

GUIDE TO THE USE OF NATIVE PLANT MATERIALS IN A LANDSCAPE

by

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Preface

The purpose of this thesis is to provide people with inspiration and guidance toward a residential landscape with native plant materials. This guide deals with aspects of developing the landscape from the planning stages through to its installation. Chapter 1 will discuss the advantages of landscaping with native plants. Chapter 2 outlines aspects of the native landscape which require understanding prior to landscape development. Section II follows through the processes involved in planning. The planning process will deal primarily with planting design. An example design will accompany the process in order to clarify each step and their sequence. Section III will cover aspects involved in planting the landscape.

Chapter 1

Why Native Plants

Throughout the earth there exists biotic communities which are adapted and indigenous to their locale. As the domain of man has spread over the globe, many of these communities have been disrupted or destroyed. Today's landscapes are hardly the natural countryside which existed prior to technological man.

This ecological destruction has stirred the souls of many and called on men to speak out for the conservation and preservation of the landscape. Aldo Leopold stressed conservation through development of a land ethic as follows:

"A land ethic reflects the existance of an ecological conscience and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self renewal. Conservation is our effort to understand and preserve this capacity." (7)

The capacity of the land for self renewal lies within its native flora and fauna. As Nan Fairbrother states in The Nature of Landscape

Design:

"The planting of native vegetation, of plant associations within their correct habitats, would make a very large contribution to the biological health of the landscape."(4)

Maintaining the health of the landscape and the survival of the native plants and animals is the responsibility of us all. John Fowles wrote

in "Weeds, Bugs, Americans":

"...if we don't help, if the whole social climate isn't one of active participation right down to the personal and household level, then all ordinary wildlife is doomed. The plastic garden, the steel city, the chemical countryside will take over. The government run parks and natural reserves may still survive; but nature in ordinary life is in the hands of people in ordinary life." (5)

The use of native plant materials lies first in the necessity for the preservation and survival of the natural landscape.

As the need exists for ecological conservation for the health and survival of the landscape, so does this need exist for the health and survival of man. Man is not separate from nature as Ian McHarg states in Design With Nature:

"From the ecological view one can see that, since life is only transmitted by life, than, by living, each one of us is physically linked to the origins of life and thus--literally not metaphorically--to all life." (8)

Every one of us is totally linked with nature and the flow of life on earth. The destruction of the native landscape also affects the health and survival of man.

The population and cultural demands of man have brought about his creation of artificial environments in which to live and an increasing removal and reduced awareness of nature. The existence of these man-created environments has become foundation to our lives, but as John Brainerd stresses in Working With Nature:

"If man is to survive physically and spiritually, we must find a better balance between the artificial and the natural in our surroundings." (1)

The health and survival of the landscape, as well as of man, depends on each one of us. We can all help by growing the native trees, shrubs and flowers of the countryside where we live.

There exists a tremendous variety of plant life throughout the world with species having a natural geographic distribution. Men have traveled the globe, seeking out different plant material to return home for cultivation. Peoples' attitudes toward plants have brought about the widespread use of such imported plant materials. Jens Jensen wrote about these attitudes saying:

"It is often remarked, 'native plants are coarse.' How humiliating to hear an American speak so of plants with which the Great Master has decorated His land! To me no plant is more refined than that which belongs. There is no comparison between native plants and those imported from foreign shores which are, and shall always remain so, novelties." (6)

Jens Jensen reinforced the use of native plants by stating:

"To try to force plants to grow in soil or climate unfitted for them and against nature's methods will sooner or later spell ruin. Besides, such a method tends to make the world commonplace and to destroy the ability to unfold an interesting and beautiful landscape out of our home environment. Life is made rich and the world beautiful by each section developing its own beauty. This encourages each race, each country, each state, each county to bring out the best within its borders." (6)

The individual has no better opportunity to preserve this natural heritage than through their residential landscape development.

In addition to using native plants for the preservation of the native landscape, there is a definite advantage to the homeowner for using them. Native species have evolved to be adapted to the conditions where they grow naturally. Because of this, once established they can grow in their natural environment without demands of maintenance for their survival. Utilization of plants introduced from other places can demand weeding, watering, fertilizing, pruning, and protection from weather, insects and diseases creating the need for constant maintenance. With the ever increasing cost of maintenance due to its consumption of time, energy and natural resources, the use of native plants in the landscape is a practical way to reduce such costs and conserve energy and natural resources.

Chapter 2

Understanding Your Landscape

Before setting out to develop your residential landscape it will be necessary to study the native landscape around you. As Frank Waugh put it in The Natural Style of Landscape Gardening:

"Since any naturalistic style of landscaping is largely dependent on the native landscape, the ideas, motives and methods must come mainly from nature." (10)

Because native plants are the prime ingredient to be dealt with in the landscape, they should be the focus of attention. Learning the plants and aspects about them will be the key to success.

Information is available on native plants by state or region throughout the United States. Through the use of books, extension publications and knowledgeable people, one can learn to identify the surrounding plants. In getting to know the plants, it will become obvious that plants are usually found in similar environments and growing with or near certain other plants. Such aspects of native plants will be of tremendous value as emphasized by Alice Dustan in Landscaping Your Own Home:

"The more carefully you observe successful plant groupings in nature, the better you will be able to work out plantings to blend and flourish in your own landscape. This is where some knowledge of plant ecology will be helpful." (3)

The presentation of ecological concepts and terminology will be helpful in observation of native plants.

Some kinds of plants habitually live together because they are able to grow and survive in similar environments. Of the many factors interacting in a plant community, the relationship between plants and their effects on one another is very important. The competition for light, water and nutrients is a major factor within the community, especially when demand exceeds the supply. If various species have similar requirements, they may occupy the same location in a community. If their needs differ, they may be arranged in different locations.

In some plant communities, certain species become dominant. For example, tall trees may form an overstory which will control the community. Shorter plants will survive only if they can tolerate the conditions created by the tall trees. This plant relationship is called stratification. Although plant competition and stratification may act to exclude some plants, they can provide favorable conditions for other plants. Such a dependence of a species on others for its survival can also influence a plant communities' composition.

Plant communities never become completely stable but are usually in constant process of change. Natural changes in vegetation are known as plant succession. Plant succession takes place as the habitat changes. As plants establish themselves, they bring alterations in the habitat. Modifications in light, temperature, and humidity change the microclimate within the community. Numerous changes also occur in

the soil environment which helps cause plant succession. Succession takes place in stages, from pioneer stage through more mature communities to a somewhat stable climax community. (Fig. 1) Pioneer stages are generally slow to establish while successive communities replace one another more rapidly. As the succession continues, the process reduces speed until at the climax, the plant community is in relative equilibrium with the climate.

It is not necessary to get wrapped up in these concepts, for a complete knowledge and understanding of the science of ecology is not of essence in developing a landscape with native plants. As Ian McHarg has written with respect to the Eighteenth century English landscape designers:

"It is a testimony to the prescience of Kent, Brown and Repton and their followers that, lacking a science of ecology, they used native plant materials to create communities that so well reflected natural processes that their creations have endured and are self perpetuating." (8)

Although ecological concepts are beneficial through providing some initial understanding of plant interaction and community changes, one must also know the physical characteristics of native plants and understand the environmental conditions to which they are adapted. This will provide the foundation toward creating a successful landscape.



Pioneer Stage



Successive Community



Climax Community

Figure 1. Plant Succession

Observation of the native landscape can also provide ideas for planting design and composition. Jens Jensen stated in many ways the benefits of observing nature and the essence of incorporating such observation into landscape design.

"Untold motives and ideas are revealed to me in the out of doors, not to be copied, but from which to develop a folksong or a poem. The art of landscaping like all other arts, is that of fleeting thought that must be caught on the wing." (6)

He also wrote:

"Nature is not to be copied -- man cannot copy God's out of doors. He can interpret its messages in a composition of living tones. The real worth of the landscaper lies in his ability to give to humanity the blessing of nature's spiritual values as they are interpreted in his art." (6)

Simply through the consciousness of seeing nature and being aware of subtle variations one can begin to sense that spirit of the landscape and work positively toward perpetuating it.

Chapter 3

Site Plan

Because the creation of a landscape around a house involves the installation of plants, people often do not distinguish between planting and planning. Prior to undertaking any action in developing your landscape, it is important to evaluate the site and plan the landscape. The planning process allows you to make mistakes on paper rather than on the land. By thinking ahead, priorities can be established as well as a sequence of development. A plan given thoughtful consideration enables creation of a landscape that has unity, blending with the house and within itself.

Before planning can begin, a site plan of existing conditions must be drawn. Unless you have a plat of your property, it will be necessary to measure the dimensions of the site and the size and location of all existing elements. Measurements can be taken by pacing or, for better accuracy, with a tape measure. Begin by determining the lengths of the property lines. Using paper on a clipboard or something equivalent, make an approximate sketch of the property. Now measure the dimensions of the house and its location on the site. All the remaining elements on the site can then be located by means of two measurements 90° from each other taken from the property lines or the house. (Fig. 2) Once all features have been measured and located, the sketch may be taken indoors and redrawn to scale. (Fig. 3) Including the house floor plan on the drawing will later be helpful when laying out the outdoor spaces

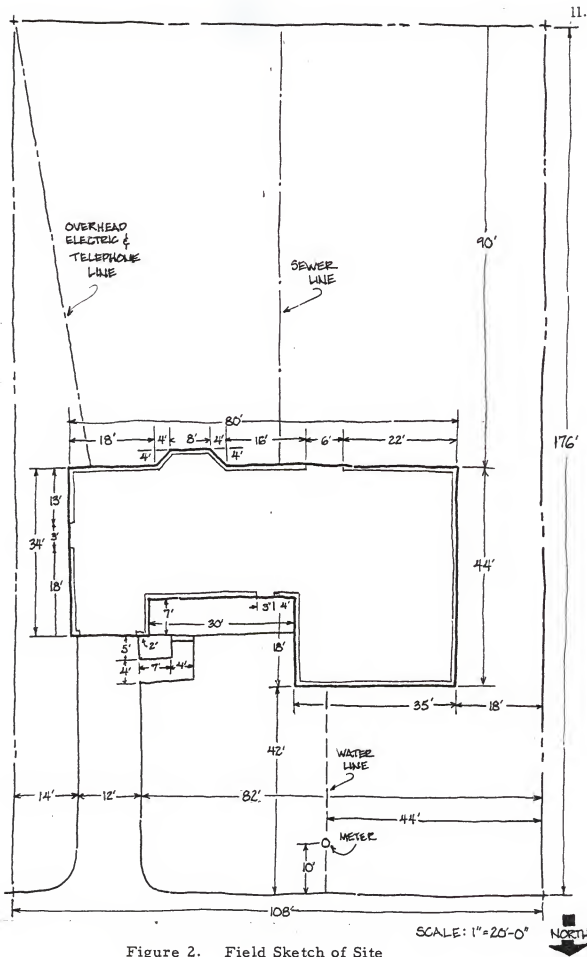


Figure 2. Field Sketch of Site

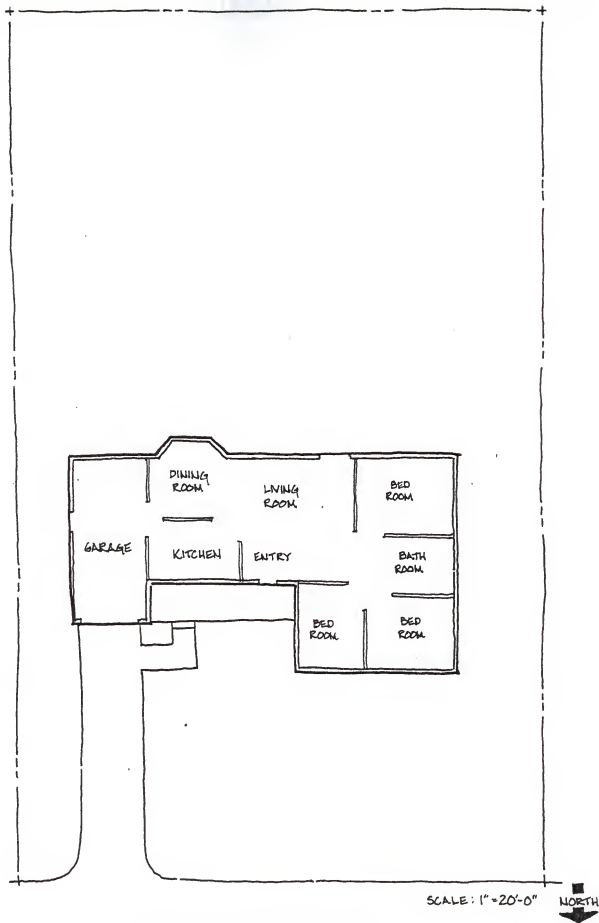


Figure 3. Scaled Site Plan

With the plan of existing conditions complete, you should compile an inventory of physical conditions on the site. Redraw the site plan on an overlay sheet and indicate the aspects of climate (sun and wind), topography (drainage pattern) and existing vegetation. Check with the Soil Conservation Service for any possible variation in soils on the site. Additional information which should be included on the inventory include: good views to be retained, bad views to be screened, utilities (overhead and underground), and any off site influences such as noise or pollution. The layout of these conditions on a plan (Fig. 4) will provide a source of constant reference while planning the landscape and can influence decision processes along the way.

The characteristics and location of the site involved can influence the practicality of using native plants and creating a naturalistic setting. On urban sites, consideration should be given to the appearance and impact the landscape will have to the surrounding area. The reversion of the landscape back to a totally naturalistic and unmanicured state may be offensive or discouraging to neighbors. Rural sites with existing natural barriers of surrounding native vegetation are ideally suited for the use of native plants and a naturalistic residential landscape.

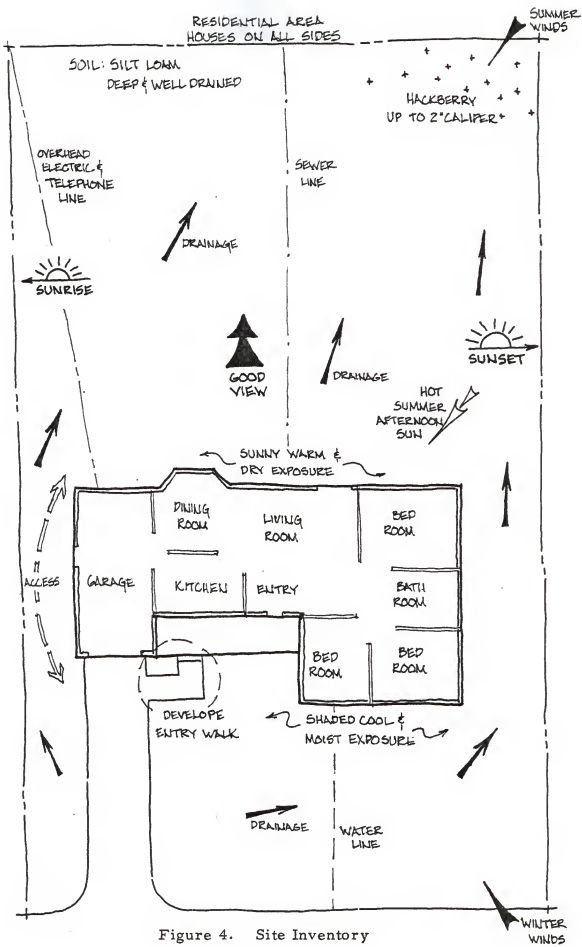


Figure 4. Site Inventory

Chapter 4

Outdoor Space Organization

Just as a floor plan for a house is determined primarily by the need and desires of the people expecting to occupy the place, such is the basis for development of the landscape plan. Before laying out the "outdoor floor plan," an assessment of needs and desires of the people will need consideration. The following list covers some common needs that influence the design of the landscape:

- Outdoor Sports - Badminton, Croquet, Shuffleboard, Football, Baseball, Tennis, etc.
- Children's Play Equip. - Swing, Slide, Club House, Sand Box, etc.
- Patio - size: based on number of people and its use
- Garden - size: based on quantity and types of plants to be grown
- Misc. - Pool, Green House, Clothes Line, Firewood Storage, Dog Pen, Tool Shed, Camper or Boat Storage, Additional Parking, etc.

Once your need and desires have been established, the design of outdoor space can begin. First it is important to determine the arrangement of primary use areas on your property. These areas include:

- Public Area - the front entrance to the house includes the driveway, parking, walks and front yard area.
- Utility Area - the outdoor work areas includes garden, clothesline, trash, tool storage, dog pen, recreational equipment storage, etc.
- Private Area - the outside living area includes the patio, outdoor cooking, recreational areas and flower gardens.

Using considerations from the site inventory and needs assessment, you can sketch some possible shapes and arrangements of these areas. On overlay sheets over the site plan, try various possibilities sorting through the pros and cons of each. (Fig. 5)

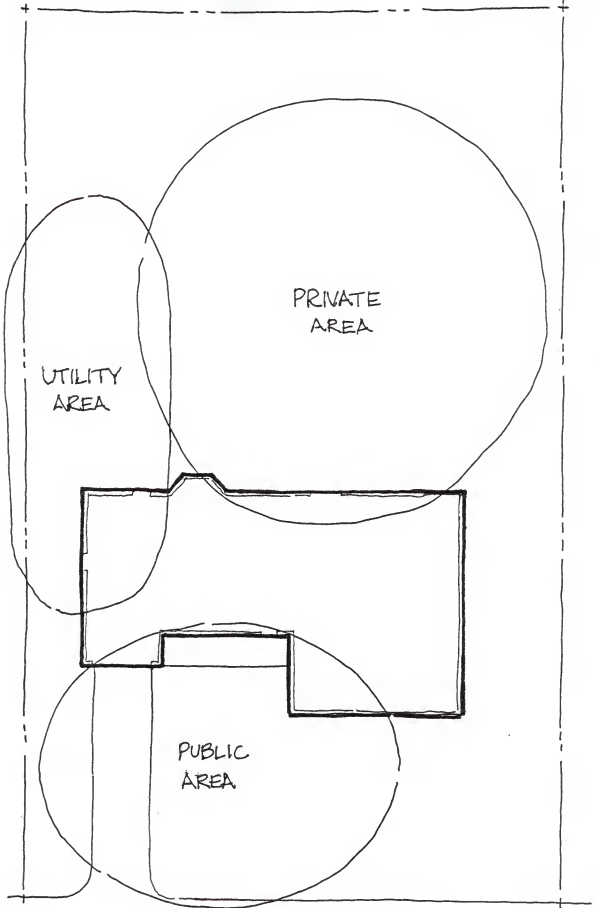


Figure 5. Use Areas

The primary use areas outline the general locations of various spaces and activities. These activities can now be juggled around within their respective areas until the best solution for their arrangement is found. (Fig. 6) This process will help in determining the amount of space needed for each activity and the influence of site and environmental conditions upon these activities. Because there is more common use and need for direct access between some spaces than others, consider the relationships between the activity areas and the rooms of the house when arranging the outdoor areas.

Within the spaces for the various activities located on the site, planting design can begin using plant materials to define and/or separate these spaces.

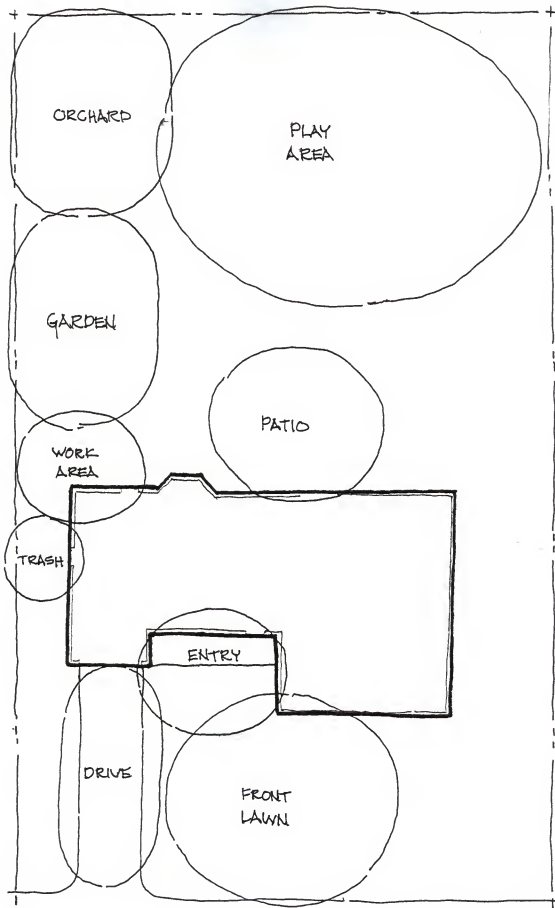


Figure 6. Activity Arrangement

Chapter 5

Plant Materials

Plants can serve many functions in the landscape. Just as walls separate spaces within a house, plants can be used to define spaces in the landscape. Other functional uses of plants include:

- . create privacy and screen undesirable views
- . enframe views
- . influence and/or control vehicular and pedestrian circulation
- . create a noise barrier
- . give shade and reduce glare
- . break wind
- . serve as snow fence
- . prevent soil erosion
- . air conditioning and filtration
- . frame and compliment a house
- . create a background
- . attract wildlife
- . provide food

Proper selection and arrangement of plant materials will determine their effectiveness in serving these functions. Success comes from a knowledge of plant characteristics and a sensitivity to site and environmental conditions.

Plant types include trees, shrubs and groundcovers. (Fig. 7) Each of these types exhibit a variety of form. They vary in height, spread and shape. (Fig. 8) In addition, plants are either deciduous or evergreen. When selecting a plant for a particular location, consider the desirable plant form for that location, as well as the need for being deciduous or evergreen. The fact that many plants, especially trees, change their shape from youth to maturity should also be considered.



Figure 7. Plant Types

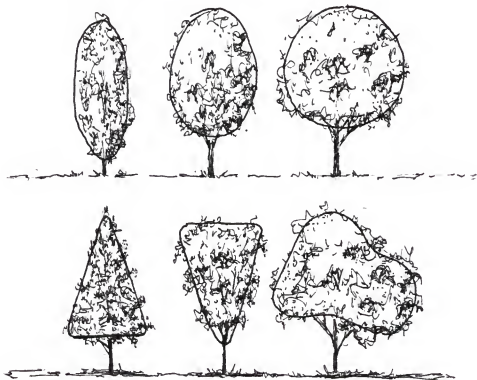


Figure 8. Tree Forms

Plant texture and color are important in planting design. Texture is expressed by characteristics of twigs and branches in the winter while during summer by the plants' leaves. A plant which appears fine in the summer may look coarse in the winter and visa-versa. When working with plant texture in the landscape, remember the possible variations with the seasons.

Color is probably the most striking element in design. Plant color is expressed by its leaves, flowers and fruits. The use and arrangement of color is an important consideration in planting design. Through the growing season a plants' color may change considerably. Plant leaves may vary from summer shades of green to many possible fall colors.

When working with the color of plant flowers and fruits, it is necessary to know the time of year they occur. Two plants with clashing flower color could be used in the landscape if they bloom at different times. Try to blend the colors of plants that flower or fruit simultaneously. Color, texture and form are the three plant characteristics utilized in the aesthetics of planting design.

Plants occupy various vertical space from the ground covers to the top of trees. They can create floors, walls and ceilings. The effectiveness of plants serving certain functions can be influenced greatly by the way they are used to occupy different heights. Plants can grow in the same location filling different segments of vertical space. (Fig. 9) In doing so, consideration must be given to the effects of the plants on each other.



Figure 9. Plants Occupy Vertical Space

The environment requirements of plants must be kept in mind when selecting plants for certain locations. Different plants have varying requirements in light, water and soil. Knowing the needs of your native plants will allow assessment of their adaptability to various locations on the site, and their compatibility when growing in common locations with other plants.

The considerations directed toward plant materials in planting design are numerous, from aesthetics to practicality. As Carpenter, Walker and Lamphear wrote in Plants in the Landscape:

"The selection of plants is both an art and a science. It is art because it requires sensitivity to elements of design, such as color, form and texture, and the ability to judge the elements in each plant. And herein lies the primary difficulty, for in describing the design qualities of a plant, the designer must remember that the plant is not static but changes in texture, form and color, and so forth, with seasons as well as with age. It is a science because it requires knowing the plants environmental requirements before its health can be maintained. The proper selection of plants is dependent on the fulfillment of both artistic and scientific considerations." (2)

There are general design principles used in arranging plant masses in the landscape. The primary goal of your design is to create unity within the landscape, to give it a sense of oneness and coherent organization. This is achieved by maintaining simplicity, variety, balance, emphasis, sequence and scale in the use of color, form and texture. These principles should be applied toward plant materials and other site features as well, especially the house.

The use of line in the design establishes the shapes of spaces and plant masses in the landscape. There are several types of line patterns used in landscape design but the curve is the primary pattern in creating a naturalistic setting. Jens Jensen expressed the use of curves when he wrote:

"The study of curves is the study of life itself. Curves represent the unchained wind full of mystery and beauty. Straight lines belong to militant thought. No mind can be free in a concept of limitations. The free thought that produces the free curve can never be strangled." (6)

Using lines, size and shape can be given to the spaces sketched out in Chapter 4. On an overlay sheet sketch out these spaces and the plant masses. (Fig. 10) Once this is complete, the types of plant materials to occupy these masses and certain spots will need to be determined. Trees can serve to provide shade which is important on the south and west exposures. Trees can also serve as a wind break. Evergreens are especially effective in blocking the cold north winter winds, while deciduous trees can slow down south winds in the summer yet allow the southern sun through in the winter. Trees can enframe the house and give it background. They also provide means for screening or enframing views.

While trees tend to create ceilings or high walls in the landscape, shrubs provide walls at a height more to human scale. Because of this, shrubs are an effective means of defining and separating spaces in the landscape. To create privacy or block undesirable views, noise or wind,

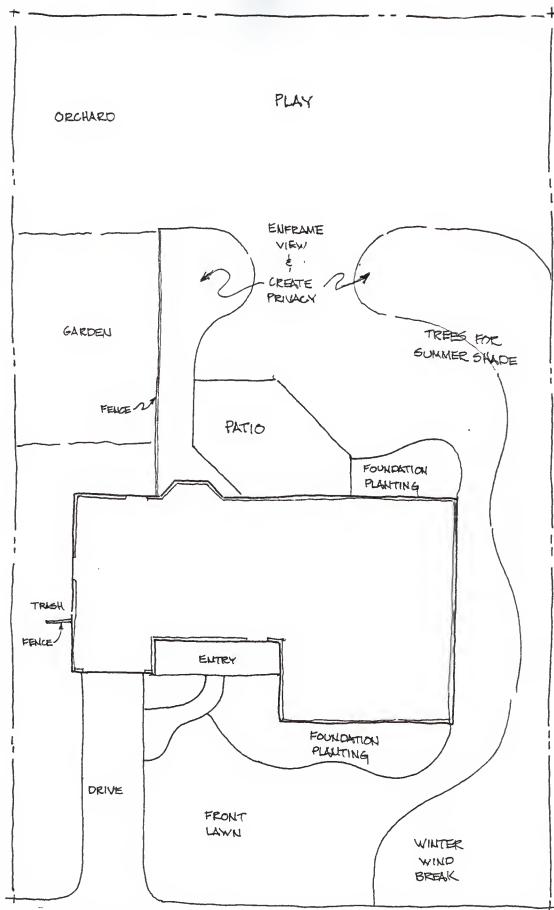


Figure 10. Outdoor Space and Plant Mass Organization

shrubs can be used to fill the lower spaces beneath trees and provide a better screen. Shrubs are excellent plants to use around the house to soften corners and blend the house into the landscape. Shrubs create a transition from the house to the lawn or from trees to the lawn or ground cover. Shrubs are usually planted in masses or shrub borders and arranged such that the tall shrubs are at the back with shorter ones to the front. This again creates a transition which is also a habit of native vegetation.

Keeping the functional uses and design principles in mind, determine the plant types to occupy the planting areas established in the previous step. (Fig. 11) Indicate the proposed size of the plants within each area and individual trees.

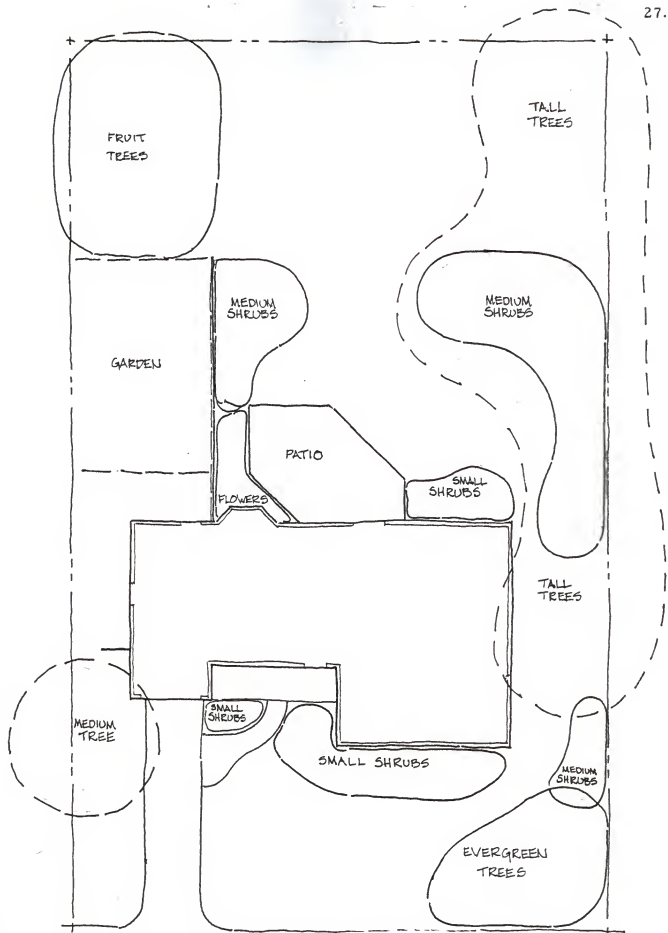


Figure 11. Plant Type and Size Determination

Chapter 6

The Landscape Plan

With the plant types and sizes established, the final step is to determine the specific plant materials that will meet those requirements as well as the environmental conditions. In selecting plant materials, it will be helpful to have a reference of your native plants with their characteristics and requirements. Through the use of other references and from personal observation, develop a list or collection of index cards which include the following information for each plant:

Plant Characteristics

Plant Type

Height and Spread

Growth Habit

Form, Color and Texture

Flower - time and color of bloom

Fruit - time and color

Environmental Requirements

Climatic - light, water, temperature

Edaphic (soil) - texture, depth

Biotic (Other Organisms) - animals, man, other plants

While plant characteristics are used to select plants for function and aesthetics, the environmental requirements provide the basis for selecting and locating plants. In order to utilize their benefits of adaptability, it is important to understand the native environments.

It is not only the individual qualities of the climatic, edaphic and biotic factors that demand understanding but also the causes, affects and interrelationships of these in the environment. There exists

numerous micro climates within the native landscape. Many of these are the influence of topography. For example, there is a tremendous difference in the micro climates of north and south facing slopes. Because the south facing slope receives more sunlight, it is a warmer and dryer environment in comparison to a north facing slope. Consequently, different plant materials will be found on the two slopes. A similar contract of micro climates exists in the residential landscape between the north and south sides of the house. Because different native species will be adapted to these contrasting exposures, the selection of species for those locations should be made accordingly.

In another way topography creates different environments within the landscape. The environmental conditions can vary considerably with changes in elevation. The variation in environment and vegetation due to a change in elevation can be caused by different factors. For example, in some mountainous areas variation of temperature and precipitation are dominate factors. Plant species change with the decreasing temperature and increasing precipitation associated with higher altitudes. Yet in the great plains, where elevation changes are not as extreme, the variation in environment and composition of vegetation is created primarily by differences in soil and water availability. Some species live only at the lower elevations near rivers and streams where there are deep soils and plenty of water. Others cannot tolerate wet feet and live in the shallower soils and dryer conditions at higher elevations.

These species are particular to specific environments while other species being more adaptive to different environments can be found in the valleys and ridges. It is important to be aware of those species which are adapted to specific environments and those that tolerate different conditions. Comparison of the residential site with native landscape of the same exposure and elevation can indicate plant materials which are adapted to its conditions.

As in the process of plant succession, the establishment of certain plants can alter the micro climate of a location so as to provide the conditions required by other plants. Understanding such processes can allow planning a sequence of planting which will enable future establishment of native species unadapted to present site conditions. A knowledge of native plants environmental requirements and the affects of climate, soil and organisms on the environment is essential in developing planting sequence and the selection of species.

Once the species has been selected, arrange the plants within each mass according to their spread. Plants that tend to grow in thickets may be indicated as a mass rather than as individual plants. There are various means of indicating plant materials but thinking through possible arrangements for plants, using circles of diameters equal in scale to the mature spread of the plants are satisfactory. A circle template will help tremendously in doing this. In the final plan the circles can be redrawn to be more representative of plants.

With all the plant species selected and arranged, the final plan may be drawn. Identifying plants on the plan can be done by either labeling the plant directly (Fig. 12) or using a key-number and list system. (Fig. 13) While it may be easier to read the plan with the names next to the plants, the plan may become so cluttered that it actually is more difficult to read. The nature of the planting design and personal preference will determine which method to use. No matter which method is used, it is helpful as you begin to implement the plan to have a plant list with the quantities of each species indicated. With the landscape plan complete, the installation of plant materials may begin.

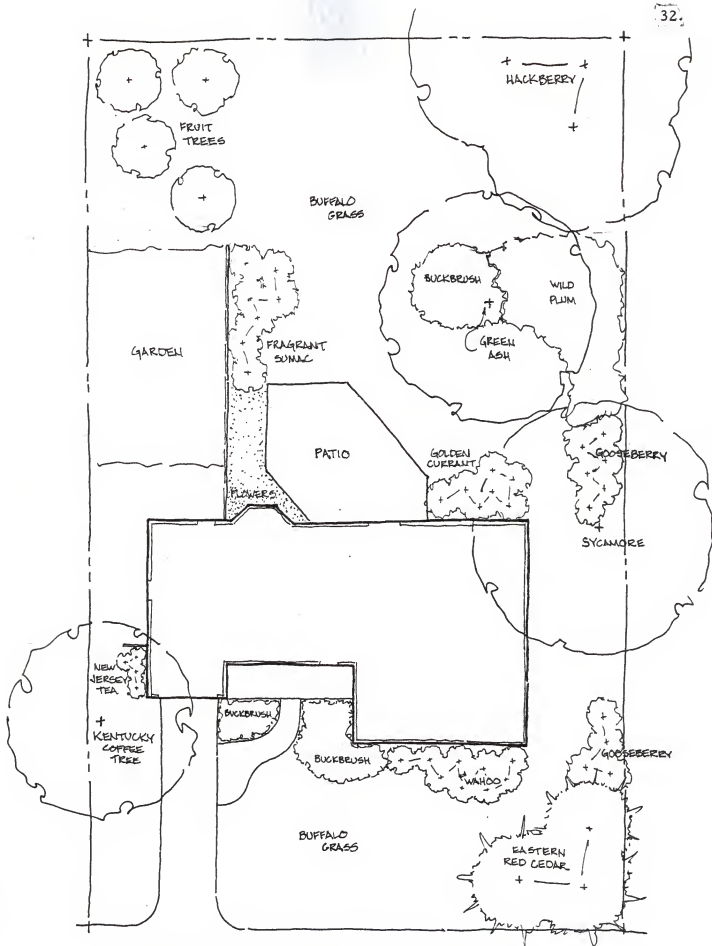


Figure 12. Landscape Plan - Direct Plant Labeling

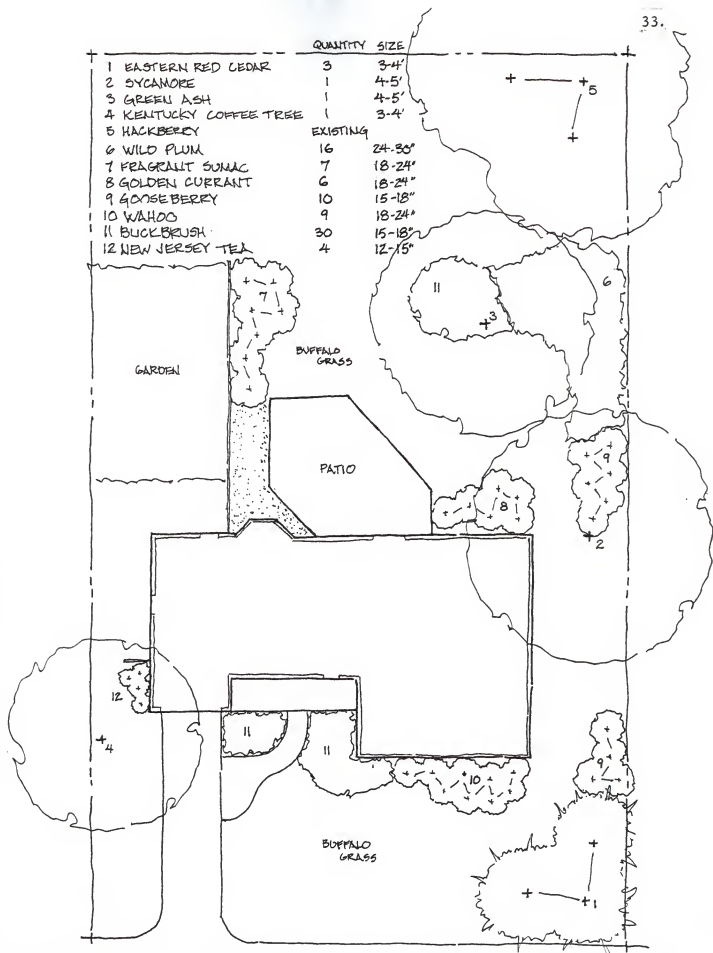


Figure 13. Landscape Plan - Key-number and List System

Chapter 7

Gathering Plant Materials

When you are ready to install plants in the landscape, it will be necessary to decide upon obtaining plant materials from a nursery or digging them yourself. People are often unaware that many of the plants available at nurseries are native, depending on the region considered. Check with local nurseries and find out what native plants can be obtained from them.

Nursery stock is sold bare root, balled and burlaped and in containers. (Fig. 14) It is available in many sizes and varies in price accordingly. While bare root stock is usually less expensive than balled and burlaped and container stock of equal size, it can only be planted in early spring and fall.

It will be necessary to obtain plants from the native landscape when they are unavailable from nurseries. Always gain permission from the property owner when collecting plants from another site. Never dig plants along roads or from public land such as parks or preserves. Check state laws on collection of plant materials, especially the possibility of an endangered species. Native plants can be found in sites from the country or city. Many building projects clear vegetation before beginning construction. By contacting the owner or contractor and getting permission, plants can be collected from the site prior to their destruction by bulldozers. Check with developers and contractors about future projects. Also watch for any announcements concerning proposed developments in your area.

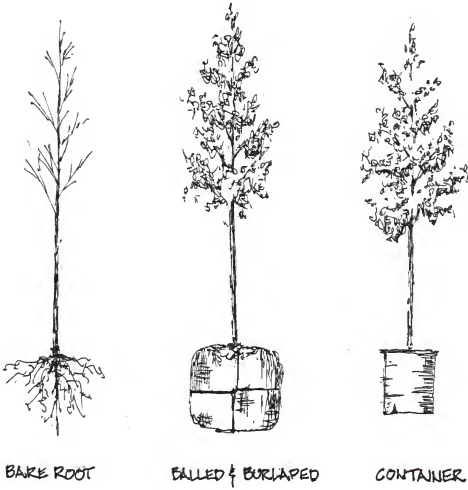


Figure 14. Types of Nursery Stock

Farmers and ranchers often want to remove plants competing with grass in pastures or to clear land for cultivation. With the owner's permission, this can be another source of native plants.

If you have little time to remove the plants, smaller plants should be dug. They can be moved successfully without previous preparation. Larger plants may be moved if time is available for preparation. Root pruning before moving a plant allows a concentration of root growth within the dug area. Best results involve root pruning two successive years prior to transplanting. In spring or fall, dig a trench around portions of the plant as in Fig. 15. All the roots in those areas should be cut cleanly. Backfill the trenches with a mixture of soil and manure or compost. The third year the plant is ready to move. Root pruning will greatly increase the chance of survival when moving large plant materials.

The soil and general plant environment can influence success in transplanting as P.O. Pirone wrote in Tree Maintenance:

"Trees growing in medium heavy or clay soil and in open areas are preferable as subjects for transplanting to those growing in sandy soil or in heavily wooded areas. A tree growing in the woods whose top has been protected by other trees and whose roots are shallow because of protection by shade and mulch is more apt to do poorly when moved out into the open and exposed to full sunlight and drying winds." (9)

When selecting plants to be moved, consider the new environment the plant will be exposed to on your site as compared to its existing environment.

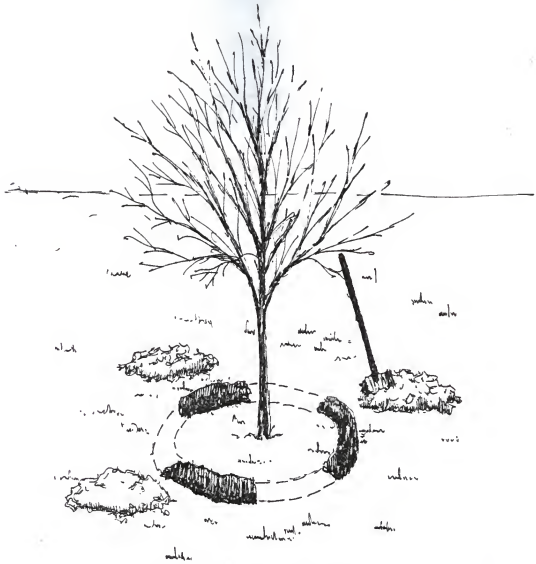


Figure 15. Root Pruning

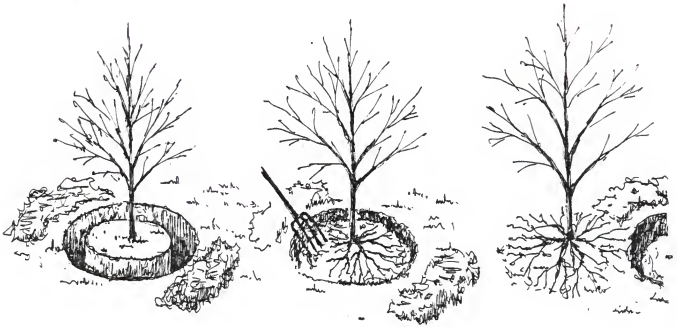


Figure 16. Digging Bareroot Stock

Plants moved without leaves may be dug bare root. (Fig. 16)

This is done in early spring or late fall. To prevent drying, keep the plant roots wrapped in wet burlap until it is planted. Evergreens and deciduous plants in leaf should be moved with soil around the roots. Use burlap to wrap the soil ball and secure it with rope. (Fig. 17)

Although this involves more work, it reduces stress on the plant and allows transplanting during the growing season. Evergreen plants are always moved more successfully when balled and burlaped rather than bare root. The tremendous weight of the soil ball limits the size of plant you will be able to move successfully. Smaller plant materials may not create an instant landscape, but they transplant with less effort and greater success. It may be considered feasible to move trees up to around 8' in height. Proper root pruning will make a tremendous difference in a tree that size surviving the transplant. The practical size of shrubs to move range from 18 - 30" depending on the species ultimate height. The important thing is not to waste time and energy attempting to move plants too large to ever survive.

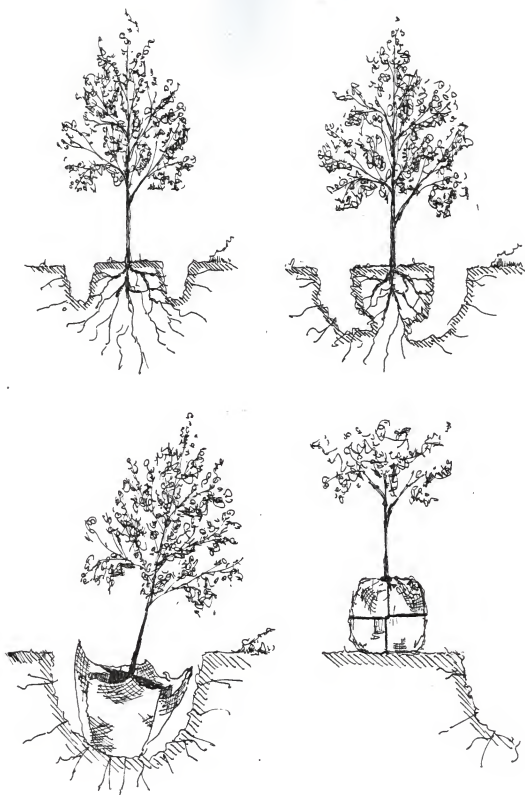


Figure 17. Digging Balled and Burlap Stock

Chapter 8

Planting the Landscape

Before going after plant materials, it is best to stake out where they will be planted. For each plant, scale its distance from existing features shown on the plan and measure the same distance on the site. Set a stake at the determined location. It may be desirable to make changes in the plan when staking out locations for plant materials. While locating the plant positions in the landscape, you may get different impressions than had been envisioned during the planning.

Depending on your design, it may be necessary to establish some plants before others. You may have certain priorities in the plants to be established first. Some plant species require the presence of others for their survival. Many understory shrubs and trees need protection from sun and wind in order to thrive. In such cases the establishment of overstory trees comes first. Think through the interrelationships of plant materials and their preferred environments prior to planting. Once the planting sequences and your priorities have been determined, installation of plants may begin.

When planting bare root stock the size of the hole should be larger than the spread of the roots so they can be arranged without restriction. Dig the hole deep enough to allow the plant to rest at its original depth. Spread the roots out in several directions to distribute development of main roots and improve anchorage. Make sure all root ends are pruned

off cleanly and that none are bent or broken. Backfill soil may be supplemented with manure or compost. The soil should be replaced in layers and pressed down firmly. A basin may be formed around the plant and watered immediately. (Fig. 18) The plant should be pruned once it has been set in the ground. Reduce the amount of plant above the ground to be in a closer relationship with the amount of roots. The plant is unlikely to survive if it has insufficient roots to support it.

The planting of balled and burlap stock follows the same basic procedure as bare root stock. Again dig the hole larger than the ball and firm the backfill as it is replaced. (Fig. 19) Set the plant at its original depth in the ground. Most of the burlap may be left on the ball to prevent any possible disturbance of the soil ball and roots. The top part of the burlap should be rolled back or cut off before the backfill is placed. This allows water to easily penetrate the soil ball. The plant should then be watered and pruned.

If you plant nursery container stock, the procedure is also the same. Use tin snips to remove metal can containers.

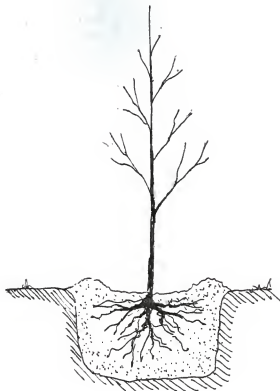


Figure 18. Planting Bareroot Stock

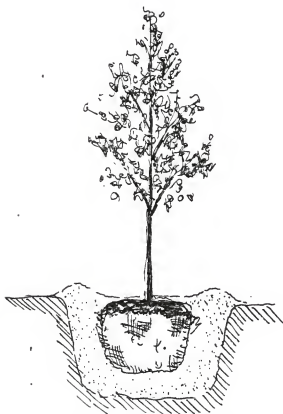


Figure 19. Planting Balled and Burlap Stock

Chapter 9

Maintenance

One of the greatest benefits in using native plant materials in the landscape is their reduced demand for maintenance. The adaptability native plants have to their natural environments eliminates the need of continual care for survival. It is the use of plant materials in environments different than what they are adapted to that cause the necessity for such maintenance as watering and fertilizing. An example from the great plains is the use of introduced grasses such as fescue and bluegrass for lawns, rather than native buffalo grass. Buffalo grass not only survives without watering or fertilizing, but also grows at such a rate as to need mowing once or twice a year. In this way the use of native buffalo grass in the great plains saves considerable time, energy and resources.

An aspect to consider is that maintenance is in greater demand in those areas of more human use. Portions of the landscape which people use need maintenance to create the desired conditions for its use and/or to prevent deterioration from the wear and tear it receives. It is the parts of the landscape that are seldom used by people that lend themselves to the use of native plants and their natural existence. Because of this, landscapes having more "unused" space, such as large residential sites, parks and other recreational areas, are the situations ideally suited to the use of native plants and their minimal maintenance requirements.

In addition to the use of native plants for reducing maintenance, certain considerations during the planning process can also influence the maintenance requirements of the landscape.

There may be native plants attempting to establish themselves on the site. They should be noted when compiling the site inventory. Unless the location and/or characteristics of the plants conflict with your design intent, they should be incorporated into the landscape. The elimination of existing native plants is in conflict with an attempt to work with the natural processes of the site. The conflicts may create continual problems and demands of your time and energy.

Maintenance may also be reduced through proper selection and layout of plant materials. An attempt, for example, to establish a plant in the open that requires protection from sun and/or wind in the native landscape, may either die or place considerable demands on you for its survival. It is important to select species adapted to the site and its micro climate in order for them to survive without maintenance. Experiences of plants dying should be thought of as learning rather than failure. Assess the problem by comparing your site situation with the plant's environment in the native landscape. Positive adjustments can then be made.

A lawn in the landscape can create considerable maintenance due to the need for trimming around the house, patio, trees, etc. Arranging shrubs around these objects to create a transition from them to the

lawn can eliminate most trimming. Many native shrubs grow in thickets that tend to spread and increase in size. In mowing along the edges of the mass, new shoots are cut off and the thicket contained.

In the landscape using native plant materials, maintenance of plant materials may be very minimal. The energy put into the landscape over the years may be installing plants associated with different phases of the landscape development. It may take several years for certain plants to become well enough established to create necessary conditions for installation of other plants. The waiting period need not be discouraging but enjoyed. As Nan Fairbrother stresses in The Nature of Landscape Design:

"The pleasure of watching things develop in time, and of noting and enjoying each different phase as it appears, is not to be relinquished lightly - to miss out on these intermediate stages is to lose one of those contacts with the soil which our period can ill afford; and the artificial completion of the project at one stroke is one of those means by which civilization impoverishes the realities of living in time." (4)

Within the awareness of the landscape and its changes annually as well as seasonally, lies a means of experiencing that reality and the beauty of the earth.

Conclusion

This guide has not been created to teach the user how to create a naturalistic residential landscape, but to expose him to the basic processes and considerations. The real learning will come from doing. Each site creates a unique challenge and poses new questions during various stages of development.

The primary intent of this thesis has been to guide the homemaker in the basics of planning and planting a naturalistic landscape. Yet in addition an attempt has been made to direct a portion of peoples' awareness toward the native landscape, to shift their sight toward the vast interrelationships and tremendous beauty in nature.

The shift in awareness is necessary to gain a knowledge of the plants and the environments in which they live. This knowledge is essential in order to use native plant materials successfully and reap the benefits their adaptability provides when used in the landscape. The creation of a landscape using native plants is not an overnight proposition. Not only can the development of the landscape be a long process, but the gathering of knowledge and understanding of native plants and their environments also takes time. The creation begins with a new awareness that will not only be guidance in creating a successful landscape, but may also provide positive changes for ourselves and the earth.

Glossary

- Balled and Burlaped - plant to be transplanted having soil around its roots, wrapped in burlap.
- Bare root - plant to be transplanted having no soil around its roots.
- Backfill - the soil to be replaced in the hole when planting trees or shrubs.
- Container stock - plants to be transplanted which have been grown in a container.
- Deciduous - plant which loses its leaves during a dormant season.
- Evergreen - a plant that retains its leaves throughout the year.
- Habit - the growth characteristics of a plant.
- Habitat - the environment in which a plant lives.
- Indigenous - native to a place.
- Micro climate - isolated modification in climatic factors.
- Native Landscape - the land, particularly its vegetation, that existed prior to its alterations by man.
- Naturalistic Landscape - a landscape comprized of native plant materials and resembling the native landscape.
- Nursery Stock - plant materials obtained from a nursery.
- Root Prune - cutting back a plant's roots to stimulate formation of a compact root system.
- Texture - in plants, the relationship between leaf and twig size and the remainder of the plant.
- Wild Stock - plant materials obtained from the native landscape.

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GUIDE TO THE USE OF NATIVE PLANT MATERIALS IN A LANDSCAPE

by

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B. S. , Kansas State University, 1975

AN ABSTRACT OF A MASTER'S THESIS

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MASTER OF LANDSCAPE ARCHITECTURE

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The presence of technological man has altered or destroyed much of the natural countryside that once existed. The homeowner can actively contribute to the preservation of the native landscape by the use of native plant materials in their landscape. The adaptability of plants to their natural environments allows the use of native plants to be advantageous by reduced maintenance as compared to non-indigenous plants. Guidance has been given in the planning and planting of the residential landscape.

Initial planning involves the development of a site plan of existing conditions along with an assessment of personal needs and desires of the landscape. These in conjunction with plant material characteristics, functions and requirements, provide the basis for planting design decisions. This necessitates a knowledge of the plants in the native landscape.

Finding native plant materials is a major factor in the installation of the naturalistic landscape. Some plants are available through the nursery trade, yet many are not. Guidance has been directed toward the collection of plant materials from the "wild" and the procedures of planting them. While the homeowners' creation of a naturalistic landscape demands more personal time and energy than most landscapes, it provides greater benefits in their personal growth and in the preservation of the native landscape.