

**Guidelines for Formatting Manuscripts Submitted To
Meeting the Challenge: Invasive Plants in Pacific Northwestern Ecosystems
September 19-20, 2006, UW Botanic Gardens, Seattle, WA**

The purpose of the following guidelines is to help each author to create a manuscript copy that is as close to “camera-ready” as possible, thus requiring very little re-formatting prior to publication.

Deadline for manuscripts:

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- Each author is required to have his/her manuscript reviewed by two or more peers. The revised manuscript should address the suggestions made by the reviewers.
- Final, revised copy of the manuscript is due on October 20, 2006. Please submit a disk copy to Alaine Sommargren (206-383-9924) by one of the following methods:
 - email (no file size limit): asomm@u.washington.edu
 - message board (no file size limit): <http://students.washington.edu/asomm/index.shtml>
 - regular mail: UW Botanic Gardens, Box 354115, Seattle WA 98195-4115

Please use the following standards in your writing:

- Text: font size 12 pt.–Times New Roman, 1.0 line spacing, 1 space after period.
- Spell out numbers less than 10 and the word, “percent”; within tables spell out “percent” unless there is not available space.
- Units of measure can be either English or metric.
- One English-metric equivalent table will be included for the entire proceedings publication, however, please include conversion factors you use for any units other than the standard length, area, temperature, volume, etc.
- Abbreviate units of measure.
- Use complete scientific names and authorities for plant, fungi, or animal species when first mentioned in the paper
- Be clear about definitions (e.g., which states/provinces/countries comprise a “region”)

Guidelines for preparation of tables

- Use Times New Roman, **12 pt bold** for table title (with no ending period), use 12 pt font sizes (or no lower than 8 pts.) for table text.
- Tables are placed at the end of the manuscript, just before the figure captions. Begin each table on a new page. Do not embed tables in the text of your manuscript.
- Use the Tables tool in MS-Word, L/R tabs, or decimal tabs to align data correctly, but do not use auto-formatting functions in the Tables tool (it creates complex formatting that is difficult to edit). Do not use spaces or empty columns to separate or line up data. Do not insert hard returns within cells.
- Number tables consecutively and mention each in the order to which it is referred in the text.
- Use 8 point font for footnotes in tables. (footnotes within tables, use letters, superscript, italic^a beside referenced item; notes are placed below tables with a blank space after letter or before reference).

- Capitalize only the first word and proper nouns of headings (and cell entries with the exception of a list of common species names—these can be lower case so that proper names can be identified by upper case).
- Explain everything fully in table title and footnotes so the table can stand alone.

Guidelines for preparation of figures

- Refer to figure in text as (fig. 1); if used in a sentence, spell out “figure.”
- All figures and photographs must be in black and white.
- Provide a list of figure captions at the end of the text document
- Save figures as *.tif, at least 300 dpi (dots per inch)
- Save arc-view and GIS maps as *.eps.
- Each figure should be a separate file. Example for naming a figure file: Harrington_fig1.tif
- Write the figure number lightly in pencil in top right hand corner on paper copy and type it on the disk copy.

Examples of formatting for a manuscript:

DEVELOPMENT OF MIXED RED ALDER-CONIFER STANDS IN SOUTHEAST ALASKA (TITLE, BOLD, CENTERED, FONT SIZE 16)

Robert L. Deal¹ and Ewa H. Orlikowska² (14 pt centered)

(footnote at bottom of page includes author’s job title, organization, and mailing address)

ABSTRACT (500 words or less)

Overstory stand structure and growth, and understory plant diversity and abundance were assessed in nine 38-42 year-old mixed red alder-conifer stands on Prince of Wales Island, Alaska. Tree species composition ranged from 100 percent conifer to 79 percent alder as a proportion of stand basal area. Tree height growth patterns for overstory trees were reconstructed by using dominant red alder, Sitka spruce, and western hemlock trees at each site. Height growth of alder was initially much greater than for conifers, but conifers emerged from alder overstory after 20-30 years and are now 4-9 m above the alder canopy. Understory species richness was greatest in mixed stands containing 18-51 percent alder and was lower in pure conifer and predominantly alder stands. Total understory plant cover and herbaceous cover increased with increasing proportions of red alder. Understory plant communities appeared more diverse and abundant in mixed alder-conifer stands than in pure conifer stands. Results suggest that mixed red alder-conifer stands may increase understory plant production and availability for deer forage and improve habitat for small mammals.

Keywords (include 3-5 keywords): Silviculture, stand development, red alder, overstory-understory interactions, southeastern Alaska.

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INTRODUCTION (Level One Heading 14 pt bold; no blank line between headings and text) (following text: 12 pt. Times New Roman, 1.0 line spacing, 1 space after period; all paragraphs flush left, blank line space between paragraphs)

Red alder (*Alnus rubra* Bong.) is a relatively short-lived, shade-intolerant tree with rapid juvenile height growth. In Alaska, alder usually occurs as a pioneer species with Sitka spruce (*Picea sitchensis* (Bong.) Carr.) and western hemlock (*Tsuga heterophylla* (Raf.) Sarg.) on exposed mineral soils (Harris and Farr 1974, Ruth and Harris 1979). Recent logging has increased the amount of alder in the forests of southeast Alaska, particularly in upland areas with heavy soil disturbance. However, little information is available about the growth and ecological role of red alder in southeast Alaska and basic information on silvics, stand growth and yield, tree species mixtures, succession, tree mortality and decay, and understory vegetation in alder stands is lacking. This study uses a broadly integrated approach to examine the role of alder in young-growth forest ecosystems and the influence that alder has on different forest resources.

In southeast Alaska, even-age forest management has historically been used almost exclusively in the region for wood production, and stands have been regenerated through clearcutting and natural reproduction. However, the dense, uniform, even-aged conifer stands that quickly develop are recognized as having broadly negative consequences for wildlife and fish (Wallmo and Schoen 1980; Schoen et al. 1981, 1988; Thedinga et al. 1989; Hanley 1993; Dellasala et al. 1996). Canopy closure generally occurs 25-35 years after cutting followed by a nearly complete elimination of understory vegetation for 100 years or longer (Alaback 1982a, 1984; Tappeiner and Alaback 1989). Attempts to reestablish understory herbs and shrubs through thinning young-growth conifer stands have led to mostly conifer regeneration with little new herbaceous colonization (Deal and Farr 1994). However, recent studies of mixed red alder-conifer stands have indicated that different successional pathways are possible following clearcutting in southeast Alaska. These alder-conifer stands have both species-rich and highly productive understory vegetation with biomass similar to that of old-growth stands of the region (Hanley and Hoel 1996, Deal 1997, Hanley and Barnard 1998). Habitat quality for some small mammals in even-aged, alder-conifer stands may be equal to that of old-growth forests (Hanley 1996). Although inclusion of alder will not provide mitigation for all wildlife-habitat problems (e.g., lack of snow interception for deer winter range), it may accomplish more than is possible by thinning even-aged conifer stands.

Reconstruction of Red Alder and Conifer Height Growth (Level Two Heading 12 pt bold; no level three headings allowed)

The height growth of dominant and codominant alders and conifers were compared at two sites. These sites were chosen to show two different patterns of height growth in a mostly alder overstory stand (Alluvial Fan site, fig. 1a) and a conifer-dominated stand (Lower Example site, fig. 1b). These sites illustrate general growth trends for alder and conifers but also show different potential stand development patterns.

At the Alluvial Fan site, alders exhibited rapid early height growth but then slowed down after

20-30 years (fig. 1a). Initially conifers grew slowly, but during last 20-30 years they have consistently had greater height growth than associated alders in the stand. Alders at 10, 20 and 30 years old averaged +4.0, +1.5, and -2.0 m taller than conifers of the same age. Dominant conifers emerged from the alder overstory between 20-30 years after cutting (fig. 1a), and in the current stand (year 2000), conifers average about 4.6 m taller than the overstory alders. Height growth of alders was very uniform with all of the alders currently about 24 m tall. Conifers are continuing to grow rapidly in height while the alders have shown a consistent slow down in height growth. The species richness of these mixed alder-conifer stands was fairly high with 112 species of understory plants including 49 herbs and 15 shrubs (table 1).

ACKNOWLEDGMENTS (Level 1 heading 14 pt. bold)

<include text here if acknowledgment is included; it is optional>

LITERATURE CITED (Level 1 heading 14 pt. bold) (list citations alphabetically and include all authors in each citation. In the text reference, if there are two authors, give both authors. If there are more than two authors, give the senior author followed by “et al.” Single space within citation and separate citations with a blank line space; align text flush left and ragged right. for each citation, single space after period; include either the page numbers for an article in a journal or the total page numbers for a book, etc. PNW Research Station requires page numbers for all literature citations)

Examples of literature cited formats:

Journal (text reference: Turner et al. 1993)

Turner, D.P.; Koerper, G.; Gucinski, H.; Peterson, C.E.; Dixon, R.K. 1993. Monitoring global change: comparison of forest cover estimates using remote sensing and inventory approaches. *Journal of Environmental Monitoring and Assessment*. 26: 295-305.

Journal Special Issue (text reference: Aubry et al. 1999)

Aubry, K.B.; Amaranthus, M.P.; Halpern, C.D.; White, J.D.; Woodard, B.L.; Peterson, C.E.; Lagoudakis, C.A.; Horton, A.J. 1999. Evaluating the effects of varying levels and patterns of green-tree retention: experimental design of the DEMO study. *Northwest Science*. 73: 12-26, Special Issue 1999.

Proceedings, entire (text reference: Leavengood and Swan 1998)

Leavengood, S.; Swan, L., eds. 1998. Proceedings, western juniper forum '97. Gen. Tech. Rep. PNW-GTR-432. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 97 p.

Proceedings, paper in (text reference: Bates 1998)

Bates, J. 1998. Small mammal and bird inventories. In: Leavengood, S.; Swan, L., eds.

Proceedings, western juniper forum '97. Gen. Tech. Rep. PNW-GTR-432. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 29-30.

[Forest Service publication \(text reference: Franklin and Dyrness 1973, Sohngen and Haynes 1994\)](#)

Franklin, J.F.; Dyrness, T.C. 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.

Sohngen, B.L.; Haynes, R.W. 1994. The “great” price spike of '93: an analysis of lumber and stumpage prices in the Pacific Northwest. Res. Pap. PNW-RP-476. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 20 p.

[FEMAT report \(text reference: FEMAT 1993\)](#)

Forest Ecosystem Management Assessment Team [FEMAT]. 1993. Forest ecosystem management: an ecological, economic, and social assessment. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [et al.]. [Irregular pagination].

[ROD and standards and guidelines \(also example of **corporate author**; text reference: USDA and USDI 1994\)](#)

U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management. 1994. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl. [Place of publication unknown]. 74 p. [plus attachment A: standards and guidelines].

[SAS \(text reference: SAS 2000\)](#)

SAS Institute. 2000. The SAS system: SAS OnlineDoc®, Version 8, HTML format [CD-ROM]. Cary, NC.

Example of formatting style for a table (this table was created with the Tables tool in MS-Word; note decimal alignment; **bold**, centered column headings; and absence of leading zeroes after the first listing in each column):

Table 1—Species diversity measures for all plant species, nonvascular and vascular plants, herbaceous plants, and shrubs

Data Set	Species diversity measures^a				
	Richness	Alpha	E	H'	D'
Full	112	52.6	0.60	2.39	0.82
Nonvascular	48	25.2	.45	1.47	.62
Vascular	64	27.3	.68	2.23	.82
Herb	49	17.8	.67	1.89	.79
Shrub	15	9.6	.61	1.39	.64

^a Richness is the total number of plant species in the study; Alpha diversity is the average number of species per site; Evenness (E) = $H' / \ln(\text{Richness})$, from (Pielou 1975); Diversity (H') = $-\sum (p_i * \ln(p_i))$ where p_i = importance probability in element i , from (Shannon and Weaver 1949); $D' = 1 - \sum (p_i * p_i)$ from (Shannon and Weaver 1949). The herb data set included herbaceous plants and ferns. The shrub data set included woody shrubs and tree seedlings.

Example figure caption and associated figure on following page:

List of Figures

Figure 1—Tree height growth reconstructions for dominant red alders and conifers (Sitka spruce and western hemlock) at two of our research sites.

