yellow-cedar had less weight loss (i.e , decay) than all but one tree species in a wood-inoculation study involving 75 tree species and the fungus *Pona mcrassata,* the cause of wood decay of forest products.

357. Hunt, R.S. 1976. Enophyid mite associated with damaged yellow cypress cones. Bi-Monthly Research Notes. Ottawa: Canadian Forestry Service, Department of Fisheries and Forestry; 32(3): 15-16.

Damage to cones of yellow-cedar caused by a mite (*Trisetacus* n sp) is described in British Columbia.

358. Hunt, R.S.; O'Reilly, H.J. 1984. Evaluation of control of Lawson cypress root rot with resistant root stocks. Canadian Journal of Plant Pathology. 6. 172-174.

The susceptibility of several *Chamaecyparis* species to the fungal root pathogens *Phytophthora* spp , including *P lateralis* was tested Yellow-cedar and the hybrid Leyland cypress did not show any symptoms of disease in inoculation tests In grafting trials performed to determine if Port-Orford-cedar scion material was compatible with rootstocks of other *Chamaecypans* spp., 7 of 378 grafts survived 1 yr and only one graft survived 2 yr on yellow-cedar rootstock.

359. Huntington, LeRoy W. 1923. Forest aspects of Alaska. University of Washington Forestry Club Quarterly. 1(4): 15-26.

Describes forest conditions in Alaska. Minimum stumpage rate for yellow-cedar from the Tongass Forest is $1.50 per thousand board feet. A few yellow-cedar logs have been shipped to Japan, but receipts did not justify continuing export

360. Hutchinson, Ian. 1958. Some aspects of logging in the coast forest of British Columbia Empire Forestry Review. 37(1): 66-84.

As of 1955, the inventory of mature yellow-cedar in mature stands in British Columbia was 1,560,123 ft^3. Annual cut of yellow-cedar for all timber products was 3,336 ft^3.

361. Hutchison, O. Keith. 1967. Alaska's forest resource. Resour. Bull. PNW-119. Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 74 p.

In Alaska, the volume of yellow-cedar and western redcedar is about 4 billion board feet each. There is no active market for either species today. A photo of a tree 4 ft in diameter is shown on page 46.

362. Institute of Forest Products. 1957. Conversion factors for Pacific Northwest forest products. Seattle: University of Washington, Department of Conservation. 28 p.

363. Ishibashi, Sadaki; Guzuguchi, Takefumi; Matsuwaki, Masahiro, inventors; Japan Kokai Tokkyo Koho, assignee. 1992. Cedar oil-containing miticides for domestic use. JP patent 9213607 A2 ; JP patent 0413607. January 17. 4 p A01N-065/00A; A01N-025/08B; A01N-025/12B; A01N-025/18B. In Japanese

A patent for the use of an extract from yellow-cedar foliage as a miticide.

364. Ishida, T.; Suga, T.; Matsuura, T. 1970. Conformation of nootkatone. Expenentia 26 934-935.

Methods for determining the conformation of nootkatone from the heartwood of yellow-cedar are described

365. Jackson, A. Bruce; Dallimore, W. 1926. A new hybrid conifer. Misc. Inf. Bull. 3. Kew [London], Great Britain. Royal Botanical Gardens: 113-115.

Describes the occurrence of a chance hybrid between yellow-cedar and Monterey cypress The authors propose the name *"Cupressus Leylandii "*

366. Jaeger, Edmund C. 1962. A source book of biological names and terms. 3d ed. Springfield, IL Charles C Thomas 323 p.

Chamae- (Greek) in botany sometimes signifies false and *Cyparis-* (Kypanssos in Greek) means cypress. Hence, the generic name *Chamaecypans,* or false cypress. (Note *Chamae-* also means ground or low in Greek).

367. Jepson, W.L. 1910. The silva of California. Berkeley, CA. California University Memoirs. 480 p. Vol. 2.

368. Jepson, Willis Linn. 1933. Phytogeography of the coniferae of western North America. Fifth Pacific Science Congress Proceedings: 3255-3264.

Mentions yellow-cedar as one of the coastal tree species occurring in the Puget Sound area. The author argues that Puget Sound, Sierra Nevada, and Mexican highlands are the centers of important areas of endemism for tree species of western North America.

369. Jobling, J. 1979. The clones of Leyland cypress. Arboriculture Res. Note Ottawa: Canada Department of the Environment 3 p.

370. Johnson, E.L.; Cserjesi, A.J. 1975. Gas-liquid chromatography of some tropolone-TMS ethers. Journal of Chromatography. 107: 388.

Gas-liquid chromotography was used to separate nootkatin, a component of yellow-cedar heartwood, from other tropolones Indicates that tropolones, such as nootkatin, are some of the most powerful natural fungicides.

371. Johnson, Hugh. 1973. The international book of trees: a guide and tribute to the trees of our forests and gardens. London: Mitchell Beazley Publishers Ltd 288 p.

Describes the ornamental forms of yellow-cedar used in gardens under the name "Nootka cypress."

372. Jones, George Neville. 1936. A botanical survey of the Olympic Peninsula, Washington. Biol. Publ. 5. Seattle: University of Washington. 286 p

373. Jones, George Neville. 1938. The flowering plants and ferns of Mount Rainier Biol. Publ. 7. Seattle: University of Washington. 192 p. [plus 9 plates].

374. Jozsa, L.A. 1991. Yellow cypress trivia In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it? Can we sell it? 1990 March 26-28 Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 13-15

Mentions some of the oldest known trees including yellow-cedar in Canada and elsewhere Also describes the growth of very slow growing trees

375. Jozsa, L.A. 1991. Yellow cypress wood quality and the hinoki connection In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it? Can we sell it? 1990 March 26-28 Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 9 12

Reports on wood characteristics of yellow-cedar comparing a plantation grown tree (16 yr old), an older young-growth tree (100 yr old), and an old-growth tree An X ray densiometer technique was used to measure within-ring wood density Yellow-cedar has much less variation in wood density between early and late wood than other conifers, it is the most homogeneous commercial softwood in Canada Preliminary results indicated that density uniformity is maintained in young trees In addition, the average density from young trees was 0 43 g/cm^3, not far below that tested from the old-growth tree and similar to the published value for old-growth wood These results are compared with tests on hinoki cedar *(Chamaecyparis obtusa)*

376. Jozsa, L.A.; Kennedy, R.W. 1992. Yellow cypress *(Chamaecyparis nootka tensis)* a unique coniferous resource of the Pacific Northwest In Diversity of Pacific Basin woods in past, present and future proceedings of a symposium, 1992 Aug 14-16, Lawau, HI International Association of Wood Association Bulletin 13(3) 244-245

377. Kajita, H; Skaar, C. 1992. Wettability of the surfaces of some American soft-woods species Mookuzai Gakkaishi 38(5) 516-521

378. Kamm William G., Kohn, Hubert E. 1980. Effect of warm temperature treatments on freezing tolerance and relative water content of some conifers [Abstract] Cryobiology 17(6) 625

Freezing tolerance was tested throughout more than a 1 yr cycle for yellow cedar and three other coniferous species on Mount Baker, Washington Warm treatments (10-20 °C for 18 hr) resulted in rapid loss of freezing tolerance for all tree species, except that the 10- and 15-°C treatments retained freezing tolerance in mid and late winter No significant association was found between freezing tolerance and water content for yellow-cedar

379. Kanouse, B.B.; Smith, A.H. 1940. Two new genera of Discomycetes from the Olympic National Forest Mycologia 32 756-759

A new genus and species are described for *Gelatinodiscus flavidus,* a fungus that invades the foliage and twigs of yellow-cedar in the Olympic Mountains

380. Kard, B.M.; Mallette, E.J. 1997. Resistance of six wood products used in paneling to *Reticulitermes flavipes* (Isoptera Rhinotermitidae) Journal of Eco nomic Entomology 90 178-182

Yellow-cedar was not a preferred food for the eastern subterranean termite but received damage when it was the only available food in no-choice tests Mats made of wood fiber of yellow-cedar or western hemlock pressed with waxes and resins experienced no feeding

381. Karlsson, Bengt; Pilotti, Anne-Marie; Wiehager, Anne-Charlotte. 1973. The crystal structure of chanootin, a bi-cyclic 15 carbon tropolone Acta Crystal lographica Section B, Structural Crystallography and Crystal Chemistry 29(6) 1209-1213

Determines the structure of chanootin, a bicyclic tropolone isolated from the heartwood of yellow-cedar

382. Karlsson, 1.1981. Propagation of Alaska yellow-cedar *(Chamaecyparis nootka-tensis* (D Don) Spach) by rooted cuttings for production planting International Plant Propagators' Society 31 112-116

The growth and survival of rooted cuttings and seedlings of yellow-cedar were measured in two separate trials 2 or 4 yr after outplanting in British Columbia Survival was high and growth was similar for seedlings and rooted cuttings A description is given for the establishment of a hedging orchard for the production of rooted cuttings for reforestation

383. Karlsson, Ingemar. 1974. Rooted cuttings of yellow cedar *{Chamaecyparis nootkatensis* [D Don] Spach) Res Note 66 Victoria, BC British Columbia For-est Service 4 p

The production of regeneration stock from rooted cuttings of yellow-cedar is described

384. Karlsson, Ingemar; Russell, John. 1990. Comparisons of yellow cypress trees of seedling and rooted cutting origins after 9 and 11 years in the field Canadian Journal of Forest Research 20 37-42

Yellow-cedar trees that resulted from rooted cuttings and seedlings were com-pared for survival and growth 9 and 11 yr after planting in British Columbia Sur vival was high (98 percent) after 11 yr, with no significant difference by planting stock origin Trees that originated from rooted cuttings from the oldest (7 yr-old) material produced more multiple leaders than trees originating rooted from younger sources or from seedlings In a second study, there was a significantly greater incidence of trees with multiple leaders from seedlings than from rooted cuttings (from 2-yr-old donor material) but no differences in height and diameter growth

385. Kelsey, Harlan P.; Dayton, William A. 1942. Standardized plant names 2d ed. Harrisburg, PA J. Horace McFarland Co. 675 p.

According to the authors, the approved common name for *Chamaecyparis nootkatensis* is "Nootka falsecypress." The following clones are recognized, blue *(glauca),* compact *(compacta),* Sanders *(sanden),* silver *(argenteovariegata),* weeping *(pendula),* and yellowleaf *(lutea).*

386. Kennedy, Elma I. 1965. Strength and related properties of woods grown in Canada. Dept. For Publ 1103. [Place of publication unknown] Canada Forest Products Research Branch. 51 p.

387. Kiilsgaard, C.W.; Greene, S.E.; Stafford, S.G. 1987. Nutrient concentrations in litterfall from some western conifers with special reference to calcium Plant and Soil. 102(2). 223-227.

Foliar litterfall nutrient concentrations were analyzed for several tree species of the Pacific Northwest, including yellow-cedar, at two arboreta. Yellow-cedar was noteworthy in having higher concentrations of calcium in its newly discarded foliage than any other tree species.

388. King, R. Dennis; Bendell, James F. 1982. Foods selected by blue grouse *(Dendragapus obscurus fuliginosus).* Canadian Journal of Zoology. 60: 3268-3281

Reports on a study of the diet of blue grouse on Vancouver Island. Adult males consumed the foliage of some conifers but rejected yellow-cedar foliage when it was offered.

389. Klein, David R. 1965. Ecology of deer range in Alaska Ecological Monographs 35: 259-284.

On both Woronkofski and Coronation Islands, Alaska, yellow-cedar is often present as a subordinate tree in the old-growth stands; but in blow-down areas and muskeg edges on Coronation Island and in an old burn on Woronkofski Island, it is frequently a dominant species or codominant with western hemlock and Sitka spruce. In open scrub forests on poorly drained sites, lodgepole pine is usually the dominant tree form, although it is frequently replaced by yellow-cedar on Coronation Island. Trees are dwarfed, commonly not over 20-30 ft tall, and widely spaced.

390. Klinka, K.; Feller, M.C.; Green, R.N. [and others]. 1990. Ecological principles: applications. In Lavender, D.P.; Parish, R.; Johnson, C M. [and others], eds Regenerating British Columbia's forests. Vancouver, BC: University of British Columbia Press 55-72

Lists yellow-cedar in the coastal western hemlock and mountain hemlock bioclimatic zones of British Columbia Indicates that yellow-cedar develops best on moist and medium or rich soils, is moderately shade tolerant, is frost intolerant, is heavy snow cover tolerant, and is an indicator of maritime wet and snowy climates Describes the sites where yellow-cedar is suitable for planting Mentions that low spatial crown requirements contribute to high timber yields

391. Klinka, K.; Green, R.N.; Courtin, P.J.; Nuszdorfer, F.C. 1984. Site diagnosis, tree species selection, and slashburning guidelines for the Vancouver Forest Region, British Columbia Land Manage Rep 25 Victoria, BC Ministry of Forests, Information Services Branch 180 p

392. Klinka, K.; Krajina, V.J.; Ceska, A.; Scagel, A.M. 1989. Indicator plants of coastal British Columbia Vancouver, BC University of British Columbia Press 288 p

The occurrence of yellow-cedar is an indicator of hypermaritime to submantime, subalpine boreal, and cool to cold mesothermal climates in British Columbia Yellow-cedar can tolerate a range of soil conditions It is common on seepage-affected colluvial slopes It is most productive on moist, nutrient-rich sites with a wet, cool mesothermal climate

393. Klinka, Karel. 1991. Ecology of yellow-cedar sites In Lousier, J D , ed Proceedings of a symposium Yellow cypress Can we grow it ? Can we sell it ? 1990 March 26-28, Richmond, BC FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests 23-28

Yellow-cedar sometimes is dominant but more frequently is scattered in various ecosystems in the mountain hemlock zone and in the wetter coastal western hemlock zones in British Columbia In general, it is adapted to very humid (rainy and snowy) climates with relatively warm winters and cool summers and has a wide edaphic range

394. Koehler, A. 1949. Key for identification of woods without the aid of a hand lens or microscope In Agricultural yearbook 1949 Washington, DC US Department of Agriculture 833-839

395. Kolotelo, David. 1993. Yellow cypress stratification trial Victoria, BC British Columbia Ministry of Forests Forest Report 6(1) 10-13

Tested different stratification regimes to improve the germination of yellow-cedar seed Warm preconditioning, maintaining high moisture during stratification, and extending cold treatment were the most important components for good germination rates

396. Konishi, C; Yamaguchi, K. 1978. Sawing properties of timbers sawn with a band saw Mokuzai Kogyo (Wood Industry) 33(2) 19-21

397. Krajina, V.J., ed. 1963-66. Ecology of the forests of the Pacific Northwest and of western Canadian arctic and subarctic Vancouver University of British Columbia Department of Biology and Botany, 1962-65 progress reports, National Research Council grant T-92

These annual reports provide detailed biological and physical information on sites where yellow-cedar is a component of plant communities in British Columbia Lists the occurrence of yellow-cedar in the region (Pacific coastal subalpine forest), zone (mountain hemlock), and vegetation cover (subalpine coniferous forest) The prevailing podogenic process for this zone is strong podzolization, strong mor formation (raw humus with a high concentration of organic material), and strong gleization (reduction process) Soils are classified in the subalpine humic (hums) podzol group and humus is described as ligno-mycelial mor Associated vegetation, elevational limits, and climatic data for the zone are given

398. Krajina, V.J. 1965. Biogeoclimatic zones and classification of British Columbia In Krajina, V J , ed Ecology of western North America Vancouver University of British Columbia, Department of Biology and Botany 1-17 Vol 1

Coniferous trees growing in the Pacific Northwest are listed by lower and subalpine altitudes according to their increasing shade tolerance In subalpine altitudes, *Chamaecyparis nootkatensis* is moderately shade tolerant but two of its associates, *Tsuga mertensiana* and *Abies amabalis,* possess extreme shade tolerance British Columbia is divided into seven biogeoclimatic regions (formations) and several zones Yellow cedar is one of the plant indicator species present in the Pacific coastal subalpine forest region in the mountain hemlock zone

399. Krajina, V.J., ed. **1965.** Ecology of western North America Vancouver University of British Columbia, Department of Biology and Botany 112 p Vol 1

400. Krajina, V.J. 1969. Ecology of forest trees in British Columbia In Krajina, V J , ed Ecology of western North America No 1 Vancouver, BC Department of Botany, University of British Columbia 1-147 Vol 2

Describes the biogeoclimatic zones for yellow-cedar in British Columbia and gives details of its natural habitat and site requirements

401. Krajina, V.J.; Klinka, K.; Worrall, J. 1982. Distribution and ecological characteristics of trees and shrubs of British Columbia Vancouver, BC University of British Columbia 131 p

Provides a map of the distribution of yellow-cedar in British Columbia Indicates climatic, physiographic, and edaphic requirements of sites suitable for growth Suggests that frost resistance is low unless soils are well covered by a heavy accumulation of snow Shade and flooding tolerance are listed as high Base-rich substrata (e g , calcium and magnesium) favor the occurrence of yellow-cedar over that of mountain hemlock

402. Krajina, Vladimir J. 1959. Bioclimatic zones in British Columbia Ser 1 Vancouver University of British Columbia, Department of Biology and Botany 47 p

403. Krause, A. 1956. The Tlingit Indians results of a trip to the northwest coast of America and Bering Straits (Translated by Erna Gunther) Seattle University of Washington Press 272 p (Originally published as, Die Tlinkit-Indianer, Jena, 1885)

Yellow-cedar, found singly near Sitka, has a splendid wood for carving The strong aromatic odor is supposed to be protection against moths and other harmful insects For this quality, it was highly prized in China where it was formerly imported and made into trunks by the Chinese under the name "camphor wood The ship worm, the teredo, supposedly does not feed on yellow-cedar Uses of the tree by Tlingit people also are described, including making woven hats from the roots

404. Kriz, Zdenek. 1960. Rod *Thuja* L a *Chamaecyparis* Spach v Krajskem arboretu v Novem Dvore u Opavy The genera *Thuja* and *Chamaecypans* in the Novem Dvore arboretum near Opava Acta Dendrologica Cechoslavaca 2(1959/60) 253, 267-269 In Slovak

Notes on 16 forms of *Thuja* and 18 species and forms of *Chamaecypans*

405. Kruckeberg, A.R. 1982. Gardening with native plants of the Pacific Northwest Seattle University of Washington Press 252 p

Describes the use of yellow-cedar as an ornamental tree

406. Kukal, O.; Hawkings, B.J.; Ring, R.A. 1993. Cryoinjury in conifer seedlings Cryo Letters 15(1) 9

407. Kurth, E.F. 1950. The chemical analysis of western woods part III Technical Association of the Pulp and Paper Industry (TAPPI) 33(10) 507-508

Four species of western hardwoods and four species of western softwoods, including yellow-cedar, are analyzed for ether, alcohol, water extractives holocellulose, lignin, methoxyl group, acetyl group, and ash content

408. Kurz, Mimi L.; Roberts, Dane R.; Flinn, Barry S.; Vidaver, William E. 1994. A morphological and biochemical analysis of embryo maturation during yellow cypress seed development Canadian Journal of Forest Research 24 431-441

Morphological and biochemical aspects of embryo development were studied in the seeds of yellow-cedar Average number of seeds and embryos per cone were 8 8 and 4 6, respectively The embryos may be immature at the time of seed dispersal, which may contribute to poor or delayed germination

409. Kurz, Mimi L; Webb, David T.; Vidaver, William E. 1989. Micropropagation of yellow cedar *{Chamaecypans nootkatensis)* Plant Cell, Tissue and Organ Culture 18(3) 297-312

Reports on a tissue culture study designed to develop adventitous shoots from embryos of yellow-cedar Results of readily germinated embryos suggest that problems in natural germination caused by dormancy are probably not due to developmental or physiological factors present within the embryo

410. Kurtz, F. 1895. Die flora des chilcatgebietes im sudostilichen Alaska Botanische Jahrbuecher fur Systematik Pflanzengeschichte und Pflanzengeographie 19 425

Lists yellow-cedar collected in southeast Alaska at Kasaan Bay, Prince of Wales Island, and at Wrangell during an expedition in 1882

411. Labeke, M.C. van; Vanwezer, J. 1989. Groeikrachtvergelijking by koniferen, vermenigvuldigd door stekken of enten Comparison of the vigour of conifers propagated by cuttings or grafting Verbondsnieuws voor de Belgische Sierteelt 33(8) 375, 377, 379

412. Lambert, Aylmer Bourke. 1824. A description of the genus *Pinus* 1st ed London John Gale, Bruton Street, Bond Street and R Jennings Vol 2 (Reprinted as 2d ed in 1833, London Weddell Press)

This book contains the original botanical description for yellow-cedar under the scientific name *"Cupressus Nootkatensis*" The actual description is apparently written by David Don In the book's preface, Lambert states, "I have here to acknowledge my obligations to Mr Don, for the pains he has taken forming the Descriptions, and the accurate manner in which the whole has been executed " There has been confusion among botanists and others regarding the appropriate authority for the species, i e , *C nootkatensis* D Don, or *C nootkatensis* Lamb (see Don 1824) The common name listed is "Nootka cypress" and Menzies is mentioned as the collector of the specimen

413. Langille, H.D.; Plummer, Fred G.; Dodwell, Arthur [and others]. 1903. Forest conditions in the Cascade Range Forest Reserve Surv Prof Pap 9, Series H, Forest 6 Washington, DC U S Geologic Survey 298 p

Forest conditions in the Cascade Range Forest Reserve are described by township Yellow-cedar was found in 14 townships within the reserve, but in only two were the trees large and numerous enough to be included in timber estimates Mature trees are 1 5 ft in diameter and 45 ft tall, with 12 ft of clear trunk

414. Laroque, C.P. 1995. The dendrochronology and dendrochmatology of yellow-cedar on Vancouver Island, British Columbia Victoria, BC University of Victoria 133 p MS thesis

Yellow-cedar was found to be sensitive to climatic fluctuations in a study of 380 increment cores taken from trees between latitude 50° and 51° N on Vancouver Island Temperatures during August of the previous year had the greatest influence on ring width

415. Laurent, T.H. 1974. The forest ecosystem of southeast Alaska 6 Forest diseases Gen Tech Rep PNW-23 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 30 p

Refers to early reports of the high levels of heart rot in the two cedars of Alaska, western redcedar and yellow-cedar Early reports combine the two species and describe two prominent heart rot fungi that cause most of the defect The author suggests that little is known about the diseases of yellow-cedar throughout its range

416. Lertzman, K.P. 1992. Patterns of gap-phase replacement in a subalpine, old-growth forest. Ecology. 73: 657-669.

Reports on a study of plant succession in an old-growth forest experiencing small-scale (gap-phase) disturbance in British Columbia. Yellow-cedar fills in gaps when they are caused by the death of either mountain hemlock or another yellow-cedar Gap size does not appear to influence yellow-cedar's success of filling in, but success is usually greatest on benches that form cold air drainages and maintain late spring snowpack Pacific silver fir is the predominant gap-filler species throughout the study area. As a tree with great longevity, yellow-cedar may exhibit the "storage effect," whereby long-lived individuals persist through periods unfavorable for recruitment and serve as a source of recruits when better times return.

417. Lertzman, K.P. 1995. Forest dynamics, differential mortality and variable recruitment probabilities. Journal of Vegetation Science. 6: 191-204.

Population dynamics and regeneration of amabilis fir, yellow-cedar, and two hemlock species were studied in old-growth forests in British Columbia maintained by gap-phase disturbance. Annual mortality rates for yellow-cedar used in four models ranged from 0.0009 to 0.0084 (0.09 to 0.84 percent). Yellow-cedar comprised only 2 percent of the gapmakers (large, killed trees) but 4.5 percent of the gap-fillers. Several yellow-cedars were aged over 1100 yr. In three climate models, yellow-cedar is the most successful in a cooler climate and filled in more gaps where the death of a yellow-cedar initiated the gap. Yellow-cedar may be able to maintain its part in the species composition of these forests during unfavorable periods of regeneration (e.g., due to a warmer climate) because of its low mortality rate and great longevity.

418. Lertzman, Kenneth P.; Sutherland, Glenn D.; Inselberg, Alex; Sanders, Sari C. 1996. Canopy gaps and the landscape mosaic in a coastal temperate rain forest. Ecology. 77: 1254-1270.

An analysis of small-scale disturbance and tree mortality in forests on the west coast of Vancouver Island. Yellow-cedar was a component of the forests studied.

419. Lewis, J.; Leslie, A.C. 1992. Part 3: Cupressus and x Cupressocyparis: the cypresses. In: The international conifer register. London: Natural History Book Service. 200 p.

420. Li, Hui-Lin. 1962. A new species of *Chamaecyparis.* Morris Arboretum Bulletin 13(3): 43-46.

The author formally describes a new species of *Chamaecyparis, C. henryae* sp. nov., from the Southeastern United States. It is distinguished from northern and mid-Atlantic forms of *C. thyoides* by having flatter, lighter green foliage, smoother bark, and flowers of a different color. The author comments that the newly described taxon more closely resembles yellow-cedar than *C. thyoides.*

421. Liddicoet, A.R.; Righter, F.I. 1960. Trees of the Eddy Arboretum. Misc Pap. 43. Berkeley, CA. U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 41 p

Lists yellow-cedar as occurring in the Eddy Arboretum.

422. Little, Elbert L., Jr. 1949. To know the trees, important forest trees of the United States Agric. Yearb 1949. Washington, DC: U S Department of Agriculture- 763-814.

Gives a brief description of yellow-cedar and illustrates foliage and a cone.

423. Little, Elbert L., Jr. 1953. Check list of native and naturalized trees of the United States (including Alaska) Agric. Handb. 41 Washington, DC: U.S. Department of Agriculture, Forest Service. 472 p.

Lists common names and mentions the range of yellow-cedar. Suggests that Alaska-cedar is the accepted U.S. common name.

424. Little, Elbert L., Jr. 1970. Names of new world cypresses *(Cupressus).* Phytologia. 20. 429-445.

Primarily a treatment of *Cupressus* species of North America, the author briefly discusses genera concepts for *Cupressus* and *Chamaecyparis.* A conservative approach to *Cupressus* is outlined, which includes eight species in North America north of Mexico, and the genus *Chamaecyparis* is apparently maintained.

425. Little, Elbert L., Jr. 1971. Atlas of United States trees. Volume 1: Conifers and important hardwoods. Misc. Publ 1146. Washington, DC: U.S. Department of Agriculture. 9 p. [plus 200 maps].

Gives a map of the natural range of yellow-cedar.

426. Little, Elbert L., Jr. 1978. Important forest trees of the United States. Agric. Handb. 519 Washington, DC U S Department of Agriculture, Forest Service. 70 p.

Gives common names, a brief description, and uses for yellow-cedar wood.

427. Longman, K.A.; Dick, Janet; Page, C.N. 1982. Cone induction with gibberellin for taxonomic studies in Cupressaceae and Taxodiaceae. Biologia Plantarum (Prague). 24(3)- 195-201.

The hormone gibberellic acid (GA_3) was injected into trees of 33 species of Cupressaceae and Toxodiaceae by using a microsyringe. Yellow-cedar and the Leyland cypress hybrid were among tree species that showed the most responsive influence of hormone treatment with a pronounced increase in the number of male and female cones produced.

428. Lousier, Daniel J., ed. 1991. Proceedings of a symposium: Yellow cypress: Can we grow it? Can we sell it ? 1990 March 26-28; Richmond, BC FRDA Rep. 171. Victoria, BC. Forestry Canada, British Columbia Ministry of Forests. 57 p.

Proceedings from a meeting on yellow-cedar biology and management. Contains short papers on ecology, wood properties, products, physiology, genetics, and pests.

429. Lowe, Daphne P. 1982. Checklist and host index of bacteria, fungi, and mistletoes of British Columbia Inf Rep BC-X-32. Victoria, BC: Pacific Forest Research Centre. 540 p.

Lists a number of fungi known to occur on yellow-cedar, including each of its varieties

430. Lowery, R.F. 1972. Ecology of subalpine zone tree clumps in the north Cascade mountains of Washington. Dissertation Abstracts International, B. 33(5): 1876-1877

431. Lucas, Colin Cameron. 1926. The essential oil content of the *Chamaecyparis nootkatensis.* Vancouver. University of British Columbia. 49 p. M.S. thesis.

432. Lyons, C.P. 1956. Trees, shrubs and flowers to know in Washington. Toronto: J M. Dent& Sons, Ltd 211 p.

433. Maas, E.F. 1981. How toxic is cedar sawdust to plants ? Res. Rev. Agassiz, BC: Agriculture Canada, Research Station. 10 p.

434. MacDonald, J. 1952. The place of northwestern American conifers in British forestry. London: British Commonwealth Forest Commission. 21 p.

Yellow-cedar has not been planted extensively as a forest tree in Britain, because its growth is slow and it often forks badly It hybridizes with *Cupressus macrocarpa,* however, to produce *Cupressocyparis leylandii.* This hybrid is apparently more frost resistant than either of its parents and shows remarkable vigor

435. MacDonald, James; Wood, R.F.; Edwards, M.V.; Aldhous, J.R. 1957. Exotic forest trees in Great Britain Bull. 30. London. British Forestry Commission 167 p.

The nootka cypress, discovered by Archibald Menzies in 1793 and introduced into Great Britain in 1853, has been planted as a specimen tree and ornamental in most parts of Britain and has succeeded. A number of examples are given The tree does not seem to be greatly affected by late spring frosts and is able to withstand exposure. It is slow growing, however, and is damaged by deer. The seeds require stratification for up to a year before sowing

436. MacMillan Bloedel; Powell River Limited. [N.d.]. Characteristics and uses of yellow cedar Vancouver, BC. 9 p. [plus tables].

437. Macoun, M.A. 1886. A catalogue of Canadian plants. Part III. Apetalae. Montreal. Dawson Brothers.

Briefly mentions the occurrence of yellow-cedar in British Columbia under the name *Thuja exelsa* Bongard.

438. Malpass, George 1991. Product delivery In: Lousier, J.D , ed Proceedings of a symposium. Yellow cypress. Can we grow it? Can we sell it ? 1990 March 26-28, Richmond, BC. FRDA Rep. 171 Victoria, BC: Forestry Canada; British Columbia Ministry of Forests. 5-7.

Gives information on the inventory, log grades, and value of yellow-cedar in British Columbia and fluctuations in the market.

439. Markwardt, L.J. 1930. Comparative strength properties of woods grown in the United States. Tech Bull. 158. Washington, DC: U.S. Department of Agriculture. 38 p.

Tables include data on specific gravity, shrinkage, and composite strength values of many hardwoods and softwoods, including yellow-cedar

440. Markwardt, L.J. 1930. Aircraft woods: their properties, selection, and characteristics. Nat. Adv. Comm. Aeron. Rep. 354. [Place of publication unknown]. U.S. Department of Agriculture, Forest Service, Forest Products Laboratory 34 p.

Strength of various woods for aircraft design is given, and factors affecting these values are discussed. Yellow-cedar may be considered with red, white, and Sitka spruce for use in highly stressed parts, such as wing beams

441. Markwardt, L.J. 1931. The distribution and the mechanical properties of Alaska woods. Tech. Bull. 226. Washington, DC: U.S. Department of Agriculture. 80 p

Gives information of the range, distribution, supply, properties, and uses of yellow-cedar, and a general description of the tree. The total stand is estimated to be about 10 billion board feet, with about 2.5 billion board feet in Alaska.

442. Markwardt, L.J. 1941. Aircraft woods: their properties, selection, and characteristics. Rep. 1079. [Place of publication unknown]: U.S. Department of Agriculture Forest Service, Forest Products Laboratory. 51 p.

Describes the important characteristics of many woods for aircraft construction, including yellow-cedar. Yellow-cedar is not likely to be considered for use in aircraft because of its limited supply. It may serve as a species supplementary to spruce in some applications, the result being somewhat greater strength at the expense of increased weight.

443. Markwardt, L.J.; Wilson, T.R.C. 1935. Strength and related properties of woods grown in the United States. Tech. Bull. 479. Washington, DC. U.S. Department of Agriculture. 99 p.

Lists mechanical properties of yellow-cedar.

444. Martin, Jon R.; Trull, Susan J.; Brady, Ward W. [and others]. 1995. Forest plant association management guide, Chatham Area, Tongass National Forest. R10-TP-57 [Place of publication unknown]: U.S. Department of Agriculture, Forest Service, Alaska Region. 12 chap, [plus 6 appendices]

Describes the occurrence of yellow-cedar in different plant associations, with the most detail in the section on the western hemlock-yellowcedar series Includes silvicultural information for yellow-cedar, including ideas on maximizing natural regeneration

445. Martin, Jon Randall. 1989. Vegetation and environment in old growth forests of northern southeast Alaska: a plant association classification. Tempe, AZ. Arizona State University M S thesis 221 p. (Reprinted, thesis no 36 New York American Geographical Society. 77 p.)

Discusses the occurrence of yellow-cedar in plant associations of northern end of the Alexander Archipelago in Alaska

446. Marx, John N.; Norman, Lewis R. 1973. Synthesis of gamma acoradiene (alpha alaskene) and delta acoradiene. Tetrahedron Letters. 44: 4375-4378.

Reports on the synthesis of two compounds from *Juniperus rigida.* One of the compounds, gamma acoradiene, is identical to alpha alaskene, which has been isolated from yellow-cedar. Delta acoradiene, the other compound, is enantiomeric to beta alaskene, also from yellow-cedar

447. Mason, Herbert L. 1941. The Alaska-cedar in California. Madrono. 6: 90-91.

Yellow-cedar was collected in 1939 on the northeast slope of Mount Emily in northwestern Siskiyou County and was reportedly seen on Little Grayback, farther to the west. Both localities are a little over 2 mi from the Oregon border. Specimens of the Mount Emily material are deposited in the herbarium at Rancho Santa Ana Botanic Garden, Anaheim, California. Trees associated with yellow-cedar are *Abies shastensis (Abies magnifica* var *shastensis), Picea breweriana, Pinus monticola, Libocedrus decurrens,* and *Taxus brevifolia.*

448. Mathews, J.D.; Waller, A.J.; Potts, K.R. 1960. Propagation of Leyland cypress from cuttings. Quarterly Journal of Forestry. 54: 127-140.

Reports soil aeration as a key component to successful rooting of cuttings for the hybrid Leyland cypress.

449. Mathewes, R.W.; Warner, B.G.; Clague. J.J. 1982. Ice-free conditions on the Queen Charlotte Islands at the height of Fraser glaciation: geological, radiocarbon, and plant macrofossil evidence. In: Abstracts of the American Quaternary Association's 7th Biennial Conference, 1982 June 28-30, Seattle, WA. Seattle. American Quaternary Association. 132 p.

450. Mathewes, Rolf. 1973. A palynological study of postglacial vegetation changes in the University Research Forest, southwestern British Columbia Canadian Journal of Botany 51 2085-2103

The historical abundance of vegetation in southwestern British Columbia near Vancouver is described from analyses of pollen profiles, macrofossils, and radiocarbon dating Cedar pollen became common at two sites about 6600 yr BP and then, in the most recent 500 yr, decreased Fire probably played a role in the decreased abundance of cedar At its peak, cedar accounted for 68 percent of the pollen at one site The author states that a major deficiency in all previously published pollen diagrams from the Pacific Northwest is the lack of data on pollen of the Cupressaceae Pollen appeared to preserve well in peat deposits despite Heusser's (1960) comments that it generally does not The majority of the cedar pollen found in this study, especially at one site was assumed to be from western redcedar, because it is currently more common than yellow-cedar

451. Mayr, Heinrich. 1890. Die Waldungen von Nordamerika ihre Holzarten, deren Anbaufahigkeit und forstlicher Werth fur Europa im Allgemeinen und Deutschland insbensonder The forests of North America, their tree species, their cultivation possibilities, and general forest values for Europe Munchen University Buchhandlung 448 p

452. McAvoy, Blanche. 1931. Ecological survey of the Bella Coola region Botanical Gazette 92 141-171

Yellow-cedar was found at only one location in the region on a mountain along the north border at the west end of the valley

453. McElhanney, T.A. 1951. Commercial timbers of Canada In Canadian woods, their properties and uses Ottawa King's Printer 23-56

Gives a brief description of the appearance and uses of yellow-cedar wood

454. McGugan, B.M. 1958. Forest Lepidoptera of Canada, recorded by the forest insect survey Vol 1 Papilionidae to Arctndae Publ 1034 [Place of publication unknown] Canada Department of Agriculture, Forest Biology Division 76 p

455. McIver, E.E. 1991. Fossil *Fokienia* (Cupressaceae) from the Paleocene of Alberta, Canada Canadian Journal of Botany 70 742-749

Fossil specimens of foliage and seed cones are compared to the morphology of yellow-cedar

456. McIver, E.E. 1994. An early *Chamaecyparis* (Cupressaceae) from Late Cretaceous of Vancouver Island, British Columbia, Canada Canadian Journal of Botany 72 1787-1796

Fossil remains of foliage and seed cones found on Vancouver Island from the Cretaceous period are presumed to represent an extant *Chamaecypans* species, *C corpulenta* The fossil foliage is more similar to yellow-cedar and *Thuja* spp

than to other living members of the *Chamaecyparis* Seed cones are distinctly unlike *Thuja* and are more comparable to *Chamaecyparis,* especially yellow-cedar, except that the fossil's cones are much smaller The fossil may represent an ancestral form of *Chamaecypans*

457. McIver, E.E.; Aulenback, K.R. 1994. Morphology and relationships of *Mesocyparis umbonata* sp nov fossil Cupressaceae from the Late Cretaceous of Alberta, Canada Canadian Journal of Botany 72 273-295

Fossil evidence may assist in understanding the origins and evolution of taxa in the Cupressaceae Well-preserved fossils from the Late Cretaceous sediments found in Alberta Canada are studied A new extant species is described and contrasted with living taxa of Cupressaceae, especially yellow-cedar

458. McMinn, Howard E.; Maino, Evelyn. 1951. An illustrated manual of Pacific coast trees Berkeley, CA University Press 409 p

Gives a brief description of yellow-cedar and a key to five species of the genus

459. Mertens, H. 1833. Account to the summit of the Werstovoi at New Archangel, in Norfolk Sound In Hooker, William Jackson, ed Botanical miscellany London John Murray, Albemarle-Street Vol 3

A letter written by Mertens is published by Hooker Mertens describes yellow-cedar and other vegetation along a transect from tidewater to Mount Verstovia near Sitka Mertens apparently made the collections of yellow-cedar that Bongard used in describing it as a new species under the name *Thuja excesla* Bong

460. Mertie, J.B. 1931. Notes on the geography and geology of Lituya Bay, Alaska U S Geol Surv Bull 836-B [Place of publication unknown] U S Geologic Survey 117-135

A report of yellow-cedar trees 3 ft in diameter on benches in the vicinity of Lituya Bay

461. Metcalf, Melvin E.; Hazard, John W. 1964. Forest statistics for northwest Oregon Resour Bull PNW-7 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 38 p

Forest statistics are given for the following counties Clackamas, Clatsop, Columbia, Hood River, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill On commercial forest land, the volume of yellow-cedar growing stock 5 0 in in diameter at breast height (d b h) and larger was 5 million ft^3 Volume of yellow-cedar sawtimber 11 0 in d b h and larger was 10 million board feet (Scribner)

462. Minore, Don. 1979. Comparative autecological characteristics of Northwestern tree species—a literature review Gen. Tech Rep PNW-87. Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 72 p.

Yellow-cedar and a number of other conifer species are compared for numerous characteristics on the basis of published literature and observations These include shade tolerance to various environmental factors, growth, reproduction, physical characteristics, and insect and disease resistance.

463. Mitchell, A.F. 1970. A note on two new hybrid cypresses Journal of the Royal Horticultural Society. 95(10). 453-454.

Formally describes two new hybrids from Great Britain. *Cupressocyparis notablis* Mitchell, with parents yellow-cedar and *Cupressus glabra* from Alice Holt Lodge, Hampshire, and *Cupressocypans ovensii* Mitchell with parents yellow-cedar and *Cupressus lusitanica* from Silk Wood, Gloucestershire

464. Mitchell, M.F. 1976. Preliminary note on the presence of antibiotic substances in some forest tree species. Annales des Sciences Forestikeres. 33(3). 151-159. In French

465. Mobley, CM.; Eldridge, M. 1992. Culturally modified trees in the Pacific Northwest. Arctic Anthropology. 29(2): 91-110.

Describes the process of collecting bark by Native people that produces "culturally modified trees," including those of yellow-cedar. These trees have been found along the Pacific Coast of Alaska and British Columbia and also in the Cascade Range of Washington. The study of culturally modified trees, which often includes dating the wounding event, can produce valuable anthropological information

466. Molnar, A.C.; Harris, J.W.E.; Ross, D.A. 1965. British Columbia region For Ins Dis Surv. Ottawa Canada Department of Forestry 93-109

467. Morton, B.R.; Lewis, R.G. 1917. Native trees of Canada For Br Bull. 61 Ottawa Canada Department of Interior. 233 p

Gives a description and the range of yellow-cedar in Canada.

468. Muenscher, W.C. 1941. The flora of Whatcom County, State of Washington, vascular plants Ithaca, NY: William A. Church Co. 139 p

A catalog of plant collections made by the author Lists seven locations where specimens of yellow-cedar were collected in Washington In Whatcom County, yellow-cedar is locally common in cool, moist mountain valleys, sometimes forming clumps of trees in alpine meadows

469. Muir, John. 1897. The forests of Alaska The Forester Nov 129-130

Describes yellow-cedar, its size, the wood, and uses by native people The author found that the wood of downed yellow-cedar trees on the forest floor supporting 200- or 300-yr-old trees "is as fresh in the heart as when it fell" Uses of the yellow-cedar tree by Native people are mentioned

470. Muir, John. 1915. Travels in Alaska Boston, New York Houghton Mifflin Co 327 p

Describes the appearance and size of yellow-cedar trees during several explorations of southeast Alaska States that nearly every yellow-cedar tree in one area had bole scars from Tlinkit people making bark collections The bark has a number of uses Sheets of bark were often carried in canoes for the quick construction of camping huts

471. Muir, N. 1978. Ornamental conifers Gardeners Chronicle, the Horticulture Trade Journal (GC and HTJ) 183(15) 14-16

472. Mulholland, F.D. 1937. The forest resources of British Columbia Victoria, BC British Columbia Forest Service, Department of Lands 153 p

Total merchantable timber and accessible merchantable timber by forest district are given Yellow-cedar volume is shown in the Vancouver and Prince Rupert district Total merchantable volume is 3,019,200,000 board feet, of which 1,398,300,000 board feet is accessible

473. Munday, Don. 1931. Ancients of the sky lines Canada Forestry and Outdoors 27(11) 25-27

A general discourse on yellow-cedar, its appearance, habitat, growth rate, stature, and longevity The largest trees seen by the author were 19-1/2 and 20-1/2 ft in circumference and were estimated to be at least 3500 yr old

474. Munns, E.N. 1938. The distribution of important forest trees of the United States Misc Publ 287 Washington, DC US Department of Agriculture 176 p

Contains a range map of yellow-cedar on page 60

475. Munz, Philip A. 1959. A California flora Berkeley, CA University of California Press 1681 p

Gives a brief description of yellow-cedar and mentions two occurrences in California

476. Munz, Philip A.; Keck, David D. 1968. A California flora Berkeley, CA University of California Press 1681 p

Indicates that yellow-cedar differs from Port-Orford-cedar by having less flattened branchlets, thinner bark, less glandular and more blue-green foliage Gives two locations of occurrence in California

477. Neiland, B.J. 1971. The forest-bog complex of southeast Alaska Vegetatio 22 1-64

Gives a detailed description of the occurrence of yellow-cedar in plant communities in bogs and adjacent forests of southeast Alaska Yellow-cedar is conspicuous in the "intermediate" forest (ecotone between well-drained forest and bog)

478. Nelson, N.D. 1973. Effects of wood and pulp properties on medium-density, dry-formed hardboard Forest Products Journal 23(9) 72-80

Fibreboards were made and tested for their contrasting properties and lignin content from eight tree species, including yellow-cedar

479. Newlin, J.A.; Wilson, Thomas R.C. 1917. Mechanical properties of woods grown in the United States Bull 556 Washington, DC U S Department of Agriculture 28 p

480. Norin, Torbjorn. 1964. Chanootin, a bicyclic C_{15}-tropolone from the heartwood of *Chamaecyparis nootkatensis* (Lamb) Spach Arkiv for Kemi (Stockholm) 22 129-135

A new C_{15}-tropolone, $C_{15}H_{l8}0_3$, has been isolated from the heartwood of *Chamaecypans nootkatensis* for which the name "chanootin" is proposed

481. Norin, Torbjorn. 1964. The chemistry of the natural order Cupressales Part 50 The absolute configurations of chamic, chaminic, and isochamic acids Arkiv for Kemi (Stockholm) 22 123-128

Describes the absolute configuration of three chemical substances found in the heartwood of yellow-cedar

482. Norin, Torbjorn; Stromberg, Sture; Weber, Michael. 1982. Conformation of the bicyclo 4 1 0 hept-2-ene system configuration and conformation of chamic-acid (frans-car-4-ene-10-oic acid) Chemica Scripta 20 49-52

The transisomeric configuration of chamic acid, a heartwood constituent, is determined Evidence is also presented on the probable planar chairlike conformation of chamic acid

483. Odom, H.C., Jr.; Pinder, A.R. 1972. Synthetic experiments in the eremophilane sesquiterpene group: synthesis of racemic 7 epi nootkatone and partial synthesis of valenanol the structure of nardostachone. Journal of the Chemical Society Perkin Transactions. 1: 2193-2197.

Describes the synthesis of nootkatone, an emerophilanoid sesquiterpene that occurs in yellow-cedar heartwood and grapefruit oil

484. Ohtani, T.; Yakou, T.; Kitayama, S. 1996. Conditions and origin of the critical grain size effect on the abrasive wear of woods. Mokuzai Gakkaishi (Japan). 42: 1057-1063

The effect of grain size on wear rate is reported from an abrasion study on several tree species, including yellow-cedar.

485. Oladele, F.A. 1983. Patterns of cuticular sculpture in the hybrid, *Cupressocyparis leylandii* (Jackson and Dallimore) Dallimore, and its putative parents New Phytologist. 94. 293-295.

Reports on a study that compares sculptured patterns of the inner foliage cuticles of the Leyland cypress hybrid with its parent species, Monterey cypress and yellow-cedar. The hybrid shows intermediate patterns of several but not all features

486. Omule, S.A.Y.; Kozak, A. 1989. Stump and breast height diameter tables for British Columbia tree species. FRDA Rep. 062. Victoria, BC˙ Victoria Forestry Canada, British Columbia Ministry of Forests. 67 p.

Contains tables and regression coefficients for estimating breast height diameters from stump measurements and for calculating stump radius inside bark at desired stump heights Results for yellow-cedar are in table 17.

487. Orloci, Laszlo. 1961. Forest types of the western hemlock zone Vancouver University of British Columbia, Department of Biology and Botany. 206 p M S thesis.

The author presents an ecosystem classification of the forest stands of the coastal western hemlock zone Yellow-cedar is shown to be an inhabitant of the dry edaphic and mesic zonal forest types of the wet and cool subzone Yellow-cedar is included in a number of forest types.

488. Orloci, Laszlo. 1963. Indicator plants in the coastal western hemlock zone. In- Krajina, V J., ed. 1962 Progress report—ecology of the forests of the Pacific Northwest. Vancouver: University of British Columbia, Department of Biology and Botany: 25-34.

Yellow-cedar is listed as occurring in a class of "very wet" sites in an analysis of the effects of soil moisture on vegetation in British Columbia.

489. Orloci, Laszlo. 1964. Vegetational and environmental variations in the ecosystems of the coastal western hemlock zone Vancouver University of British Columbia, Department of Biology and Botany 204 p Ph D dissertation

490. Orloci, Laszlo. 1965. The coastal western hemlock zone on the southwestern British Columbia mainland vegetation-environmental patterns and ecosystem classification In Krajina, V J , ed Ecology of western North America Vancouver University of British Columbia, Department of Biology and Botany 18-34 Vol 1

Yellow-cedar is tabulated with its plant associates in the *Gaultherieto-Tsugetum heterophyllae* association under two ecosystem types, Orthic *Vaccinium-Gaultheria* type, and Lithosolic *Vaccinium-Gaultheria* type Characteristic landform, slope, altitude, and soil characteristics of the habitats are tabulated Associated tree species on both types are western hemlock, western redcedar, Douglas-fir, and western white pine

491. Osborn, A. 1941. An interesting hybrid conifer *Cupressocyparis leylandii* Journal of the Royal Horticultural Society 66 54-55

Describes natural hybrid between *Cupressus macrocarpa* and *Chamaecyparis nootkatensis* The hybrid proved much hardier than *C macrocarpa* in the great frost of January 1940 It is easy to propagate from cuttings and has been raised from seed

492. Osgood, Wilfred H. 1901. Natural history of the Queen Charlotte Islands British Columbia North Am Fauna 21 Washington, DC U S Department of Agriculture 87 p

Indicates that yellow-cedar is rare in some areas of the Queen Charlotte Islands, but is common at high elevations, and can be found on the northern part of Moresby Island, Cumshewa Inlet, at the heads of Rose Harbor and West Arm, and near Massett Yellow-cedar grows with mountain hemlock in the Hudsonian zone

493. Owens, J.N.; Molder, M. 1974. Yellow cedar cone production Res Notes 68 Victoria, BC British Columbia Forest Service 4 p

Outlines the timing of flower, cone, and seed development for yellow-cedar Describes the appearance of immature and mature cones Based on seven trees sampled, reports that cones averaged 7 2 seeds/cone and a high percentage (71 percent) of unfilled seeds

494. Owens, J.N.; Molder, M. 1975. Pollination, female gametophyte, and embryo and seed development in yellow cedar *(Chamaecypans nootkatensis)* Canadian Journal of Botany 53 186-199

A morphological study was conducted to increase the understanding of reproduction in yellow-cedar Male flower, female flower, fertilization, embryo, and seed development are described in detail Microscopic and macroscopic descriptions and illustrations are given The timing (phenology) of each process is indicated

495. Owens, J.N.; Molder, M. 1984. The reproductive cycles of western redcedar and yellow cedar Victoria, BC Information Services Branch, Ministry of Forests. 28 p

Provides some general information on the range and growth of yellow-cedar, then gives valuable details on reproductive development from cone initiation through seed dispersal Includes line drawings, photographs, and scanning electron micrographs

496. Owens, John N. 1975. Guide for the collection of yellow cedar cones Victoria, BC. British Columbia Forest Service, Research Division. 7 p

Short manual with color photographs showing the appearance of first- and second-yr cones and seeds. Mentions that cone and seed collection in British Columbia should occur in September and October. Designed for those interested in collecting seed for reforestation

497. Owens, John N.; Molder, Marje. 1974. Cone initiation and development before dormancy in yellow cedar *(Chamaecyparis nootkatensis* (D Don) Spach.) Canadian Journal of Botany 52- 2075-2084

Pollen cones were initiated on proximal vegetative shoots during 3 wk from mid-June to early July on Vancouver Island. Transition to a pollen-cone apex was marked by the formation of a lateral branch in the last-formed leaf primordium Meiosis occurred in August Seed cones were initiated on newly formed, distal axillary vegetative shoots during 3 wk from late June to mid-July Seed cone development was complete by early September Details and illustrations of the various structures involved in reproduction are given.

498. Owens, John N.; Molder, Marje 1977. Cone induction in yellow cypress *(Chamaecyparis nootkatensis)* by gibberellin A_3, and the subsequent development of seeds within the induced cones. Canadian Journal of Forest Research. 7 605-613

The plant hormone gibberelhn A_3 was applied by foliar spray to yellow-cedar seedlings to determine if this treatment could enhance cone and seed production Treatments enhanced both pollen and seed cone development by the transition of vegetative apices into reproductive apices Female cones produced with this treatment yielded a high percentage of filled, viable seed

499. Owens, John N.; Simpson; Shiela J.; Molder, Marje. 1980. The pollination mechanism in yellow cypress *(Chamaecyparis nootkatensis)* Canadian Journal of Forest Research. 10: 564-572.

Mature one-celled pollen is produced before pollen cones become dormant in fall The size and microscopic appearance of pollen is given Pollen is shed in the one- or two-celled stage during the following March. Ovules are flask shaped and form before seed-cone dormancy Seed cones enlarge and open in March, exposing the ovules. The pollination process is described.

500. Palmer, L.J. 1942. Major vegetative types of southeastern Alaska [Mimeograph] [Place of publication unknown] US Fish and Wildlife Service 16 p

501. Panshin, A.J.; de Zeeuw, Carl. 1980. Textbook of wood technology structure, identification, properties, and uses of the commercial woods of the United States and Canada 4th ed New York McGraw-Hill

Describes the appearance, properties, and anatomy of yellow-cedar wood Includes two microscopic illustrations Lists uses of the wood

502. Parmelee, J.A. 1971. The genus *Gymnosporangium* in western Canada Canadian Journal of Botany 49 903-926

Provides a description and information on the life cycle of the foliar rust of yellow-cedar, *Gymnosporangium nootkatense* Alternate hosts are *Malus fusca, M diversifolia,* and *Sorbus sitchensis* Includes a map of the known distribution of the rust fungus

503. Parminter, John. 1991. Fire history and effects on vegetation in three biogeoclimatic zones of British Columbia In Nodvin, Stephen C , Waldrop, Thomas A , eds Fire and the environment ecological and cultural perspectives Proceedings of an international symposium, 1990 March 20-24, Knoxville, TN Gen Tech Rep SE-69 Asheville, NC U S Department of Agriculture, Forest Service, Southeastern Forest Experiment Station 263-272

504. Paul, B.H. 1961. Choose the right wood properties and uses of some minor western softwoods Hitchcock's Woodworking Digest 63(10) 26-27

Tabulates and briefly discusses the sources, supply, physical and mechanical properties, and uses of yellow-cedar and several other western conifers

505. Paul, Benson H. 1959. The effect of environmental factors on wood quality Report 2170 [Place of publication unknown] U S Department of Agriculture, Forest Service Forest Products Laboratory 48 p

The western cedars, including yellow-cedar, commonly have highly durable heartwood Yellow-cedar has a specific gravity of 0 42, higher than other cedars, with growth rates generally 10 and mostly around 20 rings per in This slow growth is desirable for certain specialty uses, which require uniform structure

506. Pawuk, William H. 1993. Germination of Alaska-cedar seed Tree Planters' Notes 44(1) 21-24

Seeds of yellow-cedar were tested for germination following different combinations of warm and cold treatments A stratification of 60 d warm followed by 90 d of cold is recommended

507. Peakes, L.V., Jr.; Lloyd, R.A.; Barnes, V.S.; Berry, J.H.; Ritter, G.J. 1945. Substitute woods for Port-Orford white-cedar for storage battery separators. Rep R1476. [Place of publication unknown]: U.S. Department of Agriculture, Forest Service. Forest Products Laboratory. 16 p.

After treatment, yellow-cedar wood was found to be suitable for use as battery separators. Tests after treatments are described.

508. Peattie, Donald Culross. 1953. A natural history of western trees. Boston: Houghton Mifflin Co. 751 p.

Describes the appearance, growth, form, and current and historic uses of yellow-cedar.

509. Peavey, George W. 1922. Oregon's commercial forests. Bull. 2. [Place of publication unknown]: Oregon State Board of Forestry. 94 p. Revised 1929.

Yellow-cedar is described and mentioned briefly under minor species. The tree occurs between the 2,500- and 7,000-ft elevations in Oregon.

510. Peck, Morton Eaton. 1961. A manual of the higher plants of Oregon. 2d ed. Corvallis: Oregon State University Press. 936 p.

511. Penhallow, D.P. 1896. The generic characters of the North American Taxaceae and Coniferae. Proceedings and Transactions of the Royal Society of Canada. 2(2) (Sect. 4) 33-57 [plus 6 plates].

Discusses taxonomic concepts for *Cupressus, Chamaecypans,* and other genera. The author places importance on the morphology of ray cells and recommends ignoring the genus *Chamaecypans* and placing these species in *Cupressus.* This move would restore yellow-cedar to its original scientific name, *Cupressus nootkatensis* D. Don. The author also points out that Port-Orford-cedar, Atlantic white-cedar, and yellow-cedar are all distinguishable from *Cupressus* species by the former group having small, narrowly lenticular pits in tangential walls of summerwood tracheids. The author also discusses two subgenus designations for *Cupressus,* including one for species now residing in *Chamaecypans* and the other for those already placed in *Cupressus.*

512. Penhallow, David Pearce. 1907. A manual of the North American gymnosperms, exclusive of the cycadales but together with certain exotic species. Boston: Ginn & Co., Athenaeum Press. 374 p. [plus 55 plates].

Gives a microscopic description of yellow-cedar wood complete with cell dimensions. Comments that the structure of summerwood is quite variable. Gives some wood strength measurements. Lists the tree as a species of *Cupressus* under the name *"Cupressus nootkatensis* Lam."

513. Perry, R.S. 1939. Yellow cedar *(Chamaecyparis nootkatensis)* [Lamb] Spach its characteristics, properties and uses British Columbia Lumberman 23 30-31

The natural range of the species is the Pacific Coast of North America from southern Alaska to northern Oregon The total estimated stand is about 6 billion board feet, half of which is found on the west side of the coast mountains in British Columbia It usually grows in mixtures with Sitka spruce, western hemlock fir, or western redcedar It averages 85 ft tall and 3 ft in diameter It is a slow-growing species and is susceptible to heart rot, which makes it difficult to obtain large amounts of high-grade lumber The wood is clear, yellow, straight grained, light in weight, and of average strength and toughness, has a low shrinkage factor, and is of high durability Many of its uses are listed The strength properties of this and other western commercial species are tabulated

514. Perry, R.S. 1954. Yellow cedar its characteristics, properties, and uses For Br Bull 114 Ottawa Canadian Department of Northern Affairs and Natural Resources 19 p

A comprehensive discussion of yellow-cedar with emphasis on the tree in British Columbia Nomenclature, locality, supply, silvical characteristics, wood characteristics, seasoning, workability, finishing, durability, marketing, and uses are discussed and strength properties tabulated

515. Peterson, J.T. 1987. Harvesting economics handfalling old-growth timber—conventional versus selective-bucking techniques Tech Note TN-106 Vancouver BC Forest Engineering Research Institute of Canada [FERIC] 12 p

516. Petrof, Ivan. 1900. The population and resources of Alaska, 1880 In Committee on Military Affairs, ed Compilation of narratives of explorations in Alaska Washington, DC US Government Printing Office 145-147

Indicates that yellow-cedar is considered one of the most valuable trees on the Pacific Coast Briefly describes characteristics of its wood Yellow-cedar is called 'dushnik" (meaning scented wood) by Russians, who the author states, nearly exterminated the tree in the vicinity of Sitka

517. Phillips, E.W.J. 1948. Identification of softwoods by their microscopic structure Bull 22 London Forest Products Research 56 p Reprinted 1963

518. Piper, Charles V. 1906. Flora of the State of Washington Contributions to the U S National Herbarium [Place of publication unknown] [publisher unknown] 637 p Vol 11

519. Piper, Charles V.; Beattie, R. Kent. 1915. Flora of the Northwest coast, including the area west of the summit of the Cascade mountains from the 49th parallel south to the Calapooya Mountains on the south border of Lane County, Oregon Lancaster, PA New Era Printing Co 418 p

520. Platt, Rutherford. 1952. American trees, a book of discovery New York Dodd, Mead & Co 256 p (Reprinted 1953 as 'A Pocket Guide to the Trees, New York Pocket Books, Inc)

521. Plummer, Fred G. 1900. Mount Rainier Forest Reserve, Washington Part 5- Forest Reserves 21st Ann Rep 1899-1900 Washington, DC U S Geologic Survey 81-143

522. Pohlheim, F. 1971. Flora Oder Allgemeine Banasche Zeitung Abt B Morphologie und Geobatinik Research on shoot variation in cupressaceae 1 Evidence of ever-sporting periclinal chimaeras. Flora (Jena). 160 264-293.

The development of white, or chlorophyll-deficient foliage, is explained by anatomical observation.

523. Pojar, Jim; MacKinnon, Andy, comps. 1994. Plants of the Pacific Northwest coast Vancouver, BC- British Columbia Ministry of Forests, Lone Pine Publishing 526 p.

Describes the appearance of yellow-cedar, gives a distribution map, and mentions uses by Native people

524. Pomeroy, Kenneth B.; Dixon, Dorothy. 1966. These are the champs American Forests. 72(5). 14-35.

The largest reported yellow-cedar tree in the United States is reported to be in Mount Rainier National Park, Washington. It is 25 ft 6 in in circumference, 134 ft tall, and has a 25-ft crown spread.

525. Prentice, R.M. 1963. Forest Lepidoptera of Canada, recorded by the forest insect survey Vol 1- Lasiocampidae, Thyatindae, Drepanidae, Geometridae [Place of publication unknown]. Canada Department of Forestry, Forest Entomology Branch Publication; 3(1013)- 283-543

526. Preston, Richard J., Jr. 1989. North American trees (exclusive of Mexico and tropical United States). 4th ed. Ames Iowa State College Press. 395 p.

Gives a key to the genus and general description, range, and silvical characteristics of yellow-cedar.

527. Puttonen, P.; Arnott, J.T. 1994. Influence of photoperiod and temperature on growth, gas exchange, and cold hardiness of yellow cypress stecklings Canadian Journal of Forest Research 24- 1608-1616

Yellow-cedar rooted cuttings (stecklings) were acclimated to several photoperiod and temperature combinations, deacclimated to a common environment, and measured for morphology, photosynthesis, and other physiological processes during both steps. Shoot growth was reduced more by short photoperiods than by cool temperatures, as were net photosynthesis, stomatal conductance, transpiration, and photosynthetic efficiency. Photoperiod-induced cold hardiness was reversible by warm treatments (i e , 20 °C, 12-hr/d photoperiod)

528. Querengasser, F. 1953-54. Die grune Douglasie *(Pseudotsuga taxifozia,* Douglas fir, red fir) und ihre begleitholzarten: The green Douglas fir and its associated trees Deutsche Dendrologisch Gesellschaft Mitteilung 58 127-141

529. Randall, Warren R. 1965. Manual of Oregon trees and shrubs Corvallis Oregon State University Book Stores, Inc 234 p

530. Raunkiaer, C. 1934. The life forms of plants and statistical plant geography Oxford Clarendon Press 632 p

531. Rayner, R.W. 1963. The diseases of Cupressus and Chamaecyparis Document I A P S C (63)2 London Commonwealth Institute of Entomology, Inter-African Phytosanitary Commission 6 p

Lists the rust fungus, *Gymnosporangium nootkatense,* on yellow-cedar in the United States Yellow-cedar is the telial host for the fungus, *Sorbus* spp and *Malus rivularis* are hosts for the aecial stage The fungus causes pustules and galls of leaves and tender shoots but is of little or no economic importance *Herpotrichia nigra* and *Phomopsis juniperovora* are both listed as occurring on *Chamaecypans* species

532 Record, Samuel J. 1919. Identification of the economic woods of the United States, including a discussion of the structural and physical properties of wood 2d ed , enlarged New York John Wiley and Sons, Inc 157 p [plus 6 plates]

Wood identification with key

533. Record, Samuel J. 1934. Identification of the timbers of temperate North America, including anatomy and certain physical properties of wood New York John Wiley & Sons, Inc 196p [plus 6 plates]

Yellow-cedar wood has a light color, fine texture, and an odor described as being similar to turnips Ray tracheids are common

534. Record, Samuel J.; Hess, Robert W. 1943. Timbers of the new world New Haven Yale University Press 640 p

Gives a brief summary of the three North American species of *Chamaecyparis,* including yellow-cedar

535. Rehder, A. 1940. Manual of cultivated trees and shrubs hardy in North America 2d ed , rev , enlarged New York Macmillan Co 996 p Reprinted 1947, 1949

536. Rehder, Alfred. 1949. Bibliography of cultivated trees and shrubs hardy in the cooler temperate regions of the Northern Hemisphere Jamaica Plain, MA Arnold Arboretum, Harvard University 825 p

Gives 31 references to the sources of botanical names valid names, and synonyms

537. Rennerfelt, Erik; Nacht, Gertrud. 1955. The fungicidal activity of some constituents from heartwood of conifers. Svensk Botanisk Tidskrift. 49: 419-432.

Nootkatin, a heartwood substance from yellow-cedar and three species of *Cupressus,* was found to inhibit growth of a number of fungi at 0.001- to 0.002-percent concentrations. This compound is judged to be extremely active and is largely responsible for yellow-cedar's decay resistance. Chamic acid from yellow-cedar heartwood inhibited fungi at 0.01 to 0.02 percent.

538. Resch, Helmuth; Ecklund, Barton A. 1963. Moisture content determination for wood with highly volatile constituents. Forest Products Journal. 13: 481-482.

The high volatile-oil content of Port-Orford-cedar and yellow-cedar affected moisture determination by the oven method. Correction factors for electrical resistance meters were based on moisture determinations by the Karl Fischer method, which were consistently lower than previously published values.

539. Resch, Helmuth; Ecklund, Barton A. 1963. Electrical moisture meter calibration for woods containing highly volatile constituents. California Forestry, Forest Products 34 1-4

540. Reshetnyak, T.A. 1976. History of cypress *Chamaecyparis* introduction into the Ukrainian SSR USSR. Ukrains'kii Botanichii Zhurnal. 33(6): 623-625. In Ukrainian.

The author describes morphological differences of seeds, cones, and seedlings as the basis for distinguishing nine separate species of *Chamaecypans.*

541. Reshetnyak, T.A. 1977. Classification of *Chamaecypans* by morphological differences of seeds cones and seedlings. Ukrains'kn Botanichnii Zhurnal. 34(6): 649-651. In Ukrainian.

542. Reshetnyak, T.A. 1978. An X-ray study of *Chamaecypans* seed. Byulleten Glavnogo Botanicheskogo Sada. 110: 82-84. In Russian.

543. Rigg, George B. 1914. Notes on the flora of some Alaskan sphagnum bogs. The Plant World. 17(6): 167-175.

Observed yellow-cedar in bogs and forests near Dixon Harbor on the mainland north of Cross Sound and east of Glacier Bay, Alaska.

544. Robinson, Robena Claire. 1960. Black stain in yellow cedar *Chamaecypans nootkatensis* (D. Don) Spach. Vancouver, BC: University of British Columbia, Department of Biology and Botany. 54 p. M.A. thesis

Describes black stain from the heartwood of yellow-cedar in British Columbia. The author also isolated the fungus *Phellinus weirii* from yellow-cedar and reports no antagonism between this fungus and the black stain fungi.

545. Robuck, O. Wayne. 1985. The common plants of the muskegs of southeast Alaska Misc. Publ. Portland, OR: U.S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 131 p.

Gives a brief description and an illustration and lists uses of yellow-cedar.

546. Rothrock, J.T. 1868. Sketch of the flora of Alaska. In: Smithsonian Institution Board of Regents Annual Report, 1867. Washington, DC: Smithsonian Institution: 433-463.

Mentions that yellow-cedar, under the name *Thuya excelsa,* grows with *Acer macrophyllum* (bigleaf maple) at latitude 55° N. Describes the flora of the Sitka area and includes portions of Merten's 1833 letter giving observations on yellow-cedar there. Yellow-cedar appears on a list of eight conifers on pages 454-455.

547. Rowe, J.S. 1959. Forest regions of Canada. For. Br. Bull. 123. Ottawa. Canada Department of Northern Affairs and Natural Resources 71 p (Revision of Halliday 1937).

548. Rudnicki, J.M. 1951. Timber fasteners. In. Forest Products Laboratories Division (Canada), ed Canadian woods; their properties and uses 2d ed Ottawa-King's Printer. 367 p.

549. Russell, J.H. 1993. Clonal forestry with yellow-cedar *Chamaecyparis nootkatensis* In- Kleinschmit, J.; Khurana, D.K.; Gerhold, H.D., eds. Clonal forestry Vol. 2. Conservation and application. Berlin. Springer-Verlag: 188-201.

Provides background information on operational cloning of yellow-cedar using a large-scale steckling (rooted cutting) program for regeneration that began in British Columbia during the 1970s. Compares field performance of stecklings and seedlings. Reports on short-term and longer term genetic gain through clonal testing and selection. The author states that up to 750,000 stecklings were produced annually for this purpose as of the writing of this report.

550. Russell, J.H. 1993. Genetic architecture, genecology and phenotypic plasticity in seed and seedling traits of yellow-cedar Vancouver, BC: University of British Columbia. Ph.D. dissertation.

551. Russell, J.H. 1993. Genetics of seed and seedling traits in yellow-cedar *{Chamaecypans nootkatensis* D. Don) Spach.). In: Lavereau, J., ed. Proceedings of the 24th meeting of the Canadian Tree Improvement Association, Part 2; 1993 Aug 15-19; Fredericton, NB. [Place of publication unknown]: [publisher unknown]: 106-109.

Places yellow-cedar as an intermediate tree species with less genetic differentiation associated with geography than some species such as western hemlock and Sitka spruce, but more differentiation than species such as western redcedar Significant population and family genetic variation exists for the traits measured, with family variation exceeding that of populations Drought-resistant ecotypes are evident in the southern portion of the range, but elsewhere, some associations of traits with seed origin were mainly nonsignificant.

552. Russell, J.H. 1993. Incorporating clones into tree improvement strategies, two contrasting examples from British Columbia In- Lavereau, J , ed Proceedings of the 24th meeting of the Canadian Tree Improvement Association, Part 2, 1993 Aug 15-19; Fredencton, NB [Place of publication unknown] [publisher unknown]. 10-18

Outlines two clonal programs to produce planting stock in British Columbia, including one using yellow-cedar.

553. Russell, John; Carson, Don. 1988. Yellow-cedar tech transfer. Victoria, BC: Forestry Canada, British Columbia Ministry of Forests. FRDA Rep. 7(1): 3.

Reports that 500,000 yellow-cedars were planted along coastal British Columbia for reforestation during 1988, 87 percent of which were from rooted cuttings. Younger donor stock and donor stock that is continually hedged back to 25-50 cm produce the most reliable cuttings for rooting.

554. Russell, J.H.; Cartwright; C. 1991. The genetics of yellow cypress. In. Lousier, J D , ed Proceedings of a symposium: Yellow cypress: Can we grow it? Can we sell it? 1990 March 26-28; Richmond, BC. FRDA Rep. 171. Victoria, BC. Forestry Canada; British Columbia Ministry of Forests 34-35

Genetic variability for provenance, family, and clones of yellow-cedar is described. Genetic improvement through provenance testing and a breeding program is discussed

555. Russell, J.H.; Grossnickle, S.C.; Ferguson, C; Carson, D.W. 1990. Yellow-cedar stecklings nursery production and field performance. FRDA Rep. 148. Victoria, BC: Forest Research Development Agreement. 21 p.

556. Russell, John; Grossnickle, Steven. 1989. Rooting of yellow cypress cuttings. Part 2. effect of fertilizer application period on rooting and growth. Res. Memo 101. Victoria, BC: Forest Research Development Agreement. 2 p.

Results from a study on fertilization of rooted cuttings for reforestation indicate that the fertilizing of cuttings should begin at callusing for juvenile cuttings and at rooting for more mature cuttings

557. Ruth, Robert H.; Harris, A.S. 1979. Management of western hemlock-Sitka spruce forests for timber production. Gen. Tech. Rep. PNW-88. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 197 p.

Briefly describes the range, occurrence in scattered and sometimes nearly pure stands, soil associations, and lack of management information for yellow-cedar.

558. St. John, Harold; Hardin, Edith. 1929. Flora of Mt. Baker. Mazama. 11(12): 52-102.

559. St. John, Harold; Warren, Fred A. 1937. The plants of Mount Rainier National Park, Washington. American Midland Naturalist. 18: 952-957.

560. Sakai, A.; Okada, S. 1971. Freezing resistance of conifers. Silvae Genetica. 20(3): 91-97.

Gives results of tests of cold resistance in twigs and saplings of several tree species including three species of *Chamaecyparis* No samples of *Chamaecyparis* survived temperatures below minus 25 °C. In general, conifers from very cold climates were the most resistant to frost damage.

561. Salamon, M. 1972. Resistance moisture meter correction factors for western softwood species. Forest Products Journal. 22(12). 46-47.

A correction table from a direct-current resistance method are given for moisture values of the woods from different tree species, including yellow-cedar. The correction values, which should be added to actual meter values, are generally minor except at low moisture levels.

562. Sargent, C.S. 1885. The woods of the United States: with an account of their structure, qualities, and uses: with geographical and other notes upon the trees which produce them. New York: D. Appleton and Co. 203 p.

Mentions yellow-cedar as a large tree of great economic value and briefly describes its wood properites and anatomy under the name *"Chamaecypans Nutkaensis."* Tables provide measurements of specific gravity, fuel value, strength properties, and weight.

563. Sargent, Charles S. 1884. Report on the forests of North America (exclusive of Mexico). Washington, DC: U.S. Department of the Interior, Census Office. 612 p.

Gives a brief description of yellow-cedar and its occurrence in the United States. Contains information on wood properties.

564. Sargent, Charles S. 1896. *Cupressus Nootkatensis.* In: The silva of North America: a description of the trees which grow naturally in North America exclusive of Mexico Boston; New York- Houghton, Miffin and Company: 115-118. Vol. 10.

Provides a description of growth form, foliage, flowers, cones, and seeds. Gives the known distribution at the time of publication and a few properties and uses of wood. Uses the common names "yellow cypress" and "Sitka cypress." Mentions that yellow-cedar was introduced into European gardens in 1850 through the Botanic Garden at St. Petersburg. Ends with a beautiful botanical illustration of yellow-cedar in this oversized book.

565. Sargent, Charles Sprague. 1933. Manual of the trees of North America (exclusive of Mexico). 2d ed Boston, New York: Houghton Miffin Co. 910 p. (Reprinted 1961. 2 vols. New York: Dover Publ., Inc.).

Gives a description of foliage, flowering, cones, seeds, bark, wood, habit, and distribution.

566. Sawyer, John 0.; Thornburgh, Dale A. 1977. Montane and subalpine vegetation of the Klamath Mountains. In Barbour, Michael G.; Major, Jack, eds. Terrestrial vegetation of California. New York. John Wiley: 699-732.

Gives elevation limits for yellow-cedar and describes its vegetative reproduction. Yellow-cedar is listed as a tree species with low tolerance to fire.

567. Sayn-Wittgenstein, L. 1978. Recognition of tree species on aerial photographs. Inf. Rep. FMP-X-118. Ottawa: Canadian Forestry Service, Department of the Environment, Forest Management Institute. 97 p.

Information is presented to assist with the identification of tree species, including yellow-cedar, on aerial photographs. A view drawing from above the crown of a yellow-cedar tree is given

568. Scagel, R.; Green, R.; Hahn, H. von; Evans, R. 1989. Exploratory high elevation regeneration trials in the Vancouver forest region: 10-year species performance of planted stock FRDA Rep. No 098. Victoria, BC: Forestry Canada; British Columbia Ministry of Forests. 40 p.

Reports on 10 years of experience with regeneration at high elevation along the coastal mainland in British Columbia. Species classified as coming from high elevation tended to have better survival but poorer growth than those from low elevation. Yellow-cedar was among species that suffered mortality at fall planting because of the lack of dormancy, especially at the site with the harshest winter climate. It developed problems in form on some sites (i.e., sweep, stem breakage, forked leaders). Yellow-cedar had longer lateral branches than other high-elevation species

569. Scheffer, T.C.; Eslyn, W.E. 1961. Effect of heat on the decay resistance of wood. Forest Products Journal. 11. 485-490.

Wet-heating schedules lowered decay resistance of some species tested, including that of yellow-cedar. No decrease in resistance occurred at 1800 °F for 48 hr, but decay resistance was lowered after heating for 1 hour at 3000 °F

570. Scheffer, Theodore C. 1983. Decay resistance of Alaska-cedar. Forest Products Journal 33(1)-25-26

The wood from yellow-cedar showed considerably more decay susceptibility, as measured by weight loss, when challenged with the fungus *Postia (Poria) placenta* compared to challenges by the fungus *Gloeophyllum trabeum.* From this result, the author concludes that yellow-cedar wood is very resistant when used in service aboveground but has only moderate resistant when used in contact with the ground

571. Schenck, Carl Alwin. 1939. Fremdlandische Wald- und Parkbaume. Berlin. Verlag. In German.

Beginning on page 127, the author describes the growth habits, varieties, distribution, plantings in Europe, and wood characteristics.

572. Schmidt, R.L. 1955. Some aspects of western redcedar regeneration in the coastal forests of British Columbia. Res. Note 29 Victoria: British Columbia Forest Service. 10 p.

Adventitious rooting of yellow-cedar is noted on Vancouver Island.

573. Schmidt, R.L. 1958. Climate and the altitudinal distribution of conifers In: Research review, 1957. Victoria: British Columbia Forest Service Forest. 14.

Describes a study in Elk Valley, Vancouver Island, on two aspects between 1,000 and 4,600 ft Length of the frost-free season decreased at the rate of 2 8 d per 500 ft of elevation within the altitudinal range of Douglas-fir, western hemlock, and western redcedar, but above this level the frost-free season decreased 36 d in 500 ft. Yellow-cedar, subalpine fir, Pacific silver fir, and mountain hemlock were not affected by the temperature boundary. Yellow-cedar occurs from the 1,000- to 5,000-ft elevation at the study site.

574. Schoenike, R.E. 1977. Leyland cypress for Christmas trees. Limbs and Needles. 5-4-5,13

Describes the hybrid Leyland cypress and recommends it for use as Christmas trees

575. Scott, David R.M. 1962. Plant associations of western Washington. University of Washington Arboretum Bulletin. 25: 11-14, 26.

576. Setzer, T.S.; Mead, B.R. 1988. Verification of aerial photo stand volume tables for southeast Alaska Res. Pap. PNW-RP-396. Portland, OR U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 13 p.

Presents a method of estimating the timber volume of yellow-cedar and other tree species in southeast Alaska, given the height of trees and percentage of crown closure.

577. Shaw, C.G.; Harris, M.R. 1960. Important diseases and decays of trees native to Washington. Bull. 540. Spokane, WA: Washington State University, Agriculture Extension Service. 35 p.

578. Shaw, Charles Gardner. 1958. Host fungus index for the Pacific Northwest. I Hosts Bull. 765. Spokane: Washington Agricultural Experiment Station. 127 p.

Lists 12 fungi known to occur on yellow-cedar.

579. Shaw, C.G., III; Eglitis, A.; Laurent, T.H.; Hennon, P.E. 1985. Decline and mortality *of Chamaecyparis nootkatensis* in southeastern Alaska, a problem of long duration but unknown cause. Plant Disease. 69: 13-17.

Provides color illustrations of the symptoms of dying yellow-cedars and a stand-level view of cedar decline in Alaska. Includes the stand composition and mortality levels of different tree species at 13 locations. The cedar bark beetle, previously thought to be the cause of mortality, was found to be a secondary agent, attacking only trees already in decline.

580. Shaw, C.G., III; Eglitis, A.; Laurent, T.H.; Hennon, P.E. 1987. An overview of decline and mortality of *Chamaecyparis nootkatensis* in southeast Alaska In Laderman, A , ed Atlantic white cedar wetlands London Westview Press 327-330

Reports on sampling of yellow-cedar decline on Chichag of Island, Alaska Declining stands often have 50 percent or more of their total volume in yellow-cedar, of which 25 percent or more is dead or dying The cedar bark beetle and the fungus *Armillana* sp are secondary agents

581. Shaw, C.G., III; Loopstra, E.M. 1988. Identification and pathogenicity of some Alaskan isolates of *Armillaria* Phytopathology 78 971-974

Attempts to identify isolates of the fungus *Armillaria* from Alaska Of the three isolates taken from yellow-cedar hosts, none was positively identified Yellow-cedar seedlings were not infected by inoculations of any of the *Armillana* isolates used but one of the isolates from yellow-cedar was able to infect Sitka spruce seedlings

582. Sheldon, C. 1912. The wilderness of the north Pacific coast islands New York Charles Scribner's Sons 246 p

The author makes the first known reference to extensive yellow-cedar mortality by commenting on the forests around Pybus Bay on southern Admiralty Island, "vast areas are rolling swamps with yellow cedar, mostly dead "

583. Sheldon, E.P. 1904. The forest wealth of Oregon Portland, OR Lewis and Clark Exposition Comm 32 p

584. Shofelinov, L. 1975. A prospective cypress hybrid *[Chamaecypans nootkatensis, Cupressus macrocarpa]* Gorsko Stopanstvo 31(6) 24-25

585. Sigafoos, Robert S. 1958. Vegetation of northwestern North America, as an aid in interpretation of geologic data US Geological Survey Bulletin 1061-E 165-185

Discusses the major forest types in Alaska and their distribution Indicates that yellow-cedar is frequently associated with western hemlock from Valdez to the southeastward Gives a distribution map of yellow-cedar and several other tree species in Alaska

586. Silim, S.N.; Charleson, L; Lavender, D.P. 1990. Environmental control of frost hardiness in seedlings of western redcedar *{Thuja plicata* (D Don)) and yellow cedar *(Chamaecypans nootkatensis* (Lamb) Spach) [Abstract] Northwest Science 64(2) 100

Yellow-cedar seedlings respond to both photoperiod and moisture stress treatments with a slight increase in cold-hardiness

587. Silim, Salim N.; Guy, Robert D.; Lavender, Denis P. 1993. Mefluidide-induced drought resistance in seedlings of three conifer species Canadian Journal of Botany 71 1087-92

The growth retardant mefluidide was applied to yellow-cedar seedlings and two other species in a study of drought resistance Mefluidide affected water potential, stomatal conductance, and the accumulation of abscisic acid

588. Silim, Salim N.; Lavender, Denis P. 1994. Seasonal patterns and environmental regulation of frost hardiness in shoots of seedlings of *Thuja plicata, Chamaecyparis nootkatensis,* and *Picea glauca* Canadian Journal of Botany 72 309-316

The effects of photoperiod, water stress and low temperature on frost hardiness were examined for yellow-cedar, western redcedar, and white spruce Under natural conditions in British Columbia, yellow-cedar began to cold-harden in late October when the photoperiod was less than 11 hr and daily maximum temperatures were less than 15 °C Yellow-cedar attained a higher degree of cold hardiness when exposed to persistent subfreezing temperature Under controlled conditions, water stress had a minimal effect but exposure to daily intervals of 9-hr at 2 °C with light and the remainder of time at -3 °C with darkness increased the rate of hardening for yellow-cedar

589. Slavin, Arthur D. 1931. Some conifers cultivated in the United States In Conifers in cultivation the report of the conifer conference held by the Royal Horticultural Society London Royal Horticultural Society 86-150

Describes many species, including yellow-cedar, grown in several aboreta in the United States

590. Smail, John. 1978. Trial and error spells success British Columbia Lumberman 62(9) 48-49,54

Describes a method for germinating the seed of yellow cedar Also outlines the cultivation and outplanting of yellow-cedar stock in British Columbia

591. Smith, Ian M. 1977. Two new species of Trisetacus *(Prostigmata Enophyoidea)* associated with Cupressaceae Canadian Entomologist 109 843-847

A new species of mite, *Trisetacus chamaecypari,* is described from yellow-cedar The mite was found in the cones of yellow-cedar on Vancouver Island

592. Smith, J.H.G.; Ker, J.W. 1957. Timber volume depends on D^2H British Columbia Lumberman 41(9) 28,30

Constants *a* and *b* for 24 tree species are given for the combined variable formula in which tree volume (V) is estimated in terms of d b h squared (D^2) and total height (H)

$V = a + b[(D^2H)/100]$

The same constants are used for yellow-cedar and western redcedar, a set being tabulated separately for coast-immature, coast-mature, and interior trees by diameter classes of 0 to 26 in and 27 in and greater. Standard errors for very tall and very short trees also are tabulated

593. Smith, J. Harry G.; Breadon, Robert E. 1964. Combined variable equations and volume-basal area ratios for total cubic-foot volumes of the commercial trees of B.C Forestry Chronicles. 40 258-261

594. Smith, R.S.; Cserjesi, A.J. 1970. Degradation of nootkatin by fungi causing black heartwood stain in yellow cedar Canadian Journal of Botany. 48: 1727-1729.

Presents a method for quantifying nootkatin from yellow-cedar heartwood Reports on the reduction of nootkatin around heartwood areas colonized by black-staining fungi. Two of these fungi show *in vitro* resistance to nootkatin.

595. Smith, Roger S. 1970. Black stain in yellow cedar heartwood. Canadian Journal of Botany. 48. 1731-1739.

Reports on a study of black stain in the heartwood of yellow-cedar from British Columbia. Comments that a small amount of stain is present in nearly all boards and is frequently associated with knots (i.e., limbs), breaks, and decay. Stain is apparently more common from trees growing on poor sites Six taxa of fungi were isolated from stained wood but none was positively identified. None of the black-stain fungi was capable of causing significant weight loss in yellow-cedar heartwood, however, colonization by these fungi made heartwood considerably less resistant to the subsequent attack by wood decay fungi. The author suggests that black stain fungi may reduce the durability of yellow-cedar heartwood by detoxifying compounds such as nootkatin and allow for the advance of actual wood decay fungi.

596. Society of American Foresters. 1954. Forest cover types of North America (exclusive of Mexico). In: Report of the committee on forest types. Washington, DC: Society of American Foresters. 67 p.

The timber types containing yellow-cedar that are given in this report are slightly modified in the 1964 edition (see item 597).

597. Society of American Foresters. 1964. Forest cover types of North America (exclusive of Mexico) Washington, DC Society of American Foresters 67 p

The composition, nature, and occurrence of the numbered timber types in which yellow-cedar occurs are described. At high elevations (in the mountains), yellow-cedar occurs in the mountain hemlock-subalpine fir type (205) In middle elevations (interior), yellow-cedar occurs in the western hemlock (224), Pacific silver fir-hemlock (226), western redcedar-western hemlock (227), and western redcedar (228) types.

598. Sodergaard, Poul. 1965. Kimplantemes morfologi og udvikling hos de I skovbruget almindeligt anvendte naletraeer: Identification of 1 and 2 year seedlings of 25 conifers. Dansk Dendrologisk Arsskrift. 2(11)- 185-247

599. Southwood, T.R.E. 1962. *Chamecyparis nootkatensis* (D Don) Spach a new host plant for *Cyphostethus tristriatus* (F) (Hem , Acanthosomatidae) Entomological Monographs 98(1180/1183) 250

Cyphostethus tnstnatus (F), a green and brown bug, formerly thought to be virtually monophagous on *Juniperus communis* L , was found to feed and breed on *Chamaecyparis nootkatensis* planted in Ascot, Berkshire

600. Spach, Édouard. 1842. Histoire Naturelle des Vegetaux Phanerogames Paris Librairie Encyclopedique De Roret XI 303-305, 329-333

Establishes and formally describes the genus *Chamaecypans* Moves yellow-cedar from *Cupressus* to this new genus under the name ' *Chamaecypans nutkaensis* Spach " The original spelling of the epithet used by D Don in the formal species description (Don 1824) should be followed, thus the binomial should read *Chamaecypans nootkatensis* (D Don) Spach

601. Spada, Benjamin. 1962. Forest statistics for Pierce County, Washington For Surv Rep 141 Portland, OR US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 26 p

Volume of yellow-cedar growing stock in Pierce County, Washington, in 1959 was reported to be 16 million board feet (International 1/4-in rule) Volume of sawtimber on commercial forest land was 15 million board feet (Scribner) Area of commercial forest land occupied by yellow-cedar type was 1,000 acres, all in public ownership

602. Spada, Benjamin; Usher, Jack H. 1955. Forest statistics for Yakima County, Washington For Surv Rep 121 Portland, OR US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 29 p

603. Spaulding, Perley. 1956. Diseases of North American forest trees planted abroad an annotated list Agric Handb 100 Washington, DC Government Printing Office 144 p

Lists the locations where yellow-cedar is planted outside of its native range, including Belgium, British Isles, Denmark, France, Germany, India, Italy, Latvia Netherlands, Norway, Poland, Sweden, and Switzerland

604. Stamm, Alfred J. 1929. The capillary structure of softwoods Journal of Agricultural Research 38 23-67

Examines in detail, by dynamic physical methods, the capillary structure of six western conifers including that of yellow-cedar Includes measurements of wood density, diameter of pores of the pit membrane, lumen diameter, and tracheid length

605. Stephens, F.R.; Gass, C.R.; Billings, R.F. 1970. The muskegs of southeast Alaska and their diminished extent Northwest Science 44(2) 123-130

The occurrence of yellow-cedar and other vegetation around bogs is noted in southeast Alaska The authors present evidence from soil profiles to suggest that bogs were once more dominant on the landscape than they are today

606. Stewart, Hilary. 1984. Cedar Vancouver, BC Douglas and McIntyre, Seattle University of Washington Press 192 p

Gives a description of the appearance of yellow-cedar and western redcedar The author describes in detail and illustrates the methods and tools used in the traditional collection of wood, bark, branches, and roots from cedar trees Sections in the book include the construction of items from wood including canoes, buildings, totem poles, paddles, toys, fishing hooks, spears, arrow shafts, masks, instruments, bowls, and utensils, items constructed from bark including hats, temporary shelters, boxes, bailers, rope, baskets, mats, blankets, and clothing, items made from branches including rope and baskets, and items made from roots including baskets, hats, and other woven products

607. Stone, Herbert. 1904. The timbers of commerce and their identification London William Rider and Son, Ltd 311 p

Describes the appearance and use of yellow-cedar wood

608. Streets, R.J. 1962. Exotic forest trees in the British Commonwealth Oxford Clarendon Press 765 p

Briefly describes the ornamental use of yellow-cedar and other *Chamaecyparis* species in Great Britain

609. Strouts, R.G. 1973. Canker of cypresses caused by *Coryneum cardinale* Wag In Britain European Journal of Forest Pathology 3 13-24

Reports on mycelial inoculation into the bark of 2- to 3 yr-old greenhouse-grown plants and 10-yr-old field-grown trees of *Chamaecypans nootkatensis* and other tree species *Chamaecyparis nootkatensis* rapidly overcame initial infection Methods of control and aids in identifying the fungus in culture are given

610. Sturrock, J.W. 1976. Leyland cypress trials 3 Northern North Island plantings and first results Farm Forestry 18(1) 7-15

611. Sturrock, J.W. 1989. The Stapehill Leyland cypresses New Zealand Tree Grower 10(2) 18-19

612. Sturrock, J.W.; Ferguson, J.D. 1990. Macro and micro propagation of Leyland cypress International Plant Propagator's Society 39 285-290

613. Sudworth, George B. 1897. Nomenclature of the arborescent flora of the United States. Div. For. Bull. 14. Washington, DC: U.S. Department of Agriculture. 417 p.

Mentions seven common names and 14 cultivated varieties for yellow-cedar. Also lists synonyms of the scientific name

614. Sudworth, George B. 1898. Check list of the forest trees of the United States, their names and ranges. Bull. 17. Washington, DC: U.S. Department of Agriculture 144 p.

Lists the following common names in use: yellow cedar, Sitka cypress, yellow cypress, Nootka cypress, Nootka Sound cypress, Alaska ground cypress, and Alaska cypress Fourteen varieties are distinguished in cultivation- *viridifolia* Sudw., *cinerascens* Sudw., *cinerascens genuina* Sudw., *cinerascens aureo-discolor* Sudw., *argenteo-varians* Sudw., *aureo-versicolor* Sudw , *zanthophylla* Sudw., *pendens* Sudw., *compacts* (Veitch) Beissn., *compressa* Beissn., *nidiformis* Beissn., *albo-picta* Sudw., *aureo-viridis* (Hort. Kew.) Sudw , *picta* Sudw. Accepted scientific and common names are *Chamaecyparis nootkatensis* (Lamb) Spach and yellow cedar, respectively

615. Sudworth, George B. 1908. Forest trees of the Pacific slope Washington, DC: U.S. Department of Agriculture, Forest Service 441 p.

Gives a general description of yellow-cedar, an illustration, and some detailed locations of occurrence in Alaska, British Columbia, Washington, and Oregon.

616. Sudworth, George B. 1927. Check list of the forest trees of the United States, their names and ranges Misc. Circ. 92. Washington, DC: U.S. Department of Agriculture. 295 p.

Lists the trees of the United States. Suggests the common name Alaska cedar for *Chamaecypans nootkatensis.*

617. Sullivan, T.P.; Harestad, A.S.; Wikeem, B.M. 1990. Control of mammal damage. In: Lavender, D. P.; Parish, R.; Johnson, C. M. [and others], eds. Regenerating British Columbia's forests Vancouver, BC: University of British Columbia Press. 302-318.

Describes deer browsing as being so severe on the Queen Charlotte Islands in British Columbia that western redcedar and yellow-cedar are probably eliminated as commercial species.

618. Sutherland, J.R.; Ring, F.M.; Seed, J.E. 1991. Canadian conifers as hosts of the pinewood nematode *(Bursaphelenchus xylophilus):* results of seedling inoculations. Scandinavian Journal of Forest Research. 6(2): 209-216.

Seedlings of 22 species of conifers found in Canada were inoculated with the pinewood nematode. Yellow-cedar was among four species that had no mortality from inoculations

619. Swan, E.P.; Naylor, A.F.S. 1969. Alkaline ethanolyhsis of western conifer barks Ottawa Canadian Forestry Service, Department of Fisheries and Forestry Bi-monthly Research Notes 25(4) 32-33

The yields of several compounds that were extracted from the outer bark of yellow-cedar and six other conifer species are reported

620. Syrdal, Daniel David. 1971. Sesquiterpenes of *Chamaecyparis nootkatensis* isolation and structure determination absolute stereochemistry chemical simulation of biogenesis Seattle, WA University of Washington 259 p Ph D dissertation

621. Tabata, Masanobu. 1991. Distribution and host range of *Seiridium unicorne* in Japan Transactions of the Mycological Society of Japan 32 259-264

The resinous canker disease caused by the fungus *Semdium unicorne* is reported on yellow-cedar and a number of other species of Cupressaceae from the Kanto district of Japan

622. Taylor, R.F.; Little, E.L., Jr. 1950. Pocket guide to Alaska trees Agric Handb 5 Washington, DC U S Department of Agriculture 63 p (Revision of Misc Publ 55)

Gives a description of the foliage, twigs, cones, bark, and wood of yellow-cedar Includes information on size, occurrence by elevation, range in Alaska, and uses of wood

623. Taylor S.; Sziklai, O. 1976. *Chamaecypans nootkatensis* yellow-cedar member of the family Cupressaceae Davidsonia 7(4) 56-62

Provides a description of the morphology, distribution, and habitat of yellow-cedar in British Columbia as well as information on ornamental varieties and hybrids Discusses several uses of yellow-cedar, including the medicinal use of foliage and bark Gives a line drawing illustration of yellow-cedar

624. Taylor, Walter P. 1922. A distributional and ecological study of Mount Rainier, Washington Ecology 3 214-236

625. Terauchi, Fumio; Kubo, Mitsunori; Aoki, Hiroyuki; Ogama, Toshimasa. 1996. Effect of odors from coniferous woods on contingent negative variation (CNV) Zairyo (Japan) 45 397-402

Contingent negative variations and electroencephalograms were recorded from 10 humans subjected to the odors from the wood of several conifer species, including yellow-cedar Responses seemed to be due to the concentration of alpha-pinene in the wood

626. Tessier, J.P.; Knapp, F.M. 1961. Cost analysis of a mobile logging operation on the U B C research forest Faculty For Res Pap 41 Vancouver, BC University of British Columbia 16 p

Gives log specifications used in bucking

627. Thornburgh, D.A. 1969. Dynamics of the true fir-hemlock forests of the west slope of the Washington Cascade Range Dissertation Abstracts 3OB(6) 2489

Discusses the factors that control the distribution of tree species of climax communities at various elevations in a portion of the Cascade Ramge Similar distribution patterns were found in other areas of the Cascades

628. Titmuss, F.H. 1965. Commercial timbers of the world 3d ed , enlarged London Technical Press, Ltd 277 p

Briefly describes the wood of yellow-cedar

629. Torgeson, D.C.; Young, R.A.; Milbrath, J.A. 1954. *Phytophthora* root rot diseases of Lawson cypress and other ornamentals Bull 537 Corvallis OR Oregon Agricultural Experiment Station

Yellow-cedar was resistant when inoculated with *Phytophthora cinnamomi,* the cause of a root disease of Port-Orford-cedar and other trees

630. Traud, J.; Musche, H. 1983. Determination and identification of alpha - and beta -thujone in plants by capillary gas chromatography-mass spectrometry (GC/MS) Fresenius Zeitschrift fur Analytische Chemie 315(3) 221-26 In German

631. Troll, C. 1955. Der Mount Rainier und das mittlere Cascaden-Gebirge Mount Rainier and the middle Cascade mountains Erkunde 9 264-274

632. Troup, R.S. 1932. Exotic forest trees in the British Empire Oxford Clarendon Press 259 p

633. Turner, L.M. 1886. Contributions to the natural history of Alaska results of investigations made chiefly in the Yukon district and the Aleutian islands, conducted under the auspices of the Signal Service, United States Army, extending from May, 1874, to August, 1881 Misc Doc 155, 49th Congress, 1st session Washington, DC Government Printing Office 226 p

Lists yellow-cedar, referred to as *"Thuja excelsa* Bong ," along with seven other conifers Indicates that it can be found at Sitka and "Southern Russian America '

634. Turner, Nancy J. 1979. Plants in British Columbia Indian technology Victoria, BC British Columbia Provincial Museum 304 p

Lists some characteristics of yellow-cedar, describes its distribution in British Columbia, and provides details on use of the tree by Native people

635. Turner, Nancy J. 1988. Ethnobotany of coniferous trees in Thompson and Lillooet Interior Salish of British Columbia. Economic Botany. 42: 177-194.

The cultural significance of yellow-cedar and other tree species within the traditional territories of two groups of Native people in interior British Columbia is discussed Lillooet people close to the coast distinguish between yellow-cedar and western redcedar, but those further inland do not Yellow-cedar wood is used for paddles and bows, and the strong odor of the tree is thought to cause illness.

636. Tyrer, Barry; McLeod, Jack. 1991. Existing and future products ln Lousier, J.D., ed Proceedings of a symposium: Yellow cypress. Can we grow it ? Can we sell if? 1990 March 26-28; Richmond, BC. FRDA Rep 171 Victoria, BC Forestry Canada, British Columbia Ministry of Forests. 16-17.

Yellow-cedar makes up 8 percent of the volume and 15 percent of the value of wood exported from British Columbia to Japan Demand is high because yellow-cedar is a good substitute for hinoki cedar, which is the native *Chamaecyparis* that is in short supply in Japan Desirable lumber dimensions and the uses for wood in the Japanese market are described.

637. Ugolini, F.C.; Mann, D.H. 1979. Biopedological origin of peatlands in south east Alaska. Nature. 281: 366-368.

Describes the occurrence of yellow-cedar on a terrace near Lituya Bay in Alaska. Suggests that soil development processes lead to sites becoming more poorly drained overtime leading to successional changes favoring bog vegetation

638. U.S. Department of Agriculture, Forest Service. 1940. Approved changes in Sudworth's check list. Washington, DC: Government Printing Office.

Approves of the common name change from Sudworth's (1927) "Alaska cedar" to "Alaska yellow-cedar." Suggests that it is desirable to retain the name "yellow" because of the tree's yellow wood. The committee prefers to hyphenate the name because the tree is not a true cedar and recommends not combining yellow and cedar to form "yellowcedar"

639. U.S. Department of Agriculture, Forest Service. 1948. Woody-plant seed manual Misc Publ. 654. Washington, DC 416 p.

One pound of cleaned yellow-cedar seed contains from 66,000 to 180,00 seeds, with an average of 108,000. Germination is characteristically low with germinative capacity ranging from 0 to 2 percent and potential germination from 22 to 57 percent. Stratification for 60 to 90 days at 410 °F is recommended to break embryo dormancy. The seed is fragile.

640. U.S. Department of Agriculture, Forest Service. 1955. Wood handbook. Agric Handb. 72. Washington, DC 528 p.

Contains basic information on yellow-cedar wood as a material of construction with data for its use in design and specification.

641. U.S. Department of Agriculture, Forest Service. 1961. Standard terms for describing wood. 3d ed., revised. [Place of publication unknown]: Forest Products Laboratory. 12 p.

Presents a series of standard terms for describing properties of various species of wood, including yellow-cedar, as developed by the Forest Products Laboratory.

642. U.S. Department of Agriculture, Forest Service. 1963. Characteristics of Alaska woods. Res. Pap. FPL-1. Madison, WI: Forest Products Laboratory. 64 p.

A general discussion of mechanical properties, pulp and papermaking characteristics, seasoning data, and preservative treatment of various Alaska woods, including yellow-cedar. Includes summary tables on strength properties, pulp processes and yields, and drying schedules

643. U.S. Department of Agriculture, Forest Service. 1966.1966 seed and planting stock dealers. Tree Planters' Notes 78. 29 p

The directory lists four sources of yellow-cedar seed and one source of planting stock.

644. U.S. Department of Agriculture, Forest Service. 1974. Wood handbook: wood as an engineering material. Agric. Handb 72 Washington, DC: Forest Products Laboratory. 428 p.

Provides engineers, architects, and others with a source of information on the physical and mechanical properties of many species of wood, including yellow-cedar, and how these properties are affected by variations in the wood itself.

645. U.S. Department of Agriculture, Forest Service. 1994. The common conifers of southeast Alaska [Leaflet] R10-MB-246. Juneau, AK Alaska Region.

Provides brief comments about the appearance of foliage, cones, and bark of yellow-cedar. Mentions that yellow-cedar can be found from sea level to timberline in southeast Alaska but is common between 500 and 1,200 ft. Includes a botanical illustration of yellow-cedar.

646. U.S. Department of Agriculture, Soil Conservation Service. 1982. National list of scientific plant names. Vol. 1: List of plant names. SCS-TP-159. Washington, DC. 416 p.

647. van Dersal, William R. 1938. Native woody plants of the United States, their erosion control and wildlife values Misc Publ 303 Washington, DC U S Department of Agriculture 362 p

Mentions several characteristics of yellow-cedar including size, soil and light requirements Information about seed includes its low production by the tree, transient viability, and weight of 106,000 seeds per pound

648. van Elk, B.C.M. 1969. New experiments on conifer propagation Gartenwelt (Hamburg) 69 303-304

Describes experiments on propagation by cuttings of yellow-cedar and other species using various combinations of soil heating, growth substances, and a fungicide

649. van Hees, W.W.S. 1988. Timber productivity of seven forest ecosystems in southeastern Alaska Res Pap PNW-RP 391 Portland, OR U S Department of Agriculture, Forest Service, Pacific Northwest Research Station 10 p

Measurements on growth of yellow-cedar and several other species in Alaska are used to develop equations relating periodic annual cubic-foot volume growth to tree diameter Results show differences in productivity among soil groups

650. Veer, J.J.G.; King, F.W. 1963. Moisture blistering of paints on house siding Publ 1024 Ottawa Canada Department of Forestry 25 p

Free water is necessary for paint blistering and water vapor alone does not cause it Susceptibility to paint blistering decreased by species in this order *Thuja plicata, Pseudotsuga taxifolia* (now *P menziesn), Chamaecyparis nootkatensis, Pinus strobus, Juniperus virginiana, Pinus resinosa,* and *Picea* spp

651. Verrall, Arthur F. 1968. *Poria incrassata* rot prevention and control in buildings Tech Bull 1385 Washington, DC US Department of Agriculture 27 p

Lists the heartwood of yellow-cedar along with two other tree species that have resistance from attack by the aggressive forest products decaying fungus, *Pona mcrassata* Note This fungus is now known as *Meruliporia incrassata*

652. Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; Wenzlick, K.J. 1992. The Alaska vegetation classification Gen Tech Rep PNW-GTR-286 Portland OR U S Department of Agriculture, Forest Service, Pacific Northwest Research Station 278 p

Mentions the occurrence of yellow-cedar in several of the hierarchical levels of the classification scheme for plant communities in Alaska Yellow-cedar can achieve dominance in the western hemlock-Alaska-cedar and mixed-conifer communities

653. Viereck, Leslie A.; Dyrness, C.T. 1980. A preliminary classification system for vegetation in Alaska. Gen Tech Rep. PNW-106. Portland, OR- U S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station 38 p

Yellow-cedar is listed in level IV and level V groups of open conifer forest in a preliminary vegetation classification for Alaska.

654. Viereck, Leslie A.; Little, Elbert L., Jr. 1972. Alaska trees and shrubs. Agric. Handb 410 Washington, DC U S. Department of Agriculture. 265 p.

Provides common names, the distribution in Alaska, and uses of yellow-cedar Also gives brief descriptions of the growth form, foliage, twigs, bark, wood, cone, and seeds Includes an illustration of a branch Lists the northwest limits of the distribution in Prince William Sound at Wells Bay and Glacier Island.

655. Viereck, Leslie A.; Little, Elbert L., Jr. 1975. Volume 2: Alaska trees and common shrubs. Misc. Publ. 1293. Washington, DC: U.S. Department of Agriculture, Forest Service. 19 p [plus 105 maps].

Gives a map of the known distribution of yellow-cedar in Alaska Mentions several locations at the northwest limits of the range, including Latouche Island in Prince William Sound.

656. Vitt, D.H.; Horton, D.G.; Slack, N.G.; Malmer, N. 1990. Sphagnum-dominated peatlands of the hyperoceanic British Columbia coast: patterns in surface water chemistry and vegetation Canadian Journal of Forest Research 20- 696-711

The authors review literature on the peatlands of the Pacific Coast and contrast concepts of classification with those of Europe and North America. They present a detailed analysis of the vegetation of peatland areas near Prince Rupert and adjacent areas of British Columbia. Yellow-cedar has the highest abundance in two vegetation groups where it is frequently the dominant tree species- mesotrophic woodland and minerotrophic lawn. Both are on soligenous fens. These two groups are characterized by soils that are relatively minerotrophic and less acidic and have higher calcium concentrations.

657. Vlug, H.; Borden, J.H. 1973. Soil *Acari* and *Collembola* populations affected by logging and slash burning in a coastal British Columbia coniferous forest Environmental Entomology. 2: 1016-1023

Soil arthropods are reported from a forest containing yellow-cedar and a logged and a burned site in British Columbia. Densities of *Acari, Collembola,* and other arthropods were reduced by logging and burning, but neither treatment induced total mortality of insect taxa.

658. Wade, Leslie Keith. 1965. Plant associations of the sphagnum bog ecosystem at Tofino Vancouver Island In Krajina, V J , ed 1964 progress report ecology of the forests of the Pacific Northwest Vancouver University of British Columbia, Department of Biology and Botany 15-16

A report on the vegetation of a marine terrace adjacent to the coastal beaches of Wickannish Bay, near Tofino, Vancouver Island Ten tentative plant community types are described, two of which contain yellow-cedar *Pinus contorta-Chamaecyparis nootkatensis,* a community restricted to bog periphery and incorporating both bog and forest elements in its composition and Bog Forest, a forest of characteristically dwarfed conifers surrounding the bog area The latter is extensive and probably represents the final stage in succession from the bog The dwarfed and peculiarly shaped condition of the trees is due to poor drainage and scarcity of nutrients Principal trees are *Pinus contorta, Thuja plicata, C nootkatensis, Tsuga heterophylla,* and *Taxus brevifolia*

659. Walters, B.B. 1991. Small mammals in a subalpine old-growth forest and clearcuts Northwest Science 65 27-31

The abundance of small mammals (e g , deer mice and voles) is reported from clearcuts and an old-growth forest composed of 9 percent yellow-cedar on Vancouver Island, British Columbia

660. Wang, B.S.P. 1974. Tree-seed storage Publ 1335 Ottawa Department of the Environment, Canadian Forestry Service 32 p

Information on the storage of conifer seed is given

661. Washington State University, Extension Service. 1963. Trees of Washington Pullman, WA

Gives a brief description and distribution map of yellow-cedar in Oregon and Washington and illustrates the foliage, cones, and seeds

662. Weetman, G.; Vyse, A. 1990. Natural regeneration In Lavender, D P , Parish, R , Johnson, C M [and others], eds Regenerating British Columbia's forests Vancouver, BC University of British Columbia Press 118-129

Outlines regeneration methods for yellow-cedar and other tree species in British Columbia Clearcutting combined with planting is the recommended method, although clearcutting in combination with natural regeneration, seed tree, shelterwood, and selection cutting also is listed as feasible

663. West, W.I. 1949. A collection of Oregon woods. Prog. Rep. 1., Circ. 1. Corvallis, OR: Oregon State College 31 p.

The purpose of the report was to make the collections existence known Lists seven specimens of yellow-cedar.

664. West Coast Lumber Inspection Bureau. 1996. Grading rules for west coast lumber. Portland, OR. 275 p

Gives grading rules for domestic and export grades used for yellow-cedar and other western conifers in the United States

665. Whalley, D.N. 1979. Leyland cypress (bigeneric hybrid of *Cupressus macrocarpa* and *Chamaecyparis nootkatensis)*—rooting and early growth of selected clones. International Plant Propagators' Society. 29: 190-202

Reports on a study involving the growth from rooted cuttings of Leyland cypress, the hybrid that formed between yellow-cedar and *Cupressus macrocarpa.* February is the optimal time to take cuttings for rooting The author suggests that the ultimate shape of a tree may be determined by the position from which the cutting was taken from the donor tree and the age (i e , juvenility) of the collected material.

666. Whitford, H.N.; Craig, Ronald D. 1918. Forests of British Columbia. Ottawa. Canada Commission of Conservation 409 p

In the vicinity of the Strait of Georgia, yellow-cedar is seldom found below 2,000 ft and extends up to 5,000 ft. Northward, it gradually descends to tidewater at Knight Inlet In British Columbia, yellow-cedar occurs as far north as the Stikine River. Clear yellow-cedar is perhaps the highest priced lumber produced in the Province, as high as $100 per thousand board feet having been paid for it by local boatbuilders. There is an estimated 4,056 million board feet of standing timber in the Province

667. Whittaker, R.H. 1961. Vegetation history of the Pacific Coast States and the central significance of the Klamath region Madrono. 16. 5-23.

The range of yellow-cedar in the Klamath region suggests that it is a relict from glacial time. It is confined to three isolated patches in the extreme southern end of its range, two of these reported by Mason (1941) and one found by Whittaker on Preston Peak

668. Winkenwerder, Hugo. 1920. Short keys to the trees of Oregon and Washington. Seattle University of Washington Press 16 p

Gives a key to two *Chamaecypans* species, Port-Orford-cedar and yellow-cedar, which are distinguished by bark thickness in mature trees, the color and prickly feel of foliage, and heartwood color

669. Witt, J.A. 1959. A cross section of arboretum plant introductions Seattle University of Washington Arboretum Bulletin 22(4) 121-123,138

Cupressocyparis leylandu has been planted in the University of Washington arboretum where it has grown well It promises to be one of the best evergreen screening and hedge plants for the area

670. Wolf, Carl B. 1948. The new world cypresses Part I Taxonomic and distributional studies of the New World cypresses El Aliso 1 1-250

A concept of the genus *Cupressus* is discussed, as is the more general concept used by Linnaeus *Chamacyparis* is the genus most similar to *Cupressus* but differs by the former having smaller female cones, which generally mature in 1 yr, only one to four or five seeds per scale, and flattened, quadrangular or terete branchlets Wolf does not take a stand on whether *Chamaecyparis* species should be included in the genus *Cupressus,* but most of the paper deals with the *non-Chamaecyparis* species, the true cypresses, *"Eu-Cupressus*" Wolf quotes in its entirety an article describing hybridization between *Cupressus macrocarpa* and *Chamaecypans nootkatensis* (Jackson and Dallimore 1926) Wolf states that he had not seen either living or pressed specimens of the resulting hybrid *(Cupressocypans leylandu),* but that the evidence presented by Jackson and Dallimore for its origin is convincing

671. Wolfe, Jack A. 1964. Miocene floras from Fingerrock Wash, southwestern Nevada Prof Pap 454-N Washington, DC U S Geologic Survey

Discusses 22 specimens of fossil remains of yellow-cedar foliage and cones and other vegetation in western Nevada The author speculates that the Nevada occurrences were different physiological races of yellow-cedar adapted to a drier climate

672. Wood, R.F. 1955. Studies of north-west American forests in relation to silviculture in Great Britain London British Forestry Commission Bulletin 25 42 p

There appears to be no generalized climatic limit in Great Britain for *Chamaecypans nootkatensis* The species has low requirements and is worthy of trial at high elevations

673. Wu, T.H.; Bettadapura, D.P.; Beal, P.E. 1988. A statistical model of root geometry Forest Science 34 980-997

A yellow-cedar tree from southeast Alaska was among several trees studied for root dimensions and geometry Several equations are developed stem diameter and mean initial root diameter, initial root diameter and length of lateral root, and root length and number of root branches

674. Wyman, Donald. 1951. Trees for American gardens New York Macmillan Co 376 p

Yellow-cedar does not have a wide distribution in the United States because it requires a moist climate It is not used much on the Pacific coast but is considered one of the finest trees where it can be grown

675. Yanami, Tetsuji; Miyashita, Masaaki; Yoshikoshi, Akira. 1980. Synthetic study of (+)-nootkatone from (-)-beta-pinene. The Journal of Organic Chemistry. 45-607-612

The steps in the synthesis of nootkatone are outlined. Nootkatone is a ketone that was first isolated from the heartwood of yellow-cedar and, later, the peel oil of grapefruit.

676. Young, James A.; Young, Cheryl G. 1992. Seeds of woody plants. Portland, OR: Dioscorides Press 407 p.

Pages 103 and 104 treat the genus *Chamaecyparis.* Reports that yellow-cedar flowering occurs in May or June, cones ripen in September, and seed dispersal is from October through the following spring. Relatively good seed crops occur roughly every 4 years. On average, there are 240 seeds per gram. Seeds can be difficult to germinate, and a suggested seed stratification is given

677. Zavarin, Eugene; Smith, Rosalin M.; Anderson, Arthur B. 1959. Paper chromatography of the tropolones of Cupressaceae. II. Journal of Organic Chemistry. 24- 1318-1321

Results are presented from a study of heartwood of 14 species of Cupressaceae, which were examined by paper partition chromatography for the tropolones present.

678. Zehetmayr, J.W.L. 1954. Experiments in tree planting on peat Bull 22 London. British Forestry Commission. 110 p.

In tests on *Scirpus-Calluna-Molina,* yellow-cedar has grown slowly, even when fertilized with phosphate, with heights of 3 ft at 12 yr after planting. Unfertilized controls reached 2 ft in height. On poorer soil, yellow-cedar reached 3 to 4 ft 16 yr after planting Smaller plants were damaged by frost in spring 1947.

679. Ziller, Wolf G. 1974. The tree rusts of western Canada. Publ. 1329. Victoria, BC: Department of the Environment, Canadian Forestry Service 272 p

Provides information on the only known rust species of yellow-cedar, *Gymnosporangium nootkatense.* Describes the life cycle, including the infection of the alternate hosts *Malus diversifolia* and *Sorbus sitchensis.* The fungus infects yellow-cedar through its entire range but not at levels causing tree damage. An excellent photograph of the uredial stage of the fungus on yellow-cedar appears on page 129.

680. Zobel, Donald B.; Antos, Joseph A. 1982. Adventitious rooting of eight conifers into a volcanic tephra deposit. Canadian Journal of Forest Research. 12.717-719

A description of the stems of yellow-cedar and several other conifer species rooting adventitiously in tephra deposits after the 1980 eruption of Mount St Helens in Washington.

Common and Scientific Names of Tree Species

Common name	Scientific name
Atlantic white-cedar	*Chamaecyparis thyoides* (L) B.S.P.
Baldcypress	*Taxodium distichum* (L) Rich
Bigleaf maple	*Acer macrophyllum* Pursh
Birch	*Betula* spp
Brewer's spruce	*Picea brewerana* Wats.
California red fir	*Abies magnifies* A. Murr.
Common juniper	*Juniperus communis* L.
Douglas-fir	*Pseudotsuga menziesii* (Mirb.) Franco
Eastern redcedar	*Juniperus virginiana* L
Eastern white pine	*Pinus strobus* L
Grand fir	*Abies grandis* (Dougl. ex D. Don) Lindl.
Hiba Arbor-vitae	*Thujopsis dolabrata* (Lif.) Sieb. & Zucc.
Hinoki cypress	*Chamaecypans obtusa* (Sieb. & Zucc)
Incense-cedar	*Libocedrus decurrens* Torr.
Leyland cypress	*Cupressocyparis leylandii*
Lodgepole pine	*Pinus contorta* Dougl. ex Loud.
Monterey cypress	*Cupressus macrocarpa* Hartw
Mountain hemlock	*Tsuga mertensiana* (Bong.) Carr.
Noble fir	*Abies procera* Rehd.
Ohia	*Metrosideros polymorpha* Gaude
Northern white-cedar	*Thuja occidentalis* L.
Pacific silver fir	*Abies amabilis* Dougl. ex Forbes
Pacific yew	*Taxus brevifolia* Nutt.
Para angelwood	*Dicorynic paraensis*
Port-Orford-cedar	*Chamaecyparis lawsoniana* (A. Murr) Parl.
Red pine	*Pinus resinosa* Alt.
Red spruce	*Picea rubens* Sarg.
Redwood	*Sequoia sempervirens* (D. Don) Endl.
Shasta red fir	*Abies magnifica* var. *shastensis* Lemm.
Sitka spruce	*Picea sitchensis* (Bong.) Carr.
Southern pine	*Pinus* spp.
Subalpine fir	*Abies lasiocarpa* (Hook.) Nutt.
Western hemlock	*Tsuga heterophylla* (Raf) Sarg
Western larch	*Larix occidentalis* Nutt.
Western redcedar	*Thuja plicata* Donn ex D. Don
Western white pine	*Pinus monticola* Dougl. ex D. Don
Whitebark pine	*Pinus albicaulis* Engelm.
White oak	*Quercus alba* L
White spruce	*Picea glauca* (Moench) Voss
Yellow-cedar (Alaska-cedar)	*Chamaecyparis nootkatensis* (D Don) Spach

Metric and English Equivalents

When you know:	Multiply by:	To find:
inches (in)	2.54	centimeters
feet (ft)	0 305	meters
miles (mi)	1 61	kilometers
cubic feet (ft^3)	0 028	cubic meters
acres	0.41	hectares
pounds (lb)	0.45	kilograms
pounds per cubic foot (lb/ft^3)	0016	grams per cubic centimeter
Fahrenheit (°F)	(°F-32)/1.8	Celsius
millimeters (mm)	0.04	inches
centimeters (cm)	0 39	inches
meters (m)	1.09	yards
cubic centimeters (cm^3)	0 061	cubic inches
hectares (ha)	2.47	acres
grams (g)	0 035	ounces
kilograms (kg)	2.21	pounds
grams per cubic centimeter (g/cm^3)	0 58	ounces per cubic inch
kilograms per hectare (kg/ha)	0.089	pounds per acre
Celsius (°C)	(9/5x°C)+32	Fahrenheit

Subject Index

Use the citation numbers to locate material on a particular subject

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Hennon, P.E., Harris, A.S., comps. 1997 Annotated bibliography of *Chamaecyparis nootkatensis* Gen Tech Rep PNW-GTR-413 Portland OR U S Department of Agriculture Forest Service Pacific Northwest Research Station 112 **p**

Some 680 citations from literature treating *Chamaecypans nootkatensis* are listed alphabet! cally by author in this bibliography Most citations are followed by a short summary A subject index is included

Keywords Yellow-cedar Alaska cedar Alaska yellow-cedar bibliography

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