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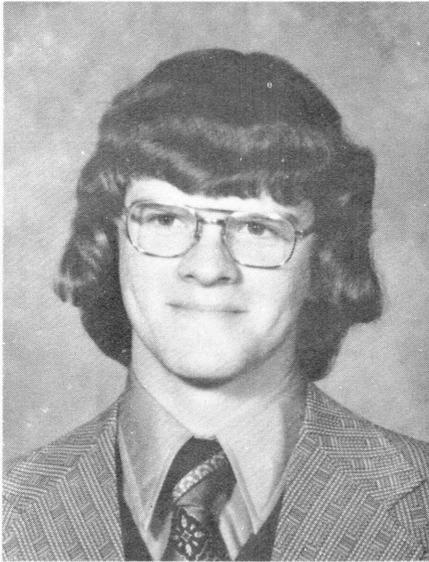
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# Dedication



In Memory Of  
Michael Zuck

time goes on

we are born  
total dependents  
we take on responsibilities, and we break ties  
one by one, strings are cut  
until one day, we are free  
we are independent

we look around  
we are alive  
we must survive, you know . . .  
years in college, then a job  
a house, a family  
a life, our life

what are we doing (where are we going)  
do we cheat ourselves in what we do  
do we sell a little too much of ourselves  
are we now dependent on ourselves  
or on the system  
a system that "works"

have we thought, really thought, outreaching thoughts  
or are we simply wrapped up in our own being  
and fool ourselves in our own minds  
by not believing what we know we should . . .  
are other people just shadows  
shadows that pass silently by, without effect

how noble to live for others  
but isn't it  
to be sure, people come and go  
people not like us, but totally different . . .  
complete sets of feelings, thoughts, convictions  
hearts, minds and souls

should we make an effort to reach out, to live fully, today  
to stop, look and listen, absorb  
to learn to receive humbly, to give without bounds  
to love . . . to live . . . to really love . . .  
to not pass up this opportunity, this challenge  
for only God knows if we are to have another chance

and time goes on

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# Natural Resource Planning And Management<sup>1</sup>

Paul F. Anderson and Glen H. Beavers

Access to the best possible information by land planners, land managers, legislators, and other decision-makers is made more difficult by the growing complexity and large scope of land use conflicts. The Land Use Analysis Laboratory, an interdisciplinary research team, has as its general purpose the development of tools to provide increased access to land information. Because the volume and complexity of the necessary data are two of the principal obstacles to full access to land information, the use of computers is an important means of increasing the availability and versatility of land information.

Through early studies of environmental impact assessment (Sinarta et al. 1973) and site selection analysis (Van Driel 1974), systems for information delivery were developed which consisted of computer programs, data preparation techniques, and data analysis methods. The Multi-Scale Data Analysis and Mapping Program (MSDAMP) was developed by the Laboratory to extend the data storage and analysis capabilities of land use decision-makers. Concern for the quality of information, for the potential program

users, and for program adaptability resulted in several development considerations or goals. These goals are important to resource planners and managers because they affect (a) the ease of using the information system, (b) the cost of using the information system, and (c) the validity of analyses that result from use of the information system.

Concern for the quality of information led to two development goals: the resource data must have a statistical basis, and the data must be stored at its most appropriate level of detail (resolution). Concern for potential program users or clients required that the information system be easily usable by public officials and other resource decision-makers, and that the information system be easily understandable to these decision-makers. Concern for program efficiency, structure, and adaptability led to two more development goals: data would be spatially referenced by the geodetic coordinate system (latitude and longitude), and a computer program with multiple functions would be needed to provide

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The Authors—Paul F. Anderson is a resource analyst, with special responsibilities in vegetation analysis and remote sensing. Glen H. Beavers is a statistician and computer programmer, with responsibilities in systems analysis. Both of the authors are with the Land Use Analysis Laboratory, Iowa State University, Ames, Iowa.

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the link between information concerns, program client concerns, and program adaptability concerns.

The resultant operational attributes of MSDAMP include (1) multiple resolution analysis where data types with different resolutions may be incorporated in the same datafile, (2) data-program independence where the coverage of the data is independent of the program's operation, (3) data analysis aggregation where data may be aggregated by two processes (averaging or subset sampling), (4) overlaid interpretations where each data type used in an analysis is processed independently for interpretation at its resolution and then combined in an overlaid composite for output, and (5) mixed resolution analysis where two related data types of different resolutions may be mixed in one interpretation to provide complete coverage of a map area without overlay occurring in those map portions covered by both data types. A more detailed discussion of MSDAMP development considerations and operational attributes may be found in *Development Considerations for MSDAMP, a Multi-Scale Data Analysis and Mapping Program* (Beavers 1976).

Although the Laboratory is primarily concerned with the conceptual basis for the use of this information system, the application and testing of the system in planning situations is also a major area of study. A fundamental part of the development of an information system is the evaluation of user needs for information and the preparation of a data base which fulfills those needs. The Land Use Analysis Laboratory is currently cooperating with the Story County Board of Supervisors in establishing such an operational land information system. Work has been completed on the first phase of the project (natural resource analysis) which is described in this paper. Additional work in recreational greenbelt planning and resource impact analysis is continuing.

### STORY COUNTY DEMONSTRATION STUDY

Story County is located in central Iowa; its land (primarily agricultural uses) is within 50 miles of the state's largest metropolitan area, Des Moines. New development and shifts in land use are common in the county especially around Ames, the largest town in the county with a population of 43,561 in 1975. In the near future Story County's comprehensive plan will be revised and the zoning ordinance will be rewritten. The Board of Supervisors has recognized that as population, development, and land values increase, land use decision making is becoming an important responsibility of not only resource planners and managers but of elected officials as well. Those responsible for decision-making feel obligated to make such decisions based on the best available information and analysis methods.

Several of the Laboratory's methods are assisting local decision-makers in meeting their responsibilities. Laboratory studies are providing the

Board of Supervisors with analyses of Story County's natural resources. These are the first such analyses for any county in Iowa. Current work in progress involves an evaluation of patterns and directions of land use changes, and an evaluation of the impacts of such changes on natural resources. Planning of a recreation greenbelt by the Story County Conservation Board has also required additional detailed land information for recreation suitability and wildlife analyses.

The natural resource analysis demonstration study of Story County provides the Board of Supervisors and county residents with a mapping of the county's natural resources and with a discussion of their quantity, quality, distribution, and significance and limitations in land planning. Geologic, soils, vegetation, and wildlife information were used to help understand the natural resources found under, on, and above the land surface.

### Landscape Patterns

Story County lies almost entirely within the Iowa landscape region "till plain of north central Iowa" (Faxlanger et al. 1973). The landscape surface left by Wisconsin glaciation varies from nearly level to gently undulating to rolling. Patterns on the surface of this land are created by the interaction of natural processes and by man's use and management of the land. The landscape of Story County displays many visual patterns of geologic formations, soils, streams, valleys, woodlands, fields, farmsteads, roads, and towns.

Ten landscape types in Story County were identified by grouping soil mapping units according to similarities of slope, drainage, geomorphic form, texture, and presettlement vegetation. Each landscape type includes all areas in the county with similar visual patterns and soil characteristics. The outline map of the ten landscape types (Figure 1) is a generalization from gray tones and patterns of soil characteristics displayed on a computer output map. Landscape Types 1 and 2 are floodplains, terraces, and footslope areas. Landscape Type 3 is a low, flat upland area. Landscape Types 4, 5, and 6 are valley and valley wall landscapes of soils formed from glacial till. Types 7, 8, and 9, which differ from each other primarily in slope and drainage character, are upland landscapes of soils formed from glacial till. Landscape Type 10, a rolling stream dissected area, is unique because it contains the only loess-derived soils in Story County.

### Resource Analyses

Of the many maps produced for this study, sixteen were selected for additional documentation, discussion, and publication in a report to the Board of Supervisors and the residents of Story County, *Natural Resource Analysis—Story County, Iowa* (Land Use Analysis Laboratory 1975a). Included are

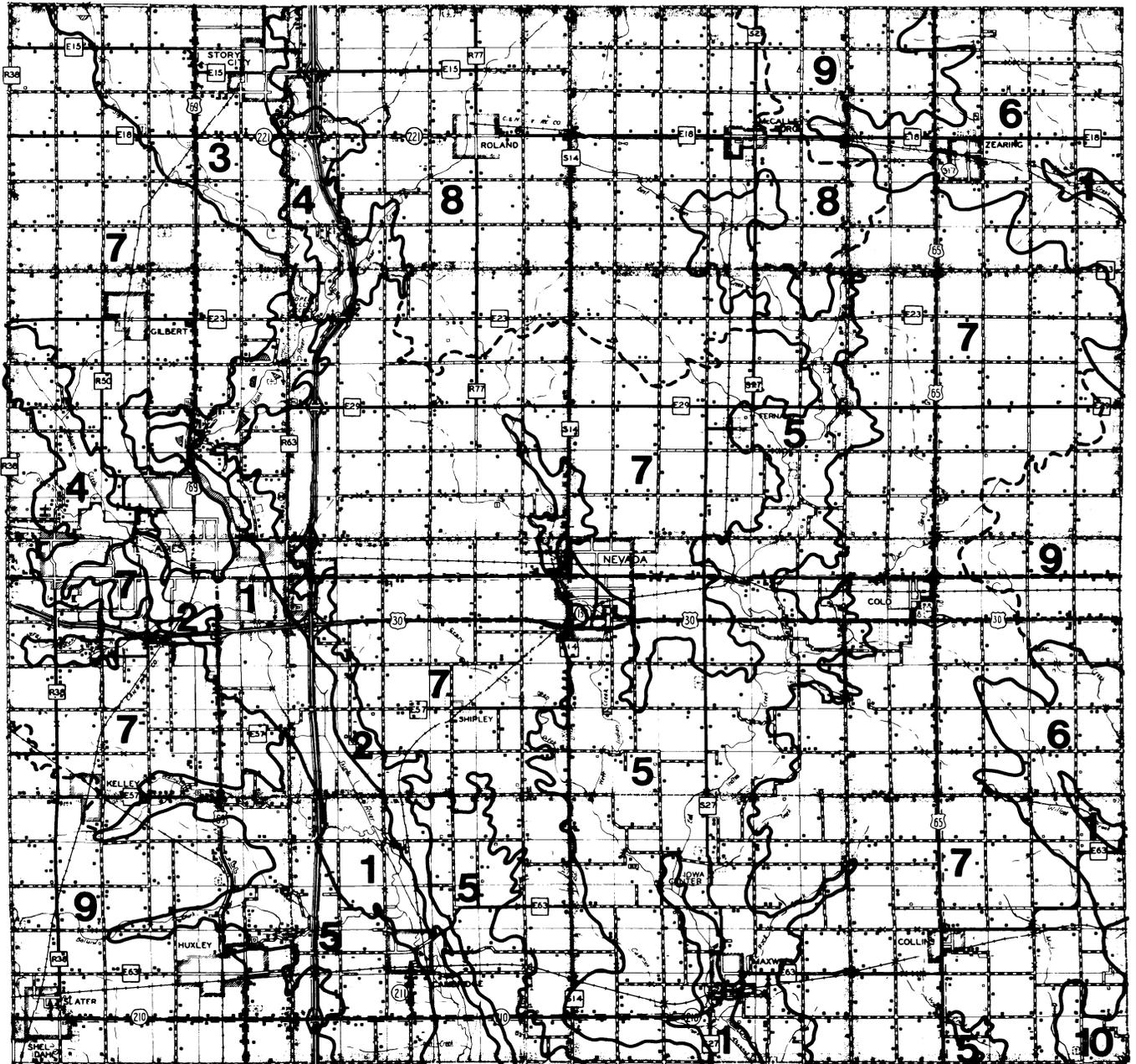


Figure 1. Story County landscape types.

the landscape types map described above; fourteen interpretive maps (emphasizing specific aspects of geologic, water, soil, vegetation, and wildlife resources); and a map illustrating the interaction of natural resources through a composite overlay of significant areas of concern from each of the fourteen individual resource maps.

**Geology.** Three geologic interpretive maps presented in the report include Bedrock Geology, Water Resources, and Mineral Resources. The Bedrock Geology map indicates the relative age, type, and distribution of the rocks underlying surficial deposits, and is used in conjunction with other information to derive maps of water and mineral resources.

The protection and use of Story County's geologic resources depends not only on wise resource management, but also on the planning and location of future land uses. Water availability and quality are important considerations in resource planning. Because alluvial and buried channel aquifers provide approximately one-half of the county's public water supply, they are primary factors in directing future land planning.

Another major source of the county's public water supply is the upper bedrock aquifer. Where this aquifer is close to the land surface (north central portion of the county), it is susceptible to pollution. Development and land management practices likely to pollute this area should be restricted. This area

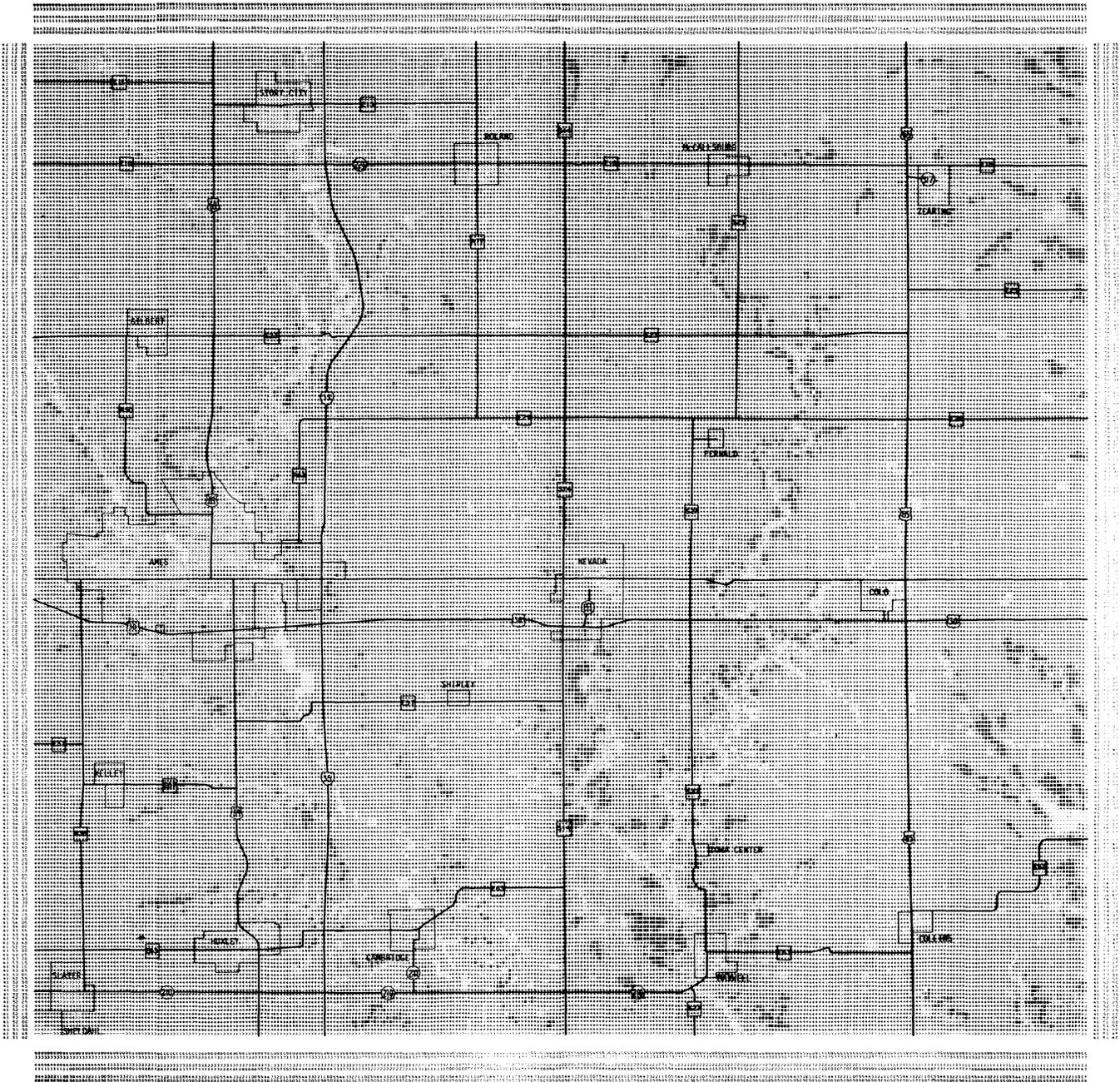


Figure 2. Story County soil erosion potential.

(about 7,820 acres) is also the best potential source of limestone in the county. Multiple use of open space management can protect this important mineral resource.

Large quantities of sand and gravel, used primarily for road construction and as aggregate in concrete, are obtained from alluvial deposits. Because the value of sand and gravel deposits depends primarily on their proximity to market, deposits located near urban areas are particularly valuable. Conflicts arise when rapidly expanding urban development and other irreversible uses cover these deposits, precluding their use. Again, open space uses (such as agriculture, timber production, woodland recreation, or wildlife habitat) could

preserve the accessibility to sand and gravel resources.

**Soil.** Soil characteristics can often indicate potential hazards and costs associated with a particular development or management scheme. These costs may be borne by the unwary individual or by the public (for instance, local government or downstream landowners). Public costs resulting from land use changes may be delayed or spread out, making it difficult to pinpoint the cause of a specific problem.

But costs of land development and management can be minimized through proper use of soil information. To illustrate this, three interpretive soil maps were produced by the Laboratory for the Story County study: Agriculture Suitability, Urban

Suitability, and Urban and Agriculture Suitability. The Agriculture Suitability map shows the distribution of soils throughout the county according to estimated productivity potential, in terms of corn suitability ratings. This index provides a basis for comparing soils and ranking them in terms of their suitability for agriculture. Over 77 percent of Story County's land has a corn suitability rating (CSR) of greater than 75 (considered by some to be 'prime' agricultural land) and nearly 97 percent has a CSR greater than 50. Decision-makers and resource managers must be concerned with this productivity potential in light of food shortages around the world.

Other resource planning and management considerations are indicated by the Urban Suitability and Urban and Agriculture Suitability maps. Construction in areas of low bearing capacity may be more costly over time because buildings and roads may crack due to uneven settling. Low areas on the uplands are subject to short term flooding, and the flood hazard on the stream bottoms is even more severe. Development projects in these low areas may cost more in terms of both initial construction and periodic maintenance.

Development on steep slopes should be restricted because of erosion and slippage problems. Septic systems may not function properly on steep land, resulting in untreated effluent coming to the surface. Groundwater or surface water may also become polluted if septic systems are placed in soils with high water tables. Although many of these problems have engineering solutions, these kinds of solutions are generally costly. The wisest, and often least expensive, solution may be to carefully avoid known problem areas.

*Vegetation.* In all vegetation planning and management decisions, the effects on soil and water resources should be of prime consideration. Vegetation is important as permanent cover, which protects soil and water resources by decreasing soil erosion and water runoff and by increasing infiltration.

The potential for soil erosion by water depends on soil type, vegetative cover, slope steepness and length, and tillage and conservation practices. Three of these factors (soil type, slope, and vegetative cover) were used in a Laboratory analysis to map areas of high, moderate, and low erosion potential (Figure 2). For example, areas with a slightly erodible soil and a permanent and dense vegetative cover have a low erosion potential (lighter symbols on the map). Conversely, areas with a highly erodible soil and seasonal or sparse vegetation have a high erosion potential (darker symbols on the map). Each of the 84,700 output cells is five seconds of arc resolution and represents approximately 4.5 acres.

Only 7.8 percent of Story County (28,375 acres) has low to moderately low erosion potential. Most of the county (75.4 percent or 276,215 acres) has moderate erosion potential, and approximately 16.8 percent (61,840 acres) has moderately high to high erosion potential.

Primarily because of steep slopes and sparse vegetative cover, areas of higher soil erosion potential occur along the smaller tributary streams and along the valley walls of the larger streams. Many of these areas are cultivated and have slopes of 2 to 14 percent. The steepest areas of the county (greater than 14 percent slope) generally do not have high erosion potential because of a permanent cover of grasses or trees.

Soil loss limit regulations, enacted by the Iowa Legislature in 1971, apply to urban lands, agricultural lands, and construction sites. Maps such as this can help delineate areas that may need additional conservation treatment and can also help establish priorities for the treatment of these areas.

Other important functions of vegetation in Story County are to provide food for human and livestock consumption (as demonstrated by the Laboratory's Agricultural Vegetation map), to provide recreation areas and wildlife habitat (as demonstrated by the Tree Cover map), and to provide sound screens for recreation areas near highways (as demonstrated by the Noise Attenuation map). Vegetation should be used in certain areas for noise attenuation. Planting native cedars and other evergreens could increase the value of recreational experiences in the planned Skunk River greenbelt area by decreasing vehicle noise from nearby Interstate 35. Most of the recreational areas in the county are located in these environmental corridors (stream valleys with their associated woodlands). Not only should existing tree cover be protected, but replacement planting should be encouraged in areas where tree cover has been thinned by development or disease (Anderson 1974).

Preservation of unique and desirable vegetation is also a high priority. Vegetation of these types is continually in danger of destruction by urbanization, land drainage, over-grazing, and over-cultivation. These areas (such as marshes, potholes, prairies, and large wooded areas) could be preserved by public acquisition, scenic or surface easements, or conservation agreements.

*Wildlife.* Over ninety percent of Story County's land lacks suitable wildlife cover, especially during winter and early spring. This land is intensively used for crop and livestock production. Though some wildlife species have adapted to agricultural land uses, the majority of species depend on the four percent of the county (primarily in the western and southern portions) which is timber or wetland habitat.

These and other conclusions were drawn from wildlife habitat analyses prepared by the Laboratory for Story County: Permanent Cover, Travel Corridors, General Habitat Quality, and habitat quality for specific species (for additional analyses see Taggart 1974). Existing woodland, marsh, and early successional areas are extremely important habitat types. These areas of low human use contain the greatest diversity of vegetation species and forms, and offer a variety of needed food and cover. Consequently, these areas which support the greatest

wildlife populations and have the greatest species diversity should be protected. Wetlands, important both to migratory waterfowl and to local wildlife populations, are the most biologically productive habitats in the county. Wetland habitat could be added in areas where soil characteristics and drainage indicate locations of past marsh or prairie potholes.

Some of these concepts are illustrated in Figure 3, a habitat quality map for a portion of Story County. The analysis was requested by the Story County Conservation Board to assist in the planning of a recreation greenbelt along the Skunk River between Ames and Story City (Brown 1974). The greenbelt, consisting of development nodes connected by a trail system, contains approximately one-fifth of the county's dense tree cover.

In this map, existing county-wide data (five seconds of arc resolution) was combined with specially prepared detailed land cover data (one second of arc resolution) to assess general wildlife habitat quality for hunting management purposes. The 49 cover types were ranked for wildlife in general rather than for a specific group or species. Each cover type was rated according to its relative value as a source of food, cover, and water; its value as permanent cover; and its positive or negative value based on the intensity of human use and management. Darker symbols indicate cover types which have the highest actual or potential value as wildlife habitat (such as woodland and marsh); lighter symbols indicate cover types of lesser value to wildlife (such as commercial and active quarry areas). Each of the 179,200 output cells is one second of arc resolution and represents approximately 0.174 acres.

The resolution of the data and the variety of conditions possible within each cover type limit the use of this map in some areas. Also, the map may appear quite different if a single wildlife species were considered, and the specific requirements of an individual species would not necessarily conform to the specific values shown here. However, this map is valuable as a general indication of wildlife habitat quality for the area as a whole.

#### Resource Areas of Concern

The analyses of individual resources identify areas in Story county which may be important environmentally or economically; which may contain either unique or non-renewable resources; or which may impose development considerations. For these reasons, special concern is needed by resource planners and managers as well as by other decision-makers when evaluating existing or proposed land uses for these areas. The Resource Areas of Concern map (Figure 4) was prepared using geologic, soils, vegetation, and wildlife data. Each resource was given equal importance in the analysis, though the categories or types of each were ranked according to their estimated importance. Thus, degrees of concern

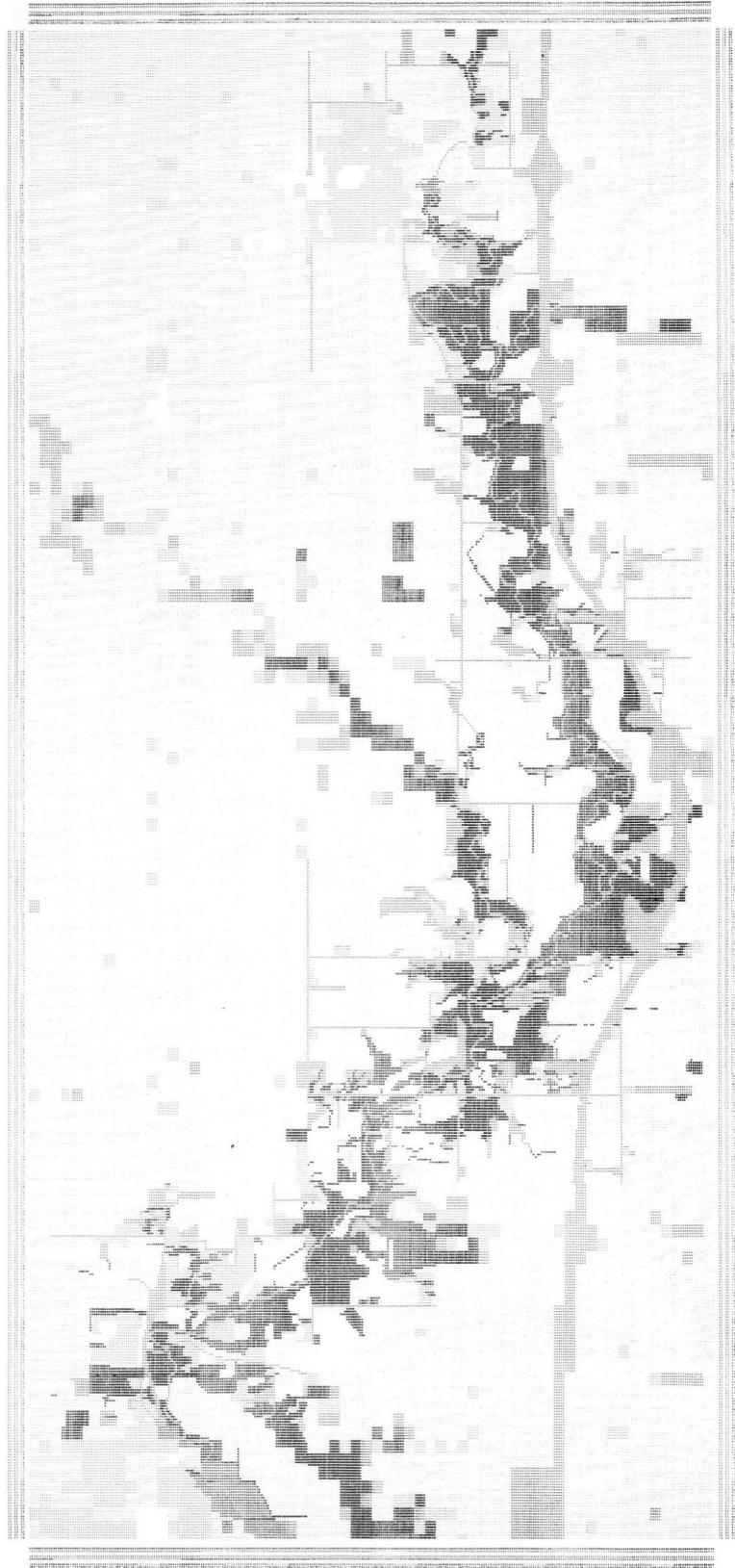
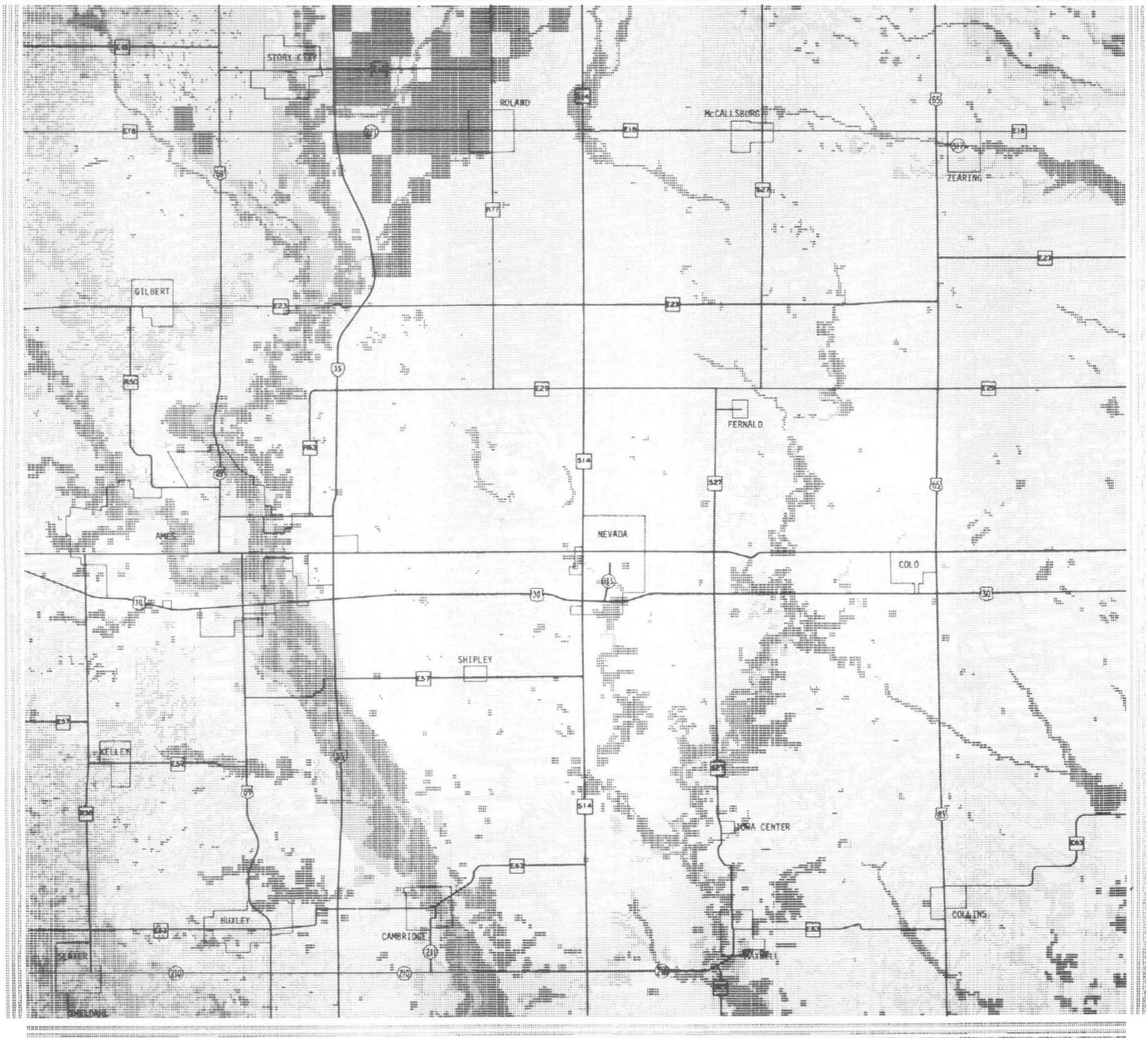


Figure 3. Skunk River greenbelt wildlife habitat quality.

are shown. Areas of more concern (more limitations) are shown with darker symbols and areas of less concern (less limitations) are shown with lighter symbols. Each of the 232,400 output cells is three seconds of arc resolution and represents approximately 1.564 acres.

Areas of greatest concern (most limitations) occupy approximately 12.6 percent of the county (45,700 acres). These areas are primarily floodplains which have geologic and soil limitations, and valley walls which have geologic, soil, vegetation, and wildlife limitations. On the uplands, areas of greatest concern are the smaller and more discontinuous pothole, peat, and muck areas, and the areas of tree cover, marsh, or prairie remnants.

Figure 4. Story County resource areas of concern.



But the entire county deserves concern because the Agriculture Suitability map indicates that nearly 97 percent of Story County has a corn suitability rating of greater than 50. Decision-makers must be concerned with these food-producing lands along with land that imposes other limitations or restrictions on development.

#### ADDITIONAL SYSTEM APPLICATIONS

Certainly neither the Story County information nor the information system is complete. Both the information and the analysis methods change over time, as do user requirements. New analyses that respond to new questions by the Board of Supervisors

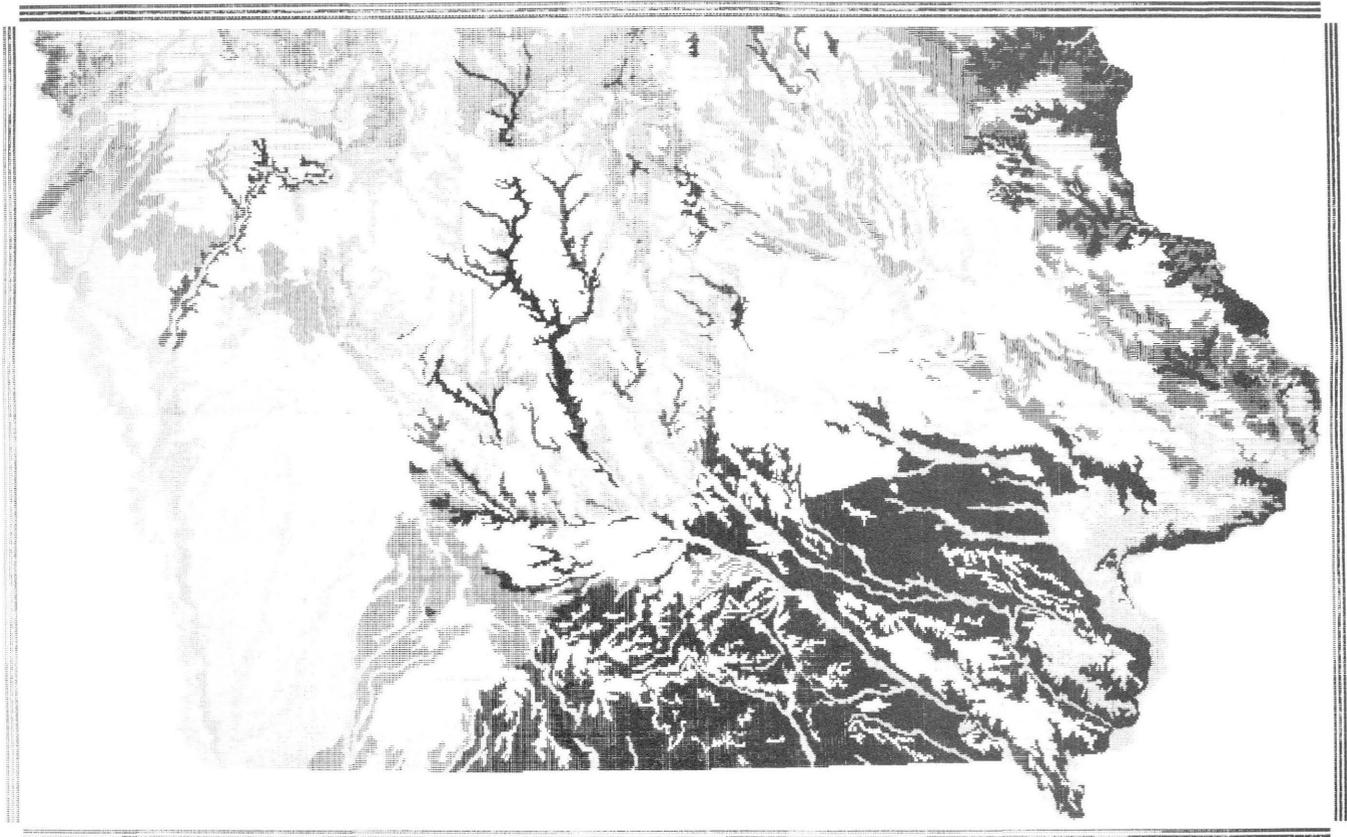


Figure 5. Iowa recreation and wildlife potential by soil associations.

and other decision-makers will need to be made. A more complete understanding of the county's natural resources and their interactions will also increase the effectiveness and value of the information system in Story County.

The few maps presented here, or the sixteen presented in the *Story County Natural Resource Analysis* (or even the nearly 75 maps produced for the Story County study), do not exhaust the potential analyses and data sets that could be prepared for the area. The land information system developed by the Laboratory can manage any spatially distributed data covering any area. The system has been tested with a variety of data types, resolutions, and coverages in several areas of Iowa.

#### Site Suitability and Land Valuation

The suitability of a particular area for a particular land use or development can be determined by data analysis. Land characteristics which may attract or preclude a particular use can be rated according to their positive or negative attributes. Such a site suitability analysis was applied to the Skunk River greenbelt data to locate areas for recreation development nodes along the trail system. Land resource data for Story County were similarly weighted to locate suitable sites for a sanitary landfill (Van Driel 1974).

Caution should be taken when using results of

suitability analyses. First, not all pertinent data may have been prepared for use in the analysis. Second, criteria or assumptions made in the analysis may need to be modified or changed. Third, site investigations will need to be made to still further evaluate suitable sites. The real value of a suitability analysis is not to locate *the* best site, but rather to reduce the area needing field evaluation.

The information system, along with modern detailed soil survey information, is being used in other areas of Iowa to evaluate agricultural land for tax assessment purposes. Assessment values can be based on productivity of the land, in terms of corn suitability ratings (CSR) and agricultural hazards rather than on land market values. Mean CSR values are determined for each 40 acre assessment tract or portion, regardless of shape.

#### Regional and State Resource Analysis

Interest generated by past applications of land analysis methods used by the Laboratory provided the impetus for a general land resource assessment of a five county region in east central Iowa (Land Use Analysis Laboratory 1975b). Twelve maps were produced to supplement available soil, stream, watershed, geology, and land cover information. The maps produced are being incorporated into the region's master plan.

Some of the information used in the study was

drawn from the Laboratory's state-wide data bank, which is still in development. The soil association data set was prepared from an unpublished base map (provided to the Laboratory by Dr. T. E. Fenton, Iowa State University soil scientist) and is being used to produce interpretive analyses of the data and for correlation with other state-wide data. One interpretation, shown in Figure 5, indicates the recreation and wildlife potential for each soil association. Darker symbols indicate areas which have high scenic value and offer the potential for diverse recreational activities such as hiking, camping, and hunting. These areas are usually hilly or steep and have relatively large amounts of woodland. Lighter symbols represent areas with lower recreation potential, and are intensively cultivated. Each of the 227,400 sample points is thirty seconds of arc resolution and represents approximately 157 acres. Data is also being prepared for the twelve state North Central region, including general soil association data and land cover data, for multi-state resource analysis.

### Forest Management

Other applications of the Laboratory's information system are possible. Some applications in the field of forest management include harvest planning, land exchange, type mapping, habitat analysis, recreation suitability, road location, and environmental impact analysis.

Laboratory participation in a reservoir feasibility study resulted in the assessment of reservoir impact on vegetative resources (Sinatra et al. 1973). Recreation suitability and wildlife habitat analysis has been demonstrated for the Skunk River recreation greenbelt (see Figure 3).

Harvest planning could be accomplished by compartment analysis. Potential harvest sites would be ranked according to selected criteria such as volume per acre, mixture of species, risk (based on age and vigor), size or age, present growth rate, site quality, and location in respect to transportation facilities. A rating could then be computed for each compartment based on how well it fits the specified criteria of the forest manager, and the resultant output map would then indicate either the relative or absolute scores for each compartment. This and other analysis types involving many criteria or characteristics are ideally suited to the Laboratory's land information system.

### Summary

The analysis of Story County's natural resources was produced for two reasons. First, elected and professional decision-makers must be aware of the best available resource information and analysis tools, and their use in land planning and management. These decision-makers are responsible for the land use policies and plans that are im-

plemented. Second, the public must be informed not only of the need and methods for resource analysis but also of the land around them, of the resources upon which they depend, and of the policies which affect their land. Each person deserves the facts in order to use land wisely.

In producing the Story County *Natural Resource Analysis* and other similar studies, the Land Use Analysis Laboratory has made use of an information system developed through research and application during the past five years. The information system is a responsive tool designed not only to help decision-makers quantify and map land characteristics, but also to assist them in identifying, quantifying, and mapping the effects of those combined characteristics on planning and management activities.

### ACKNOWLEDGEMENTS

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The management of natural resources and the use of these same resources in Iowa is a growing concern. Various methods such as statistical sampling and analysis of aerial photographs are used to monitor and inventory these resources. This report discusses the use of orbiting satellite sensing platforms to achieve these objectives.

#### Description of ERTS and Skylab Platforms

On July 23, 1972 the first unmanned Earth Resources Technology Satellite (initially called ERTS-1, but now named LANDSAT-1) was launched into a polar orbit circling 920 kilometers above the surface of the earth. LANDSAT completes each orbit in 103 minutes, approximately 14 orbits/day. Thus, LANDSAT is capable of viewing the entire earth every 18 days by advancing westward with each successive orbit.

The instrument package aboard LANDSAT is a multi-spectral scanner (MSS) which records energy reflected from the earth's surface in 4 wavelength regions. Two bands sense the visible spectrum and the others detect near-infrared (not thermal) reflected energy. The multi-spectral scanner is not to be confused with standard camera-film-filter systems. Reflected energy is collected via the scanner and these electronic signals are then transmitted to a receiving station on earth.

At the receiving station, or at a NASA data facility, these data are then processed into various products. The most commonly used product is the 70 mm transparency. An example of a black and white print from a near-infrared transparency for one entire scene in central Iowa is presented in Figure 1. The data were collected on May 10, 1973. The scene is approximately 185 km x 185 km.

NASA has also utilized manned spacecraft for earth resources studies. The most famous was Skylab, which orbited approximately 430 kilometers above the earth's surface. The sensor systems aboard this craft included both multispectral scanners and sophisticated camera systems which the astronauts operated directly. An example of a photographic product acquired over Iowa during Skylab-3 is shown in Figure 2.

#### General Methods of Analysis

Many, many methods are available to extract information from a photograph. Some are very simple, other very complex, and some are used strictly for specific applications. I will discuss only the methods used in this research relating to soils,

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# Sensing Iowa's Natural Resources Via Satellite<sup>1</sup>

Richard E. Carlson

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crops, and forestry applications using LANDSAT data.

The LANDSAT sensor was a multi-spectral scanner designed to record reflected energy in four spectral regions. This is an important point because objects and features on the surface differentially reflect solar radiation resulting in a "finger print" or a "spectral signature". If one is interested in separation or identification of surface features, these signatures must be different. To illustrate this point an example is given in Figure 3 where enlargements from August images representing both visible and near-infrared bands are presented.

Even though these two images were collected at exactly the same time, different features are highlighted depending upon the wavelength sensitivity of the scanner. The visible band, Figure 3A, details towns, roads, and stubble fields. Very little separation exists for crops, forest cover, or bodies of water in this photo. In contrast, the near-infrared band, Figure 3B, highlights bodies of water and some crops, but towns and roads are not distinguishable. At this particular time the other visible band was not distinctive for any feature and the remaining near-infrared image was very similar to Figure 3B.

Another important feature of the LANDSAT system is repetitive or temporal coverage. This may

be critical for some separations or identifications because features of interest may look different only at one time or only for a short period of time. Compare Figure 1 and Figure 3B for an illustration of this point. Both photos were produced from the same sensor band, near-infrared, but they look quite different. The May image highlights early season vegetation whereas the August image details other crop types and land features. As can be seen from these examples both temporal and multi-spectral coverage can be very important for information extraction. A last example is given in Figure 4. This image includes the same area represented in Figure 3, but this image was generated during January when the surface was covered with snow. The forest cover is quite marked along the Des Moines, Skunk, and Squaw drainage systems. In other portions of this image, topographic features were evident.

### Extracting the Desired Information

If the reduced resolution of the high-flying LANDSAT data collection system is acceptable when compared to high resolution low flyers, how can useful information be readily extracted? There are two general methods, visual-manual processing and computer-assisted processing.

Figure 1. MSS ERTS-1 coverage of central and west-central Iowa during May, 1973. Dark areas are mostly actively growing vegetation, towns, and some roads. Grey and

light areas correspond to fields at various stages of early season tillage. White areas indicate water, lakes, and rivers.



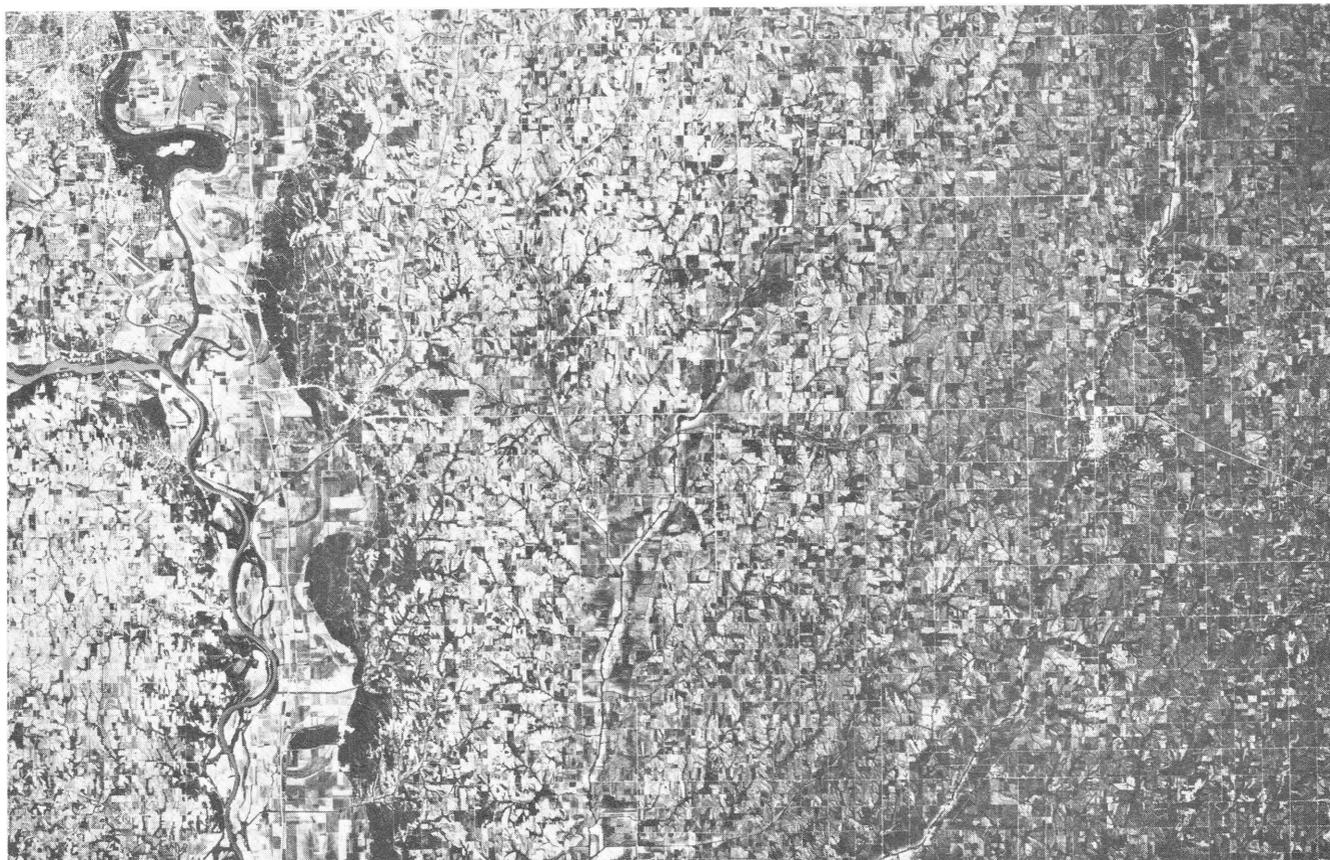


Figure 2. A portion of a Skylab image, S190B camera system, covering western Iowa during June, 1973.

The visual-manual processing methods are detailed in classroom texts, but one feature applicable to the multi-spectral LANDSAT system may be of interest. This method is called additive color processing. Basically, multi-spectral transparencies are registered and different colors are projected through each transparency onto the same screen. This is a false-color process resulting in an image which does not appear as our eyes would perceive the scene. Unfortunately, an example cannot be presented here, but to illustrate, when blue, green, and red lights are applied to scanner bands 4, 5 and 7, respectively, a color infrared rendition results. This particular example produces an image which accentuates vegetation. Color infrared film is frequently used in vegetation inventory and plant disease studies because vegetation is generally highly reflective to near-infrared solar radiation.

Additive color processing is generally applied to multi-spectral transparencies collected at the same time, though we have successfully registered and used temporal and multi-spectral transparencies. These images are very striking to the eye because the colors produced are much different than normal, and can be very useful for separation of surface features.

To illustrate the second information extraction method, computer-assisted processing, let us assume that it is necessary to determine the amount of forested land in central Iowa. From Figure 4 (near-infrared image) forested land appears different than

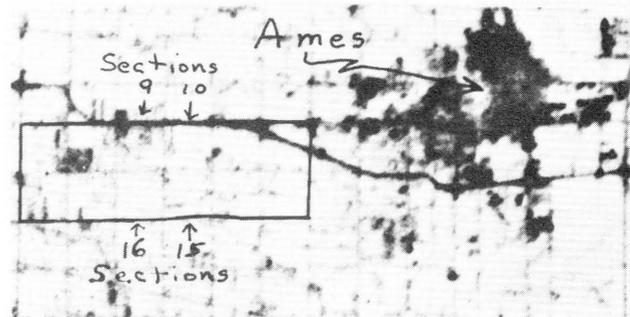
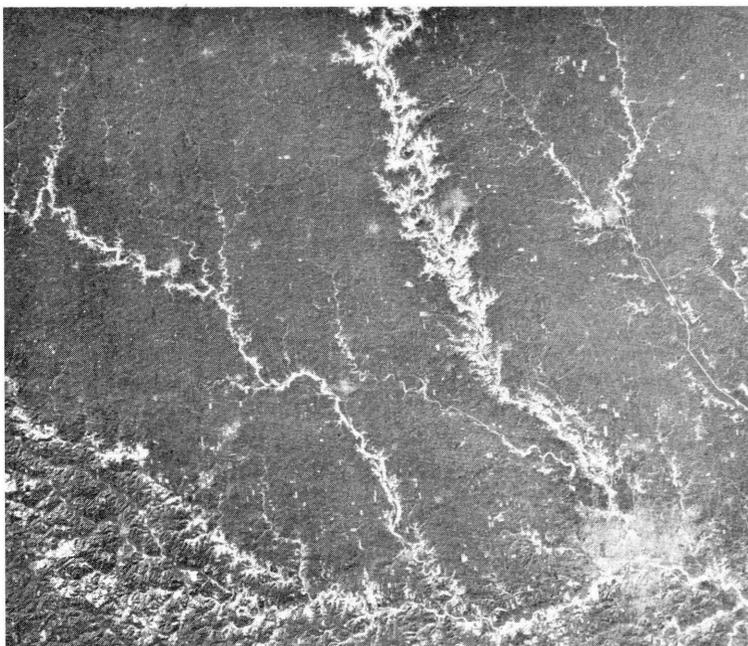
most other land uses at that time. Visual-manual techniques would be very time-consuming and tedious for any photo-interpreter. Computer compatible tapes (CCT's) could therefore be used to conduct the study because the digital data stored on the CCT's would be directly comparable to the gray levels observed in Figure 4. A word of caution is necessary at this point. In order to use the CCT's and the computer, an area must be selected and used to "train" the computer to recognize the desired features as represented by the digital data contained on the CCT's. This area, called "ground truth", is a very important part of this hypothetical study. It forms the link between known forested areas present in the scene with those forested sites never visited by an interpreter. After this link is formed, the computer could easily scan the data tapes and produce the desired forest land inventory.

Before we let the computer do all the work, one point should be noted. We assumed that all areas in the image, which appeared like the ground truth area, are forest land. This may not be true in all cases. A close examination of Figure 4 reveals other small, white areas which are not forested land. Some lighter areas correspond to towns and others were unpicked corn fields resulting from a very wet fall season. This example serves as a reminder that computer-assisted and human interpretations should be closely linked to obtain the best possible interpretation attainable.

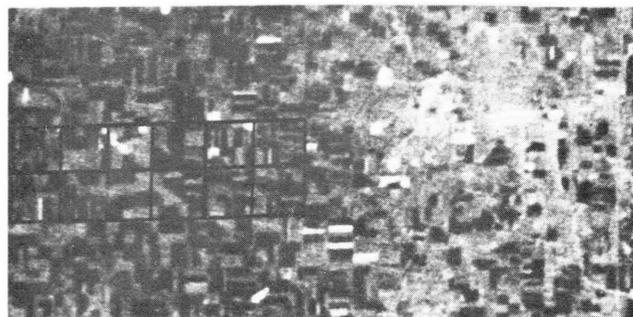
This forest inventory example is relatively simple and straightforward using only one image and two classifications, forested versus non-forested land. Other examples are usually more complex and many temporal, multi-spectral images may be required to attain a complete separation and identification of all surface features.

To illustrate, consider the problem of completing an inventory of cropland by types for central Iowa. An examination of Figures 1-4 reveals that many separations exist and, therefore, computer-assisted interpretation appears to be a possibility. As usual, a ground truth area must be established and examined closely so that comparisons between ground truth and available satellite images can be studied, but other problems relating to temporal analysis develop. The problems which develop are two-fold. First, temporal analysis via CCT's requires that the images (or digital data) must be registered or superimposed. This is being done, but the registration is difficult and never exact. Secondly, cloud cover can produce very serious limitations. The LANDSAT platform views the same area once every 18 days, but if clouds are present during a fly-by, no surface features can be observed. Required temporal separations may not be achieved. In our experiments in Iowa, a test site in western Iowa was viewed by LANDSAT 11 times in 1973; whereas, the test site in eastern Iowa was viewed only 3 times during the same time period. This limited coverage in eastern Iowa precluded temporal analysis for that area.

**Figure 4.** An MSS ERTS-1 coverage of snow-covered central Iowa during January, 1973. Forested lands and towns are highlighted.



**A.** Visible band highlighting towns, roads, and stubble fields.



**B.** Near infrared band highlighting crops and bodies of water.

**Figure 3.** MSS ERTS-1 coverage of Ames, Iowa during August, 1973.

Although the orbiting altitude of LANDSAT places restrictions on the resolution of surface features, the broad synoptic makeup of large areas is revealed. A mosaic of Iowa was produced from early season near-infrared images. This composite is quite dramatic and shows general soil and land-use patterns. Other mosaics of the state, which depict other seasons, reveal general crop and forest land state wide patterns. In the case of Iowa, this type of information, although not current in all cases, is usually known via previous sampling or aerial photograph acquisition. But, in some foreign countries and in areas in the United States where topography or vegetation restricts the ground sampling surveys, this information is not readily available.

Consequently, LANDSAT is providing a unique and useful source of information in many areas of interest including forestry, agriculture, geology, and hydrology to name a few. Earth resource sensing via satellite data acquisition systems is a new, rapidly-expanding science created by man's technology and man's interest in his environment and natural resources.

# Information-Education in Public Forestry

Michael B. Hathaway

Public relations, a legitimate activity in some circles, can be a dirty word when it comes to the Federal Government. Yet, public agencies such as the Forest Service must, out of necessity, engage in several aspects of public relations.

Douglas Gilbert, author of *Natural Resources and Public Relations*, in discussing this problem notes . . . "public recognition of the necessity for good, sound management methods and public confidence in the professional manager's ability to do a good job must be developed."

Congress specifically prohibits public agencies, including the Forest Service, from engaging in certain public relations activities—and justifiably so. No part of the Federal Government should be allowed to spend taxpayers' money in an effort to create a favorable image of itself, or even worse, to create a favorable but false image. Congress, therefore, appropriates no money for these types of public relations activities.

But what about the other aspects of public relations? Organizations need to inform the public about their activities. This need becomes particularly acute for agencies such as the Forest Service because the agency manages lands owned by the public. The public is entitled to know how the Forest Service is managing its lands and to be involved in decision making.

Viewed from another perspective, an agency can be doing a credible job meeting its responsibilities, yet the public may be unaware of those activities. In such instances, if accusations of mismanagement are made, they are most often believed. Clearly, a public agency does have a responsibility to keep the public informed about its activities, if for no other reason than to dispel inaccurate information.

Thus, the Forest Service needs to engage in the information aspects of public relations activities, but it must not attempt to create a favorable false image of itself. To meet this need, the agency conducts an information-education (I&E) program. I&E is not just bureaucratic gobbledygook that translates to public relations under close scrutiny. Rather, it is a program designed to inform and involve the public. Unlike pure public relations, efforts are not made to influence how favorably the public views the Forest Service. The facts of the whole story are presented and issues are not distorted. The public is left to make up its own mind about how "favorable" things may be. To be sure, the line between public relations and I&E activities is fine, but one that must never be crossed.

## Perspective of The Eastern Region I&E Job and Program

The 20-State Eastern Region of the Forest Service represents a complex and diverse area from many standpoints, including I&E. The Region, reaching from Maine to Minnesota and from Missouri to Maryland, encompasses 54% of the Nation's population. This population base ranges from the highly urbanized metropolitan centers to the more sparsely populated rural areas. As a consequence, it includes all manner of interest and user groups. Included are the strictly preservation-minded, those espousing multiple use, and those with exploitative motives. Backgrounds vary widely regarding scientific land management concepts and environmental awareness.

The National Forests of the Eastern Region contain about 11 million acres of public land or about 6% of the total National Forest land base. This is a small percentage compared to the large population it must serve. These lands most often occur in scattered patterns, intermingled with state, county, corporate and private ownerships. The large population and relatively small public ownership of the Eastern Region, coupled with the increasing and often conflicting demands placed upon the lands, only underscores the need for a viable I&E program.

The Eastern Region, like the majority of the other Forest Service Regions, has an Office of Information serving in direct staff support to the Regional Forester. The Office's staff includes a Director, a Public Information Officer and a Legislative Coordinator. These are most often individuals with experience in resource management, but with training and interests in the information field. The staff also includes writers, artists, an audiovisual specialist and an environmental education specialist. On a given job, parts or all of the staff may be called upon to handle a particular information project. Each of the Eastern Region National Forests also has an information officer. In a few cases, this is a full-time job, but most often these individuals have duties in addition to information activities. Other personnel, at all levels of the organization, are called upon from time to time to assist with the information program. For example, a substantial portion of the District Ranger's job falls within the scope of information activities. Specialists in all fields perform information duties when called upon to do so.

It is easiest to look at the Eastern Region's I&E program by focusing on its various components

separately; however, it is rare when only one component is used for a particular situation. More commonly, a combination of the components are used to plan and carry out an information project. The basic components include public information, public involvement, environmental education, internal communications and legislative affairs.

Public information, as the name implies, deals with that portion of the I&E program designed to keep the public informed about how they can make use of National Forest lands, resources and facilities. It also provides the public with continuing current information on the status of ongoing projects, programs, activities and accomplishments. This basic information job is the more traditional aspect of the I&E program.

Public information is disseminated in a variety of ways, with particular projects using the most appropriate means to reach the public, or portions of the public, for which the information is designed. Methods include news releases for the printed and electronic media, reports, letters, draft and final plans, brochures, maps, slide programs, motion pictures, personal contacts and group presentations. A combination of these methods are often used for any given project.

Public involvement is the close relative and often inseparable partner of public information. Involvement programs are designed to *gain* information from the public rather than provide information to the public. Normally, before "public input" can be obtained, the Forest Service must first provide information on which the public can make its response. Input from the public can be obtained from public meetings, (both formal and informal) working groups, advisory groups, written responses or on a one-to-one basis.

Public involvement is a vital aid to the land manager in the decision-making process. It is the way managers learn about the desires of the public and how the public views the management of its lands. No public agency can function properly without public involvement. To do so would be a futile attempt to operate in a vacuum.

Environmental education is the somewhat newer name and approach for a traditional information program, conservation education. The objective of the Forest Service environmental education program is to provide the public with a background of the complexities and scientific bases pertaining to resource management and to develop environmental awareness. The program acquaints the public with the realities that management of resources often generates environmental issues, requiring action plans with alternatives that are acceptable in our social and political systems. The program is designed to show people a systematic way to investigate the environment, organize their thoughts and actions, and develop a data base from which to make their decisions.

In the Eastern Region, the bulk of our en-

vironmental education program is geared to workshops for educators, resource personnel and leaders of various groups. The program teaches not only concepts of resource management from an environmental standpoint, but also methods that participants can use when they return to their respective jobs. In this manner, Forest Service efforts can be expanded by a "multiplier effect" of conveying concepts and methods to those who teach others. In many instances, environmental education workshops can be an effective public involvement technique.

Internal communications are the information activities geared to Forest Service employees. It is as important as external communications. Forest Service decision-makers and all employees must be kept aware of major external factors that may impact the agency's programs and activities. Also, all employees must be aware of current policies and activities. Effective and timely internal communications become doubly important when the diversity and decentralized nature of the Eastern Region is considered. In addition to the traditional methods of internal communications of news letters, reports and meetings, the Eastern region has found that video tape programs are very effective. For example, the technique makes it possible for the Chief or the Regional Forester to speak directly to all personnel about important policy matters or new programs. Also, messages from groups or individuals outside of the Forest Service on important subjects can be readily disseminated. Video tape has proven to be an effective training medium, often eliminating or reducing costly travel by personnel. Once the programs are produced and placed on tape, the tapes are copied and mailed to each of the 14 Supervisors' offices in the Eastern Region. The messages can be viewed on a timely basis at the field locations.

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berships in the Society of American Foresters, American forestry Association, and Gama Sigma Delta Honor Society. He was a 1962 Hartman Fellow and a recipient of the Catt Memorial Scholarship.

Legislative affairs forms another component of the I&E program. At first glance, the question can, and should, be asked about the relationship of a governmental agency to the legislative process. Since Congress provides the authorities that govern the activities of the Forest Service, the relationship has several dimensions.

When legislation is being considered to alter or influence the authorities of the Forest Service, the Members of Congress must have first-hand knowledge to aid them in their decision-making process. To meet this need, Members of Congress often visit National Forests to view management programs. Also, Forest Service officers are routinely asked to testify at Congressional hearings about bills affecting the management of natural resources.

Constituents of Senators and Representatives make inquiries about Forest Service programs. Some inquiries are quite specific, involving items that directly affect the constituent. In many of these instances, the Senator or Congressman will ask the Forest Service for assistance in replying to their constituents.

The Forest Service is sometimes requested to draft legislation for a member of Congress. These requests are made when the member wishes to introduce legislation on a given subject and the Forest Service has the technical expertise and experience to provide the service.

The legislative affairs activities of the Forest Service I&E program are especially significant in the 20-State Eastern Region because of the large population and associated numbers of Senators and Representatives.

### **The Information-Education Challenge**

An example of the Forest Service I&E program is provided by a brief review of actions to meet the requirements of the Forest Rangeland and Renewable Resources Planning Act.

This law, enacted in August 1974 (commonly referred to as the Resources Planning Act) directed that an assessment be made of the Nation's renewable resources. It also directed that, based on the assessment, a program be developed for managing the National Forests. The law stipulated that the assessment be updated every ten years and the program every five years. Both documents must project 40 years into the future. The first assessment and program will be submitted to Congress early in 1976.

In total, the Forest Service requested input from the public on three occasions. First, an outline for developing the assessment and program was provided to the public for review and comment. Input was needed at this stage to ensure that the final documents dealt sufficiently with all aspects of National Forest System programs.

Based upon input received on the outline, the

public was furnished a draft of proposed alternative goals to be incorporated in the program document. Again, input was needed to ensure that a full range of alternatives were considered in developing National Forest System programs.

Finally, in August 1975, the draft assessment and program documents were given wide public distribution for review and comment. The drafts were a blend of previous public input and professional management considerations. Both were necessary to meet the requirements of the Resources Planning Act.

Throughout the period of public involvement, the Forest Service made every effort to gain as much public input as possible. Periodic news releases were published announcing the availability of the materials for review and the need for public participation. Forest Service personnel at all levels of the organization took advantage of opportunities to include the subject in presentations and personal contacts. Personnel made numerous appearances on television and radio interview programs. Letters were written and paid newspaper advertisements were placed in the major newspapers. During September, public hearings were held across the Nation.

Following the public involvement, the documents were redrafted, reflecting the public input. The assessment and program that will ultimately be submitted to Congress will be strong testimony that the public does indeed play an active role in charting the management of our National Forests. The program selected by Congress from among the alternatives submitted will place the management of our National Forests on a long-term basis. Decisions reached today will affect future generations and management programs. I&E played an essential role in meeting the requirements of the Resources Planning Act.

The Forest Service, from its beginning, has been looked upon as a protector and custodian of the Nation's vast National Forest System. More recently, it has also been called upon to manage the System to produce increasing outputs of natural resource commodities and amenities. These demands, often conflicting, must be met from a finite land base.

The agency has always endeavored to manage the National Forest System on a scientific, professional basis. In carrying out its charge, the agency has not always, however, had the understanding of the public. In addition, failure to involve the public during the decision-making process in some instances has led to major conflicts. It is clear today that the public must be kept both informed and involved if the National Forest System is to continue to provide the goods and services which are vital to the Nation.

Just how well the public and the Forest Service can work together won't be known for many years. Our efforts today appear to be the most viable approach.

# Forest Management Of Small Woodlots

Richard Anderson

Over half (59%) of the 502 million acres of commercial forest land in the United States is owned by four million private, nonindustrial owners, in tracts of 5000 acres or less (Craig 1974). Because it is estimated that in thirty years the demand for wood in the U.S. will exceed the supply, it is these small forest lands that are now coming into the spotlight (USDA 1975). As the Forest Service stated in its "Outlook For Timber in the United States" (1972): "Many of these privately held woodlots include highly productive timber sites, and most are close to markets for timber products. These ownerships consequently have long been of major importance as a source of timber supplies for the wood-using industries" (Kelly 1975). Good management of these small woodlots is very important to the future supply of timber in the U.S.

However, only 10% of these four million owners currently practice any form of forest management. The majority of these small woodlots are inferior in timber quality and stand vitality. It is estimated that 25 million acres of these ownerships are unstocked, 50 million acres are poorly stocked, and an additional 120 million acres need some sort of stand improvement (Butler 1974). So as the nation turns to

these private woodlots with an increasing demand for timber production, recreational space, wildlife habitat, and watershed, they are not ready.

The substandard management of these woodlots stems from four main sources. The first is a lack of information on the possibilities and benefits of planned management, either from simple ignorance or owner apathy. The second is the communications barrier between the owner and the professional forester (the bad guy logger image). Third is a lack of interest on the part of the owner to improve or manage his woodlot. And fourth is the economic obstacles faced by a small, private operation (Butler 1974). These four problems can be broken down into several more specific problems of small woodlots.

**Landowner attitudes:** Many woodlot owners have no clearly defined goals for their tracts, and many of the others don't realize that forest management is a multiple use tool.

**Lack of application of technical knowledge:** Less than 3% of these four million owners are receiving any kind of technical assistance.

**Risk:** The threat of either natural (fire, insect damage, etc.) or unnatural (trespass, arson) disaster creates risk in any management plan.

**Insurance:** Insurance against loss of timber or other related aspects of a management plan is not available; not even from the Federal Crop Insurance Corporation.

**Small scale diseconomies:** Over 70% of the forestry cooperatives established in the last fifty years have folded because of lack of interest, capital, volume of business, or management.

**Labor and equipment:** Even 5000 acres of timber cannot support the \$100,000 in hand and power tools, tractors, trucks, discs, planters, and other equipment needed for an intensive management plan. Some services such as fire line plowing, site preparation, and planting are available at cost from some private contractors, as is advice from consulting foresters, forest industry, and associations of landowners. But many areas don't have any such assistance for the



An unutilized, unmanaged woodland lot on a farm just north of Ames, Iowa.

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The Author—Richard Anderson, a freshman forestry student at ISU, originally submitted this article to Dr. Hall in partial fulfillment of the requirements of Forestry 101, Introduction To Forestry and Outdoor Recreation Resources.

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small woodlot owner because of the seasonal nature of the work, the investment required, the uneconomical size of these tracts, the distance between tracts, and the competition with larger operations (forest industry) for labor.

**Lack of investment capital:** As stated earlier, 195 million acres of these privately owned woodlots need some sort of stand improvement (Pomeroy 1973).

Recently, a group called Trees For People was formed from representatives of the American Forestry Association, the Association of Conservation Districts, and other natural resource related fields. The purpose of TFP is "to improve the management, protection, and use of small, private, nonindustrial forests. Furthermore it is improvement for whatever purpose the owners may have in mind, be it preservation as a wildlife sanctuary, or production of timber" (Pomeroy 1973).

TFP found that the small, private woodlot owners' most pressing problems were: protection from fire, control of insect damage and disease, lack of technical assistance to forest owners, and lack of cost sharing opportunities (Pomeroy 1973). TFP recommended the following:

1. Coordinate information on all public forestry programs at the county level so the owner need make only one contact. This should include referrals to consulting foresters, contractors, loggers, and woodbuyers.

2. Provide for owners what they can't supply themselves. (i.e. fire protection; insect or disease protection; technical information; research on management, silviculture, and utilization; increased development of markets; and maintenance of a favorable public climate for forestry.)

3. Share the capital investment of long term activities that are in the public interest, such as planting trees, development of multiple-use areas, wildlife habitat, and outdoor recreation potential, and preservation of aesthetic values.

4. Intensify educational programs by public agencies, forest industry, and conservation associations.

5. Maintain and improve tax laws that recognize the long-term potential of forests and their contribution to the environment.

6. Encourage cooperation between small forest owners for the economical and professional management of their property.

7. Develop reliable sources of labor and equipment.

8. Ensure the availability of long term, low interest loans for management programs.

9. Encourage multiple-use of forest lands.

10. Classify land for intensive management so that those areas with the greatest potential could be developed first.

11. Authorize adequate emergency funds for prompt control of potentially disastrous outbreaks of fire, etc.

12. Set up an economically sound leasing



**Just one example of the some 300 million acres of woodlots owned by private, nonindustrial concerns.**

program that will ensure intensive management of forests plus income for small woodlot owners (Butler 1974).

The Federal government has also recognized the potential of these small, private woodlots with new funding for fire protection and reforestation, the establishment of the Cooperative Forest Management Program, and increased research into control of insects and diseases (Butler 1974). Other suggestions for up to 80% federal cost sharing on stand improvement, establishment of a national tree bank program, and annual federal appropriations to subsidize interest payments on loans for forest improvement, have been made, but have not been approved by Congress. However, in 1973 Congress did approve the Forestry Incentives Program (FIP), which provides federal cost-sharing of tree planting and timber stand improvement with private landowners of tracts less than 500 acres. The federal share ranges from 50% to 75%, \$10,000 maximum, depending on the rate set by each state and its counties' Agricultural Stabilization and Conservation Committee (USDA 1975).

The ultimate use of these woodlots does, however, rest in the hands of the owner. He must recognize that by his ownership he is a land use planner. And he must view and accept forest management as a multiple-use tool, and set goals for the management of his land.

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# Forestry At Iowa State - Our Second Century

George W. Thomson, Chairman

It was in 1874 that Suel Foster, an Iowa nurseryman and an ardent believer in the concept of an agricultural college, encouraged the initiation of coursework in horticulture and forestry. Thus our beginnings considerably predate the Biltmore school of Dr. Schenck and the earliest concepts and admonitions of Gifford Pinchot. So impressive a heritage and so long a history should not be taken lightly by any of us now in residence for we have been preceded by others whose contributions were greater than ours, and we will be followed by yet others who may surpass all that has gone before.

Although the accepted date of origin of a formal curriculum in Forestry is 1904, the development of continuity of direction dates to the arrival of Gilmour MacDonald ("Prof. Mac" to hundreds of foresters) in 1910.

From that date to 1950, the character of our department was firmly established by the boundless energy of that one man and the faculty that he gathered. This period coincided with the heyday of the conservation movement in America. Forestry was the antithesis of exploitive logging and thus the protection of forests from fire in the cutover areas was a massive and highly visible task which was universally applauded. Foresters and "Ames Foresters" in particular, were expected to be competent in everything from throwing a diamond hitch to running a CCC camp to regulating a forest by the French methode du controle. All students were expected to go to Forestry Camp which might be a railroad trip to the West Coast or a walking trip through Glacier National Park. Help in job locating was a task single-handedly undertaken by Professor MacDonald because he believed that Iowans must spread out through the whole United States to avoid the isolation of this prairie university and to prevent insular smugness.

During this period the Department Head was also State Forester and was simultaneously, during the 30's, director of the CCC program. While teaching any courses that were left over, Prof. Mac would keep up correspondence with all of his "Ames Foresters" and in June would head out of town, picking up a cook and a cook-stove on his way and personally direct the summer camp for the year. An ardent believer in setting aside park lands, Professor MacDonald worked effectively with those early Iowa conservationists, MacBride and Pammel, in building up the park system in the state. Although the paperwork proliferation had not yet come to university administrators, his task was not an easy one. Enrollment in the late 30's was higher than it has been until 1975, the returning veterans of World War II provided a population explosion from 1945 to 1950 that outdistanced faculty replacement. The forestry faculty had been reduced to one man during the war years. A further complication arose from a group in Iowa which tried to eliminate forestry education from the university. This latter event was defanged by the combined efforts of a devoted alumni and by cartoonist-conservationist Ding Darling of the *Des Moines Register*.

No modern forestry school administrator can feel uniquely overworked after observing G. B. MacDonald in action.

During the ten subsequent years, from 1950-1960, our department became increasingly effective in cooperative matters within Iowa and provided increasing emphasis on industrial forestry due to the tireless efforts of George Hartman. His warm and understanding manner, his devotion to students, his enthusiasm for industry, and his knowledge of and love for Iowa put an indelible stamp on Iowa Staters over the twenty years that he taught and administered here. Dedicated to good teaching and warm friendliness through formal advising and informal rapport, Professor Hartman continued the pattern of teaching, advising, and service that welded together one of the strongest alumni groups in the nation.

In 1960, the profession of forestry was changing under the influx of great numbers of young and highly educated professionals who were stimulated by research, encouraged by more readily available funds and experienced in the ways of bureaucracy. Carl Stoltenberg from the Northeastern Forest Experiment Station, U.S. Forest Service, by way of California, was the third Head of Department. An economist by training and a natural leader, he initiated the doctorate program in Forestry and immensely widened the scope of forestry activities geographically in terms of research and inter-university contacts. An ambitious and highly competitive man, he was also an extremely personable and humane professional who set new goals and new attitudes for faculty and students. He certainly can be credited with the formal establishment of the scientific method as a way of life in the Department of

Forestry and made research and publication the key to success for his faculty.

In 1967, the bloom was beginning to fade from the flowering of budgetary abundance that had allowed for the expansion of faculty and the building of the just-completed Bessey Hall. H. H. Webster, another economist from the Northeastern Station, had cut his teeth as an administrator at the University of Wisconsin and became our fourth Head. An avid spectator of the political arena, he brought to Iowa State still another perspective, awareness of the legislative process, and another talent, the know-how of administrative organization. While only moderately enthused about Iowa as an outlet for his energies, "Hank" Webster believed passionately in cooperation with other forest schools and agencies. His ability to fuse together complex amalgamations of people and funds was unprecedented, and his interest in removing boundaries between organizations was watched by some with awe and by some with suspicion. His concern for minorities and his support for opportunities for women fit well to the turbulent sixties and accomplished much in increasing the awareness of the times in the minds of students and faculty.

But departments change through the efforts of others besides administrators. Humaneness and literacy were exemplified by Dr. J. A. (Skipper) Larsen; the quantitative skills were enlarged by Dwight Demeritt, Allan Goodspeed and Kenneth Ware; the scientific method and biologic talents by A. L. McComb and Gordon Gatherum; the emphasis on extension was developed by Guy Ramsey and Richard Campbell; the concern for forest recreation and esthetics was first shown by G. B. MacDonald and formalized by DeWitt "Swede" Nelson; the concern for wood products by George Hartman as a teacher and carried on and developed by Dwight Bensed (who has to be listed despite my intention to exclude people currently on the faculty). Each current faculty member has expanded these skills and built on the foundations of those who have gone before.

Today the cultivation of an environment for learning is no less important than the protection and wise use of the natural environment for which we are perhaps more obviously responsible. It is the protection and improvement of this learning environment that has undoubtedly impressed each man who has assumed leadership for the Department of Forestry. Further, it is this feeling of responsibility that prompts an administrator to draw to himself the strengths of his colleagues on his faculty and in the profession at large. But a point sometimes overlooked in the "we-them" atmosphere that sixteen years of schooling seems to generate where university students gather is this: No university can be better than its students and that must surely mean that the cutting edge of our profession in the future is forged by the energy and dedication of those professionals-in-embryo—today's forestry students.

To clarify the atmosphere and remove misunderstanding, let me repeat for the nth time that the etymology of the term "forestry" is this—timber, recreation, wood products, range, esthetics, water, wildlife habitat are all encompassed. Goal defining, the black box of "doing" and the cybernetics of feedback are common to everything that we attempt to do. Further, biology, economics and sociology are equally versatile hand-maidens in the massive household in which our mutual career choices have placed us. The least wise among us soon come to the realization that the ignoring of any part of our responsibility or the abandonment of any one of our tools will lead us to grief.

What is it that we attempt to do with the taxpayer's money and the students' tuition in this societal institution called the Department of Forestry? The question bears some serious thinking. Nowhere in our charter are we enjoined to provide a cloister for adults with Ph.D. degrees nor to provide a sanctuary for postponement of maturity for the young. On the contrary, it must be assumed that our first charge is to serve society by combining finances, physical commodities, and mental prowess into an amalgam that provides a worthy outlet for the energies of those who come here. It is most fortunate that such an objective makes it possible for young people to earn a living while at the same time making it possible to extend the frontiers of knowledge of environmental management and natural resource use.

The conventional approach of such a department as ours, as we serve the public, is to partition the task into three categories: classroom education, extension or off-campus education, and research. While the particular interests and efforts of faculty members tend to be focused on one or two of these categories to the apparent exclusion of the others, it is evident that the responsibility of the institution is to all. There are few forestry schools that can prosper for long if any one of the three areas of responsibility is very long ignored.

The serving of our various publics is complicated not only by the apparently endless conflicts always engendered when one seeks to serve multiple masters, but also by the vast numbers of young people who have interest in the out-of-doors and conservation fields. If one excludes the seasonal hoop-la that concentrates on athletic fame and then passes over the mythology of elitism that surrounds certain universities, the next most obvious characteristic of schools would certainly be the numbers of students (usually undergraduates) enrolled. Tax-paying parents and legislators have strong opinions about admission standards, subject matter offerings, cost per student, efficiency of classroom use and a host of items that faculty members sometimes think of cynically as "head count".

The challenge to all of us who feel responsible for the Department of Forestry is that of providing an education to an apparently infinite number of students with a finite resource of funds, personnel and

time. Limiting of enrollment might very well solve many of the truly puzzling questions about providing a quality education but when the question is reduced to "Will I (or my son or daughter) be excluded from studying Forestry at Iowa State University?" the matter ceases to be purely rhetorical and becomes more personal. This is much the same as the stance I take on the limitation of family size to a replacement basis. I approve of it in a philosophical way, but pragmatically I oppose it for I have a perfectly good third son who would not have been born (and, as a matter of fact, neither would I—nor my father—nor his father).

It is easy to see that the result of offering an educational chance to each one who asks for it is this: Classes will be bigger than desirable for those students who should have special attention, i.e., those who have special talents or special problems at either end of the Gaussian distribution. There will be more graduates than there will be jobs, for our resource is finite, too. There will be continual competition among students for favored courses, favored times and favored teachers. More and more impersonal will become the educational process and more and more numerous will become the complaints of the unlucky who, like children in a large family, can't sit next to the window in the car or next to grandpa at Christmas. Greater and greater will be the inclination for the teacher-scientist to withdraw to the laboratory to flee the distractions of advising and the cries of dissent from increasingly distraught or disinterested students. Less and less may become the emphasis on providing service to the off-campus residents of the state:

Unless—

And this is the important part.

Unless—students begin to participate in the dialogue of the classroom where each contributes by raising questions, volunteering information from readings and personal insight and thereby draws attention to his own interest and thus personalizes the classroom experience.

—grade getting is put in its proper place and an eagerness to learn replaces the all-too-common emphasis on getting the diploma and getting out.

—the expectation of entertainment from the teacher is replaced by the humbling awareness that teaching and communication require receivers as well as senders and that late-night-talk-show comics are extremely scarce even on television and are never found in classrooms.

—faculty members become convinced that there is both satisfaction and success in good classroom teaching.

—administration at all levels goes to bat day in and day out for the classroom contributions of its staff members.

*(Continued on next page)*

# A NEW OPTION: Forest Recreation

Wendell Beardsley

Although I.S.U. is known for having the oldest continuously-functioning undergraduate forestry program in the United States, we're also known for constantly seeking ways to improve and update our courses and curriculum. In that spirit, the Outdoor Recreation Resources curriculum was assigned to the Department of Forestry in 1969. Under the initial leadership of DeWitt Nelson and because of new interest of college students in the amenity side of forest land management, the curriculum flourished and was substantially improved in content and focus. Continued improvement has taken place as new courses in outdoor recreation have been added both in Forestry and other departments, and as many previously existing courses have been altered to put new emphasis on recreation aspects of forest resource management. In addition, there now exists considerably more coordination between departments and continuity between courses than in the beginning years. As a result we now have a rigorous

- background material and foundation courses and academic sophistication is provided and competence demanded by all levels of education that has gone before.
- each student and each staff member realizes that the schoolroom is not the world nor is the present world the future world of the graduate.

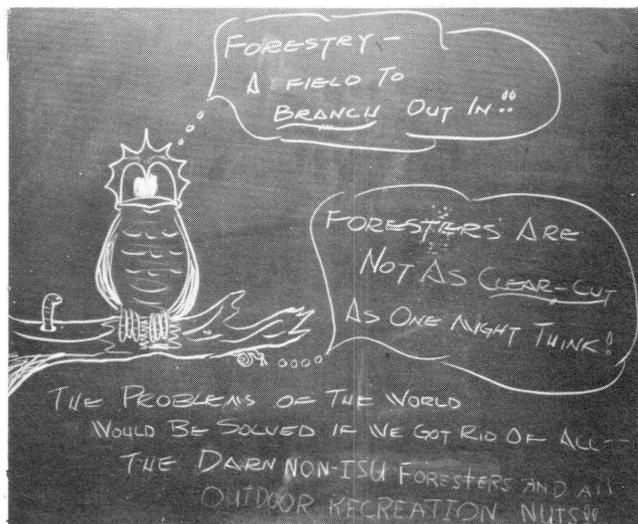
While I would gladly submit to a directive that would provide a larger budget, would demand more staff members and fewer and better students, would guarantee an expanded job market, and would offer that divine guidance which would let all of us who profess to be teachers have the wisdom of serpents and the tongues of angels, I don't believe that it is in the cards. But even though budgets be frozen and populations explode, the whole educational experience, at both ends of the classroom, can be immensely improved if each one of us does his part.

but broad core of required courses encompassing the field of forest recreation management plus the latitude for individual students to specialize in their area of interest through appropriate selection of minor and elective courses.

Support and enthusiasm for the new curriculum, Outdoor Recreation Resources, was based on the original assumption of developing a job market for graduates with specific recognition of this as a new professional field having its own standards for education, employment, and professional affiliation. Unfortunately, these expectations have not materialized to the level anticipated despite strong and continuing efforts by forestry professionals at I.S.U. and across the country.

It therefore became the consensus of the staff that we could better prepare recreation students and offer them a means of entry into established, recognized career paths by a slight modification of curriculum content and title. We proposed changing the curriculum in Outdoor Recreation Resources to a major in Forest Recreation, a title we feel more appropriately describes the actual focus of the curriculum.

In terms of course requirements, the only major change will be to add Summer Camp (where additional emphasis will be given to forest recreation resources) and three sophomore-level forestry courses in management, products and measurements. These will expose students to a broader range of forestry concerns and will qualify all students in the Department for the U.S. Civil Service classification, Forester. We will retain the breadth that has proved so beneficial in the past when students have found employment with the National Park Service, Forest Service, state agencies, county agencies, municipalities and private firms. We feel sure they will continue to find jobs across this spectrum, but at the same time believe we've better defined what we really do, and have given all students entry to a recognized professional career path.



Woodsey Owl says, "...

# Faculty



Seated, left to right: Larry Promnitz, Steve Jungst, Wendell Beardsley, Dean Yoesting, Dean Prestemon, David Countryman. Standing: Rich Faltonson, Paul Wray, Ole Helgerson, George Thomson, Rick Hall. Not Pictured: Dwight Bensend, Harold McNabb Jr., Wayne Scholtes, Dave Thompson.

## New Faculty

KENT T. ADAIR, Ph.D.  
*Visiting Professor, Spring—1976*  
*Forest Economics*

Dr. Adair received his B.S. in forest utilization from Colorado State University (1958), his M.F. (forest management and engineering) from Oregon State University (1961) and a Ph.D. (forest economics) from Colorado State University in 1968. His work experience includes a tour of duty with the U.S. Forest Service (timber management, Six Rivers National Forest, Gasquet, California), consulting forestry (Eugene, Oregon), and academic appointments with the University of Montana, Missoula (1963-66) and the University of Missouri (1967-present). He is married and is the father of three daughters. He is filling in for Dr. Hopkins and is responsible for the 451 and 570 courses this spring. In June, he will head south and resume his duties with the School of Forestry, Fisheries and Wildlife, University of Missouri, Columbia.



OLE HELGERSON  
*Instructor*

Mr. Helgerson received his B.S. in Forest Products in the fall of 1968. After a stint in the Air Force, he returned to ISU to resume his education. He received his M.S. in 1975. He has taught Forest Ecology at the 1974 Wisconsin and the 1975 Minnesota camp and is presently helping to teach the forest biology courses. Ole plans to start active work on his Ph.D. in the fall. His research interests include reclamation of devastated land, soils, and why trees grow. He is also interested in music, travel, ski-touring, and canoeing.

STEVEN E. JUNGST  
*Instructor*  
*Forest Mensuration, Photogrammetry*

This is Mr. Jungst's first year as an instructor. He received his B.S. from ISU in 1969. After a period of military service, he returned to ISU in 1973 and received his M.S. in 1976. In addition to teaching a course in introductory forest measurements and acting as a lab instructor for the photogrammetry courses, he is working toward a Ph.D. in forest biometry. His hobbies include hunting, fishing, and model railroading.

PAUL W. WRAY, Ph.D.  
*Assistant Professor and Extension Forester*

Dr. Wray received his B.S. and Ph.D. from Iowa State University. He taught Forest Ecology at the 1973 North Carolina summer camp. Upon completing his Ph.D. at ISU he went to Virginia Polytechnical Institute before returning to Ames to take over the extension responsibilities. His research interests are in tree physiology and small woodlot management. Fishing and woodworking are his major hobbies.

## Faculty On Leave

FREDERICK S. HOPKINS, Ph.D.  
*Associate Professor of Forestry*

Dr. Hopkins has been working both in Lima and in the antiplano region, an area of high plains within the intermountain region of Peru, since 1974. He is working on assignment from the International Agricultural Program of Iowa State University in the area of forest products utilization for this South American country.

JOHN C. GORDON, Ph.D.  
*Professor of Forestry*

During the 1975-76 academic year Dr. Gordon has been on a Faculty Improvement leave at the University of Glasgow, Scotland working on problems of nitrogen fixation by nonleguminous, woody plants.

## Secretaries



Deb Krogmeier, Peg DeHoet, Liz Stanley, Deb Eldridge.

## Forestry Association of Graduate Students



Front row, left to right: M. Miller, W. Cheng, M. Fisk, C. Maynard, J. Funck (behind magazine), B. Haywood. Back row: T. Hennessey, R. Mecklenburg, C. Walker, G. Jones, O.

Helgerson, G. Dale, C. Ramm. Not Pictured: M. Anderson, G. Campbell, J. Dawson, D. Hertz, D. Lee, J. Porterfield, M. Putra, H. Shinn, R. Ullrich, M. Versch, H. Vurdu.

# Summer Activities

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## Summer Camp - 1975

Keith Walton

The bogs of northern Minnesota became the home for 40 ISU forestry students during the summer of 1975. While at the Cloquet Forestry Center, we got another small taste of what forestry is really all about.

Dr. Wendell Beardsley took over the directorship (dictatorship?) of the camp when Dr. Benseid was not able to attend. With the help of Steve Jungst and Ole Helgerson, we were guided through six weeks of intensive study in Multiple Use Operations, Forest Mensuration, and Forest Ecology. But not before Dr. Prestemon led us charging through Wood Utilization in a record time of two and a half weeks.

Following Dr. Prestemon around most of northern Minnesota and some of Wisconsin, we observed the wood processing industry from timber harvest to final wood products. Along the way, we saw some very efficient operations and some that made us wonder how they ever managed to stay in business. The trips included visits to three timber harvesting operations, two sawmills and a stud mill, Superwood Corp. (to observe hardboard production), Northwest Paper (a subsidiary of Potlach where we got to watch everyone stop work to watch us go by), Diamond Match Co. (where everyone helped themselves to a year's supply of sample matches), and a Koppers preservation plant (where no one managed to help themselves to a pocketful of railroad ties).



Kipp Adams finally takes his weekly bath.

Ole Helgerson kept us closer to home. Most of our exercises for Forest Ecology were performed right in the Cloquet Forest. Here we were introduced to some of the complex interrelations found in the forest environment. We were sent off several times to tramp through the *wuzzies* in search of data, data which was to clear up (?) some of the mysteries of how and why forests grow. One time, while standing in a neck deep hole, we were informed that in this area one only needs a soil pit two feet deep. Through all the trials and tribulations, Ole's imaginative cliches helped bring us through.

Dr. Beardsley took us back on the road with the Multiple Use Operations course. Besides several excursions to points of interest in the Cloquet Forest, we visited a state park. The highlight trip included visiting the Voyageur Center, USFS, for the Boundary Waters Canoe Area (BWCA), forest service campgrounds in the area, and a proposed site for an open pit taconite mine (just outside the BWCA). Other trips were to an operating taconite mine, Eveleth Nursery, a fire control session, and observing deer browse management in the cedar swamps.

Steve Jungst put us back in the *wuzzies* again for mensuration. Most of our work centered around 22 acres of the most hazel-choked forest in the area. We ran an *almost nearly* closed boundary traverse with several interior lines in order to produce a topographic map of the area. We then cruised the enclosed timber, and in the end calculated that we would need to sample the entire area one and a half times in order to reach the desired level of confidence! And as we Iowa Staters were getting a taste of throwing chains, cussing compasses, and going blind from abney readings, a myriad of monstrous Minnesota mosquitoes got a taste of Iowa Staters.

Our introductory lecture to camp included two prime directives: "Don't ever go anywhere on the forest on a camp activity without your hardhat", and "Don't go into the local bars in groups of less than three or four." Once, when the first directive wasn't followed, Ray Jenson, a classmate of Dr. Benseid, threw the offender out of the forest. If the second directive was even violated, there apparently were no ill consequences.



Seated, left to right: R. Houseman, C. Cochrane. Second row: J. Hiedeman, G. Showalter, M. Vorwerk, S. Joslin, M. Lieurance, D. Menz, J. Weintz, J. Brown. Third row: L. Laverman, M. Popp, D. Spoerl, C. Liggett, T. Gannon, R. Harrington, F. Boyen, M. Harris, K. Walton, P. Meyer, R. Chemnick. Fourth row: L. Logan, R. Paris, C. Boldman, K. Abel, B. Siefken, E. Schatz, D. Hibbs, R. Peterson, R. Larsen. Fifth row: E. Larson, W. Beardsley, S. Wilton, S. Jungst, D. Larwick, O. Helgerson, K. Boyd, J. Swenson, M. Becker.

Being fairly typical college students, there was no way under the sun that we would work all the time, contrary to what the staff wished. In camp, there was almost always a "jungle rules" volleyball game going on, or Ole, Steve, and Dr. Beardsley would take on any comers in horseshoes. Pool and ping pong where also major deterrents to studying. For those who were not so athletically inclined, there were miles of forest roads, swamps, and even an abandoned fire tower, which all lent themselves to pleasant walks.

Outside of camp, the local laundromats ranked second in popularity only to the Golden Rail. Country Kitchen and the fire tower tied for third.

Camp really wasn't as mundane as it might sound. There was always something happening to spice things up a bit. If the rumor of the Indian take over didn't cause much excitement, there was always the fire. Yes, a fire. No, call it *the fire*. One morning we were to observe a controlled burn. When we arrived at the site, Don Von Ormer, forester-in-charge, pointed to a truck and told everyone to grab the tool of their choice. We were then instructed in the fine art of digging fire lines. By the time the afternoon was over, many of us had tasted smoke. That's right, *the fire* got out of control, jumped the fire line, and continued on its way. We "observers" got to practice what we were yet to learn. (See *Prescribed burn educates Iowa students here from*

*the Cloquet Pine Knot*, which follows this article). The following day we attended a practical fire fighting seminar.

There were other little things of interest, like the forester named Joe Wood (no kidding). Then there were Duane (du—wayne) and George (and Dawg, a beast of a four legged friend). They spent the entire six weeks logging less than nine acres of jack pine!

We finally got a three day weekend near the end of July. Many of the students took advantage of this time by going home to visit wives or girl friends, while others just enjoyed the rare quiet around camp. Still others went on trips. One of these was a canoe trip to Quetico Provincial Park, just north of the BWCA. Fourteen of us canoed some 20 miles on 8 lakes and spent a short day swimming, fishing, and or being lazy. Some of us indulged by bathing in a basin that was a third of the way down an 80 foot waterfall. On our second night, the aurora borealis gave us a command performance as we drifted around the lake. It sure was hard to go back to classes at Cloquet.

Our last night in camp was also marked with a display of the northern lights. It was one more small sign that the long nights of study, mosquitoes, and endless hours spent over calculators were more than made up for by the good times, the new fellowships, good food, and the things we learned in that suddenly short six weeks.



"But Cloquet is back that way," says crew chief Keith Walton.



The (in) famous camp professional personnel.

## Prescribed burn educates Iowa students here

The Cloquet-Forestry Center conducted what is known in forestry terminology as a prescribed burn, Thursday afternoon, July 17. This is an instance of fire being used as a forest management tool in a controlled situation.

The area burned was a balsam fir stand which was logged during the winter months. The fir was over 80 years old, and fir being a very short-lived tree, there were many dead and down trees in the timberstand. This left a great deal of unmerchantable wood on the site after logging.

The logging method used was what is called the tree length method. The unusable limbs, and tops are cut from the tree where it is felled and only the merchantable trunk portion is taken out of the area. The limbs and tops add a large amount of debris to the area.

Since it is nearly impossible to reforest the site with a desirable stand of trees while all the debris is there, some type of site preparation treatment is necessary to remove it. Controlled or prescription burning is one such treatment.

Fire is also a very helpful tool in controlling the invading brush which would produce fatal competition for trees planted on the site.

The fire provided an excellent educational opportunity for 50 students from Iowa State University, who are presently using the Cloquet Forestry Center. They were able to get practical experience in constructing fire lines to contain the fire in the desired



Some very practical experience was learned the hard way as the controlled burn got out of hand.

area, and to observe the fire's behavior as well as stand by to put out any fire that crossed the fire line.

The burned area now has no obstacles to planting and the small planted trees will have an excellent opportunity to get a head start on their competition. From the *Cloquet Pine Knot*, Thursday, July 13, 1975.

# Summer Jobs - 1975

## Exposure To Urban Forestry

Jim Jaminet

It was getting late in spring quarter before the City of Des Moines, Iowa decided to hire me for the summer to work on an oak wilt survey. I then became aware that three other ISU foresters would also be employed by the Des Moines Forestry Department. We were all old summer camp companions so no introductions were necessary. Dave Binegar, Pat Lynch, and myself chose to find an apartment in Des Moines and Baldo Schneider, the best tree climber I ever saw, commuted from Ames every day, or almost every day. Also employed were Dennis Schulte, an entomology major, and Dan Hertel, an entering freshman in forestry at ISU.

The first day on the job we divided the city into four sections while looking at what seemed to be the largest city map in the USA. Our instructions were to cover every square block of the city, (approximately 60 square miles) and count all oak trees, sample the unhealthy ones, keep accurate records, and count the remaining elm trees. The data collected included DBH, % crown, species, health, location on property, and at times an estimate on removal cost. That first day I was sure the three months allotted for the job would never possibly be enough time.

The typical work day hours were from 7:30 to 4:00 and included various experiences such as: discovering dead end streets with several square blocks of drainage ditches and woods, encountering mean dogs and ill-tempered residents, finding no house numbers for address purposes, flat tires, overheated vehicles, and either too much or not enough rain.

It all passed very quickly and at last we had only office work left to do and one week to do it in. To our amazement, the job was completed but only with days of overtime, watermelon in the park, coffee at Dahls, and noontime poker games.

Overall, it was a very educational summer in that we learned about tree diseases, city government, the scope of survey planning, unhappy residents as well as helpful and interested residents, and the general picture of urban forestry.

## Count'n Redwoods

Steve Jones

For the past two summers, I worked for Hamman, Jensen, Wallen, and Associates, a forestry consulting firm in Oakland, California.

The job I worked on was in Sequoia National Park, California. We were inventorying and mapping every Sequoia tree, from seedling to fallen tree, logs, snags and stumps, in several of the back country groves of the park.

When the job was described as arduous they were not kidding. Every grove we mapped was in the back-country, and many had no trails to them. One particular grove required bushwacking up a 100 percent plus slope through manganita for a mile and a half.

We worked a shift of 10 days on and 4 days off. Much of the time we were cooking our own meals which meant we were up at dawn to cook breakfast, in the field until 6 p.m., and back to camp to cook supper, which meant we worked from sun up until sundown.

This past summer we had two women on the crew, which got us a front page story in the local newspaper. The reporter was most interested in whether we all washed up together and slept in the same tent. We did.

My days off were spent in the tourist portion of the park. I also traveled to Los Angeles and the San Francisco Bay area to visit relatives.

The work was hard, but that is what life is all about, and I cannot think of anything I would have rather done.

Which way is the Interstate?



# My Experience In Redwood Country

Perry Dargitz

I spent the summer of '75 as a timber cruiser for Simpson Timber Company in northwestern California, along with Doug Sturhan. I was fortunate that my job was located within the heart of the Redwood country. During the first week of my job it was rather difficult to get used to measuring the boles of 70-100" diameter trees. The taller specimens of these "monsters" ranged from 144 to 176 feet in height.

As all foresters may know, during the summer months redwoods achieve most of their moisture from fogs coming off the Pacific Ocean. Sure enough, every morning we were met with this fog which hung around us until about noon and kept the temperatures between the high 40's to low 50's and the undergrowth cold and wet. Because of the high amount of moisture, the undergrowth consisted of ferns and other moisture loving plants. In other areas, such as the cutover areas, the brush was so thick that I had to fall into it in order to get the vegetation crushed down enough so I could crawl over it.

Along with measuring the height and diameters of the trees and taking reproduction counts, I also graded the down redwood logs left behind by Weyerhaeuser in the 50's when they owned the land. I was surprised to see that after laying around for 20 to 30 years in this climate, the heartwood of the logs showed no signs of decay. Even the split logs had heartwood that was still in sound condition.

Five of us lived in a cabin not too far from the Klamath River and the Pacific Coast. The cabin had a fireplace which was in use practically every night and was considered the most important furnishing in the house. Along with the cabin we were provided with a "six pack" pickup to get us back and forth to work. Because of this old "clunker" we gained the reputation around Klamath as the Simpson Swat Team.

In the evenings I often went down to the Klamath River fishing for steelhead trout and salmon. I also had the opportunity to visit Crescent City, to watch the commercial fishermen bring in their days haul. On Sundays we visited the beaches or other attraction sites along with going to the surrounding logging exhibitions and fairs. Toward the end of the summer our crew entered a raft race only to get beaten by a local team of women bartenders, a group of kids floating on a piece of styrofoam, and the Air Force.

Some of the more interesting experiences that happened to me while working in California included: getting stranded in the middle of the forest with a flat tire on the truck and no jack, getting a sudden attack of the flu while timber cruising and having to hike for

three hours over steep mountains back to the truck, having our camp raided by a bear while we were out cruising, which left my partner and I without food for a day, and waking up one night to find a salamander crawling into my sleeping bag with me. Another embarrassing situation occurred one night when I was fishing. Just about the time it was beginning to get dark, I hooked a trout which took me almost a half-hour to land. Because of this, I got back to the cabin later than usual only to find the Klamath sheriff starting to get a search party together to go out looking for me. Apparently, a couple of my friends back at the cabin were rather "soused" and thought I had drowned or was taken by the river god (a god which many of the Indians in that area still believe in).

Working for Simpson Timber Company was a real experience. They are becoming a progressive and innovative company concerned for the future of the redwoods. In some areas they are planting tubling stock which is providing them with 90% survival rate. For a person who has never been west of Ames, this was an experience I will never forget thanks to Simpson Timber Company, Dave Kaney, and Dr. Thomson.

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## The Black Hills

Roger Showman

My summer began last June 2nd when I managed to find Nemo, South Dakota, population 30, where my forest service duty station was located. I had left Ames thinking that it might be a dull summer. I had to take a job which was listed as a forestry aid working with recreation, but to my surprise when I got there I discovered that I had been assigned to the Nemo district fire crew.

We began work in June piling brush and thinning. June is a wet month in the Black Hills. The three of us on the fire crew were planning a camping and fishing trip to Wyoming over the 5th and 6th of July but bright and early on the 5th we had our first fire which totally canceled the trip. We mopped up the fire and returned to the work center at one o'clock in the morning, which really made for a long day.

The living quarters in this small town were quite pleasant and reasonably priced. I only paid 20 dollars a month for a seven room house where I could look out toward the east to see the Piedmont Ridge and all its beauty as the early morning sun rose over it. Many times throughout the summer deer were standing just outside the backdoor in the early morning, which made a beautiful sight.

As summer drew to an end it became a sad time, a time of packing up and returning to school. All in all though, it was a fun summer and I gained a lot of good experience in the forestry profession.

# Keep Oregon Green

Mark Webb

A lesson that is often taught is that if a person wants something badly enough, and tries for it, that person will usually obtain what is wanted. This concept became true for me last year as I obtained a summer job with the forest service in Oregon. Working and living in the mountain-west had been a life-long dream of mine, and it was finally happening. I secured my job in late April, and spent much of spring quarter just waiting for summer to come.

When the time came I fired up my old '64 Dodge, loaded up, and set out on the 2100 mile journey to Sweet Home, Oregon, and a job on a project crew for fire control in the Wilamette National Forest. Three long days of driving took me the distance, and helped this midwesterner realize the beauty of the mountain country. I was rather excited at seeing mountains for the first time, and also marvelled at how the land changed; from plains to forest and mountains, to high desert country, to hills and forest, then more mountains. The last mountain range crossed was the Cascade, and I then coasted down the west side to my home for the summer.

Sweet Home is as nice as its name. This small logging community is located on the west edge of the Cascades, near the Three Sisters and Mt. Jefferson wilderness areas; just east of the fertile Wilamette Valley, and only 80 miles from the beautiful Oregon coast. Forest cover in the area is dominated by large stands of douglas fir, with some cedar and spruce. Snow in the mountains provides the area with numerous streams, rivers and lakes, so watershed management is a primary concern. The west side of



I hope that wasn't just a campfire down there.



Mark's favorite job, mopping up.

the Cascades is a high precipitation area. It rains almost every day from September through May, but the summers are nice, and often get dry.

The district office there had no lodging for employees, so I situated myself in a small cabin-style apartment, and was soon put to work. The crew I was on was responsible for presuppression and fire-suppression activities. My first week of work we were broadcast burning slash, often until eleven or twelve o'clock at night. This was followed by extensive mop-up, or a thorough inspection of the units to be sure all remaining fire was out. By mid June, it was too hot and dry to burn, so we then worked clearing recreation trails.

That job was like being paid for taking a vacation. After a few weeks of that the crew began brush disposal and fire patrol work. Piling brush was not the most exciting job, but it was in the mountains, and those mountain mornings were some of the finest I have ever seen. Patrol work meant driving through the mountains all day, checking on campers, and watching for fire.

Whenever fire did start, it was our job to put it out. Policy of the forest was to suppress any kind of fire. The crew was on constant call for fire duty, and I was aroused three different times in the middle of the night to go fight fire. I went on three project fires outside of the Sweet Home district, none of them very large. There were also three small fires in the district. It was enough exposure to let me get sick once from smoke inhalation, learn about and un-

derstand fire control and suppression organization, and witness how terrible fire can be. One thing that did surprise me was the number of women on some of the fire crews. Three of our fifteen members were women, but other larger crews had as many as one-half women members. Fighting fires sounds exciting, but it's also a very hot, dirty, exhausting, and sometimes sickening job. One thing I liked about it was the travel and the many people I met. With fire suppression work I saw most of Oregon, and parts of Washington.

The Pacific Northwest is a very beautiful area. My summer there taught me a lot about forest service operations, the logging based economy, the lifestyle in mountain country, the beauty and wonder of the ocean, and the rich feeling of living on the Cascade country. If you can make it out there, I'd recommend it.

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## Forestry Arizona Style

Ray Dirksen

The summer of 1975 found me in the heart of Geronimo County, Coronada National Forest, Douglas Ranger District, in southeast Arizona. I was quartered, along with a native population of desert rodents, at the remains of one of the forts built by the U.S. military in an effort to capture Geronimo and his band of renegades. Fortunately I did not run into any vengeful Apaches. I did chase some local history and learned that "the lifeline of the woods" (to quote Dr. Thomson) in Arizona can do more to make a person lost than saved. I spent one afternoon with the district ranger searching for three separate section markers, which on one occasion was a 2 by 3 foot sandstone rock marked by an X in the northeast corner amidst a field strewn with comparable rock.

On the more serious side, I was a member of a fire crew, with recreational cleanup and fire prevention work occupying non-fire time. During the two months I was there, I was on three small fires (largest was 1 acre) all resulting from lighting striking trees. As a result, I saw more action behind a shovel cleaning fire pits than digging fire lines and more time scanning the roadside for litter from the garbage truck than scanning for fires from the helicopter.

One final point for all those unbelievers, yes Virginia, there are trees in Arizona. In fact the trees at 5,000 feet can make Holst Tract look quite poor, and at 8,000 feet huge Mexican white pine, lodgepole pine and some gambel oak predominated in majestic stands—not to be outdone by any Iowa forest. The problem is that most of this is not merchantable since the trees grow on slopes of 100 percent or more.

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## Honor Society

### Xi Sigma Pi

Michael T. Miller  
Forester

Alpha Gamma is Iowa State University's chapter of Xi Sigma Pi, a national forest resources management honorary society. Xi Sigma Pi has the objectives of maintaining high standards of scholarship and improving the forest resource management profession; it serves as a form of recognition of personal achievement and also provides funds for a \$200 scholarship given each year to one U.S. undergraduate student member.

Student members of Xi Sigma Pi are chosen from juniors and above, in the forest resource management field, on the basis of scholastic record and character traits indicative of a person highly interested in his or her field and likely to reach high professional achievements.

A student who accepts an invitation to become a member of the Alpha Gamma chapter goes through an initiation which is followed by a banquet. Initiation involves a week of wearing semi-formal clothing, carrying out the tree tradition and going through an initiation ceremony. The tree tradition is the wearing of a piece of wood cut in the form of a tree, with Xi Sigma Pi written on one side; it is hung around the initiate's neck with a piece of white and green ribbon. The tree is taken to current members for signatures thus serving as a means of bringing new and old members together for the first time.

Activities taken on by Alpha Gamma this year included aiding Dr. Dwight Benseid in updating employment files and the employment bulletin board, and helping Dr. Benseid in setting up a seminar series which had the purpose of bringing information to students concerning job hunting and resume preparation. Initiation week is planned for the week of April 20 - April 23, and the banquet will be held on the night of April 23. Between now and the end of May our chapter will also be holding elections for officer positions to be held during the next academic year.

# Forest Products Research Society Meeting

October 8-9 1975

Gary Hilton

In the fall of 1975 four Iowa State forestry seniors attended the Forest Products Research Society's Midwest Section annual meeting. Those attending were Mark Chicoine, Dan Garst, Gary Hilton and Tim Trachsel. Dr. Bensed and Dr. Prestemon accompanied the group. Dr. Bensed is currently the secretary of the midwest section.

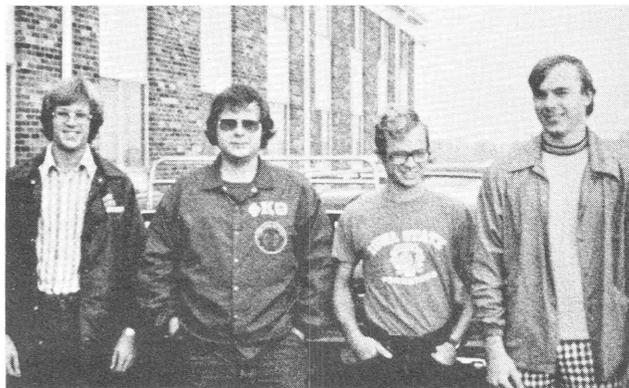
The two day meetings were held at the Ramada Inn in Waukesha, Wisconsin, near Milwaukee. The topic of the seminar was, "The Inside and Outside of Wood Finishes." Stains, laminates, wood coatings and finishes were among topics discussed.

The meetings were well organized and quite informative. Speakers from throughout the United States were in attendance. Forest products industry representatives and a representative from the Forest Products Laboratory (USFS) conducted the

programs. Midwest student members of FPRS were also in attendance. Schools represented were the University of Illinois, Southern Illinois University, University of Wisconsin and ISU.

Financial assistance was provided to students attending the seminar by the FPRS, also, money was provided by the Hartman Travel Fund for those members from Iowa State.

The experience was well worth the classtime missed and proved to be both entertaining and educational. A special thanks to Dr. Bensed for arrangements he made in enabling the four of us to attend.



Left to right: Gary Hilton, Mark Chicoine, Tim Trachsel, Dan Garst.

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## Forestry and Outdoor Recreation Club

### Presidential Review

Chip Scott

With the new departmental alignment, our name will no longer be the Forestry and Outdoor Recreation Club, but instead will simply be the Forestry Club.

This year has been a very successful one for the Forestry Club. We have been very active as a result of some energetic and creative members and can boast a healthy financial situation.

The Game Banquet was a success. The Veishea display presented the public with many facets of forestry, and featured a scale model of the Holst State Forest. Also during Veishea we held our annual Seedling Sale. The sale culminated a year of collecting seeds, planting them and then growing the seedlings.

Fall quarter found the Club busy with some activity almost every week. The Freshman Welcome at Soper's Mill had a good turnout. Work continued on the Holst Tract with emphasis on finishing the grid system markers. We were able to rid ourselves of the

last place trophy in competition at the Midwest Conclave at Southern Illinois University. Fall Forester's Day was its usual success. Other fall activities included the Canoe Trip, and trail clearing for the YMCA near Lynn Fuhrer Lodge in Ames.

Christmas Tree Sales started with the beginning of winter quarter. Again this year we had no snow for the Skiing Party, thus we had a Skating Party at Hickory Grove. A backpack, knife, and bow saw were given away in the raffle, which just broke even. Other winter quarter activities included a campout, intramural volleyball, hockey, waterpolo, and basketball, planning for the Veishea display, the Game Banquet and Seedling Sales.

Because the Christmas Tree and Seedling Sales, and the *Ames Forester* were so profitable this past year, the club has been able to involve itself more, and was able to purchase some equipment for use at the Holst Tract. There is every reason to believe that the Forestry Club will continue on this path of success.

## Officers



Left to Right: Jim Jaminet, vice pres.; Suzanne Tomek, sec.; Carla Derby, treas.; Chip Scott, pres.; Dr. Hall, club advisor.

## Freshmen and Sophomores



Left to Right: L. Knepp, S. Tomek, C. Gillespie, R. Anderson, C. Krambeer, C. Cochrane, K. Walton.

## Juniors and Seniors



Front Row, left to right: G. Hilton, T. T. Trachsel, M. Chicoine, S. Jones, R. Showman. Second Row: L. Logan, J. Swenson, M. Blenkush, D. Lundquist, C. Derby, M. Vor-

werk, C. Scott, R. Larsen, M. Popp, P. Dargitz, D. Hibbs. Third Row: M. Calhoon, J. Jaminet, R. Meier, L. Bajuk, T. Burk, R. Dirksen, M. Rediger, J. Jennett, D. Garst.

## . . . and the rest of the Club members

K. Adams, M. Adams, D. Becker, D. Binegar, E. Caldbeck, G. Case, J. Crane, S. Davis, J. Dewit, F. Emendorfer, G. Franklin, R. Gettle, D. Hertel, D. Hult, M. Hume, G. Ivory, S. Kleitsch, M. Lieurance, P. Lynch, J. McClure, L. McNally, G. Minkler, L. Moore, A. Mowery, J. Natvig, S.

Peterson, T. Podzimek, B. Rasmussen, R. Saedt, N. Saul, L. Schneider, R. Schwenke, D. Solem, J. Stanley, J. Stuart, D. Sturhan, J. Tuhy, S. VanHelten, D. Watson, M. Webb, M. White, J. Wilson.

# A Report On Conifer Plantations At The Holst State Forest

Larry Moore

The Holst State Forest has been under Forestry Club administration since 1947. One of the first (and one of the only) major club projects on the forest was the planting of conifer plantations. Upland areas near the forest entrance (Fig. 1) which had been cultivated during the war were reforested by the club in the late 1940s. The 1948 *Ames Forester* said that "the purposes of this . . . planting operation will be 1) reforestation, 2) experimentation on three soil groups, 3) demonstration of windbreaks and coniferous plantation in Iowa, and 4) the future realization of products."

The last recorded reforestation activities took place in the spring of 1952 with the planting of 5000 red pine seedlings (1953 *Ames Forester*). Many plans were made in the years that followed, but there are no records that any of them were ever carried out. The 1958 *Ames Forester* reported that "The pine plantation is growing rapidly in area and size [no figures on amount of growth given]. Several experimental areas concerned with site and aspect and using various pine species are well under way" [no sizes, locations, or any other details recorded]. The 1969 *Forester* reported plans to map the plantations, prune

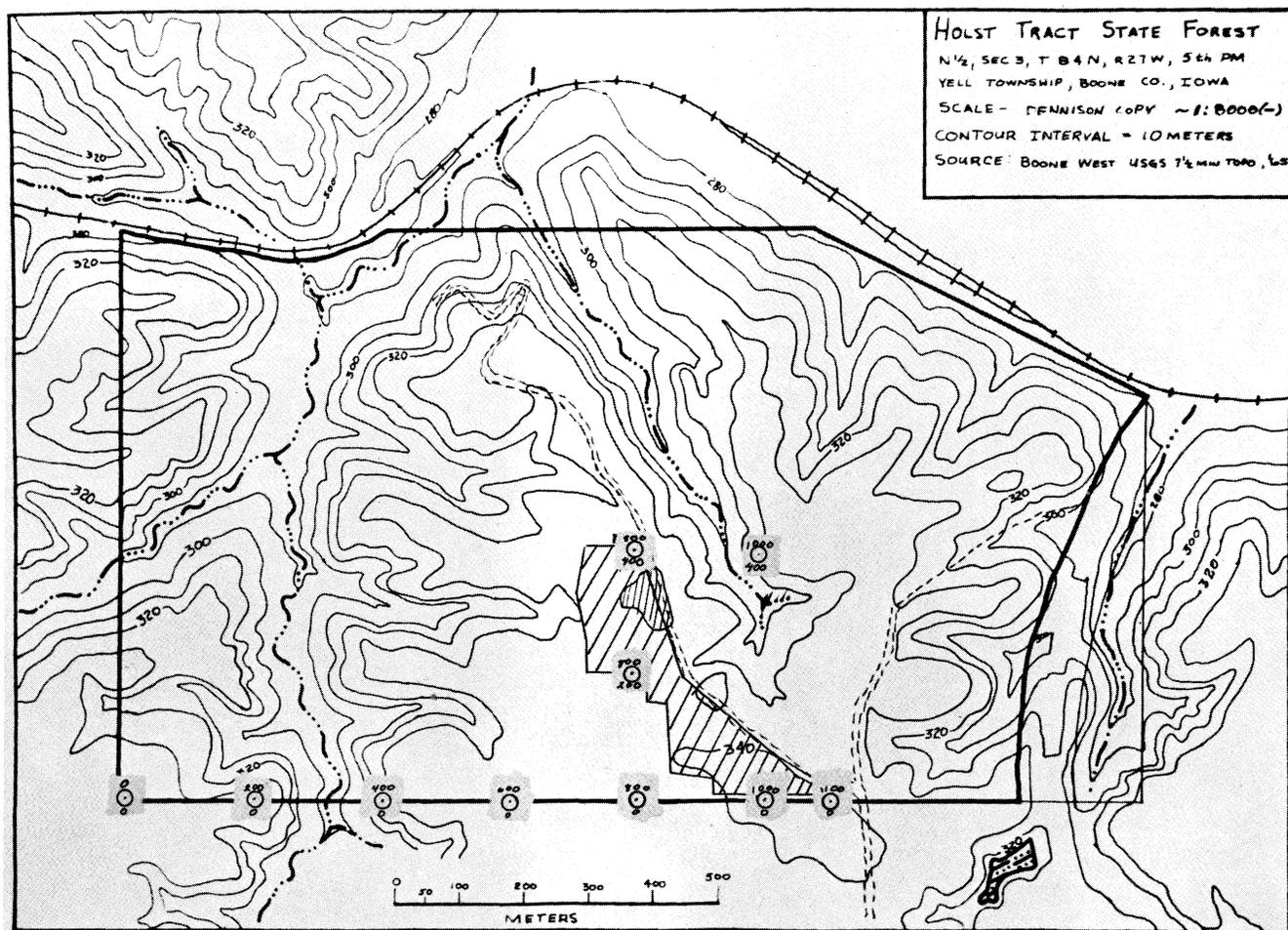


Figure 1. A topographic map showing the location of the upland conifer plantations at the Holst Tract.

the stands, and thin selected areas. No other records of any of these projects exist.

### Acreage

It is impossible to say exactly how many acres of conifers were planted through the years. The 1948 *Forester* reported the planting of 10 acres (4.05 hectares), and the 1949 *Forester* reported the planting of 18 one-fifth acre plots (3.6 acres or 1.46 ha total). Two other planting projects are reported in the *Forester*: 3000 seedlings in 1949 and 5000 seedlings in 1952. No locations of these plantings are recorded, so they could represent either the forestation of new land or simply the restocking of land planted earlier. These figures put the total acreage planted by 1952 between 13.6 acres (5.5 ha) and 22 acres (8.9 ha).

The plantation presently covers about 11.5 acres (4.65 ha), so it is doubtful that its size has ever been greater than 15 acres. Even so, *Foresters* of later years claimed the plantation area to be considerably greater. This "growth" reached its peak in 1959 at 35 acres.

### Species

At least eleven different conifer species have been planted on the forest. The 1948 *Forester* reported the planting of white pine, red pine, Virginia pine, blue spruce, and Douglas fir. In 1949 "eighteen different species of coniferous trees were planted . . . from native Iowa species to Swiss and shortleaf pine" (1950 *Forester*). Additionally, three hardwood species, green ash, black walnut, and red oak, were planted in the area in 1947.

No records were kept of where specific species were planted, how many were planted, or how many survived. At present, there are four species existing in stands large enough to be typed (greater than 1/10 acre): red pine, white pine, jack pine, and white spruce. Northern white cedar, eastern red cedar, scotch pine, ponderosa pine, and Austrian pine are also present, but are scattered or in stands smaller than 1/10 acre.

## PERMANENT BENCHMARK SYSTEM

Experimentation and research have always been primary purposes of the plantation area, but the poor record keeping of the past has made this or any other kind of management very difficult. An undergraduate club has a fast turnover of members, and when someone graduates without leaving a record of his work, that knowledge is lost. No notes or maps describing the plantation are still in existence, which quite literally means that no one knows where anything is.

Some system of permanent points was needed to make quick and accurate location of plots possible.

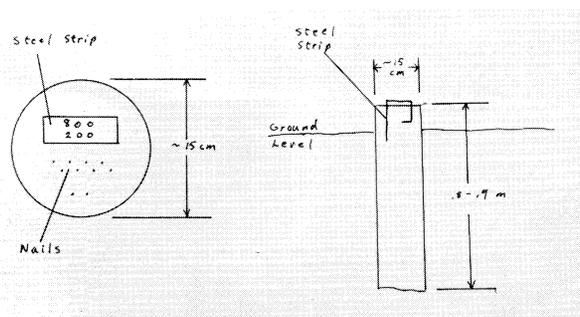


Figure 2. Benchmark size and marking used at the Holst Tract.

### Design of the System

A system of benchmarks was designed by Larry Bajuk with the help of Dr. Richard Hall in the fall of 1974. The system consists of a series of concrete benchmarks tied in to the southwest corner of the forest (SW corner of NW $\frac{1}{4}$ , S3, T84N, R27W). Benchmarks are located 200 meters apart (Fig. 1), with redwood stakes at the 100 meter mark between benchmarks. The system follows the south boundary of the forest to the east and expands north into a grid in the plantation area.

The markers themselves are poured concrete (Fig. 2). The concrete was poured directly into the ground around a steel wire. The location of each benchmark is described on the marker's top in two ways; inscribed on a steel strip and coded with imbedded nails.

Benchmark locations are described by a standard (x,y) coordinate system. The southwest quarter corner is the origin (0,0), with the x axis running due east and the y axis due north. The (x,y) coordinates of each point are inscribed on a steel strip on top of the benchmark, and also recorded by the number of nails imbedded in the concrete; each nail represents 100 meters (Fig. 2).

At this writing, the 10 points shown in Figure 1 have been permanently marked. The system can easily be expanded at any future time.

### Implementation

The system was initiated in the Spring of 1975. Points were located by standard chain and compass techniques, starting from the southwest quarter corner.

Surveying was done by student teams of three to five people (the activity was also used as an educational exercise, upperclassmen instructing underclassmen). The survey was done with the following methods and equipment:

1. Hand-held Sunto compasses.
2. Topographic chains (metric chains were not purchased by the club until the Fall of 1975. Distances

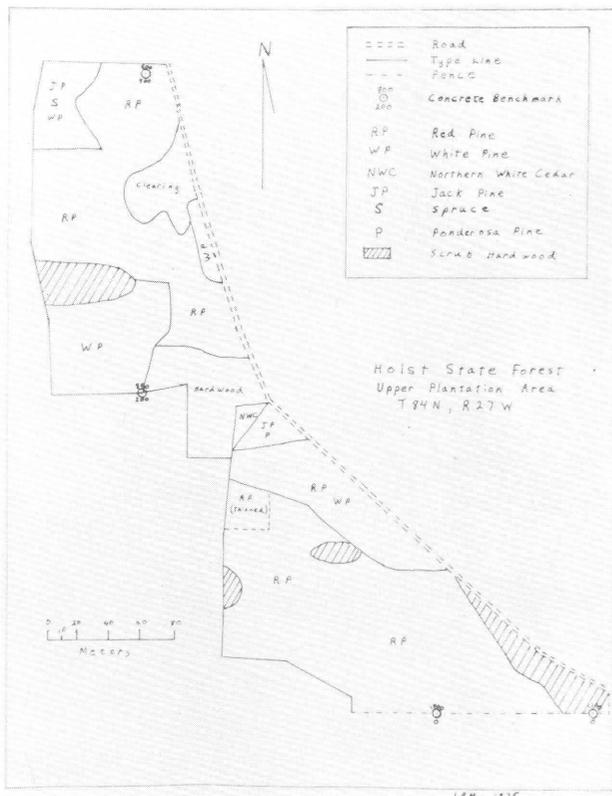


Figure 3. A type map of the plantation area.

on this survey were converted to meters by standard conversion.)

3. Hand-held Sunto clinometers. Slope corrections were made trigonometrically.

At this writing, no significant errors have shown up in the location of points.

### TYPE MAPPING OF THE PLANTATION

As far as we know, no type map or other accurate record of species composition has ever existed for the plantation area. This makes any kind of information gathering or management difficult, for reasons already discussed. In recent years, some test plots have been installed for research in stand dynamics and genetics, but even these plots have not been located accurately with respect to the rest of the world. Type mapping the area was logically the next step after installing the benchmark system.

#### Methods

The plantation was mapped in the Fall of 1975 by Larry Moore and Larry Bajuk. The plantation perimeter was run with a 50 meter chain and hand-held Sunto compass. The plantation area is virtually flat, so slopes were not corrected (except to chain level where obviously necessary).

The perimeter traverse was closed and tied in to the benchmark system. Interior lines were run at 40 meter intervals to roughly establish type lines. The

type lines themselves were then surveyed by compass and pacing. (It should be noted that pacing did not introduce as large an error as might be expected.) The benchmarks and flagging left on the perimeter traverse supplied enough known points that it was seldom necessary to walk more than 50 or 60 meters without tying into some known point.

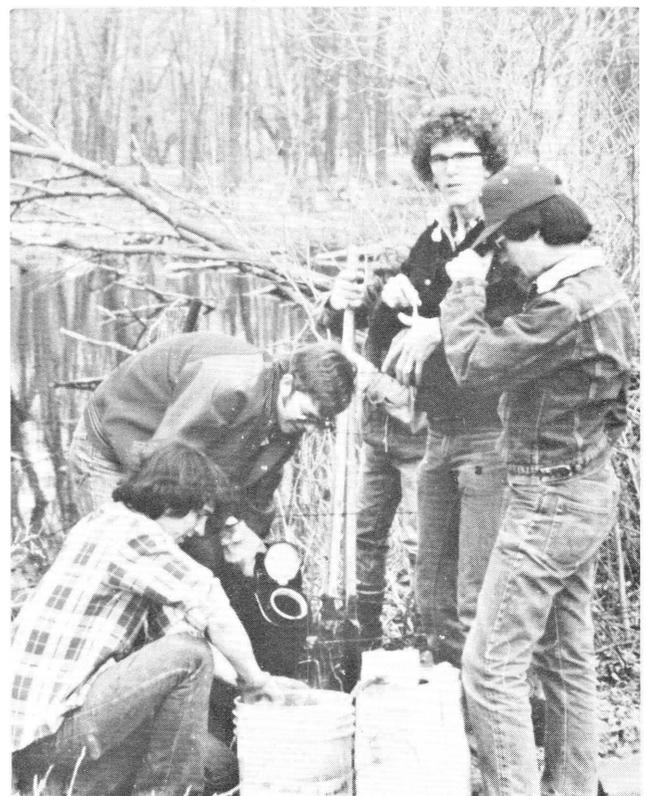
### CONCLUSIONS

The final product of this project was a type map of the plantation area (Fig. 3). The total area of the plantation is 11.5 acres (4.65 ha). Table 1 breaks this area down by types. This map can be updated and/or made more accurate at any future time by running more interior lines. The benchmark system makes it relatively easy to lay out small test plots or make detailed maps of small areas of the plantation.

Table 1. Area by types.

Type	Acres	Hectares
Red Pine	6.6	2.67
Red pine-White pine	1.1	.45
Jack pine-Ponderosa pine	.14	.06
Northern-White Cedar	.07	.03
Jack pine-White pine-spruce	.42	.17
White pine	1.2	.48
Hardwood	.7	.28
Scrub hardwood	.85	.34
open	.42	.17

Larry Bajuk, Larry Moore, Ray Dirksen and Steve Jones set a benchmark during the fall of 1975.



# The Wild Game Banquet

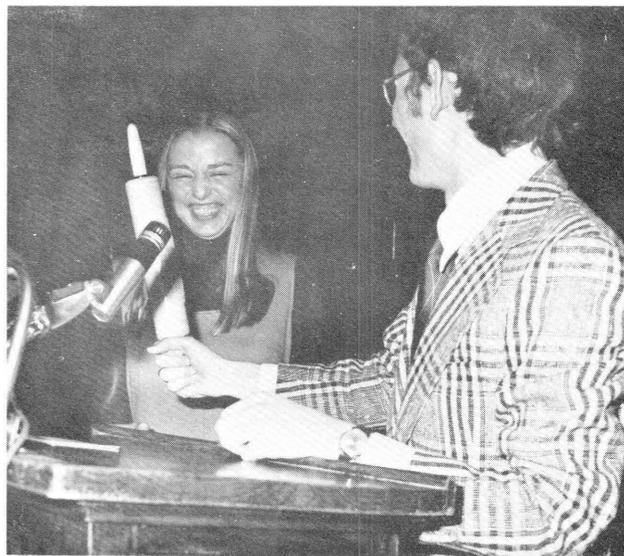
Dwight Lundquist

With the help of many other people, Pat Franje and I put together a rousing game banquet on March 21, 1975. The south Ball Room of the Memorial Union housed the group of 89.

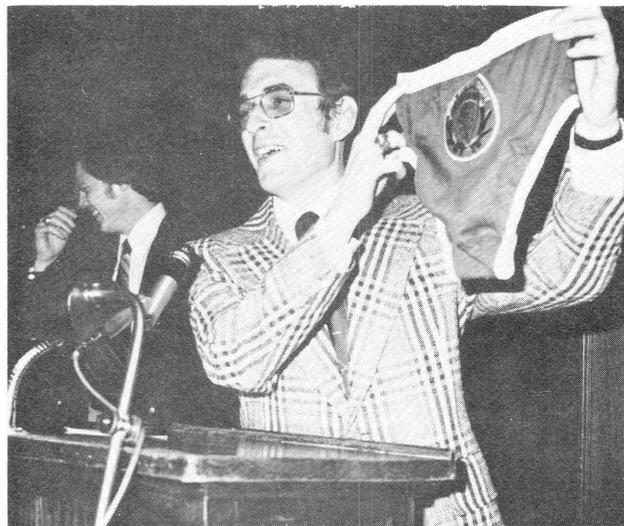
After a welcome by Russ Hatz, the emcee, Pat gave the invocation. The meal featuring buffalo, pheasant, rabbit, squirrel, turbot (fish), perch, and roast beef satisfied everyone.

Various awards were then announced. Mark Webb received the Keith A. Bauer and Hoo Hoo Awards. Joel Tuhy accepted the J. Milton Cone Award. The S.A.F. Awards went to Gary Beyer and Joel King. Three miscellaneous awards were also given. Gary Hunter got a bed pan, Pat Rutz got a rolling pin, and Jon Gehring received a pair of "patched" underwear.

Results of the club elections, kept so diligently secret, were announced prior to the speech given by Dr. Phil Larson from the Forest Research Station at Rhineland, Wisconsin. A social hour then followed the raffling of the floral center piece.



Pat's new Biltmore stick.



For the man who has everything.



Joel Tuhy receives the J. Milton Cone Award.



The Keith A. Bauer Award went to Mark Webb.

# Veishea - Seedling Sale

May 1-3, 1975

The Forestry Display for Veishea 1975 had some marked improvements, which earned us "Recognition For Outstanding Contribution." Three continuous slide shows, background music, and spotlighting were some of the additions to the display in Bessey Hall. At the same time, seedling sales moved outdoors, right onto central campus, where seedlings were sold at a blinding rate.

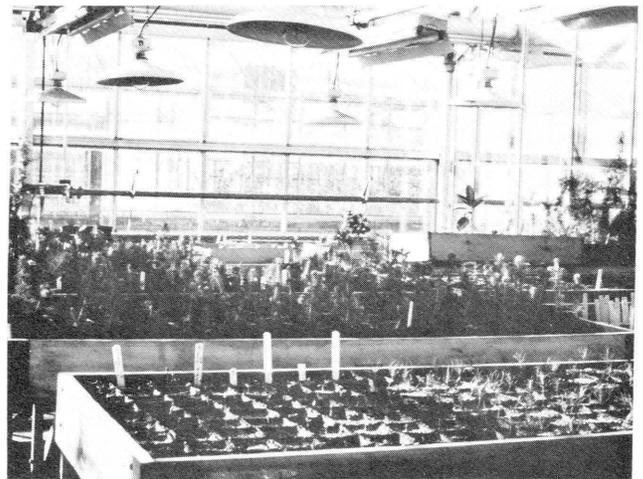
This year's seedling project co-chairmen, Bob Meier and Mike Vorwerk, are busy supervising planting, transplanting, and watering trees for

Veishea 1976. Presently, the Forestry Club has 24 members working on the project. Bob says he sees three goals for the project; making those who visit the display more aware of what tree care involves, giving undergraduates a chance to practice basic greenhouse skills, and bringing some funds into the club's treasury.

Meanwhile, Jim Jaminet, Larry Moore, and Mark Rediger are busy organizing the 1976 indoor display.



Making molehills out of mountains; the Holst Tract model.



The FOREC nursery, at the Iowa State Forestry Research Greenhouse.



The seedling sale on central campus drew many buyers and curious spectators.

# Freshmen Welcome

September 19, 1975



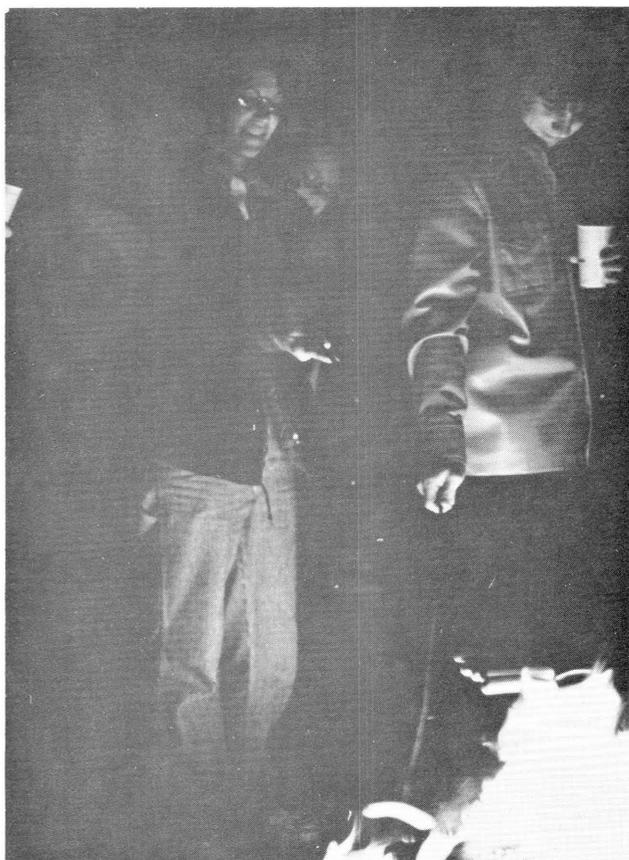
Super salesman Larry Moore makes a big sale.



The FOREC members building fire line at Soper's Mill.



Sue . . . Sue . . . its sticking its tounge out at me . . .



Forestry 01, hot dog utilization.

# Fall Foresters' Day and Pig Roast

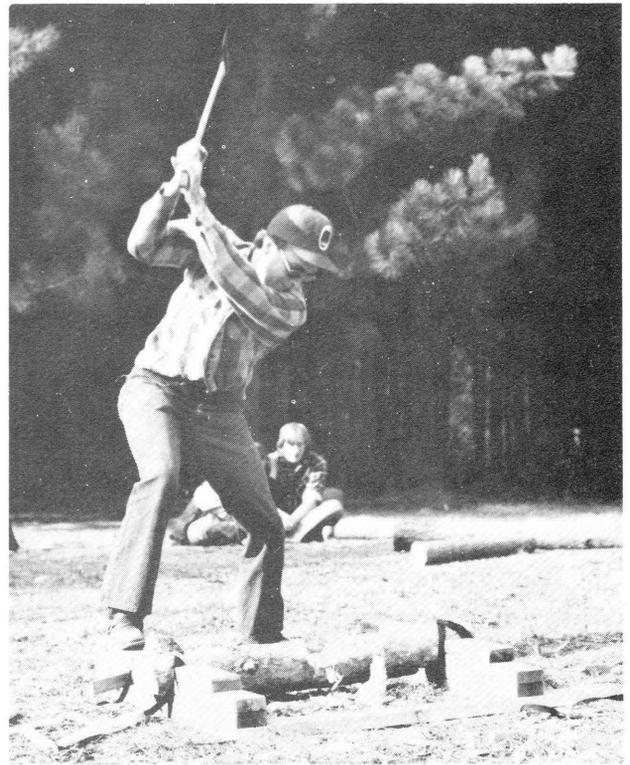
October 11, 1975

Fall Foresters' day was held at the Holst Tract State Forest on a beautiful, crisp fall day. After a full day of activities which ended in the traditional water boil and dizzy-izzy, the club retreated to the cabin area to feast on roast pig. With the help of most of the club, and in spite of the uncooperative chain saw and kinked topographic chains, these events were again a success.

Larry Bajuk and Dan Hibbs, Co-chairmen



Larry Bajuk, Doug Sturhan and Steve Peterson warming up for the tug-of-war.



Steve Van Helten giving it the all American effort.

Jim Jaminet and Doug Sturhan harpooning a wild log.





Dr. Thomson supervising his new forestry physical education class.

## Placings

### Overall

1. Rich Gettle
2. Roger Showman
3. Anderson-Scott-Vorwerk

### Pulp Toss

1. Gettle-Vorwerk
2. Burk-Scott

### One Person Buck

1. Rich Anderson
2. Rich Gettle

### Chain Throw

1. Bob Meier
2. Jim Jaminet

### Two Person Buck

1. Dewit-Kouba
2. Gettle-Vorwerk

### Traverse

1. Roger Showman
2. Tom Burk

### Tree Felling

1. John Jennett
2. Tom Podzimek

### Log Rolling

1. Hilton-Showman
2. Jaminet-Sturhan

### Wood Technology

1. Carla Derby
2. Mike Vorwerk

### Speed Chopping

1. John Jennett
2. Mark Chicoine

### Tobacco Split

1. Mark Rediger
2. Dan Hertel

### Bolt Throw

1. Rich Streeper
2. Jim Wilson

### Match Split

1. Rich Anderson
2. John Natvig

### Nail Pound

1. Sue Kleitsch
2. Eilene Larson

### Dendrology

1. Chip Scott
2. Rich Gettle

### Tug-of-War

1. The Gang
2. Seniors

### Egg Toss

1. Mark Kouba & wife
2. Greg Franklin & wife

### Water Boil

1. Larson-Showman
2. Derby-Jaminet

### Dizzy-Izzy

1. Neal Saul
2. Gayle Minkler

# 24th Annual Midwest Foresters' Conclave

October 17-19, 1975

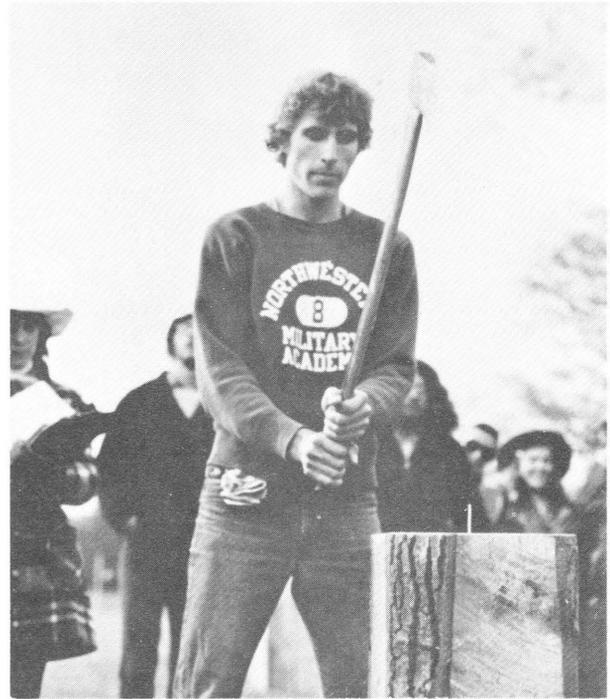
Jim Jaminet

October 17th was a beautiful sunny Friday afternoon when the 10 of us left the ISU Forestry greenhouse. How could it be cold in Carbondale, Illinois? After all, we were going south. The trip took about 11 hours and wasn't exactly uneventful. John Jennett's car blew a front tire while going down the freeway passing a truck. I was driving Mark Rediger's car when a friendly small town policeman stopped me for having a headlight out. No ticket was issued but he sure shook up the contents of the car.

The Conclave site was difficult to find because rain had demolished several of the direction signs. Half-way through the captains meeting, in the dark of night, we arrived. Most of us choose to immediately fall asleep on the bumpy army cots to get some shut-eye before the events that would begin later that same morning. Mark (Bear) Chicoine was dedicated to axe sharpening and antifreeze disposal. He slept perhaps an hour while we all ate breakfast. Maybe that explains his performance in the event, for that matter, we all could have sharpened axes all night.

The tobacco spit was scheduled for 8:00 AM Saturday morning. Contestants were slow to show up, but who could blame them with sausage and eggs still in their mouths and Red-Man waiting to be chewed.

As the day progressed, our score didn't . I must explain that ISU is a greenhorn at Conclave games.



Greg Franklin has his kung fu forestry concentration at work.



First row, left to right: Tim Trachsel, Mark Chicoine, Jim Jaminet, Mary Franklin, John Natvig. Second row: Mark Rediger, Ray Dirksen, Rich Gettle, Carla Derby, John Jennett, Greg Franklin.

This was our third year to take part in the extremely competitive events. Many of the other teams have much better equipment and practice the events like a true team for months in advance.

It was dark, cold, and our last chance to score any points when the special event, log burling, took place. All the pressure was on a freshman, John Natvig, a very courageous and dedicated forester for falling off that log into icy cold water. John hadn't practiced burling for years, as a matter of fact—never, and the result of the day's activities found us tied for last place with Ohio State.

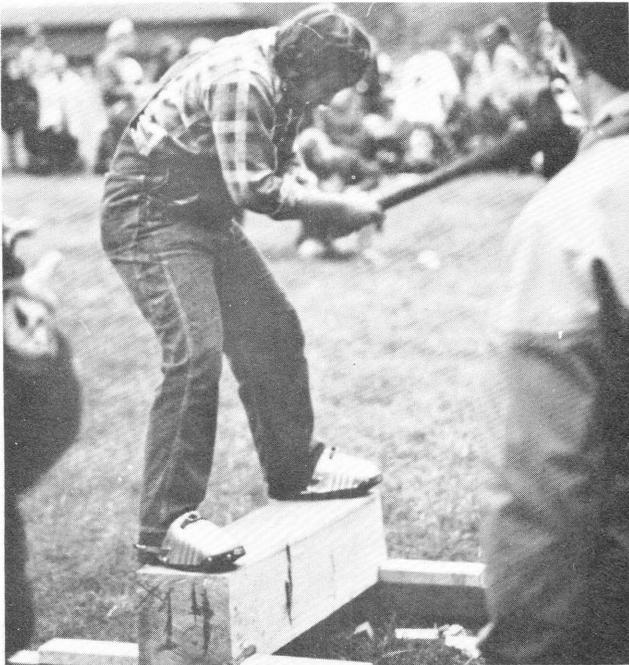
Now the clincher. Last place is an insult and disgrace to get. The prize is a greasy, moldy, moth eaten bearskin. We all sat patiently through the awarding of some really decent prizes, none of which we got, and anxiously waited to see who would get the bearskin. A yelling contest with ISU having more support was the deciding factor that awarded the incriminating bearskin to Ohio State.



Rich Gettle sure hated it when his partner didn't show up.

What I like to refer to as the final event was the bonfire, song singing, beer drinking contest. ISU did place quite well in this event and we would have certainly been given a prize for knowing how to enjoy ourselves.

Schools entered in the Conclave were: Iowa State, Michigan, Michigan State, Michigan Tech, Minnesota, Missouri, Ohio State, Purdue, and Southern Illinois. The University of Michigan took first place point wise but I feel the ISU Conclave team placed high in learning and having a good time.

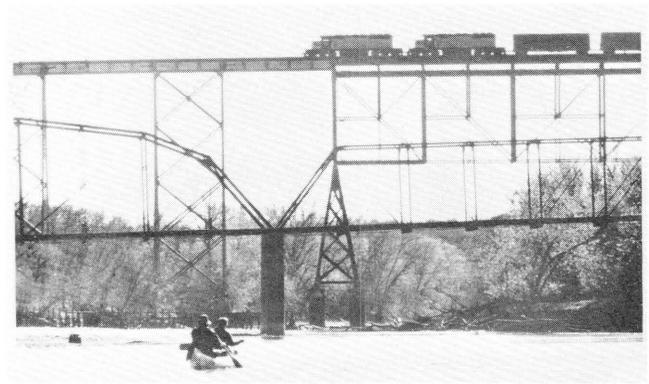


Bear made sure his boots were nailed down before he started speed chopping.

## Canoe Trip October 24-26, 1975

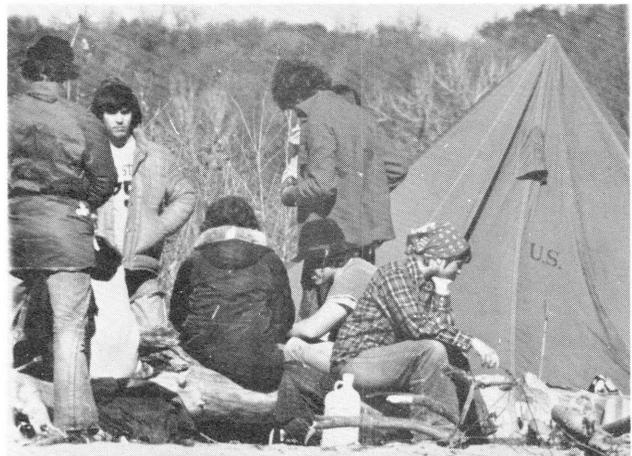
The route was along the Des Moines River from the Holst Tract State Forest (Fraser) to the Ledges State Park. The armada was 6 canoes strong with 12 club members participating.

The women during a moment of thought at the Boone Waterworks portage.



Canoeing under the Kate Shelly Bridge.

An enthusiastic camp crowd at the Ledges State Park.



# Christmas Tree Sales

The annual Forestry Club Christmas tree sales got under way the Wednesday after Thanksgiving vacation with a stock of 330 trees and 50 degree weather. Although the lack of snow may have dampened some people's Christmas spirit, the sales profit was the most ever realized.

This year's trees were purchased from the John Winebreunner tree farm in Leon, Iowa, 105 miles south of Ames. The co-chairmen Tom Burk and Keith Walton along with five other members of Forestry club were responsible for picking up the trees.

Both the hard work of the co-chairmen and the support they got from other club members helped to make this project a success.



Sue Kleitsch at work trying to sell Dr. Bendsend a tree.



A familiar sign around the Memorial Union at Christmas time.

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(Ski Party)

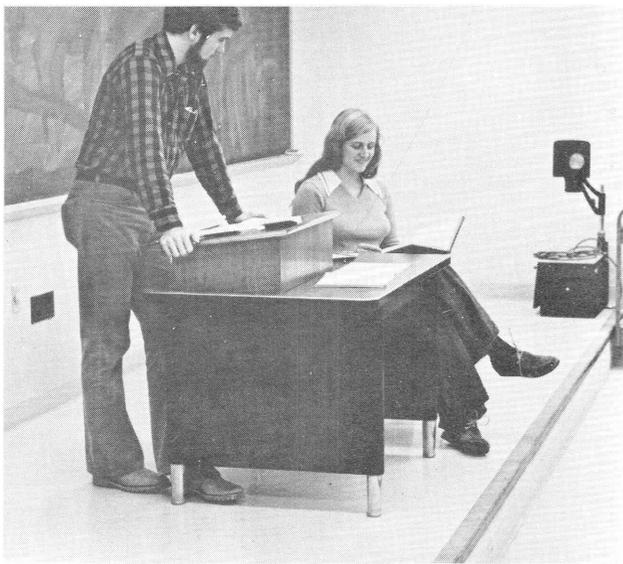
January 30, 1976



Keith Walton tries to get just one more tree in the van.



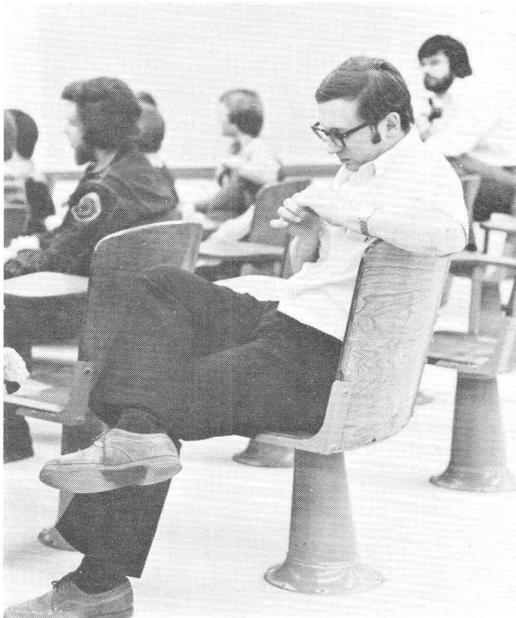
A big chili cook in preparation for the skiing party.



Chip somberly gives his farewell address . . .



Sleeping was one of Curt Krambeer's favorite pastimes on the canoe trip



. . . and our advisor is tremendously moved.



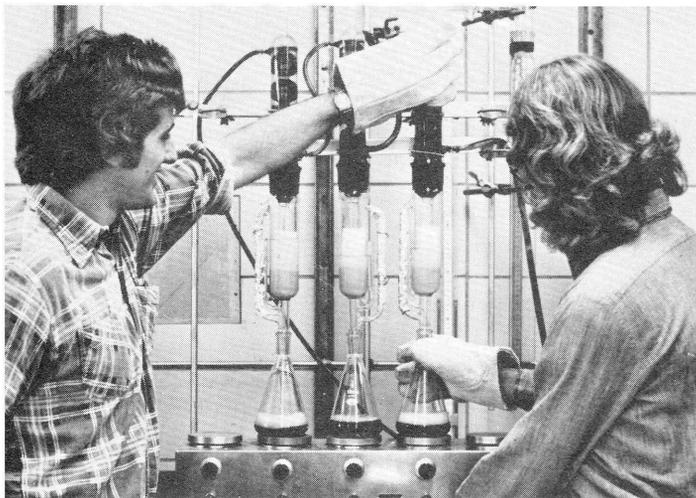
Carla isn't worth anything in the morning before her first marshmallow.



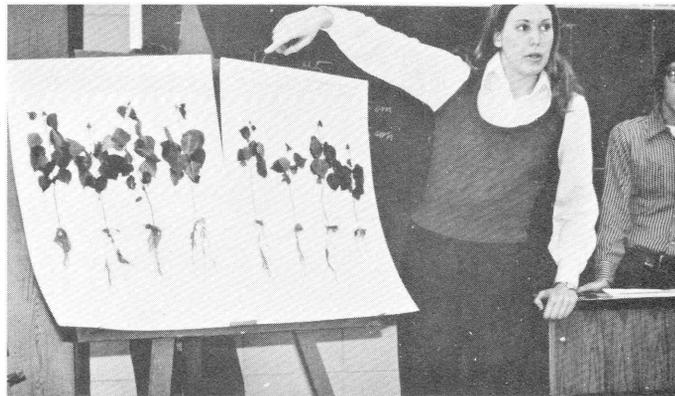
Tom Burk(e) forming a coup at a recent FOREC meeting.



Dr. Scholtes further elucidates on yet another fine point.



Streeper and Kouba; mad wood chemists at work.

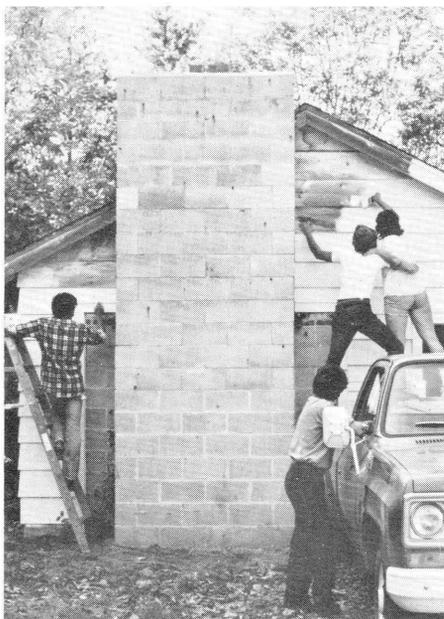


A scene from the notorious 301 presentations for Dr. Gordon, v 1975.



Steve Jones is still looking for the Interstate.

It took a little brotherly love and 3 gallons of paint to get the shed at Holst Tract refinished.



A very happy winter resident of the Holst Tract.



Jim Jaminet shows Steve Van Helten and Dwight Lundquist how to enjoy a FOREC meeting.

November 20, 1975

Mr. and Mrs. Bajuk  
605 Lyon Avenue  
Wheaton, Illinois 60187

Dear Mr. and Mrs. Bajuk:

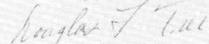
As head of the Forestry Department at Iowa State University, the task of informing you of your son, Larry's, disheveled and unkempt appearance has fallen heavily upon my shoulders. Personal feelings towards modes of dress no longer have a bearing on the issue. Shredded blue jeans of an insufficient length, boots with gaping mouths for soles, the occasional absence of socks, the perennial appearance of a certain pale red scout jacket in conjunction with a seldom tucked orangish/brown plaid shirt, a seedy grey/brown/black(?) skull cap, and (heaven forbid) a blue O-REC T-shirt, simply have no redeeming social value at a university of Iowa State's caliber.

How can we in good conscience expect students in our classes to concentrate their attention upon the subject matter at hand when we ourselves do vainly attempt to maintain our composure in the presence of a bony pair of knees protruding from the refuge of a motorcycle accident?

If this problem was only the general consensus of the professors in the department and a few of your son's personal friends, all would be well. But, pressing enquiries have ensued from the offices of the Dean of Students and... the President himself. I cannot disavow knowledge of your son's being a senior forester indefinitely. Come graduation day, will he rise in all his tattered blue jeans glory to receive his diploma as a result of sheer neglect or cowardice on our parts?

Please Mr. and Mrs. Bajuk, we beg, we entreat you, set your son straight. Surely his sentimental feelings towards you will succeed where dire threats of administrators and peers have failed.

Sincerely,



Douglas F. Tree  
Head of the Forestry Department

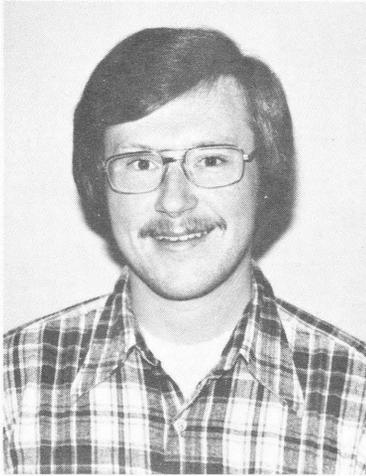
DFT/sk

"Your son is smart enough, but . . ."

Chip Scott and Ray Dirksen do some trail clearing at Lynn Fuhrer Lodge.



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**DAVID ASH**

**Forest Management—Economics**

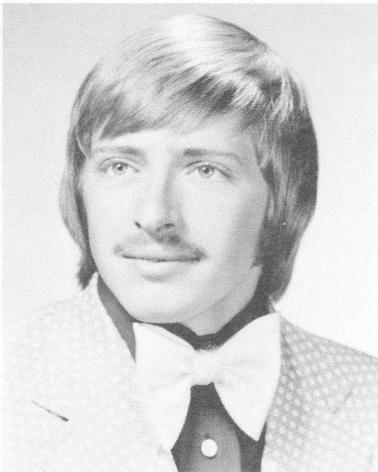
Dave is from Des Moines, Iowa. He is married and was with the 1973 summer camp in North Carolina. The next summer Dave worked at a telephone cable splicer in Indiana for General Telephone and Electronics. The following summer was spent as an engineering aide on pollution abatement on the Bighorn National Forest in Sheridan, Wyoming. He was a member of Sigma Phi Epsilon Social Fraternity and Alpha Phi Omega National Service Fraternity, secretary of Alpha Phi Omega, and student member of Society of American Foresters. His interests include hunting, fishing, camping, "studying", and an occasional beer. After graduation next winter quarter he plans to work in forest resource management for private industry.



**LAWRENCE A. BAJUK:**

**Forest Biology-Management**

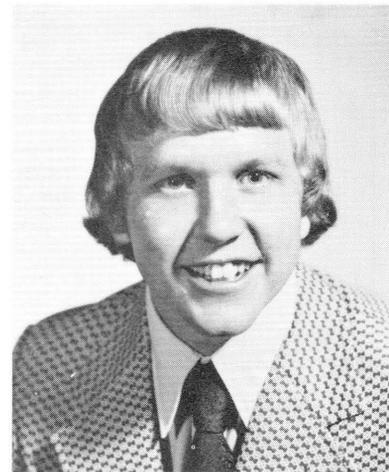
Larry came to ISU after many months on the Appalachian Trail. Buckling down to college life, he soon became active in the Honors Program, FOREC Club, Holst Committee, as well as forest biology research. Having received the Cone Award and a Goke Estate Scholarship, he is now planning to study forestry at the University of Ljubljana, Yugoslavia under an ITT International Fellowship. Living, being outside, and sharing with people are his favorite endeavors.



**G. DAVID BINEGAR**

**Forest Management—Economics**

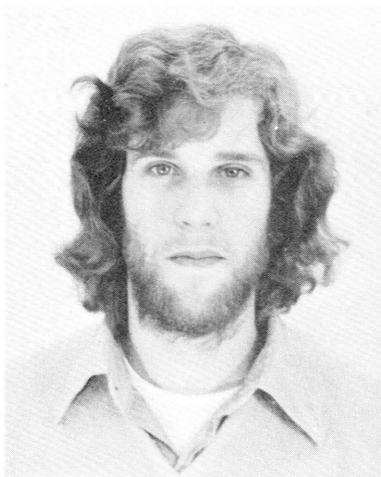
Dave is from DeWitt, Iowa. He was at the 1974 Wisconsin summer camp. Dave worked last summer on an Oak Wilt research survey for the city of Des Moines. His activities have included FOREC Club, Honors Program, member of Alpha Gamma Rho Fraternity, and Student Ambassador. Dave's main hobbies are billiards, chess, and music. He intends to enter Law School or do graduate work after his graduation in the spring.



**THOMAS EDWARD BURK**

**Forest Management—Statistics**

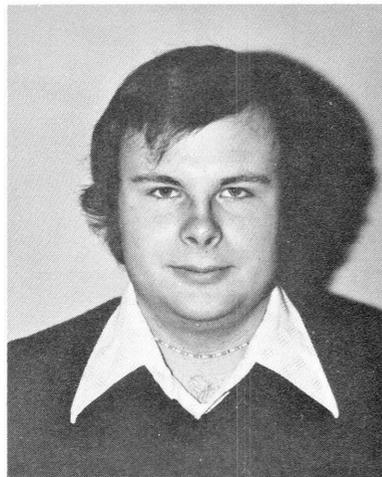
Tom is from Independence, Iowa. He attended the 1973 summer camp in North Carolina. His summer work has included working as an International Paper Company intern, working on the ISU Forestry Department's Illinois Project, and counselor at the Trees for Tomorrow Conservation Camp. Tom has been active in FOREC Club as Sophomore Representative and Christmas Tree Sales Chairman. He is also a member of Xi Sigma Pi, Alpha Zeta, Phi Kappa Phi, Gamma Sigma Delta, on the forestry department's Curriculum Standards Committee, Hoo Hoo Award recipient, and an Honors student. His hobbies include hunting, trap-shooting, hockey, and squash. Tom's plans after graduation in the spring are to attend graduate school unless an attractive permanent position surfaces.



**MARK CALHOON**

**Forest Management—Journalism**

Naperville, Illinois is Mark's home. He attended summer camp during 1973 in North Carolina. He has been a member of the FOREC Club, was editor of the 1976 *Ames Forester* and worked with the Public Information Bureau at ISU. His interests include photography, bicycling, camping, reading and sports. Mark worked in the Medicine Bow National Forest during the summer of 1975. He plans on working with the Peace Corps after graduation.



**MARK A. CHICOINE**

**Forest Products—Industrial Engineering**

"Bear" comes from Downers Grove, Illinois. He was with the 1973 summer camp in North Carolina. The next summer Mark worked with the forestry summer camp staff of North Carolina State University. The following summer he was responsible for detection and marking of all diseased elm trees for the city of Downers Grove. His activities take in FOREC Club, Forest Products Research Society, and being member of Phi Kappa Theta fraternity. Mark likes hockey, hunting, fishing, camping, motorcycle riding, and woodworking. His post-graduation plans in the spring are to work in the area of forest products research and application.



**PERRY D. DARGITZ**

**Forest Management—**

**Soil Science and Watershed Management**

Perry comes from Leaf River, Illinois. He was with the 1973 summer camp in North Carolina. Perry has spent three years working for the Rockford Park District in Illinois, two summers supervising tree nursery operations for a landscaping firm in Rockford, and last summer as a timber cruiser for Simpson Timber Company in northwestern California. He has been active in FOREC Club as Senior Representative and Student-Faculty Relations Committee Chairman, a member of Xi Sigma Pi and the Society of American Foresters, and has participated in the Iowa State University Marching Band and the Concert Band. His hobbies include camping, hiking, fishing, photography, playing in bands, and raising animals. Perry's plans after graduation in the spring are to work for a federal agency as a soil scientist or a watershed manager or as a general forester for a private firm.



**SHARON DAVIS**

**Outdoor Recreation—Biological Sciences**

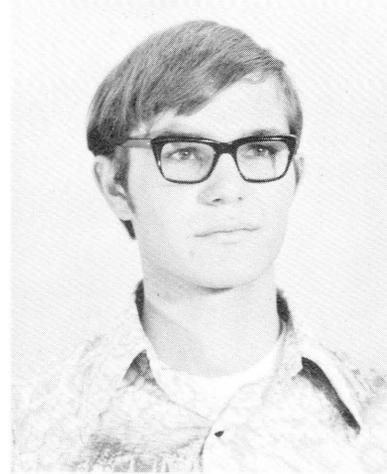
Sharon comes from Coon Rapids, Iowa. She is a member of the FOREC Club and has been very active in the 4-H club on campus as publicity and recreation co-chairperson. During the summer Sharon has been nature-crafts supervisor at Iowa 4-H camping center in Madrid, Iowa. She enjoys guitar playing, hiking, and jogging. Her plans after graduation next fall are to work at a recreation area.



**DANIEL DOLAN**

**Forest Management—Resource Education**

Dan comes from Evansdale, Iowa, and is a member of the Phi Kappa Alpha fraternity. He was a member of Freshman Student Government, a student ambassador with the Student Alumni Association, captain in charge of Cyclone Recruiters for Campus Chest, and regional vice-president of his social fraternity. Dan's interests are in outdoor sports and politics. He attended the 1973 summer camp in North Carolina. He plans to possibly enter law school after graduation.



**PATRICK FRANJE**

**Forest Management—Forest Biology**

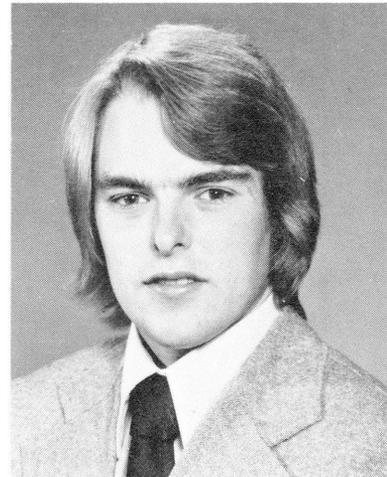
Pat is from New Sharon, Iowa. He attended the 1973 summer camp in North Carolina. Pat worked one summer for the Pella tree nursery landscaping and planting trees and shrubbery. He is a member of the FOREC Club and his main hobby is fishing. After graduation next fall he plans to work in forestry outside of the United States for a few years.



**RICHARD GETTLE**

**Forest Management—Botany**

Rich attended summer camp during 1972 in Quebec. He is from Elberon, Iowa, and is an active assistant scoutmaster there. Rich worked in the San Juan National Forest, Colorado the past two summers. He has been very active in the dormitory system, and a member of the FOREC Club for five years, serving one year as the senior representative to the Ag Council. He would like to work with the Forest Service after graduation. His hobbies include raising bees, collecting axe heads, camping, reading, motorcycling and calling hogs (the 1971 Bohemie Hills hog calling champion).



**NEIL D. HAMILTON**

**Forest Management—Economics**

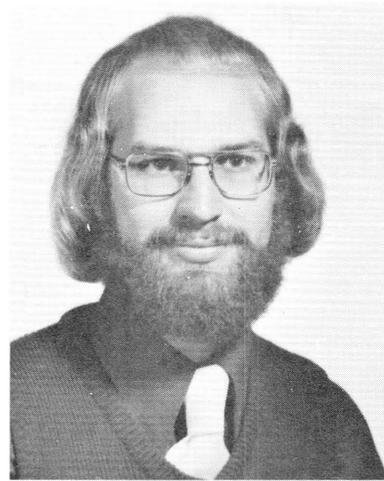
Coming from Prescott, Iowa, Neil graduated in February, 1976. He attended summer camp in 1973 with Dr. Benseid's North Carolina camp. In 1974 Neil worked during the summer as a forestry research assistant at ISU. He was a member of the Ag Council for two years, a GSB senator for the Ag College, on the Forestry Department Curriculum Committee, student representative on the Environmental Council, and a member of Xi Sigma Pi. He will attend law school next fall.



**GARY HILTON**

**Forest Products—Forest Management**

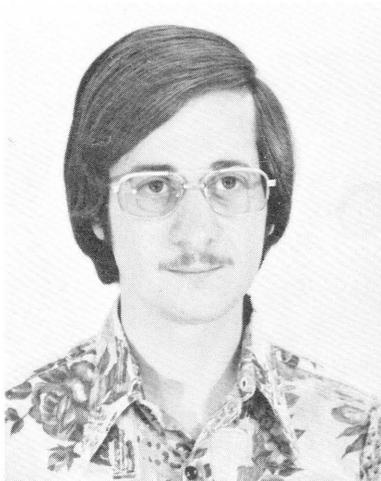
Gary is from Fort Dodge, Iowa and will be graduating in Fall 1976. He attended the 1973 summer camp in North Carolina. The summers of '74 and '75 were spent working for a lumber company in his hometown. Basketball, backpacking, fishing and music are among the things Gary enjoys. He is a member of Forec Club, Forest Products Research Society, Wilderness Society and Society of American Foresters. Post graduation plans include either working for the Forest Service or going on to graduate school.



**JAMES ALLEN JAMINET**

**Forest Management—Industrial Administration and Education**

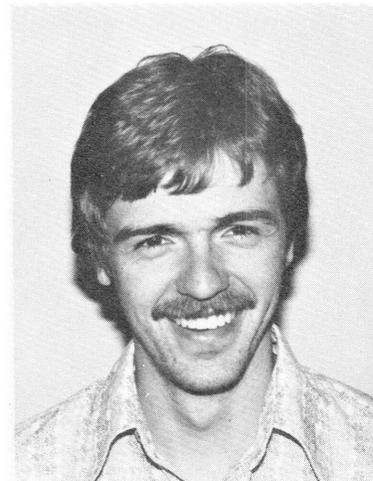
Jim is from Remsen, Iowa. He had his summer camp experience in Cable, Wisconsin, during 1974. Jim spent last summer working for the State Forester of Des Moines detecting and marking all trees having oak wilt or dutch elm disease. He is Vice President of the FOREC Club, House secretary, and member of Society of American Foresters. His hobbies include hunting, golf, tennis, music, skiing, and "the pursuit of happiness." After graduation in the spring, Jim plans to pursue work with the Forest Service out West.



**STEPHEN M. JONES:**

**Forest Management—Soils**

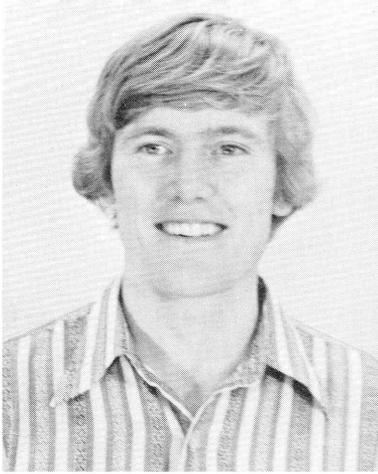
Steve hails from Walnut Creek, California. He attended the 1973 North Carolina summer camp. His summer work has included doing inventory and mapping of Sequoia trees in Sequoia National Park, California. Steve is a member of FOREC Club, and is house secretary and activity chairman. His hobbies include scuba diving and jeep'n. After graduation this spring he plans to work on the West Coast, hopefully in California.



**GREG LARSEN**

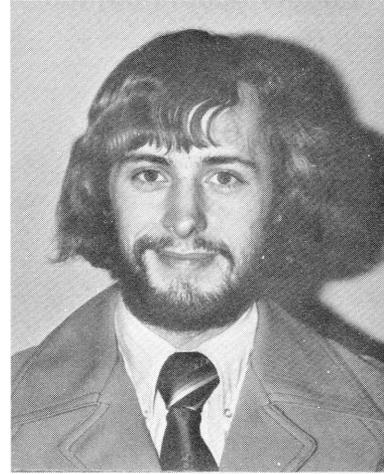
**Forest Products—Business**

Greg is from Fairmont, Minnesota. He attended summer camp in North Carolina during 1973. In the past summers he has worked for the United Building Center in Fairmont and the Wilderness Canoe Base in Grand Marais, Minnesota. Greg has been a member of the ISU tennis team, active in intramurals and the house treasurer of a dormitory floor. At the present time he does not have definite plans for post graduation. He enjoys canoeing, camping, athletics and horticulture.



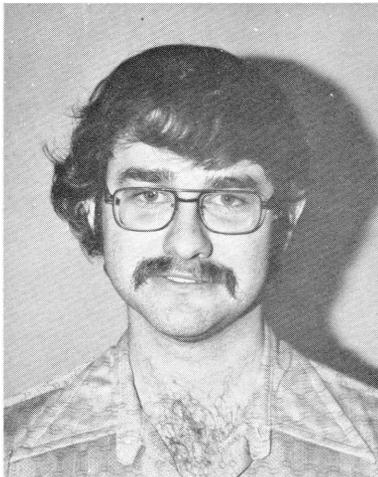
**PATRICK LYNCH**  
**Forest Management—Forest Business**

Pat comes from Iowa City, Iowa. He went to the 1974 summer camp at Chuamegon National Forest in Wisconsin, and worked one summer for the city of Des Moines on an oak wilt survey. He has participated in the FOREC Club, is a member of Xi Sigma Pi, and belongs to the Society of American Foresters. Pat likes hunting, fishing, and camping. After graduation in the spring he plans to work for private industry for at least one year and then continue graduate work in the area of forest administration and management.



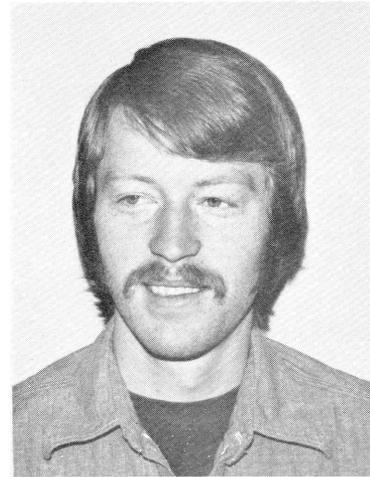
**ANDREW MACK**  
**Outdoor Recreation—Sociology**

Andy comes from Corning, Iowa. He has worked for five summers at Lake Binder, a recreation area near his home town. Outdoor sports are some of Andy's interests, along with model car building and raising plants. With a strong interest in environmental issues, he plans on seeking full time employment in recreation planning or be involved in similar forestry or environmental work.



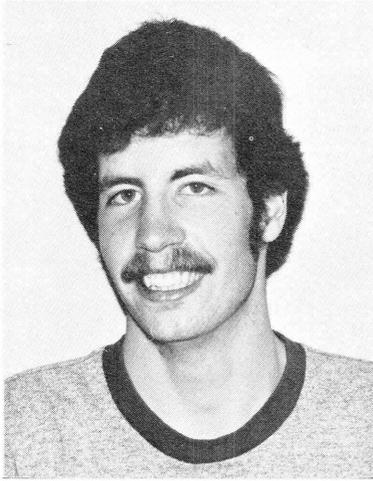
**GAYLE L. MINKLER**  
**Forest Management—Agronomy**

Gayle calls Plover, Iowa home. He has summer work experience in the nursery business. During the summer of 1974 he attended summer camp in Wisconsin. Gayle has been a member of the FOREC Club. He plans to find work with private industry or state government after graduation this spring.



**LAURENCE MOORE**  
**Forest Management—statistics**

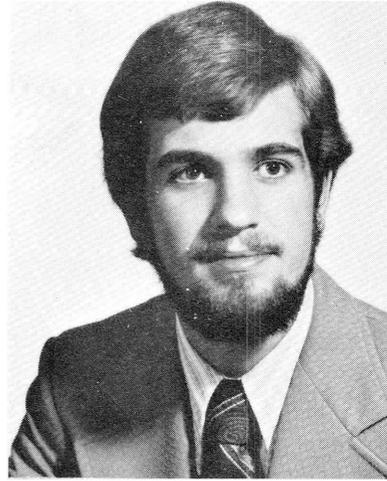
Larry is a native of Urbandale, Iowa. He worked as a Weyerhaeuser summer intern in 1975, and spent the summer of 1973 working in the Boundary Waters Wilderness Area. During the summer of 1974 he attended camp in Wisconsin. He has been a member of the FOREC Club and worked on the Holst State Forest. Some of Larry's interests include model airplanes, motorcycling and canoeing. This past year he has been a resident assistant in the dormitories.



**LARRY SCHNEIDER**

**Outdoor Recreation—Biological Sciences**

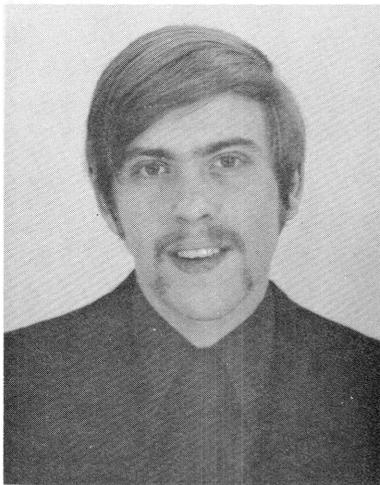
Larry comes from Ames, Iowa. He has spent several summers working in and around Glacier National Park. Larry is a member of FOREC Club and his hobbies include plant dendrology, bird watching, insect collecting, athletics, and bicycling. His plans after graduation in the spring are to work for the National Park Service or Forest Service.



**CHARLES THOMAS SCOTT**

**Forest Management—Statistics**

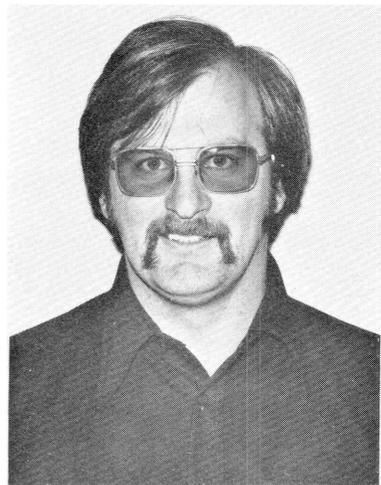
Chip calls Rockford, Illinois home. He spent his summer camp at North Carolina in 1973. He has since worked for one summer measuring CFI plots with Boise Cascade in Northern Minnesota and last summer with the Forest Service on the resurvey of Kentucky forest lands. Chip has been Freshman Student Government vice-president, a member of the GSB Finance Committee, Fraternity Scholarship Chairman, Goke Scholarship recipient, Honors student, Secretary-Fiscal Agent of Xi Sigma Pi, and FOREC Club President. He enjoys leatherwork, aquariums, backpacking, canoeing, and squash. After graduation this spring he hopes to attend graduate school next fall after a summer of work in practical forest mensuration.



**ROGER SHOWMAN**

**Forest Management—Agronomy**

Roger is from Oskaloosa, Iowa. He attended the 1974 summer camp in Wisconsin. The next summer Roger worked for the Forest Service in the Black Hills of South Dakota in fire and recreation control. His hobbies include coin and gun collecting, fishing, and hunting. He plans to work for the Forest Service after graduation in the spring.



**DOUGLAS STURHAN**

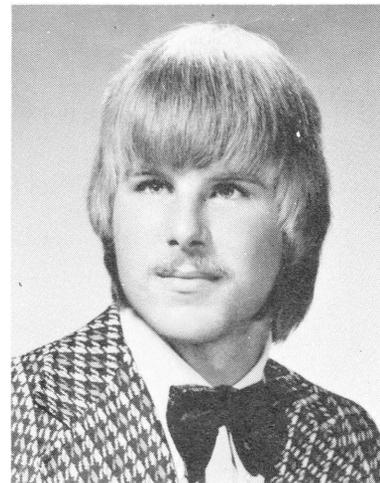
**Forest Management—Surveying and Photogrammetry**

Doug is from Quincy, Illinois. The 1974 summer camp took him to Wisconsin. He worked last summer as a timber cruiser for Simpson Timber Company in California cruising Redwoods. Doug has been a member of FOREC Club for one year and is a member of Student Charter of American Congress of Survey and Mapping. His activities have taken in intramural football and tug-o-war, and most outdoor activities such as backpacking and hiking. After graduation this spring he plans to work for a forestry consulting firm or an extension office.



**TIMOTHY W. TRACHSEL**  
**Forest Management—Forest Products**

Tim calls Milton, Iowa, home. He was with the 1973 summer camp in North Carolina. Tim spent one summer as a forest technician for International Paper in Arkadelphia, Arkansas, and another summer with Osmose in Bloomfield, Iowa. His activities include membership and participation in the FOREC Club, Xi Sigma Pi, and the Forest Products Research Society. He enjoys jogging, camping, hunting, canoeing, reading, and information collecting. After graduation in the spring he plans to work for private industry or enter the military service.



**JEFF WAND**  
**Forest Management—Agronomy**

Jeff hails from Jefferson, Iowa. He attended summer camp during 1974 in Wisconsin. Jeff worked one summer in a sawmill in Joxpark, Wyoming. He has participated in several fraternity activities and likes hunting and fishing. His after graduation plans in the spring are indefinite at the present.

## . . . the silent and invisible seniors

### **FORESTRY**

Kendall Boyd  
James Brown  
James Dewit  
James Doolittle  
Daniel Garst  
Perry Hewitt  
Steven Joslin  
Mark Kouba  
Nancy Larson  
Marc Lee  
Michael Merritt  
Michael Moore  
Glenn Oren  
Raldo Schneider

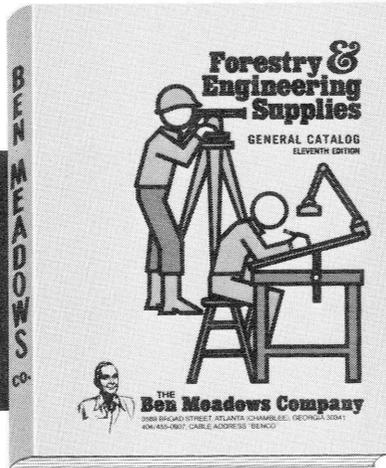
Richard Schwien  
Richard Stephenson  
Richard Streeper  
John Swenson  
Steve VanHelten  
Lynn Venteicher

### **OUTDOOR RECREATION**

Charles Abrahamson  
Roger Anderson  
Michael Bevins  
Gary Boyle  
Audrey Burditt  
Curtis Burger  
John Castle

Kenton Cordts  
James Crawford  
Robert Erickson  
Alvin Haworth  
Robert Hille  
Paul Hutting  
Roger Jacob  
Ronald Junkman  
Mark Lewis  
Mike Putney  
Thomas Russell  
John Stuart  
Rick Tagtow  
Robert VanDyke  
Robert Wernimont  
John Wieskamp

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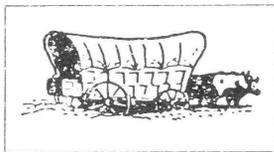
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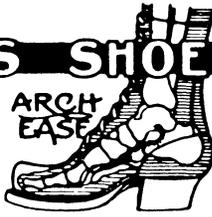
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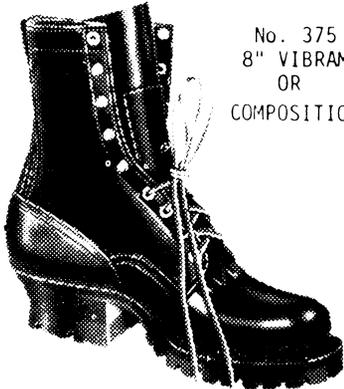
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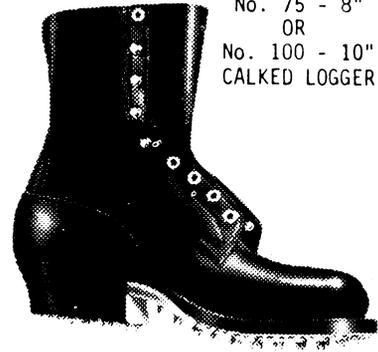


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