

**\*EXAMPLE OF A COOPERATIVE LEARNING BASE GROUP ASSIGNMENT\***

**R. Campa**

**UPLAND ECOSYSTEM MANAGEMENT  
FW410, Spring 2014  
HABITAT ANALYSIS AND MANAGEMENT PLAN**

Purpose:

This exercise is designed to help you acquire and understand the processes involved in developing and implementing a wildlife habitat analysis and management plan. Additionally, this is an opportunity to gain experience organizing an original field study, acquiring and summarizing data pertinent to specific objectives, interpreting results, making upland ecosystem management decisions based on your scientific data, presenting data in a scientific style, and defending your results with supporting evidence from the scientific literature to peers. This entire process is something that is commonly done by biologists, natural resources planners and other natural resources professionals. Upon completion of this project, you should be better able to identify alternative approaches to the solution of a given wildlife habitat management problem.

Components of the assignment:

As a group (2 members maximum),

1. Apply appropriate habitat analysis and evaluation techniques to determine the limiting factors for one of the topics given below.
2. Develop a 40-year habitat management plan to meet your group's objectives for the Rose Lake Wildlife Research Area or another area (i.e., private or public land-such as a State Game Area) approved by Dr. Campa, in advance, that is at least 81 ha (i.e., ~200 acres) in size. Use of privately owned property (e.g., of your family or of a relative) is highly encouraged, however, please get permission (from the landowner and Dr. Campa) prior to starting your project. The respective landowner may have resources (e.g., maps, management history) that will be beneficial to you completing a quality plan.
3. Prepare 2 professional project progress (written and oral) reports and present them to Dr. Campa. These progress reports must include these 4 sections: (a) a "Description of Progress" made on the project, (b) "Tasks to be Accomplished" before the next planning session (or to complete the project), (c) "Responsibilities of Group Members" to complete the tasks identified in (b), and (d) "Questions". Class points are given for presenting and turning in satisfactory progress reports.

Additional details describing what specific materials should be brought to each planning session will be described in classes and discussed later in this handout. At the beginning of each planning session, a "Group Recorder" should be identified to take notes during the session.

4. Prepare original and professional written and oral presentations of your analysis and management plan and defend your plan to the class, instructor(s), and professional natural resource managers, and researchers.

This assignment is a group project because habitat analysis and management plans, similar to this, conducted by professional biologists (e.g., from agencies, timber industry, or environmental consulting firms) are completed by teams and the extensive amount of work required to complete a good plan. Dr. Campa will review an example of a management plan developed by a group of wildlife professionals.

### Procedures:

#### 1) Choose a topic:

Once you have selected a group member (Dr. Campa will discuss how this should be done in class), you and your partner need to select one of the topics below for your analysis and management plan project.

- a) maintain/enhance habitat for biological diversity  
(Note: See definition for biological diversity—this includes all taxa [upland & aquatic], diversity of naturally occurring vegetation types and habitat conditions [upland & aquatic], and ecological processes—in upland and aquatic ecosystems)
- b) maintain/enhance habitat for early successional species richness (eastern meadowlark and eastern massasauga rattlesnake [see Angel site for the rattlesnake model]).
- c) maintain/enhance habitat for forest wildlife species richness (red-backed salamander [see Angel website] and ruffed grouse)
- d) maintain/enhance habitat for the gray and fox squirrels

All of the above mentioned species have Habitat Suitability Index (HSI) models for them online @ <http://www.nwrc.usgs.gov/wdb/pub/hsi/hsiindex.htm> (website accessed 02 Jan. 2014) or are posted on the FW410 Angel Website. These models should be used to help guide your field sampling, data analyses, and for making habitat management recommendations. For the biological diversity topic area, Dr. Campa recommends that groups approach this topic area using a coarse/fine filter or habitat diversity approach—he will provide guidance and references for these approaches. To get started see the article by Haufler et al. in your course packet.

#### 2) Initial Field Reconnaissance, Planning and Conducting Your Analysis, and Developing Management

##### Recommendations:

After picking a group member, initial field reconnaissance will help familiarize you with the Rose Lake Wildlife Research Area or your approved study area. After visiting the study area, selecting your topic now will be the time to develop your objectives as well as justifications for them (i.e., Why do you want to manage for these species or this topic?). Dr. Campa will discuss how to develop objectives in lab.

It will be necessary to determine the habitat requirements for your target species or the approach you are using to conserve biodiversity. Habitat requirements of desired species can be determined from the appropriate HSI's and the published scientific literature (i.e., journal articles such as in the Journal of Wildlife Management, Ecology, Wilson Bulletin [bird journal]). Proceed to identify the present value and limiting factors of selected stands (stands for sampling will be assigned to your group by Dr. Campa) of the appropriate vegetation types (i.e., for your species) at Rose Lake by conducting a habitat analysis using appropriate field sampling techniques. The vegetation sampling techniques will be discussed and demonstrated in lab.

Once current habitat quality has been assessed by you and your group member, by measuring the appropriate habitat components and characteristics for your objectives, your group must formulate habitat management decisions to eliminate the limiting conditions and improve or maintain habitat quality. Your management practices must be based on functional practices verified in the scientific literature and class discussions and material. **JUSTIFY WHAT MANAGEMENT PRACTICES YOU INTEND TO IMPLEMENT TO REDUCE LIMITING FACTORS USING INFORMATION IN THE SCIENTIFIC LITERATURE (THESE MUST BE CITED IN YOUR PAPER).** Groups should include a section in the report and presentation outlining how your management system will function throughout a 40-year period to maintain suitable habitat quality and quantity—this includes a timeline.

Your plan must also include a section on what species or guilds may likely be negatively impacted by your suggested management actions over 40 years—provide some examples and support these examples with information in the scientific literature. Some of these negative impacts should also include a

discussion of the human dimension components--or the attitudes and values different stakeholders may have for natural resources that may be impacted (positively or negatively) by implementing your plan. One report should be turned in for each group.

If “problems” develop between group members and cannot be resolved internally, Dr. Campa should be contacted immediately and he will resolve the problem--most likely this will entail “firing” a group member and having the member doing the project individually (i.e., getting “fired” from your group will entail forfeiting 10 and 5 points on the written and oral assignments, respectively - see the Letter of Application assignment). The management plan assignment is a large one, doing it cooperatively, as a group is an advantage (i.e., for developing and turning in a good plan) and emulates the working environment of natural resource management professionals. Select your group member carefully (i.e., Read their “Letter of Application” carefully. Check their schedule—when do they have time to work on the plan outside of class? Talk to them about other experiences they have had working in groups-what are their strengths? ).

#### Planning sessions:

Your first task (besides visiting the Rose Lake Wildlife Research Area or your selected study area) is to select a topic for your management plan. Dr. Campa will have 2 planning sessions with each group (conference dates and times will be randomly assigned) throughout the semester. All conferences will be 25 minutes long and serve as an opportunity for you to report on your progress, problems, and to discuss proposed activities. For each session, groups should prepare a type-written handout (2 copies, please) addressing the topics for that respective conference session. **COME PREPARED FOR THE PLANNING SESSIONS WITH THE NECESSARY INFORMATION OR QUESTIONS—THIS IS YOUR TIME.** Attendance with the appropriate material at each respective planning session is required for all group members to receive the allotted number of points. Failure to bring the appropriate written materials (and questions) will result in groups not receiving points for the respective planning sessions.

The meetings will be scheduled for:

02/17, 02/18 or 02/24, 02/25 Planning Session 1: Objectives, Limiting Factors, and Methods

03/17, 03/18 or 03/24, 03/25 Planning Session 2: Results, Discussion, Management Recommendations

#### For Planning Session 1:

Once a topic is selected, your group should formulate: (a) objectives, (b) potential limiting factors for your objectives (i.e., see the variables in the HSI models), (c) develop proposed field sampling methods to quantify the limiting factors (these methods will be discussed in lab and some are suggested in the HSI models), and (d) text for a project “Introduction” describing your rationale for conducting a habitat analysis and management plan for your respective objectives and citing appropriate literature. This information should be typed (i.e., as a “Progress Report”) and be prepared to discuss it at the “Objectives, Limiting Factors, and Methods Planning Session” your group will have with Dr. Campa. More details for the expectations of this planning session will be discussed in class.

#### For Planning Session 2:

During the second planning session, your group will be required to present written and oral project progress reports of your: (a) results (with tables or figures), (b) discussion points synthesizing your findings, and (c) proposed habitat management recommendations. More details for the expectations of this planning session will be discussed in class.

#### Technical presentation and report:

Oral presentations, to the class, instructor(s), and potentially natural resources managers and researchers on your habitat analysis and management plan will be made during the following lab periods: **04/07, 04/08 or 04/14, 04/15**. Groups should prepare a 30-minute professional presentation (this includes time for questions). Groups will be randomly assigned a date and time and a schedule will be distributed later in the semester (i.e., the schedule will largely be the same as the planning session schedule). Attendance at 1 session of presentations per week is required--attendance will be taken. Your group should prepare a well-organized oral presentation explaining what you did, your results, and habitat recommendations

based on your results (each group member should speak roughly the same amount of time in the oral presentation). This presentation should be delivered much like a presentation at a professional conference. A professional appearance is highly encouraged—this will be discussed in class. Visual aids are highly encouraged—using PowerPoint—an LCD project and laptop will be available during the presentation periods. PowerPoint presentation files must be turned into Dr. Campa the morning of your presentation on a USB drive. The written report (hardcopy only) is due: **Thursday, 24 April 2014 at 5:00 p.m. LATE OR E-MAILED PAPERS WILL NOT BE ACCEPTED.** The composition guidelines and rubric that follow should help you prepare your plan, please review it carefully.

#### Grading:

This assignment is worth a total of 104 points.

Planning	6 (3 points per session)
Oral Presentation	28
Written Report	70

The planning sessions will be graded (0, 1, 2, or 3 pts.) on your attendance, preparation, written progress report content, presentation, and participation in the discussion.

Oral presentations and written reports will be team graded on the following categories:

#### **Oral Presentation:**

- Introduction and Objectives (2 points)
  - Problem, what was done and why (cite appropriate scientific literature)
- Study Area Description (2)
  - Location, soils, climate, vegetation
- Potential Limiting Factors (5)
  - What variables were measured, what habitat components or characteristics do they provide?
- Habitat Analysis of Area (7)
  - Methods and materials used, results, HSI values, limiting factors, required sample sizes
- Habitat Management Recommendations and Timeline (5)
  - What are the habitat recommendations, how do they relate to current or future necessary habitat components or characteristics?
- Potential Impacts of Habitat Management on Nontarget Spp./Human Dimensions Component (3)
  - How will your recommendations likely positively and/or negatively impact other wildlife species or communities and/or stakeholder groups? Support this with your data and information in the literature.
- Quality of Presentation (2)
  - Organization, speaking ability, visual aids
- Response to Questions (2)
  - If your group runs out of time, you will not have time for questions and your group will receive 0 points in this area.

**Written Presentation/Technical Reports (following JWM Style—see guidelines on The Wildlife Society’s web site @: <http://joomla.wildlife.org/documents/JWMguidelines2011.pdf> accessed 02 Jan. 2014)**

- Abstract (3 points)
- Introduction (4)
- Study Area Description (4)
- Methods and Materials—Potential Habitat Limiting Factors and Habitat Analysis and Evaluation
  - Methods Used (15)
- Results (12)
- Discussion of Habitat Management Recommendations, Impacts to Nontarget Species, and Human Dimensions Potential Impacts of the Plan (24)
- Literature Cited (3)
- Overall Quality and Use of JWM Style for Text, Tables, and Figures (5)

Please follow these guidelines when writing and reviewing your plan. As a check-off, has your group included all of these components in your report?

### **Compositional Guideline Checklist**

#### **Date, Authors, Title of Project**

#### **Abstract of your project**

What was the problem you were addressing? What were your specific objectives? Justifications? What were your results? What are you recommending?

#### **Introduction**

A description of the problem(s) and purpose(s), justification for conducting the project, and specific objectives. This should include a review of the scientific literature (with citations) related to your objectives.

#### **Study Area Description**

Geographic location and legal description, characteristics of soils, climate, topography, and vegetation descriptions

#### **Methods**

##### **Potential Habitat Limiting Factors**

From scientific literature and HSI models

##### **Habitat Analysis: Methods and Materials Used and Evaluation**

Description of techniques (what was measured, why, how-sampling design, number of samples required to meet desired accuracy, etc.). A description of how data were summarized and analyzed. An evaluation of the area your group sampled based on quantitative results. You should include figures, maps, and tabulated data where necessary.

#### **Results**

Quantitative summaries and written description of your results is most meaningful. For examples of tables and figures please see the Journal of Wildlife Management Guidelines or articles in JWM. Your tables should look like those in the JWM (not like an Excel spreadsheet). Compute HSI and present values for each stand or evaluation areas along with the descriptive statistics (means, standard errors) for the habitat components and characteristics you sampled. Discuss the present value of the areas you sampled based on your habitat analysis--refer to your own data and that in the literature (recommendation--see how this is done in journal articles)! Keep in mind your objectives. Consider information needed about species of plants and animals important to your system. Remember your **objectives!**

#### **Discussion**

##### **Habitat Management Recommendations and Timeline**

Describe, in detail, suggested habitat management techniques and improvements for a 40-year duration (What will occur, when, how often, and what habitat component or characteristic will be provided by making this management action?). Provide area map(s) to illustrate where proposed habitat manipulations will occur and when.

Be practical--potential constraints, such as time, labor, equipment, and costs should be considered, but not impede your plan (i.e., you don't have to factor costs into your plan). A timetable of activities, before, during, and after your management plan is brought to a functional state, is required. The expected response of your plan should be discussed (How will it impact the species or groups of species you are trying to manage?).

Your discussion should also include an estimate of expected population levels of your target species (i.e., given the availability of habitat; potential population density after your plan is implemented).

**\_Potential Negative Impacts of Your Management Practices on Nontarget species (or guilds) and Human Dimension Impacts Influenced by Your Plan**

What species or communities may be negatively impacted by your proposed 40-year management plan and why? What will be the likely human dimension impacts that may result from implementing your plan—positively or negatively? What stakeholder groups will be impacted and how? Support your conclusions from the scientific literature.

**\_Literature Cited**

The format for the Literature Cited Section should follow that outlined in the Journal of Wildlife Management Guidelines. All references cited in your report should appear in this section.

Quotes: Any direct quote from a reference should be cited as such as described by the JWM Guidelines (i.e., use quotation marks, cite author, year, page numbers in parentheses-e.g., Jones 2011:351). Plagiarism WILL NOT be tolerated and is considered academic misconduct (<https://www.msu.edu/unit/ombud/academic-integrity/index.html#integrity>; accessed 02 January 2014).

Web references must be from the scientific sources (e.g., Michigan Department of Natural Resources, The Nature Conservancy, U.S. Forest Service, U.S. Fish and Wildlife Service). Publications such as Outdoor Life, Field and Stream, or similar magazines or on-line encyclopedias are not considered scientific literature. Don't use Wikipedia as a reference. While resources may contain scientific information, they are not scientific literature—get your information from the original articles/sources.

**\_Overall Quality and Use of JWM Style for Text, Tables, and Figures**

Reports must be typed (12 pt. font), double-spaced with 1” margins. **Follow the Journal of Wildlife Management (JWM) style and format**, including that for an abstract, figures, tables, citations within text, writing style, and literature cited. **See the style guidelines for JWM given above.** Please place all tables and figures at the end of the manuscript.