

**HANDBOOK**

**SENIOR THESIS**

**IN**

**NATURAL RESOURCES**

**MANAGEMENT**

**School of Agriculture and Land Resources**  
**Management**

**Department of Plant, Animal and Soil Sciences**  
**Department of Forest Sciences**  
**Department of Resources Management**

**Effective September, 2002**

## SENIOR THESIS TIMELINE

1

The weeks listed below are approximate dates. Specific due dates will be handed out in the workshops at the beginning of each semester. The calendars will vary slightly due to timing of holidays and number of students enrolled.

### **NRM 405**

<b>WEEK 1-2 or earlier</b>	Complete Introductory Workshop and Proposal Writing Workshop
<b>WEEK 1-3 or earlier</b>	Choose a topic and thesis advisor. Have <u>required</u> meeting with advisor and advisory committee
<b>WEEK 3 or earlier</b>	Submit topic to advisory committee for approval (must have attended the Introductory workshop first) Return committee signature form to office.
<b>WEEK 4 or earlier</b>	Receive topic description grade
<b>WEEK 7 or earlier*</b>	Submit first draft of the proposal to committee (must have an approved topic description first)
<b>WEEK 8</b>	Receive grade for first draft
<b>WEEK 9*</b>	Short presentation on draft proposal (attendance is mandatory for all first-semester students)
<b>WEEK 10</b>	Submit final proposal to committee
<b>WEEK 10</b>	Submit annotated bibliography to committee

### **NRM 406 \*\***

<b>WEEK 2 or earlier</b>	Complete Thesis Writing Workshop
<b>WEEK 1-2</b>	Receive time for oral presentation/poster. Meet with advisory committee (required). Return committee signature form to office
<b>WEEK 10 or earlier*</b>	Submit first draft of thesis to coordinator
<b>WEEK 11</b>	Receive grade on first draft
<b>WEEK 11-14*</b>	Oral thesis presentations (mandatory attendance for all second semester students)
<b>Last Day of Regular Classes</b>	Submit Thesis to Committee

\* students must submit the draft proposal or draft thesis to their committee and receive a grade from all committee members by the deadline established for their presentation or it will be cancelled. Presentations cannot be postponed or dates changed unless there is a verifiable family or medical emergency. Students must contact the course coordinator prior to the presentation if such an emergency exists.

\*\* Students cannot sign up for the second semester with an "I" (incomplete) grade during the first semester. All requirements for completing an "I" must be fulfilled before the first class period of the following semester or the coordinator will initiate a withdrawal.

**NOTE:** NRM 405-6 is NOT offered during summer sessions. You may complete research during the summer, but credit must be taken during fall or spring semesters; presentations cannot be given in summer.

## TABLE OF CONTENTS

Contents	Page
Timeline .....	1
Table of contents .....	2
Introduction .....	3
Course requirements and grades .....	3
Orientation Workshop .....	5
Team Members .....	5
Choosing a thesis topic .....	6
Examples of possible topics .....	7
The Topic Description .....	8
Writing the Proposal .....	8
The Proposal Presentation .....	9
The Annotated Bibliography .....	9
Writing the Thesis .....	10
Thesis style and publishing .....	10
Thesis format .....	11
Title Page .....	11
Abstract .....	11
Introduction, methods, results, discussion .....	13
Literature Cited .....	13
Optional Sections .....	13
Margins .....	13
Page numbers and spacing .....	13
Paper and Printing .....	13
Spelling and grammar .....	13
Thesis presentation .....	14
Review of required papers and grade routing .....	15
Appendix 1 Sample Title Page .....	16
Grading sheets- Topic description .....	17
Committee Meeting Form .....	18
Draft proposal grading sheet .....	19
Proposal grading sheet .....	20
Proposal Presentation grading sheet .....	21
Annotated bibliogray grading sheet .....	22
Draft thesis grading sheet .....	23
Final thesis grading sheet .....	24
Thesis presentation grading sheet .....	25
Appendix 2 Faculty list and interest areas .....	26
Appendix 3 Completed senior thesis titles .....	28
Appendix 4 Literature Citation Style .....	31
Appendix 5 Permission to Publish form .....	36
Appendix 6 Abstract worksheet form .....	37

NRM 405-6, Senior Thesis in Natural Resources Management, is required of all students majoring in Natural Resources Management. The purpose of the course is to provide an opportunity for you to bring together the knowledge you have acquired through course work, internships and work experience; to use that collective knowledge in formulating a question in natural resources management; and to demonstrate competency in problem solving, analysis and written and oral communication. The senior thesis is a research report that includes the following major components:

- 1) identifying and defining a question on some aspect of resources management,
- 2) attempting to answer the question by conducting an experiment, gathering survey data, analyzing existing literature, etc.,
- 3) discussing and/or defending your conclusions and supporting them with existing literature,
- 4) and sharing your findings with others.

These components differ from a term paper by adding an element of creativity and independent thought. The thesis goes beyond reporting what others have done and allows you to formulate your own question, research it, and defend your conclusions.

Effective communication is one the most important skills that every student of natural resources management should master. Regardless of the area of specialization, the ability to write and speak clearly in your field of expertise is essential. The senior thesis course provides an opportunity for you to practice good writing and speaking skills within the context of natural resources management. Your efforts will be judged both on content and your ability to effectively communicate with your peers and faculty.

**COURSE REQUIREMENTS AND GRADES**

NRM 405-6 is for Natural Resources Management majors and minors only. In order to enroll in NRM 405-6 for credit, you must be a senior or second semester junior and have satisfactorily completed one NRM intensive writing course and all NRM core courses. If these criteria are not met, you must receive permission from the course coordinator to enroll.

Letter grades will be given when the course is taken for credit. Grades for all written projects will be the average of three grades received from each member of the advisory committee. Grades for presentations will consist of one grade from each committee member plus an average grade for all other faculty members participating in the session.

<b>NRM 405:</b>	Attendance at First Workshop	10
	Required committee meeting	10
	Topic description	25
	Draft proposal	100
	Proposal presentation	100
	Attendance at all proposal presentations	10 (each session)
	Final Proposal	100
	Annotated Bibliography	50
	Total points	405+ (depends on number of presentation sessions)

**NRM 406:**

4

Attendance at second workshop	10	
Required Committee meeting	10	
Draft thesis	150	
Final thesis	150	
Thesis Presentation	100	
Attendance at all thesis presentations	10 (each session)	
Submission of final thesis on disk	10	
Submission of permission to publish form	5	
Total points	<u>445+</u>	(depends on number of presentation sessions)

During each semester grades will be assigned as follows:

90-100 percent of total points	A
80-89	B
70-79	C
60-69	D
59 and below	F

**Incomplete grades** will be given only in cases where satisfactory progress in the class has been achieved, and circumstances beyond the student's control (verifiable family or medical emergencies) prevent completion of course requirements. All incompletes must be approved by the coordinator and the advisor. Grades for NRM 405 must be changed from an incomplete to a letter grade before the first day of class of the second semester or you will not be permitted to enroll in NRM 406.

All papers and presentations will be evaluated on content as well as written and oral communication skills. All papers will be edited and points deducted for inaccurate spelling, punctuation, poor grammar, and inaccurate or incomplete format as specified. Oral presentations will be graded on content as well as presentation effectiveness. Posters, videos, slides, etc. will be graded on content, layout, and effectiveness in communication. Written supporting materials also will lose points for inaccurate spelling and poor grammar.

**Deadlines** for proposal and thesis presentations cannot be changed or postponed unless there is a verifiable family or medical emergency. A graded draft proposal or draft thesis must be on file in the coordinator's office prior to the presentation date or the presentation will be cancelled. The course coordinator must be notified **prior to** the presentation date in the event of an emergency. No shows and students who do not make prior arrangements, receive no credit.

**Students with recognized learning disabilities.** Anyone enrolled in NRM 405 or 406 who has a recognized learning disability that may interfere with his/her ability to perform any of the work in these courses must contact the UAF Center for Health and Counseling and the course instructor within the first two weeks of the class to arrange for appropriate assistance.

**Prior Research:** Research completed by the student prior to enrollment in NRM 405 will not be accepted. The Introductory workshop, acceptance of a thesis topic by the full advisory committee, draft and final proposals and proposal presentation must be completed prior to conducting the research project for senior thesis credit.

## ORIENTATION WORKSHOPS

The first workshop will introduce NRM 405; outline the responsibilities of the course coordinator, faculty advisor and student; review grading policies; and outline components of the proposal and proposal presentation. The second workshop will review policies pertaining to NRM 406, the senior thesis; how to write a senior thesis; how to make an effective presentation; and how to use visual aids such as slides and overheads.

You may elect to participate in these orientation workshops any time prior to your senior year, and may attend more than once. The course coordinator will maintain a permanent file in which the date of your attendance at workshops will be recorded. Although you might complete the workshops early, you will not receive credit until you enroll for credit. The workshops must be completed before submitting a topic description, proposal and thesis for credit. If you attend a workshop early, perhaps as a freshman, be aware that the handbook changes every September. You are responsible for learning of any changes by reading the handbook or attending another workshop. After the first two weeks of class, the course coordinator will meet with students as needed to answer questions and help solve problems that may arise.

## TEAM MEMBERS

The **course coordinator** is the SALRM faculty member in charge of the course. The coordinator will conduct all workshops, schedule presentations, and facilitate functions of the advisory committee. The coordinator will assist you, if necessary, in finding an advisor.

During the scheduled class time and posted office hours, the coordinator will answer all questions regarding the processes and policies of NRM 405-6. The coordinator will maintain all NRM 405 files and submit final grades. The coordinator will establish the deadlines for completion of individual components of the two-semester thesis and will ensure that all requirements and standards are met. Presently the coordinator is:

Fall semester: Dr. Dave Valentine  
309 O'Neill  
474-7614 ffdwv@uaf.edu

Spring semester: Dr. Pat Holloway  
Georgeson Botanical Garden  
474-5651 ffpsh@uaf.edu

The **thesis advisor** is a SALRM faculty member whose area of interest most coincides with your research interests (Appendix 2). This person need not be your academic advisor but should be the person most familiar with your project area. Your thesis advisor will be your major contact during the two semesters and will provide guidance in defining the topic, designing the project, preparing drafts and final products. This faculty member will work with you to ensure that the selected project is feasible given time and economic constraints.

Your advisor will help you formulate ideas for your thesis and generate discussion. You are responsible for meeting all deadlines and completing all written and oral assignments. Your advisor can provide assistance by helping you refine your ideas and locate equipment to complete an experiment. Do not expect your thesis advisor to correct spelling and grammatical errors. If you have questions regarding writing skills, contact the UAF Writing Center for editorial assistance.

A faculty member may not advise more than three students during a semester. Therefore, you should solidify your ideas and make contact with a potential faculty advisor as soon as possible.

**It is strongly recommended that you set up a weekly meeting with your thesis advisor to help keep you and your advisor on track with the timelines and to make sure the lines of communication are always open.**

The **advisory committee** is composed of three faculty members, your advisor, and two others who have an interest or expertise in your chosen thesis topic area. This committee will approve your topic and grade all written and oral projects during the two semesters. The committee will ensure that the high standards developed by the SALRM faculty are maintained. You will have access to every member of the committee for advice and support while completing your project.

One member of the committee can be a non-SALRM faculty member, but they cannot chair a committee. Faculty from other departments, agency personnel, private researchers, etc. may be included on the committee with the approval of the coordinator and the advisor. Technicians and graduate students from SALRM, other university departments, agencies and public organizations may be included as additional, non-grading members of a committee but cannot replace a faculty committee member. Participation by UAF graduate students and technicians is strictly voluntary and must be approved by the appropriate supervisor and department head. Remember, a person does not have to be a member of your committee to lend assistance, advice, or support.

**It is required that you set up a meeting with your committee and advisor within the first three weeks of each semester so that all committee members can have input at one time into your topic area and can help you with methods. Make every effort to keep all members of your committee well informed of your progress. Don't wait until the last minute to get help. Also, recognize that your committee members are very busy with lots of other classes and research. It is up to you to keep them informed of your progress and all timelines. Hand in the committee form (pg 18) to the secretary in 303 O'Neill immediately after that meeting.**

The course coordinator will attempt to solve problems that may arise between you and your committee. If the problem cannot be resolved, an **appeal committee** will be formed that will include one chairperson (selected by the three department heads) and one person from each of the three departments in SALRM (selected by the department heads). The committee decision is final.

#### **PRIOR RESEARCH:**

Research completed by the student prior to enrollment in NRM will not be accepted. The Introductory workshop, acceptance of a thesis topic by the full advisory committee, draft and final proposals and proposal presentation must be completed prior to conducting the research project for senior thesis credit.

#### **CHOOSING A TOPIC**

Use your classroom discussions and work experience to identify a topic area that interests you. Talk to other students, your academic advisor, and other faculty members about your idea. The specific topic is your choice, but it must be approved by your advisory committee.

Find a faculty member whose interests are most closely associated with your project. Appendix 2 lists all SALRM faculty and their research specialties. Your faculty advisor will assist you in refining your ideas and, most importantly, will make sure the project is feasible in the short amount of time. Complete a thesis topic description form (page 17), and submit it to your committee by the deadline. At the same time, complete the committee signature form, and return it to the coordinator.

The thesis project may or may not involve an experiment or laboratory research. Also, it may or may not represent original research. However, the topic should have a level of complexity that distinguishes the senior thesis from a term paper. The topic should be one that provides for independent thought and critical analysis.

A paper reviewing the published methods of germinating white spruce seeds is a good term paper, but it is not acceptable as a senior thesis. A paper based upon an experiment comparing several methods of germinating white spruce seeds at different temperatures could be a good thesis. A comprehensive review of the literature on a particular topic is appropriate as long as it contains an analysis or critical review of the literature. For instance, an outline of the literature relating to land use practices in the Tanana Valley would not be sufficient for a senior thesis. However, a critical comparison of land use practices on public and private lands could be appropriate. Make sure you can formulate your topic into a hypothesis or question.

## **EXAMPLES OF POSSIBLE TOPICS**

The SALRM faculty compiled the following list of topics that might be explored in a senior thesis. This list should serve as a catalyst to help develop your own ideas. Your chosen topic should reflect your own interests, and should be discussed and finalized with your thesis advisor.

What are the similarities and differences in the resource planning process of a native corporation and a public agency?

Compare and evaluate the public involvement process of two resource plans.

Is GIS an effective tool in resource planning processes?

How effective are the interpretive programs for a public entity such as Creamer's Field Wildlife Refuge?

Survey potential wilderness users to compare perceived needs and appropriate management classes.

How effective is the public hearing process in decisionmaking at the Alaska Division of Forestry?

What is the best percentage of crab meal in diets of swine?

What are the animal rights issues in Alaska, and are they effectively addressed in public hearing and laws?

What are the controversies surrounding the use of chemical growth promoters in beef and swine production?

What are the effects of 24-hour photoperiod on flower initiation, growth and development of a specific plant?

How can seed germination for a horticultural crop be changed by preconditioning seed treatments?

How effective is the elementary and secondary school curriculum in natural resources management?

Are the needs for urban forestry in the Fairbanks area being met?

How effective are renewable resources management strategies of Alaska native corporations?

What are the fuel wood management strategies for state forest lands in Alaska and are they being met?

What are the best conditions for seed germination of Alaska wildflowers?

Develop a strategy for Alaskan agricultural product marketing and test its effectiveness.

How does agricultural development differ among countries in the circumpolar north?

What are the forest tree stand age characteristics of pure white spruce stands in Rosie Creek?

What are the relationships between forest tree crown width/diameter and height?  
Do nitrogen-fixing bacteria occur in Alaska native legumes? Can they be isolated?  
How does increased atmospheric carbon dioxide affect plant nutrient requirements?  
How do consumer perspectives of Alaska-grown food products compare with imported products?  
How much vitamin A is in Alaska-grown carrots, and how does it compare to imported products?

### **THE TOPIC DESCRIPTION**

Formulate a tentative title for your project and write a description of your topic in 150 words or less. The description should include your objectives, question or hypothesis and your approach (methods). Provide enough detail so your committee can understand what you want to do and how

you will do it. This topic description may be written or refined jointly by you and your committee members during the required meeting at the beginning of the semester. Your committee will evaluate the feasibility of the project based on time and economic constraints and help you refine your ideas. Use the form on page 17 or type your own, and submit one copy to each of your committee members and one copy to the coordinator.

### **WRITING THE SENIOR THESIS PROPOSAL**

Submit a typed (12 point or larger) proposal (plus grading sheet pgs 19 or 20) detailing the research project to be completed during the two-semester senior thesis course. The proposal should include the components listed below. The body of the proposal (items 4 through 6) is limited to two typed pages (may be single spaced). Use separate pages for the title page, timetable, literature cited and references. The total length of the proposal should not exceed 6 pages. Two copies will be graded, a draft and a final proposal. You may submit as many drafts as necessary to your advisor and committee prior to receiving a grade. Notify your advisor whether or not the draft is to be graded.

- 1) Title (Use sample title page, pg 16)
- 2) Author
- 3) Date

- 4) Introduction including
  - Statement of hypothesis or question
  - Importance or significance of the research
  - Objectives
- 5) Review of previous investigations
- 6) Methods

— 2 pg limit

- 7) Timetable (including research and course deadlines)
- 8) Literature Cited (only literature used in the body of the proposal)
- 9) References or working bibliography (a list of pertinent references not necessarily cited in your proposal)

## THE PROPOSAL PRESENTATION

Prepare a fifteen minute oral presentation on your proposal. Present a brief summary of your project to your peers, your advisory committee and faculty. Your presentation should include a discussion of the hypothesis/question, importance or significance of your work, objectives, review of previous investigations and methods. In other words, your speech is the body of your proposal. The purpose of the presentation is to inform members of SALRM of your topic area and provide a forum for sharing ideas, methods, and sources of information that might help you succeed with your project.

## ANNOTATED BIBLIOGRAPHY

Prepare a typed, annotated bibliography with a minimum of 15 references (more references means a higher grade) that you will be using as supporting material for your thesis. At least 8 of the references must be from primary sources. A primary source includes journals, proceedings, technical notes, and books in which original data are presented. It does not include reviews, surveys, and analyses written by other scientists who may have reviewed many primary sources in their book or paper. You must attach a copy of the article title page (first page of the article) of each primary source to the back of your annotated bibliography.

Two of the minimum 15 sources must be historical references published before 1975. Two others must be recent articles published within the past three years. The remaining references can be any year. Popular articles are not acceptable. References from professional publications, journals, books, theses, Internet sources and related materials must be cited appropriately using the format outlined in Appendix 4.

The citation must be followed by a short paragraph, outline or notes describing how the article will be important to your research. Annotations are notes, not necessarily in complete sentence form, that are reminders of information you want to use in your paper. They can be complete quotations, bits of data, an outline of methods, important conclusions, whatever you find that might be relevant to your project. Below are some examples of an annotated bibliography.

Gasbarro, A., J. Zasada, J. Utten and D. Argyle. 1979. Opportunities for the subsistence use of forest resources in interior, Alaska. pp. 23-35. In M. Murray, ed. The Subsistence Lifestyle in Alaska. Now and in the Future. University of Alaska Agricultural and Forestry Experiment Station Special Pub. 1.

1973 subsistence survey of Yukon-Porcupine villages

good map on pg 10

Annual harvest of berries- 9000 pounds

annual harvest of wild vegetables - 200 pounds

cranberries = 90% of the berries

Kyte, L. and J. Kleyn. 1996. Plants from Test Tubes. Timber Press, Portland, OR.

The medium for tissue culture is outlined in Chapter 3, pg 14.

protocol changes= pH change from 7.5 to 6.5

culture time changed from 6 weeks to 10 weeks

growing temperature = 21C, not 15C

good discussion of tissue culture procedures, pg 45

Carter, F. 1976. The education of Little Tree. Univ. of New Mexico Press, Albuquerque, MN.

"It is The Way," he said softly. "Take only what ye need. When ye take a deer, do not take the best. Take the smaller and the slower and then the deer will grow stronger and always give you meat." p. 9

This typed bibliography is due on or before the 10th week of the semester. Attach the appropriate grading sheet to the front of the document (pg 22) when submitting the bibliography for a grade.

## **THE SENIOR THESIS**

Two copies of your thesis will be graded: a draft and a final thesis. You may submit as many drafts as necessary to your advisor and committee prior to receiving a grade. Notify your advisor whether or not the draft is to be graded. After the thesis is graded, one unmarked (all corrections made) and unbound copy of the thesis must be submitted to the course coordinator. This copy will be placed in your permanent student file. Attach the appropriate grading sheet to the draft or final thesis when submitting each for a grade (pages 23 or 24). You will not receive a grade until this final copy and all grading sheets are on file with the course coordinator.

In addition to the hard copy, bring a computer disk to the main office (303 O'Neill) and give it to one of the administrative assistants. A copy of your thesis will be downloaded onto a permanent computer file. It must be formatted in Word, ClarisWorks, PageMaker or other common word processing/desktop publishing program and readable on a MAC or IBM-compatible computer. Please contact the office (474-7188) to make sure your software is readable. Your final thesis (with all corrections completed) will be stored permanently on disk for access by future students and faculty.

A portion or all of your thesis may be published by you and your advisor or committee at a later date. Selected abstracts will be published in *Agroborealis*, a publication of the School of Agriculture and Land Resources Management, and on the School's WEB page. You will receive full credit for anything that is published through the School. Abstracts will be published with the student as sole author and an acknowledgments of committee support. Publications resulting from the thesis will have the student as first author unless additional creative work or extensive rewrite is necessary for publication. Coauthors may include the major advisor, committee members, and any person who contributed substantially to the creative nature of the thesis.

When you hand in your thesis on disk, you will be asked to sign a "Permission to Publish" form (Appendix 5). This will allow the School to publish your abstract or for your major advisor to help you format your thesis for further publication. Please include an address and telephone number in case your thesis or a portion of it will be published at a later date. You will receive credit for ALL publications resulting from your thesis, and this information will be used to contact you after you graduate.

## **THESIS STYLE**

Refer to Appendix 4 and workshop notes for information on how to cite literature. Discuss with your advisor how to handle footnotes, what abbreviations are acceptable for units of measure-

ment and other questions regarding writing style.

If you are interested in publishing your thesis, most agencies have guidelines dictating specific components and writing style. Your thesis may be written in the style outlined by a specific publication, but the style must be approved by your advisory committee. It is easier to write your thesis from the beginning in a particular style of the publication rather than rewriting your thesis later.

Most scientific journals review manuscript requirements in an "Instructions to Authors" section in the first issue published each year. These instructions usually are abbreviated, and will include an address for obtaining more information. Your thesis advisor can assist you in obtaining the appropriate instructions. Journals often have their own style manuals. Discuss with your advisor the appropriate style manual for the journal you have chosen.

## **THESIS FORMAT**

The components listed below and on the next page are required for your thesis, and each must be clearly identified as section headings (in bold type).

1. **Title page** (use sample thesis title page on pg 16)
2. **Abstract** (on page by itself with heading)
3. **Introduction** including
  - statement of question/objectives/hypothesis/problem
  - importance or significance of research
  - objectives
4. **Literature Review**
5. **Methods**
6. **Results**
7. **Discussion and Conclusions** (may be 2 separate sections)
8. **Literature Cited**

**Title Page** - The following information must be included on the title page: title, presentation statement, name of degree, your full name, names of your committee members, location, month and year. A sample title page is shown on page 16.

**Abstract** - In 150 words or less state the nature and content of the thesis in an abstract. This abstract should include the objectives/question/hypothesis of the study, an overview of the methods, the results and conclusions. It does not include any literature citations because it is work that you have done, not other people. This part of the thesis is often the most difficult to write. It is hard to condense your entire thesis into 150 words. Although the abstract contains small portions of your introduction, results, etc., these components do not normally follow in the same order as your thesis. Sometimes a single sentence may contain introduction, methods and objectives. Another might contain results and methods. On the next page are two examples of abstracts that give you an idea of how they are constructed to fit all your ideas in 150 words or less. Some people find it handy to use a worksheet to construct an abstract so that no essential components are left out. A sample worksheet may be found in Appendix 6.

## Abstract Example 1

12

*Introduction*

*Methods*

Objectives

*Lingonberries from eight geographically-widespread selections were propagated by microshoots from tissue culture and conventional stem cuttings. Rooted plants were evaluated after two growth cycles to compare rhizome and daughter shoot production among selections and between propagation methods. Sixty percent or fewer of the plants from all selections produced rhizomes when propagated by conventional stem cuttings. Rhizome production among selections from microshoot propagation varied from 100 percent to zero. Overall, propagation by tissue culture produced the greatest number and biomass of rhizome and daughter shoots. However, significant variation among selections highlights the importance of evaluating individual clones in breeding programs for the ability to produce rhizomes rapidly from tissue culture. (110 words)*

**Results**

Conclusion

## Abstract Example 2

*Introduction*

*Methods*

Objectives

*Current economic situations such as lumber mill closures in southeast Alaska have stimulated interest in commercial development of secondary forest products which includes resources other than wood pulp and saw logs. Twenty native species were identified as potential secondary forest products based on a score of their combined economic value and abundance throughout southeast Alaska. Details about the potential uses, ecological requirements, propagation and management related to the marketable attributes provided the foundation for scoring. Eleven of the 20 species were useful in wild berry markets, while six species could provide floral products. One species had value both as a floral product and tree seedling production for revegetation. Two of the top 20 species had uses as botanicals. There is substantial potential for development of secondary forest products in southeast Alaska primarily through wild berry harvesting.*

**Results**

Discussion/conclusions

**Introduction, literature review, methods, results, discussion and conclusions** - These sections contain the text of the thesis. There are no page requirements. Refer to the required text and notes from the workshops for the content of each of these sections. All figures and tables should be discussed in the text and should be located on a separate page immediately following their first mention in the text. They should be numbered consecutively, and an appropriate title should be included above each.

Photographs reproduced on a standard 8 1/2 x 11 inch sheet of paper or photocopied directly onto typing paper may be included. Small photographs may be dry mounted (not glued) for inclusion in the thesis.

**Literature Cited** - Only references cited and/or discussed in the thesis should be listed in the literature cited section. Refer to Appendix 4 and discuss with your advisor the appropriate methods of citation for books, periodicals, etc.

**Optional sections** - An **acknowledgments** section is optional in the senior thesis, but may be appropriate if you wish to acknowledge a funding agency or the assistance of an individual or your committee in developing your thesis. It should be located on a separate page just after the title page. It does not get graded, and should appear only in the final copy of your thesis.

An **appendix** may be included if supporting information such as a survey document are a necessary component of your thesis. All appendices should be titled and referred to as Appendix A, B, or Appendix 1, 2, etc. in the text. The appendix should be the last section of the thesis.

**Margins** - Provide a one-inch margin on the top, bottom and right side of the page for all text pages, figures and tables. The left margin should be 1 1/2 inches to permit binding.

**Page numbers and spacing** - All pages except the title page **MUST** be numbered. Numbers should occur within the margins listed above. All text should be double spaced except for the titles of figures and tables. Long quotes in block format and footnotes should be single spaced.

**Paper and printing** - The final thesis should be typewritten on one side of the paper only on white typing paper. Any simple, non-script font, 12-point size or larger is acceptable. Any dot matrix printer, inkjet printer, laser printer or typewriter may be used as long as the thesis is easily readable and "letter quality".

**Spelling and Grammar** - Your thesis will be evaluated both on content and on your written communication skills. Your thesis advisor, the advisory committee and the coordinator will reject any draft or final thesis that has not been edited for spelling, punctuation and grammatical errors. Many books have been written on "How to Write" and on the correct use of English. They are available in the bookstore and the Rasmuson Library. Some titles that have been especially useful are listed below. In addition, visit the UAF Writing Center. The tutors can provide invaluable assistance in editing and writing. Most assistants in the writing center know a particular style such as MLA. Make sure you take a copy of a style manual or this handbook to ensure they understand the style you are working with.

Day, R.A. Latest Edition. *How to Write and Publish a Scientific Paper*. Oryx Press. Phoenix, AZ.

Heffernan, J. and J. Lincoln. Latest Edition. *Writing. A College Handbook*. W.W. Norton & Co., NY.

Shertzer, M. 1986. *The Elements of Grammar*. MacMillan Publ. Co., NY.

### **THESIS PRESENTATION**

Within the 10-14th week of the second semester, you will present your thesis to the faculty and your peers. You will give a 25-minute formal presentation (plus 5 minutes for questions) that will include a short summary of your objectives, methods, results and conclusions. Your presentation must include visual aids such as slides, overheads, a video, poster, etc. Your presentation will not be acceptable without these visual aids. This presentation is a formal university seminar. It should be planned, organized and delivered with as much care as it takes to write the thesis. The audience may consist of all faculty, your student peers, guest lecturers and scientists, agency personnel and other members of the university community.

## SUMMARY OF REQUIRED PAPERS

### FIRST SEMESTER

- 1) **Committee Meeting Report**- one copy with original signatures to main office
- 2) **Topic description** - one copy each for advisor and committee members and one unmarked, ungraded copy to coordinator
- 3) **Draft proposal** - one copy each for advisor and committee members
- 4) **Final proposal** - one copy each for advisor and committee members and one unmarked, ungraded copy to coordinator
- 5) **Annotated bibliography**- one copy for advisor and committee members and one unmarked, ungraded copy to coordinator

### SECOND SEMESTER

- 1) **Committee Meeting Report**- one copy with original signatures to main office
- 2) **Draft thesis** - one copy each for advisor and committee members
- 3) **Final thesis**- one copy each for advisor and committee members  
-one unmarked and unbound copy to coordinator

## ROUTING PROCEDURE FOR ALL PAPERS

1. Make the appropriate number of copies for each member of the committee and coordinator.
2. Attach the appropriate grading sheet to the top of each copy and hand deliver to each committee member. Make sure the grading sheet is stapled to the TOP of each paper to be graded.
3. Faculty will return all grade sheets to the secretary who will make two copies
  1. Original is returned to the student
  2. One copy goes to the advisor
  3. One copy goes to the coordinator
4. You will receive all grades and announcements in a folder with your name on it located near the outgoing mail table in 303 O'Neill. The file boxes are hanging on the wall.
5. If a deadline has passed and you have not received a grade:
  1. Ask the secretary if it is in a file to be copied,
  2. Ask the faculty committee members directly.
  3. Seek help from the course coordinator.

ENVIRONMENTAL EDUCATION LEGISLATION AND ITS IMPACT ON ALASKA  
SECONDARY ENVIRONMENTAL EDUCATION PROGRAMS

A

SENIOR THESIS

Presented to the Faculty  
of the  
School of Agriculture and Land Resources Management  
University of Alaska Fairbanks  
and  
The Senior Thesis Committee:  
D.K. Holmes, Chair  
J.P. Carpenter  
I.M. Carone

in partial fulfillment of the requirements  
for the degree of

BACHELOR OF SCIENCE  
in  
NATURAL RESOURCES MANAGEMENT  
RESOURCES OPTION

by

Jane Elizabeth Doe

Fairbanks, Alaska

May, 2000

**TOPIC DESCRIPTION - SENIOR THESIS**  
**(please type all information)**

Name:

Date:

Preliminary title:

Description: In 150 words or less, describe the topic you propose to explore for your senior thesis. Return 4 copies of this form, one to each of your committee members and one to the course coordinator. Topic description = 25 points.

- \_\_\_\_\_ includes objectives
- \_\_\_\_\_ includes approach
- \_\_\_\_\_ includes anticipated results
- \_\_\_\_\_ includes relevance to NRM (Who will benefit?)
- \_\_\_\_\_ free of spelling and grammatical errors
- \_\_\_\_\_ idea is clear and feasible under time and money constraints
- \_\_\_\_\_ potential for independent, creative thought (hypothesis, question well stated)

Points (25 possible) \_\_\_\_\_ Reviewer signature \_\_\_\_\_  
(Reviewer: return the graded form to 303 O'Neill)

**MANDATORY COMMITTEE MEETINGS**  
**(beginning of each semester)**

The committee for \_\_\_\_\_ met on \_\_\_\_\_  
(student's name printed)

The following individuals have agreed to serve (or continue serving) on the committee and support the student's thesis research. Second semester students are making sufficient progress to permit scheduling thesis presentation dates.

Must be signed legibly by all committee members:

Advisor signature \_\_\_\_\_ Printed \_\_\_\_\_

Committee members:

Signature \_\_\_\_\_ Printed \_\_\_\_\_

Signature \_\_\_\_\_ Printed \_\_\_\_\_

Signature \_\_\_\_\_ Printed \_\_\_\_\_

\_\_\_\_\_

Anticipated completion date \_\_\_\_\_

## DRAFT PROPOSAL GRADING SHEET

The attached is the first draft of the thesis proposal for (student name) \_\_\_\_\_,  
Please review this draft and make comments either on this sheet or directly on the proposal. You may  
contact the student directly to discuss your concerns or obtain clarification. Grades must be returned  
to the student one week after you receive this form.

### Comments on proposal content:

- \_\_\_\_\_ complete title page
- \_\_\_\_\_ clear statement of hypothesis/question/objectives
- \_\_\_\_\_ pertinent literature citations using appropriate citation style
- \_\_\_\_\_ well-organized methods that support question
- \_\_\_\_\_ reasonable, complete timeline
- \_\_\_\_\_ includes both literature cited and references list

### Comments on writing skills:

- \_\_\_\_\_ ideas clearly stated in a well-organized, logical manner
- \_\_\_\_\_ easy to read and understand
- \_\_\_\_\_ free of factual errors
- \_\_\_\_\_ free of grammatical, spelling and punctuation errors
- \_\_\_\_\_ language is appropriate for the topic and thesis
- \_\_\_\_\_ follows thesis format
- \_\_\_\_\_ not wordy, no extraneous material

### Points for the draft proposal

Points for content (45) .....	_____
Points for written communication skills (45) .....	_____
Points for adherence to format (10) .....	_____
Total points (100 possible) .....	_____
Deductions for spelling and grammatical errors (1/2 point each) .....	_____
Deduction for late paper (10 points) .....	_____
Final Points .....	_____

Reviewer signature and date \_\_\_\_\_

(Return all graded sheets to 303 O'Neill

# FINAL PROPOSAL GRADING SHEET

The attached is the final copy of the thesis proposal for \_\_\_\_\_,  
Please review this proposal and make comments either on this sheet or directly on the proposal. You may contact the student directly to discuss your concerns or obtain clarification. Grades must be returned to the student one week after you receive this form. **Return all grade sheets to the secretary in 309 O'Neill**

### Comments on proposal content:

- \_\_\_\_\_ complete title page
- \_\_\_\_\_ clear statement of hypothesis/question/objectives
- \_\_\_\_\_ pertinent literature citations using appropriate citation style
- \_\_\_\_\_ well-organized methods that support question
- \_\_\_\_\_ reasonable, complete timeline
- \_\_\_\_\_ includes both literature cited and references list
- \_\_\_\_\_ content changed to reflect committee suggestions and comments

### Comments on writing skills:

- \_\_\_\_\_ ideas clearly stated in a well-organized, logical manner
- \_\_\_\_\_ easy to read and understand
- \_\_\_\_\_ free of factual errors
- \_\_\_\_\_ free of grammatical, spelling and punctuation errors
- \_\_\_\_\_ language is appropriate for the topic and thesis
- \_\_\_\_\_ follows proposal format
- \_\_\_\_\_ not wordy, no extraneous material

### Points for the final proposal

Points for content (45) .....	_____
Points for written communication skills (45) .....	_____
Points for adherence to format (10) .....	_____
Total points (100 possible) .....	_____
Deductions for spelling and grammatical errors (1/2 point each) .....	_____
Deduction for late paper (10 points) .....	_____
Final points .....	_____

Reviewer signature and date \_\_\_\_\_

# PROPOSAL PRESENTATION GRADING SHEET

Evaluation sheet for \_\_\_\_\_

Comments on proposal presentation content:

Comments on oral presentation skills:

- \_\_\_\_\_ hypothesis, objectives, project significance and anticipated results clearly stated
- \_\_\_\_\_ methods concise and easily understandable
- \_\_\_\_\_ logical flow of ideas, well-organized speech
- \_\_\_\_\_ language was appropriate to the audience and topic
- \_\_\_\_\_ student spoke directly, clearly, in a conversational manner
- \_\_\_\_\_ student spoke loudly and effectively
- \_\_\_\_\_ student spoke within the 15-minute time limit

Points for Proposal Presentation

Content (50) ..... \_\_\_\_\_  
Oral Communication Skills (50) ..... \_\_\_\_\_  
Total Points (100 possible) ..... \_\_\_\_\_

Reviewer signature and date \_\_\_\_\_

# ANNOTATED BIBLIOGRAPHY GRADING SHEET

Attached is the annotated bibliography for \_\_\_\_\_ Use the checklist below as a guideline for grading the paper.

- \_\_\_\_\_ bibliography is typewritten
- \_\_\_\_\_ citation format follows the accepted formats in Appendix 4
- \_\_\_\_\_ free of spelling errors
- \_\_\_\_\_ references are appropriate to the research project
- \_\_\_\_\_ annotations show good connection between article and student's project
- \_\_\_\_\_ includes 8 primary sources ( contains original data, not reviews)
- \_\_\_\_\_ includes attached title page for all eight primary sources
- \_\_\_\_\_ includes two historical references pre-1975
- \_\_\_\_\_ includes two references from the past 3 years
- \_\_\_\_\_ includes professional, not popular references
- \_\_\_\_\_ minimum 15 references (more references means higher grade)

Comments on content or suggestions for further literature search:

### Points for Annotated Bibliography

Content (40) .....	_____
Adherence to format (10) .....	_____
Total Points (50 possible) .....	_____
Deductions for fewer than 15 references (-5 each) .....	_____
Deductions for late paper (-10) .....	_____
Final Points .....	_____

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

## DRAFT THESIS GRADING SHEET

The attached is the first draft of the senior thesis for \_\_\_\_\_,  
Please review this draft and make comments either on this sheet or directly on the proposal. You may contact the student directly to discuss your concerns or obtain clarification. Grades must be returned to the student one week after you receive this form.

### Comments on thesis content:

- \_\_\_\_\_ all components present: title page, abstract, introduction, literature review, methods, results, discussion/conclusions, literature cited
- \_\_\_\_\_ clear statement of hypothesis/question/objectives
- \_\_\_\_\_ pertinent literature citations using appropriate citation style
- \_\_\_\_\_ well-organized methods that support question
- \_\_\_\_\_ discussion/conclusions show creativity, thorough analysis, integration of previous work with current findings, clear understanding of project

### Comments on writing skills:

- \_\_\_\_\_ ideas clearly stated in a well-organized, logical manner
- \_\_\_\_\_ easy to read and understand
- \_\_\_\_\_ free of factual errors
- \_\_\_\_\_ free of grammatical, spelling and punctuation errors
- \_\_\_\_\_ language is appropriate for the topic and thesis
- \_\_\_\_\_ follows thesis format
- \_\_\_\_\_ not wordy, no extraneous material

### Points for the draft thesis

Points for content (65) .....	_____
Points for written communication skills (65) .....	_____
Points for adherence to format (20) .....	_____
Total points (150 possible) .....	_____
Deductions for spelling and grammatical errors (-1/2 point each) .....	_____
Deduction for late paper (-25 points) .....	_____
Final points .....	_____

Reviewer signature and date \_\_\_\_\_

# SENIOR THESIS FINAL GRADING SHEET

The attached is the final senior thesis for \_\_\_\_\_, Please review this thesis and make comments either on this sheet or directly on the proposal. You may contact the student directly to discuss your concerns or obtain clarification. Grades must be returned to the student one week after you receive this form.

### Comments on thesis content:

- \_\_\_\_\_ all components present: title page, abstract, introduction, literature review, methods, results, discussion/conclusions, literature cited
- \_\_\_\_\_ clear statement of hypothesis/question/objectives
- \_\_\_\_\_ pertinent literature citations using appropriate citation style
- \_\_\_\_\_ well-organized methods that support question
- \_\_\_\_\_ discussion/conclusions show creativity, thorough analysis, integration of previous work with current findings, clear understanding of project
- \_\_\_\_\_ substantive changes made from draft to reflect committee comments, suggestions

### Comments on writing skills:

- \_\_\_\_\_ ideas clearly stated in a well-organized, logical manner
- \_\_\_\_\_ easy to read and understand
- \_\_\_\_\_ free of factual errors
- \_\_\_\_\_ free of grammatical, spelling and punctuation errors
- \_\_\_\_\_ language is appropriate for the topic and thesis
- \_\_\_\_\_ follows thesis format
- \_\_\_\_\_ not wordy, no extraneous material

### Points for the senior thesis

Points for content (65) .....	_____
Points for written communication skills (65) .....	_____
Points for adherence to format (20) .....	_____
Total points (150 possible) .....	_____
Deductions for spelling and grammatical errors (-1/2 point each) .....	_____
Deduction for late paper (-25 points) .....	_____
Final Points .....	_____

Reviewer signature and date \_\_\_\_\_

# THESIS PRESENTATION GRADING SHEET

Evaluation sheet for \_\_\_\_\_

Comments on thesis presentation content:

Comments on oral presentation skills:

- \_\_\_\_\_hypothesis, objectives, project significance and anticipated results clearly stated
- \_\_\_\_\_methods concise and easily understandable
- \_\_\_\_\_logical flow of ideas, well-organized speech
- \_\_\_\_\_language was appropriate to the audience and topic
- \_\_\_\_\_student spoke directly, clearly, in a conversational manner
- \_\_\_\_\_student spoke loudly and effectively
- \_\_\_\_\_student spoke within the time limit

Comments on supporting materials (posters/slides, video, etc.)

- \_\_\_\_\_ materials were appropriate to the thesis
- \_\_\_\_\_ message was clearly presented in a well-organized, logical order
- \_\_\_\_\_ materials truly supported the presentation (no extraneous material)
- \_\_\_\_\_ writing was large, legible and easily understood
- \_\_\_\_\_ materials did not detract from or overwhelm the message
- \_\_\_\_\_ materials were free from grammatical, spelling and punctuation errors

Points for Proposal Presentation

Content (40) .....	_____
Oral Communication Skills (30) .....	_____
Supporting Materials (30) .....	_____
Total Points (100 possible) .....	_____

Reviewer signature and date \_\_\_\_\_

## FACULTY OF THE SCHOOL OF AGRICULTURE AND LAND RESOURCES MANAGEMENT

### DEPARTMENT OF FOREST SCIENCES

**Dr. John Alden** 319 O'Neill (7652) Forest genetics.

**Dr. John D. Fox, Jr.** 328 O'Neill (7084) Wildland hydrology, forestry, modeling and simulation, environmental ethics

**Dr. Glenn P. Juday** 182D Arctic Health (6717) Forest ecology, forest structure, tree ring analysis, biological diversity, geologic and landscape control of diversity, natural area policy and management.

**Dr. Ed Packee** 161 Arctic Health (5070) Forestry, silviculture, forest management, forest growth and yield, forest products.

**Dr. Scott Rupp.** 339 O'Neill (7535) forest measurements, modeling

**Dr. David Valentine.** 313 O'Neill (7614) Forest soils, nutrient cycling, global climate change, trace gas biogeochemistry.

**Dr. John Yarie** 182F Arctic Health (5650) Forest ecosystem ecology, ecosystem modeling, global modeling.

### DEPARTMENT OF PLANT, ANIMAL AND SOIL SCIENCES (Fairbanks faculty)

**Mr. Greg Finstad** 180 Arctic Health (6055) Reindeer Research

**Dr. Pat Holloway** 182A Arctic Health (5651) Horticulture, propagation and cultivation of Alaska native plants, cultivation of fruit crops, landscape ornamentals and wildflowers

**Dr. Meriam Karlsson** 240 Arctic Health (7005) Horticulture, environmental physiology, flower initiation, effects of photoperiod and temperature on flowering, greenhouse crops production.

**Dr. Jenifer McBeath** 230 O'Neill (7431) Plant pathology, biotechnology

**Dr. Milan Shipka** 347 O'Neill (7429) Animal science, animal nutrition and reproduction.

**Dr. Steve Sparrow** 316 O'Neill (7620) Soil microbiology, decomposition in soils, nitrogen cycling in soils, nitrogen fixation in plants.

#### (Palmer Faculty)

**Dr. Don Carling** (746-9470) Vegetable diseases, especially potatoes

**Dr. Norman Harris** (746-9450) Range management

**Dr. Dot Helm** (746-9472) Committee member only, soils, soil microbiology, mycorrhizae

**Dr. Roseann Leiner** (746-9450) Vegetable crops production, vegetable diseases

**Dr. Allen Mitchell** (746-9450) Soil-water-plant relationships in northern latitudes

**Dr. Chien-Lu Ping** (746-9462) Genesis and classification of cryogenic soils, extraction and fractionation, carbon cycling and global change

### DEPARTMENT OF RESOURCES MANAGEMENT

**Dr. Peter Fix** 323 O'Neill (6926). Outdoor recreation management, human dimensions of natural resources, quantitative recreation research methods, recreation economics

**Dr. Joshua Greenberg** 332 O'Neill (7189) Resource economics, economic modeling, resource allocation

**Dr. Elena Sparrow** 317 O'Neill (7699) Natural Resources Education, soil microbiology  
**Dr. Sidney Stephens** 321 O'Neill (7628) Natural Resources Education, GLOBE Program  
**Dr. Susan Todd** 302 O'Neill (6930) natural resource planning, conflict resolution

#### **DEPARTMENT OF GEOGRAPHY**

**Dr. Kenneth Barrick** 322 O'Neill (6641) Geography  
**Dr. Cary DeWitt** 329 O'Neill (7141) Geography

#### **BOREAL ECOLOGY COOPERATIVE RESEARCH UNIT**

**Dr. Marilyn Walker** 193 Arctic Health (2424) Forest Ecology  
**Dr. Trish Wurtz** 193 Arctic Health (5994) Forest Ecology

#### **USDA AGRICULTURAL RESEARCH SERVICE**

**Dr. Dennis Fielding** 313 O'Neill (2439) Entomology  
**Dr. Sultan Begna** 321 O'Neill (7628) Entomology

## COMPLETED SENIOR THESES

- 1993 **Hammond, Timothy.** Use of GIS to determine relative cost of access zones for sections of the Tanana Valley State Forest. Advisor, Dr. John Yarie
- 1994 **Pigors, Jeanne.** The effect of composting on weed seed germination. Advisor, Dr. Charles Knight
- 1995 **Sampson, Jennifer.** The Arctic Circle site plan and its relation to the Bureau of Land Management planning process. Advisors, Drs. Susan Todd and Alan Jubenville
- Grover, Raymond.** Identification of alkaloids in Alaskan Lupinus spp. with reference to crooked calf's disease. Advisors, Drs. Lyle Renecker and Fred Husby
- Hollingsworth, Jamie.** Survival and Growth of Late-summer Planted Conifers in Interior Alaska. Advisor, Dr. Ed Packee.
- Russo, Robert.** Salmon oil as a moose deterrent in Alaska gardens. Advisor, Dr. Charles Knight
- 1996 **Adams, Scott.** A preliminary analysis of solid waste and wastewater pollution in the Fairbanks North Star Borough. Advisor, Dr. Susan Todd
- Barnard, Colin.** Polyphosphate sequestrants as a source of supplemental phosphorus. Advisor: Dr. Charlie Knight
- Burke, Toby.** The Bryophyte and Lichen Flora of Interior Alaska's Boreal Forests with Reference to Species at Risk from Forest Management in areas with Similar Flora. Advisor: Dr. Glenn Juday.
- Gibby, Stephanie.** Forage Quality for ensiled fireweed and bluejoint. Advisor: Dr. Mike Panciera
- Kern, Christine.** Canola Residue and its Potential as a Natural Herbicide. Advisor, Dr. Charlie Knight.
- Sarringer, DeeDee.** Comparison of Canadian and U.S. wetland delineation systems. Advisor: Dr. Charlie Knight
- Schoening, Franz.** A Legal Analysis of the "Intent Requirement" for criminal Prosecution of Violations of the Migratory Bird Treaty Act. Advisor, Mr. Harry Bader.
- 1997 **Charlton, Brian.** Growth of paper birch following an early winter snowfall. Dr. David Valentine
- Clark, Stacy.** Can Outdoor Wilderness Programs Change the Attitudes and Behaviors of Rural High School Students? Advisor: Dr. Carol Lewis
- Downing, Jason.** Economically Useful Plants for Southeast Alaska. Advisor: Dr. Pat Holloway
- Hippe, Tyrone.** Youth Design of a Forest Management Plan for Lost Lake Scout Camp. Advisor: Dr. John Yarie
- Janak, Chris.** Mapping Spruce-lichen Sites from Landsat-TM Data. Advisor: Dr. Dave Verbyla
- Johnson, Erik.** A recreational resource for Internet users interested in the Matanuska-Susitna Valley. Advisor: Dr. Alan Jubenville
- Lomax, Terri.** Effective Team Design: an Analysis of the Dalton Highway Planning Team. Advisor: Susan Todd
- Lown, Samantha.** Irrigation and Radial Growth of White Spruce in Fairbanks. Advisor: Dr. Glen Juday
- Meumann, Jacqueline.** Effectiveness of Fairbanks North Star Borough School District Third Grade Water Science Curriculum as Environmental Education. Advisor: Dr. John Fox.
- Milne, David.** Comparing two Forest Fire Mapping Techniques: A Case Study in Wood Buffalo National Park. Advisor: Dr. Dave Verbyla
- Peterson, Eric.** The availability of fertilizer nitrogen for turfgrasses in Fairbanks, Alaska. Advisor: Dr. Charlie Knight
- Pigors, Rochelle.** The Fairbanks Agricultural and Forestry Experiment Station- First Ten Years. Advisor Drs. Pat Holloway and Terrence Cole
- Swor, Rhonda.** Comparison of Hulless Barley and Naked Oats in Early Weaned Pig Diets in Interior, Alaska. Advisor: Dr. Fred Husby
- Voshell, Emily.** Environmental Factors Affecting the Nutrient Levels of Carex. Advisor: Dr. Steve Sparrow
- Wickstrom, Cheryl.** Landscape Plant Materials for Fire Resistance. Advisor: Dr. Mike Panciera
- 1998 **Adkins, Dwight.** Sulfonylurea herbicide persistence in dry, cold northern soils. Advisor: Dr. Charles Knight.
- Drohan, Anthony.** Evaluation of two Sanguisorba species for domestication. Advisor: Dr. Pat Holloway
- Henderson, Jennifer.** A law enforcement option in the Natural Resources Management Degree Program. Advisor: Dr. Joshua Greenberg
- Herman, Janel.** Cutthroat trout populations estimates in Auke Lake, Alaska. Advisor: Dr. Carol Lewis
- Holcomb, Shawn.** Stalk strength and disease susceptibility of barley following treatment of potassium to soil. Advisor: Dr. Charles Knight

- Mihailov, Mihail.** Predicting aspen versus birch distribution based on computed potential radiation. Advisor Dr. Dave Verbyla.
- Osborn, S.** Hidden stem decay in white spruce (*Picea glauca*) in the Tanana Valley Watershed, Interior Alaska. Advisor: Dr. Glen Juday
- Payne, Anthony.** Low altitude oblique videography for documenting features along interior Alaska rivers. Advisor: Dr. Alan Jubenville
- Soplanda, Jerry.** Hazardous Materials Emphasis for Natural Resources Management. Advisor; Dr. Carol Lewis
- Trillhose, Suzanne.** The potential for reducing and reusing the paper component of the solid waste stream at UAF. Advisor: Dr. Susan Todd
- White, Jenna.** White Spruce volume tables for the Tanana Valley, Alaska. Advisor: Dr. Edmund Packee
- 1999 **Atchison, Anna.** Analysis of the School of Agriculture and Land Resources Management strategic planning survey. Advisor: Dr. Susan Todd
- Atwood, Nicole.** Potential Allelopathic Effects of Birch Trees on Garden Flowers. Advisor: Dr. Charlie Knight
- Bushong, Kelly.** Determination of honeybee level of productivity as affected by ambient air temperature. Advisor: Dr. Charlie Knight
- Buzby, Joshua.** Taper of high and low elevation white spruce in interior Alaska. Advisor: Dr. Ed Packee.
- Johnson, Melissa.** Soil respiration potential as a function of soil temperature. Advisor: Dr. Dave Valentine
- McMillen, Thomas.** Seed dispersal and viability in a high cone production year at Bonanza Creek Experimental Forest, Alaska. Advisor: Dr. Glen Juday
- Lauder, Timothy.** Legal implications of proposed wood bison introduction to the Yukon Flats Area, Alaska.
- 2000 **Bingham, Marcus.** Soil compaction, carbon content, and O horizon thickness along the Stampede Pass Trail. Advisor: Dr. Dave Valentine
- Crowley, Dane.** Survey of public support of clear-cut logging in the Matanuska-Susitna Valley. Advisor: Dr. Allen Mitchell
- Davis, Amy (Nikki).** Potato yield and quality as influenced by cultivar, harvest date and vine killing. Advisor: Dr. Charlie Knight
- Jordan, Dan.** Canola oil mulches and soil water evaporation. Advisor: Dr. Charlie Knight
- Richard, Marylou.** Stabilized biosolids as a safe and effective growth medium for vegetables in Fairbanks, Alaska. Advisor: Dr. Steve Sparrow
- Wooters, John.** Germination and Transplant Age of Five Alaska Wildflowers. Advisor: Dr. Pat Holloway
- 2001 **Arseneau, Jen.** The human dimensions of protected area management in the circumpolar arctic. University of Lapland, Finland.
- Baraclough, Mike** Advisor: Effects of M-44 cyanide guns to control coyote predation on newborn (bovine) calves, Dr. Milan Shipka
- DeWitt, Adia.** Effects of hands on activities in middle school students' interest in science. Advisor: Dr. Elena Sparrow.
- McCabe, Jon.** Inversion of clear bottles to increase temperatures of cold soils in interior, Alaska. Advisor: Dr. Charlie Knight
- Strom, Samantha.** Recent sockeye salmon run failures in Bristol Bay. The impact of high seas fishing. Advisor: Dr. Carol Lewis
- Terry, Tracy.** Shoot proliferation in response to light intensity and photoperiod of in vitro propagated *Vaccinium vitis-idaea*
- True, Nick.** Effects of spacing tree stands on damage caused by bark beetles. Advisor: Dr. Ed Packee
- 2002 **Bosveld, Craig.** Effect of space on the early stem diameter of white spruce. Advisor: Dr. Ed Packee
- Dunham, Kara.** Determining differences of two barley based diets on body mass and intake rates of pregnant captive reindeer during winter. Advisor; Mr. Greg Finstad
- Fortunato, Mark.** Birch bark use in Alaska. Advisor: Dr. Ed Packee
- Kato, Nayouki.** Perspectives in Denali's West Buttress human waste management. Advisor; Dr. Josh Greenberg
- Klingman, Marie.** Production and transportation considerations in the export of peonies from Fairbanks, Alaska. Advisor; Dr. Josh Greenberg
- Kolberg, Tara.** Morphology and yield of three strawberry types in response to photoperiod. Advisor: Dr. Meriam Karlsson

- Liljeblad, Adam.** Impacts of recreational use on arctic wilderness lakeshore vegetation, Brooks Range, Alaska. Advisor: Dr. Ed Packee
- McArthur, Jeff.** Gall aphids on Alaska white spruce. Advisor: Dr. Ed Packee
- Smith, Glenda.** Sclerotia production by *Sclerotinia sclerotiorum* on carrots and effects of *Coniothyrium minitans* on apothecia production. Advisor: Dr. Roseann Leiner
- Tachibana, Miyuki.** A case study of a winter interpretive program at the University of Alaska Museum. Advisor: Dr. Josh Greenberg
- Winslow, Steve.** Role of soil disturbance, charcoal and nitrogen on white spruce along the Kugururok River, Alaska. Advisor: Dr. Glen Juday

## APPENDIX 4 LITERATURE CITATION

31

There are many different ways to cite literature in natural resources management. Publishers require a certain style and expect strict adherence to every detail (right down to the last period) or the paper may be rejected. The citation style outlined below should be used in all papers written for Natural Resources Management classes (including Senior Thesis) unless the instructor provides an alternative style manual. The style shown below follows the Harvard system of citation.

### General Rules

1. List only references that have been published. Use footnotes in the body of the paper for unpublished papers and personal communications.

2. List citations alphabetically (letter by letter, not word by word) by the names of the authors, then by year. For instance:

Jonas, K. 1998....

Jones, K. 1975...

Karlen, P. 1983...

Karlen, P. and J. Zimmer. 1997.

3. If you are citing several works by the same author written in the same year, add a lowercase letter to the date both in the text and in the literature citation. For instance:

Johnson, P. 1998a...

Johnson, P. 1998b...

4. If you are citing several works by the same author written in different years, the oldest paper comes first. Multiple authors follow single authors. For instance:

Harlan, P. 1973...

Harlan, P. 1978...

Harlan, P. and C. Taylor. 1972...

5. If you don't know the author, do not use "Anonymous" as the author. Instead, give the name of the publisher or the organization responsible for the work. For instance:

World Health Organization. 1992....

Alaska Cooperative Extension. 1924...

6. All authors must be listed in the same order as the original publication. The first author is listed last name first followed by initials, while all subsequent authors are listed with initials first. For instance:

Cronquist, A., J. Gleason and P. Hartford.

7. Do not italicize or capitalize all words in a title. Capitalize only proper names. Never abbreviate titles. For instance:

Harlan, C. 1997. The choice between two rivers....

Jacobs, P. and J. Skelton. 1943. A resource tragedy in Africa....

8. Spell out publishers names, and give complete information for the publisher's location.

Prentice-Hall, Inc., Englewood Cliffs, NJ.

9. Publication titles are capitalized and may be abbreviated except for one-word titles. For instance:

Can. J. Bot. **OR** Canadian Journal of Botany

J. Amer. Mus. Nat. Hist. **OR** Journal of the American Museum of Natural History

Ecology **NOT** Ecol.

Science **NOT** Sci.

10. Use only arabic numerals when reporting volume and issue numbers even if the publication lists volumes in Roman numerals. The volume, issue number and page number should be written as shown below with no spaces. The volume is followed by issue number in parentheses and followed by a colon. Page numbers immediately follow the colon. Pages should be written out in full.

6(4):225-226. **NOT** 6(4):225-6.

## METHODS OF CITING LITERATURE IN THE TEXT

Use the following format when citing references in the body of the text:

**One author:** Jones (1992) conducted research on salt tolerance ....  
(*Author name is part of the sentence*) OR

Research on salt tolerance in Michigan (Jones 1992) showed  
that.....

**Two authors:** Jones and Perkins (1995) -(*authors names part of the sentence*)  
OR

(Jones and Perkins 1995) - (*authors names not part of the sentence*)

**Three or more authors:**

Jones *et al.* (1995) (*authors names part of the sentence*) OR

(Jones *et al.* 1995) (*authors names not part of the sentence*)

**Two or more references cited at one time:**

(Jones 1994, Perkins 1995) oldest reference comes first

Sample:

Crowberry is a low, creeping evergreen shrub that forms dense mats to 15 cm tall. The leaves are crowded in a whorl of four or occur alternately (Hall 1995). They are commonly 3-7 mm long and are minutely glandular. The underside has a distinct groove. The flowers appear crimson and inconspicuous (Pojar and Mackinnon 1994). At times male and female flowers appear on separate plants. The fruit is a juicy and black, berrylike drupe (Jones *et al.* 1985, Schofield 1989). Alaska Wild Berry Products (Eden, Pers. Comm. 1996<sup>1</sup>) purchased crowberry fruits from wild berry harvesters for \$2.20 per kg. Carlson (1992) noted that the demand for this berry was declining in recent years because of the availability of more abundant wild berries.

---

<sup>1</sup>Letter dated 25 April 1996 from Peter Eden, Owner, Alaska Wild Berry Products, Homer, AK.

The publication types listed below are the most commonly quoted in papers. Many other publication types exist. If you have questions about citation style, please see your thesis advisor **BEFORE** you hand in your rough draft.

**Single author in journal:**

Jones, H. 1995. Propagation of tree species growing in Interior Alaska. *Canadian Journal of Botany*. 3(2):554-556.

*(Most journal titles may be abbreviated (i.e. Can J. Bot.) See advisor for appropriate abbreviation.)*

**Multiple authors in journal:**

Jones, H., K. Perkins and T. S. Perel. 1988. Guidelines for electronic transfer of abstracts. *American Journal of Agricultural Education*. 3(5):117-119.

**Circulars, bulletins, numbered reports:** *(Be aware that there are a lot of journals that have the word bulletin in the title (i.e. Bulletin of the Torrey Botanical Society). These are referenced as journals, not bulletins because they have volume and issue numbers. Bulletins and circulars are usually one-of-a-kind publications issued as a series by a government or public agency. Bulletins do not have volume and issue numbers. Rather they have bulletin numbers that are unique to one publication).*

Pellett, H. 1923. Bacteria and root rot diseases of potatoes. University of Alaska Agricultural and Forestry Experiment Station Circ. 115.

**Book:**

Schwartz, H. 1966. Bacteria in relation to plant disease. 3rd ed. University of Chicago Press, Chicago, IL.

*(list the edition if known)*

**Editor of Book, no author:**

Hammer, J., ed. 1955. Earthworms and composting. John Hammer and Sons, Inc. Storrs, CT.

**Abstract Only:** *(Information quoted in your paper is taken from an abstract, not the main article).*

Jones, H. 1942. Soil profiles in the central Brooks Range, Alaska. *Soil Science*. 22(4):56. (Abstr.)

**English summary:** *(Information quoted in your paper is from an English summary, not an abstract or the main article).*

Bandzaitene, J. 1985. Nutrient cycling in a boreal forest. [in Russian, English summary]. *Ekologia*. 4(22):225-226.

**Chapter in Book:** *(This is used when chapters have different authors, and the book has an editor or compiler. If one author wrote the entire book, cite the entire book, not just one chapter).*

Holmes, J.K. 1987. Growth hormones in plant culture. pp. 55-65. In: E.O. Jordan, ed. *Plant Physiology Notes*. University of Alaska Press. Fairbanks, AK.

**Thesis:**

Jordan, K. 1996. Temperature and seed germination of Alaska wildflowers. MS Thesis. University of Alaska Fairbanks, Fairbanks, AK.

**Author is agency, business, etc.:**

Alaska Cooperative Extension. 1996. Food for thought. Alaska Cooperative Extension Service Bull. 39.

**Newspaper article:**

Karlin, A. 1997. The Dispute over public lands in Alaska. The Wall Street Journal. 22 May:110.

**Translation:**

Borakova, J. 1985. Wild berries in Estonia (Transl. from Russian.) Rastitelnye Resursy. 450:17-21.

**No date:**

Gloria, K. n.d. Subsistence laws and bush Alaska life-styles. The BIA Newsletter. Bureau of Indian Affairs, Washington D.C.

if you can make an educated guess:

Gloria, K. (1998?). Subsistence laws and bush Alaska life-styles. The BIA Newsletter. Bureau of Indian Affairs, Washington D.C.

**Internet****Individual works:**

Holmes, J.K. and P.J. Carpenter. 1995. Guidelines for better writing. [On-line] Available <http://www.usa.net/~vined/home/better-writing.html>. 9 Jan.

**CD-ROM**

Calder, A. 1992. The resource game. 2nd ed. CD-ROM. Univ. California Press. Davis, CA.

**Internet Newspaper Articles:**

Johnson, C. 1996. Alaska's wild rivers. Miami Herald. [On-line] Available [http://www.summit.fiu.edu/Miami Herald](http://www.summit.fiu.edu/Miami%20Herald). 4 Dec.

**E-mail:**

Johns, K. (kjohns@moose.edu)1992. Review of literature – land planning in Alaska. E-mail to P. Mason (pmason@alcatraz.com). 5 Jan.

## Appendix 5 Permission to Publish

Portions or all of a senior thesis may be published by the student and his/her advisor along with committee members and others who contributed substantially to the creative work. Student authors will receive full credit and/or acknowledgement for all of their creative work. The student shall be first author of any published work resulting from the thesis unless substantial rewriting is necessary and/or additional original data are added to the point where the student is no longer the primary contributor to the publication. Selected abstracts will be published by the School of Agriculture and Land Resources Management as part of the research review in *Agroborealis*. Students will be sole author of abstracts, but committee input will be acknowledged.

In order to facilitate the dissemination of information from student theses, students will bring a computer disk copy of their thesis to the main office in 309 O'Neill. By signing this form, the student gives permission for publication of abstracts and use of the thesis (with proper citation) as a reference work. Formal publication of all or part of the thesis will require joint authorship with the thesis advisor and others, with full knowledge of the student.

Please provide a good contact address and phone number (your own or a relative's or parent's address) in order to facilitate contact after you have graduated.

Name:

Contact Address:

Phone Number:

Signature: \_\_\_\_\_

**Abstract Worksheet Form**

Describe your research project in a concise manner. The worksheet below allows you to order your thoughts and include all the information necessary for an informative abstract. Note: sections may be combined so that one sentence contains an introduction + methods, methods+hypothesis, etc. Word limit = 150

**Introduction** (What is this project about? Use key terms to describe your project, but don't use citations):

---

---

---

---

**Hypothesis or objectives** (What is the specific question you wanted to answer?):

---

---

---

---

**Methods** (Very briefly explain how you fulfilled your objectives or tested your hypothesis. This section may be combined with introduction in the final abstract):

---

---

---

---

**Results** (What did you find when you conducted your experiment, survey, literature search, etc.?):

---

---

---

---

**Discussion and Conclusions** (How did you interpret your results? What conclusions did you draw? Why are your findings important?):

---

---

---

---



