Developed by:
John Haack & Sheri Snowbank
UW-Extension
(715)635-7406

Talking points/notes -Shoreland Restoration Program

1. Shoreland Restoration	Provided references that can be copied & handed out: ● Restoration Steps ● Site map & key ● References ● Poison Ivy Control ● Exotics ● Native Shrubs for Wildlife and Landscape use in Wisconsin ● Wisconsin's Wild Plant Laws ● Resource People (Barron, Burnett, Chippewa, Dunn, Polk, Washburn) ● Native Plant Nurseries (Western half of Northern Region)
2. Leopold quote	"Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land" – Luna Leopold
3. Loon, Dragonfly, Eagle	The lake has an intangible attraction fostered by wildness and natural beauty: the enchanting call of a loon, the fun of seeing the daring acrobatics of dragonflies skimming over the water, the majestic sight of a bald eagle soaring above the water. The appeal of life on the lakeshore is provided largely by the diversity of native plant and animal life that make the lake their home.
4. Why people enjoy lakes.	Scenic lakes have lured many families to their shores for generations. But why are shoreland properties so popular? In a recent survey by UW-EXT Lake Tides, citizens were asked why they own property on a lake. As you can see in the graph Peace and quiet, Natural beauty, and fishing and hunting were the top three reasons cited. Another recent study by Dr. Pat Shifferd of Northland College found similar results. Again the top reasons cited were one-enjoying the view, peace and tranquility; two-observing wildlife; and three fishing.
5. Take time to enjoy what is important.	For many people living along relatively undisturbed shorelines, enjoying the native plant and wildlife of a lake with clean water is the only order of the day. While neighbors spend their precious free time toiling with yard care chores.
6. The perfect shoreline.	The object of all of the devotion are their lawns. Lawns themselves are not particularly harmful, and they are for many a source of pride and a gathering place for family activities. Unfortunately, decades of traditional suburban lawn management have led many to adopt conventional ideas about what the "perfect lakeshore" lot should be, expansive lawn right to the water, clean beaches with no aquatic vegetation.

7. **A question of maintanance**	Often the lawns are improperly maintained and over fertilized and are established in areas that are critical for wildlife. Lakeshore owners often eliminate native vegetation and plant labor intensive and chemical dependent bluegrass lawns just like the ones they left behind in the city. Compacting soils, eliminating existing forbes, shrubs and trees.
8. **Death by a thousand cuts.**	While it may not seem like a big deal on one 200-foot lot, multiplied many fold, up, down the shoreline and big changes begin to occur to the entire lake system. Biologists refer to this as cumulative impacts, one large change or alteration is not what normally brings about these changes rather our lakes frequently suffer a slow decline “death by a thousand cuts”. As this happens, many of the things we came to the lake to embrace are lost and new problems arise- bank erosion, muskrat and Canada geese nuisances, and potentially water quality issues.
9. **Natural shorelines provide a rich mosaic of vegetation.**	Along natural shorelines, there exists a mosaic of trees, shrubs and aquatic plants that in turn support a rich diversity and abundance of wildlife habitat. This slide illustrates the many components of wildlife habitat on lakeshores. The more habitat features that are present the more abundant wildlife will be. The variety of trees, shrubs and aquatic plants provides a mosaic of wildlife habitat. These near shore areas are ribbons of life. According to research done in Ontario, ninety four percent of all lake-life is born, raised and fed within 30 feet of were the water meets the land.
10. **What’s happened to shorelines?**	What happens to existing vegetation with traditional site development? During the summer of 1997, biologists measured the vegetation at 146 sites on 12 developed and 16 undeveloped lakes in Vilas and Oneida counties. They compared the physical structure of vegetation along both developed and undeveloped sites for a distance of 50 meters inland from the waters edges. They found that all three levels of vegetation were reduced at developed sites. The most significant impact was a virtual elimination of the shrub layer and large woody debris (logs and branches).
11. **What’s happened to frogs?**	Shorelands provide essential habitat for riparian species such as amphibians and reptiles that use both water and land at various stages of their life cycle. Terrestrial and aquatic vegetation, fallen trees, and logs are all important habitat features for these species. During the same study biologist used the green frog as an ecosystem indicator for the health of aquatic life in northern Wisconsin lakes. Male green frogs establish breeding territories within two feet of a lake's edge and defend it against other breeding males. Biologist compared the number of breeding frogs on 24 developed and undeveloped lakes. Their study found that as lakeshores became more developed the abundance of green frogs and their habitat drastically declined. Green frogs likely function as indicators for other species that require both aquatic and terrestrial environments for survival.

12. What's happened to songbirds?	The Meyer's study also indicated an effect on migratory birds. A breeding bird survey was done at 120 sites on 40 lakes. The study found that while there wasn't a change in the number of birds found there was a dramatic change in the species. The main species found at undeveloped sites were ground nesters and the neotropical migrants (Warblers). On the developed sites gleaners were the dominant species (Blue Jays, Starlings etc.)
13. Seven Rules for lakeshore living.	How can the "perfect yard" mentality be brought under control? Protection of the remaining wild shores and lakescaping/ shoreland restoration of developed shores may be a step in the right direction. Carol Henderson author of Landscaping for Wildlife and Water Quality summarizes these philosophies in seven rules.
14. Rule 1 "Treat Lake as an ecosystem" and Rule 2 "Lakeshores are our rainforest"	We need to recognize that all share a broad stewardship responsibility. What we do as individual collectively effects the lake system. Lakeshores like the rainforest have diverse biological communities that are disappearing and changing at a rapid rate. While we might not be able to have an effect on the worlds rainforests as they become threatened by changing land uses and rapid exploitation. We can, however, have an effect on the type of development and changes occurring along our rapidly changing lakeshores.
15. Rule no. 3. Provide a new vision of Lakeshore.	Many lakeshore owners realize there are problems on the lake. Fish population declines or changes to less desirable species, fewer wading birds. They view Canada Geese and muskrats as nuisances. They see more bank erosion and spend more time mowing than fishing or recreating. They have created a dysfunctional lakeshore environment.
16. Rule no. 4. Promote through benefits.	Rather than attempting to sell this as a new regulatory program or just the ecologically correct way to live, we need to look at the benefits that accrue directly to the landowner. • Less time on maintenance * • Fewer chemicals • Contribute to cleaner lakes • Mitigation • Attract more "enjoyable" wildlife

*** - From This Point on Boxed Text = Slide Text.**

17. **Rule no. 5** **Importance of buffer zone**	The creation of a buffer zone along the shoreline is the key. A buffer zone is a natural strip of vegetation along at least 75% of the lakeshore frontage extending both into the water and upland at least 35 to 50 feet, where possible. In northern Wisconsin counties zoning rules on buffer zones apply to the upland areas above the lakebed and extend inland from 35 to 75 feet depending on the county and lake classification. • Help clarity by holding sediment in place • Take up nutrients that would be used by algae • Shelter for wildlife • Wildlife food and nesting areas • Reduce erosion and runoff
18. **Rule no. 6.** **Reference Sites**	By locating reference sites (undisturbed natural communities) that have similar conditions to the restoration site you can begin to select native plants that thrive in the specific soil, moisture and light conditions found within the buffer area. *Definition* – a local natural area with similar site characteristics to the restoration site. *Why are they so important?* – Identifies what native plants are most suitable and the densities they are found in.
19. **Rule no. 7** **Lakescaping vs. gardening**	The lakescaping approach to landscaping differs from that of typical home landscaping and gardening. Generally, when planting in residential situations, a homeowner first selects favorite plant for their flower, color or some other selected feature. Then, in order to get the plants to survive the site needs to be altered. This approach includes the need to provide the plant with fertilizer, pesticides and additional water. In the lakescaping approach the homeowner first assesses the growing environment and then selects native plants known to grow in similar conditions.
20. **Why Native Plants**	You hear a great deal about using only natives, but why is it felt they are so important? What is the difference between a “local natives” and “native to WI”? LOCATION Local natives are the key, using what grows in the area will survive. Wisconsin has many different microclines and soil types, so what may work in Madison will not work in Superior. • Conservation of local genetic diversity • Ability to provide food and shelter for native wildlife • Improved health and vigor • Increased survival rates • Reduced maintenance costs

21. Water lilies	With the popularity of water gardens you will come in contact with a well meaning aquascapers that wish to place exotics in the water. At all costs try to talk them out of it. In most cases they are throwing their money away because the plants are not winter hardy or will be susceptible to herbivory and disease. Or it could go the other way and they will be the cause of another purple loosestrife or Eurasian Water Milfoil.
22. Types of Restoration	There are three basic types of restoration. A restoration site may use one or all in combination. Things that will influence the restoration type used: Site characteristics, Existing vegetation, Program objective, and Landowner objectives • Protection • Natural Recovery • Accelerated Recovery
23. Protection	This is the preferred method "total hands-off", "don't fix what isn't broken" Most economical method in terms of finance and man-hours. • No serious erosion problem • Native vegetation present • Diversity of structure • Shoreland buffer requirement met.
24. Natural Recovery	The no mow option. Leave and let grow also low labor and finance. Simple things such as changing use patterns, keeping pets and children out of an area and letting nature take its course. Can be a slow process. • Wet margins of lake drawdown zone • Native elements present • Turf grasses not established • Area screened from view • Discourage trampling. • Look for opportunities to see results and promote
25. Accelerated Recovery	Replanting areas. Highest cost in labor and finances. Quickest results can be seen. • Turf grass well established • No natives present • Compacted soil • Lots of traffic • Sand beach maintained • Quick results wanted

26. **Site Plan Design**	**REFER THEM TO HANDOUT "RESTORATION STEPS"**. Developing a site plan will be for many the most challenging step a landowners will face. What appears as "busy work" will in the long run will save you time and money and is well worth the effort. The first step in designing a site plan is to inventory and map existing: • Trees and Shrubs • Areas of native forbs and grasses • Structures • Relevant landscape features
27. **Photos of example site**	**In your restoration step handout (1. Inventory area of Restoration) you can see the list**. Point out some items on the photos <partial list see below> -Trees and shrubs (Id which are native/exotic) -Structures -Relevant landscape features. -Condition of the shoreline (Is erosion actively occurring?) -Light conditions (Areas of light and shade) -Soil type -Moisture levels
28. **Initial Plan**	**REFER TO HANDOUT OF MAP AND KEY** Point out OHWM, viewing corridor, Property line, structures, trees, areas of light/shade, soil type (sand, peat, etc), moisture level
29. **Homeowner questions**	**Ask the homeowner/yourself <u>lots</u> of questions and compliment them on what they are doing right.** • What end product does each family member envision for the shoreline • What is the property's drainage pattern • Where are the areas of heaviest use ➥ Recreation (What types, # of people) ➥ Pets and children • Where is the viewing corridor • Structures near the water
30. **Work to address homeowner concerns**	Listed are five common concerns homeowners have about a restoration project. Try to come up with fair alternatives. How would you respond? (Reduce size, shoreline editing, setback from shore, etc.) Provide the homeowner with a strategy and information to share with neighbors to explain their project. • View of the Lake • What will the neighbors think • Beach Areas • Play Areas • Storage .

31. Find a Reference site	You want the restoration site to be within the 75-mile range. (Note: a reference site doesn't need to be located on the lake the restoration site is on.). Many counties have or are in the process of developing reference lists by habitat types/ location, soil, light conditions. To save yourself time call Land Conservation Departments, Extension, NRCS or DNR to see if list has been made for your area. If there is not a pre-existing list Inventory common/abundant vegetation as well as their densities. If you can't identify a plant take pictures, show the pictures (or a specimen if the plant is abundant) to a local botanist or local resource personnel, DNR, NRCS. **REFER TO USEFUL REFERENCES HANDOUT** for a list of many good plant identification books available. Find out as much as you can about the plants, i.e.: life expectancies, rate of establishment, growth time, ability to propagate, competition, resistance to herbivory. Whether your list comes from the field or from the county. Keep your list length reasonable (5-15 species). You don't want to overwhelm yourself with choices • Site should be within 75 miles • Note vegetation types • Note vegetation densities and growth characteristics *To save time ask your local agencies if a list for your area exists.*
32. Draft Burnett County Native Shrub List	This is a portion of the draft Burnett County plant list. Highlighted in red is the shrub/tree choices made by our examples landowner.
33. Dogwood and Juneberry	• Grey Dogwood – Full sun to partial shade. Needs some protection from strong winds. Propagation by seeds sown as soon as ripe or in the spring after stratification. Softwood cuttings and Layering are other methods. • Juneberry/Serviceberry – Fertile soil that is neutral to slightly acid. Suckers or by seeds planted as soon as ripe or in spring after stratification. Some seedlings may not come up until the second yr. Edible fruit.
34. New Jersey Tea and Highbush Cranberry	• New Jersey Tea – Well drained preferably sandy loam. Propagation by seed in the spring after stratification. Mature plants do not transplant well. • Highbush Cranberry - moist fertile loam. Full or partial sun. Sucker, cuttings, layering or seeds. Seeds should be planted as soon as ripe. May take several years for germination.
35. Hazelnut and Red Osier Dogwood	• Red Osier Dogwood - full sun or partial shade. Seeds should be planted as soon as ripe or in spring after stratification. Softwood cuttings can be rooted under intermittent mist. Also layering as form of propagation. • Hazelnut – Edible nuts and catkins in the spring. Grows well in moist soils. Propigation by seeds, suckers, layering, and by cuttings. Seeds need to be planted in fall and are often infested by an insect that destroys the them.

36. Snowberry and White Cedar	• Snowberry – Plants require well drained soil. Propagation by seeds, cuttings, and division. Seeds need to be warm and cold stratified to germinate. • White Cedar – Moisture-retentive soil. Propagation by seeds or cuttings. Young plants can be planted bare root in the spring. Larger plants should be moved with a ball of soil.
37. Birch and Tamarack	• Tamarack – deciduous. Native to swamps but fairly drought tolerant. Seeds sown in fall in sandy seedbeds. Seedlings must be shaded the first year. • Birch – cool soils that are moist. Doesn't like soils that become compacted.
38. Common noxious plants	• Poison Ivy – Care must be taken in removal (**REFER TO POISION IVY CONTROL**) • Milfoil - (**REFER TO EXOTICS HANDOUT)** • Purple Loosestrife – **EXOTICS** Highly invasive. Please note there are native loosestrifes that are attractive and beneficial
39. Will Permits be needed	Will a permit be needed and who regulates what?
40. O.H.W.M Ordinary High Water Mark	Erosion Control, Grading, Fill, Structures will most likely need approval. The location of the OHWM will decide which agency you will need to talk to. Above County Zoning. Below DNR Water Management Specialist. The point on the bank or shore where water created a distinct mark.
41. Create a final site plan	Combine all of your information and develop a long-term plan that can achieve the homeowner's and environmental priorities. Set up plans in stages. You don't want to bite off more than you can handle. You don't want to scare off the landowner. Stages allow you to see what works and what doesn't, so you can modify future plans Environmental priorities are to: ◦ Reduce and detain runoff ◦ Stabilize the routes that runoff takes ◦ Restore poorly vegetated areas ◦ Stabilize eroded shorelines ◦ "protect" high use walkways ◦ Identify conditional human use changes (boating patterns, keeping pets off Create a final site plan that combines a vegetation list & veg. densities from your reference site and answers to the land use questions. End product should be beneficial to the shoreline and agreeable to the homeowner.
42. Revisit Inventory plan	Initial plan again

43. **Final Plan**	First year plan. Make up answers to some land use questions (like viewing corridor and maintaining use of some structures). Discuss changes and restoration types chosen for certain areas.
44. **Set up monitoring plan**	Come up with a monitoring plan and commitment. Include who will maintain the planting: Professionals, Landowners, or Volunteers. And to what level of management: Let nature control, Weed only noxious plants and undesirables, Mow to control weeds at end of season, or Burn area to control weeds • Who will maintain • What level of management will be utilized Once a plan is agreed upon provide written care and maintenance guidelines.
45. **For Greatest Success**	This will help create ownership in their eyes. Thus increasing the level of pride in the project • Continue maintenance • Willingness to invest time and finances
46. **Challenges**	These are just a few of the challenges you will face. Each site will be a learning experience. Sharing you solutions with others will benefit other landowners and the lakeshore. • Unrealistic homeowner expectations • Patience • Site variability • Technical Skills • Lack of good reference sites/ lists • Undesirable species • Herbivory • Monitoring
47. **Planting**	Once the plans are approved the work begins. Commonly there are **three types of revegetation: seeds, live plants (plants and root stock) and live stakes.** All plantings will take effort to get them established, but once established natives will require little maintenance.
48. **Seeds**	We will discuss removal of competing vegetation in a moment. • Remove competing vegetation • Mix the seeds with moist sand the seeds will adhere to the sand allowing you spread them evenly and broadcast. • Tamp seeds in or lightly rake the seeds in • Mulch lightly with ½" weed free mulch • Water daily for the first few weeks unless there is significant rainfall • WEED WEED WEED the first season – some advise growing a small tray of seeds so you can see what seedling look like. Pull only the common weeds they can recognize.

49. Vegetation Removal

If you do attempt seeding there is a general consensus you will need to remove the existing vegetation to get any germination and eliminates competition from turf grass. How you remove the vegetation is an area of debate and some controversy. With any areas of soil that are disturbed it is essential that there is adequate erosion control.

	PROS	CONS
Black plastic	Inexpensive, least possible chance of erosion. Could also use alternatives, i.e. wet newspaper.	Some feel unsightly, can take a long time to be effective 4-6 weeks.
Soil tilling	Effective if done correctly	Highest chance of erosion if used on slopes, will need to repeated to be effective. Will stir up weed seeds. Can destroy soil structure.
Herbicides	Quick, effective if done correctly, little erosion	Using poisons near the water, non-selective

50. Plants/ Rootstock

Transplanting directly into a lawn works best if lawn is poor or consists of native sedges/grasses.

- Planting in the spring allows for the greatest root growth (some plants can be planted at other times).
- Give at least 18" between planting; copy spacing of native stands.
- Plant carefully, dig holes for your plants, and be sure to remove grass clumps, make sure each plant is planted to a correct depth.
- Be ready to water, water immediately after planting.
- Plant in the cool hours of the day this will give your plants a greater survival rate. Plant ASAP if you can't keep the plants damp (wet burlap) and in partial shade.
- Mulch heavily with 3-4" of weed free
- Water daily for the first few weeks unless there is significant rainfall WEED WEED WEED the first season

51. Live Stakes

Dipping in latex immediately after cutting reduces evaporation. It is important to know which end is up. When cutting stakes from a source cut the bottom at an angle (aids in driving into the ground). Plant w/in 24 hours or keep cuttings in shade and moist. Drive the stake in at least 1' (the deeper the better). Leave 3-6" above ground. There will be root growth before leaf growth. Larger stakes (thicker and longer) will survive heating and drying better than smaller. Whips work well along very moist areas. Push into the ground as far as they will go without breaking.

- Willow, dogwoods, tag alder
- 18-24" X 3/8" stakes
- Angle bottom and dip top in latex
- Drive in with rubber mallet
- Plant within 24 hours

52. Plants from a nursery	Preferred source if feasible. Some nurseries will grow your collected seeds for you. • Special orders - plan well in advance • Determine origin/propagation method DO NOT use imported plants

53. Take from the wild	Stress plant ethics, we don't want to create problem while solving another. Areas slated for construction are the best.
	• Wild plant laws
	• Ethics
	  • Collect only common / abundant
	  • Transplant when in danger of destruction
	  • Don't endanger health of plant community
	  • Cuttings - remove less than 5% of plant
	  • Seeds - be sloppy, leave majority
	  • Ask permission
	CHECK FOR EXOTICS

54. Littoral Zone Restoration	Some may have noticed that we have not spent time on planting in the water (littoral zone). For the most part the best method of re-establishment is to reduce disturbances (change boating pattern coming into dock. Reducing speed and docking straight on instead of an angle.) The seed bank in the littoral zone is very resilient.
	There may be areas of past heavy herbicide use where planting could be done. Remember this area will be the highest in cost and in most cases have the lowest results.
	Some areas are naturally lacking plants or alternatives for herbicided areas would be fish habitat structures such as tree drops, cribs etc. DNR Fish managers are a good source of expertise on which method works best in which type of location and can aid in the permit process.
	• Change use patterns
	• Plantings
	  • Seed bank
	  • Plants need to be weighted down
	  • Protection - wave reduction structures
	• Alternatives - Fish habitat structures
	• Change use patterns
	• Plantings
	  • Seed bank
	  • Plants need to be weighted down
	  • Protection - wave reduction structures
	• Alternatives - Fish habitat structures

55. Littoral Zone Hazards	Some causes of low results will be out of yours and the landowners hands.
	• Boat Motors
	• Ice
	• Drawdowns
	• Exotics
	  • Carp
	  • Rusty crayfish
	  • Eurasion watermilfoil
	  • Purple Loostrife

56. – 60. References	• Life on the Edge - $3.00 Contact County UW-Extension office • Through the Looking Glass - $20.00 Checks payable to UW-Extension and mail to UWEX-Lakes Program, CNR, 1900 Franklin St., Stevens Point, WI 54481 • Landscaping for Wildlife and Water Quality - $19.95 call 1-800-657-3757 • Yard Care and the Environment - Contact County UW-Extension office • The Living Shore - $17.00 (includes shipping) call Wisconsin Association of Lakes (WAL) 1-800-542-5253