

Proposed Updates to the Ontario Wetland Evaluation System

October 25, 2022

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Background

Under Ontario's current policy framework, an evaluated wetland is a wetland that has been assessed according to the Ontario Wetland Evaluation System (OWES). The OWES is the official procedure to:

- a) determine the wetlands that are significant, and
- b) determine the boundaries of significant wetlands.

The OWES assesses wetlands under four categories: biological, social, hydrological and special features. OWES defines a significant wetland as any evaluated wetland that scores 600 or more points in total, or that scores 200 or more points in either the biological component or the special features component.

The OWES consists of two manuals: the Southern OWES (used to evaluate wetlands located in Ecoregions 6 and 7) and the Northern OWES (used to evaluate wetlands located in Ecoregions 2, 3, 4, and 5). Coastal wetlands are also evaluated using these OWES manuals.

The OWES has been in place since 1983. Over the last decade in particular, we have heard practitioners voice concerns and recommendations for improvements to how Ontario's significant wetlands are assessed and identified.

Proposed changes

The MNR is proposing the following changes to content in the OWES manuals:

- Add new guidance related to re-evaluation of wetlands and updates to mapping of evaluated wetland boundaries.
- Make changes to better recognize the professional opinion of wetland evaluators and the role of local decision makers (e.g. municipalities)
- Other housekeeping edits to ensure consistency with the above changes throughout the manual.

This document reproduces the current OWES southern manual (without graphics and formatting) and shows proposed changes in blue font. Where the OWES northern manual contains the same content, the proposed changes would be made in that manual as well. Sections of the OWES manuals that are not proposed to change at this time have not been included in the document.

Introduction to the Evaluation System

southern manual pages 1-3

As a steward of Ontario's natural resources, one of the Ontario Ministry of Natural Resources and Forestry's (MNR) mandates is the protection and sustainable management of the province's natural heritage features, including wetlands. To aid in identifying those wetlands that have value at a provincial scale, MNR has developed, and administers, this wetland evaluation system (referred to throughout the text as the "OWES", the "evaluation system", or "this manual").

Wetlands are land types that are commonly referred to as swamps, fens, mires, marshes, bogs, sloughs and peatlands. They occur intermittently across the landscape along lakes, rivers and streams, and in other areas where the water table is close to the surface. They vary in size from a fraction of a hectare to many thousands of hectares.

As areas where land and water come together, wetlands provide unique and specialized habitat for a great variety of species that can live nowhere else. If wetlands small and large cannot survive in reasonable abundance across the landscape, their dependent species will decrease in number and eventually disappear. The survival of wetlands helps to preserve ecological processes and functions that secure and protect the quality of the biosphere in which humans and other organisms together must dwell.

Although the evaluation system is based on scientific criteria, it was developed primarily to serve the needs of Ontario's planning process that is generally implemented by municipalities. The evaluation recognizes the role that wetlands play in maintaining critical ecosystem functions, providing social benefits, moderating storm flows, improving water quality, and protecting rare species. The system provides a way of rating wetlands relative to each other and also provides information about why one wetland is more important than another. The evaluation system can also be used to carry out a preliminary or "first cut" biophysical inventory of a wetland.

This evaluation system and any updates or addendums issued are the only means of evaluating wetlands in Ontario to determine whether they are provincially significant. In the OWES, the term "significant wetland" refers to Provincially Significant Wetlands, or PSWs, as determined by the criteria outlined in this manual. Although other information sources, maps or inventory approaches (e.g., the Ecological Land Classification System) may be used to aid evaluators in undertaking a wetland evaluation, it is the OWES that determines whether a wetland is a PSW and, likewise, determines the boundaries of the PSW wetland.

This evaluation manual is a revision of the 2002 version of the Southern Ontario Wetland Evaluation System manual (OMNR 2002a) and is similar to the evaluation

manual for wetlands in northern Ontario (OMNR 2012b). Differences between the evaluation manuals for southern and northern Ontario reflect the differences in climate, geomorphology, human uses and other factors between these two parts of the province.

This evaluation manual can be applied to all southern Ontario wetlands located in Ecoregions 6 and 7 as defined by Hills (1961) and modified by Crins *et al.* (2009). Figure 1 shows the boundary for application of the two manuals. ~~In the event that a particular wetland is located very close to or on the boundary, so that identifying the appropriate Ecoregion is uncertain, the evaluator must consult with the local MNR District to ensure use of the appropriate system.~~

Since this evaluation system is designed to identify and measure recognized values of wetlands, it should provide a mechanism or framework through which conflicting claims about wetland values and uses can be resolved. The application of this system provides knowledge of the different kinds of wetland values, which is then available for examination and review by any interested person, agency or group. ~~Nevertheless, the evaluation is not a complete biophysical inventory and certain information, particularly about the presence of rare species and about hydrological functions, may be lacking even after the evaluation is completed. If this is determined to be the case, then more information should be obtained before making decisions about the types of land uses in the vicinity of evaluated wetlands (particularly those deemed to be provincially significant).~~

The evaluation system does not evaluate vulnerability of wetlands to various sorts of developments and pressures. The system is a tool that allows consideration of the relative value of different wetlands through the examination and ranking of a number of wetland functions. The assessment of vulnerability is considered to be presumptive and outside the scope of this evaluation.

Likewise, the evaluation system does not suggest the kinds of management that would be best for a wetland. However, the information gathered through the application of this evaluation system can provide the basis for considering management options and alternatives.

The results of evaluations made under this system ~~may be used at several levels: are primarily used by 1. By~~ a municipality or county government as part of the municipal planning process where there is a need to know: (a) whether a specific wetland has been evaluated or not, to assist in determining if it should be evaluated, ~~and~~ (b) whether a wetland has been identified as a PSW, ~~to determine whether it is to be protected pursuant to the Provincial Policy Statement, and (c) for information about the specific values of a wetland.~~

~~2. By the province as an aid to land use planning. In this regard, the wetland evaluation system serves as an essential cornerstone of wetland policies of the Provincial Policy Statement, authorized under Section 3 of the *Planning Act*. As well, the evaluation system may prove of value in identifying nationally and internationally important wetland features.~~

~~3. By conservation authorities as an aid in implementing regulations under the *Conservation Authorities Act*. Conservation authorities for purposes of public safety, natural hazard prevention and management, regulate wetlands for flood attenuation, natural storage capacities and for preventing shoreline erosion. Conservation authorities also regulate areas around wetlands that may interfere with the hydrologic function of the adjacent wetland including in general areas within 120 metres of all PSWs and areas within 30 metres of all other wetlands. Many conservation authorities evaluate wetlands; MNR retains authority to identify PSWs.~~

~~4. By conservation authorities who at the request of their municipalities or as approved by their boards may be developing a broad watershed plan or study to provide technical advice to municipalities for plan input or to direct management on conservation authority owned land.~~

~~5. By MNR to manage and conserve fish, wildlife, land and other resources and to inform stewardship and incentive programs. A wetland that has been evaluated using this system is known as an “evaluated wetland” and will have a “wetland evaluation file”. NOTE: Where there are wetland features on a site that have not been evaluated or that have not been recently evaluated, municipalities, county governments, conservation authorities, landowners, or others should not assume that the wetland is not significant.~~

Figure 1: Boundary for application of northern and Southern Wetland Evaluation manuals in Ontario. NOTE: for illustrative purposes only; evaluators should use the Ecodistrict layer available through Land Information Ontario ~~or check with their local MNR office if they are not sure which manual to use.~~

How the Scoring System Works

Southern manual pages 5-6

In this evaluation, wetland values are grouped into four principal components. These are Biological, Social, Hydrological, and Special Features. Each component is evaluated individually and separately from the others. Each component is further subdivided into subcomponents, and some subcomponents are further subdivided into attributes and some into sub-attributes.

The method used for assessing the value of a component, subcomponent, attribute or sub-attribute is numerical. Thus, relative value is assessed by ascribing point totals to

predefined values. The scores are then totalled to provide a measure of value at the subcomponent and component levels. The total number of points that can be accumulated by each of the four major components is 250 points. An individual wetland can score a maximum of 1000 points.

The relative scores assigned to the subcomponents, attributes and sub-attributes were developed over a decade. The 1984 edition of the Evaluation System was applied to about 2,000 wetlands across southern Ontario during which time a great deal of experience was gained. Hence, the judgement of dozens of people about the relative importance of the recognized values is the basis for the credibility of the assigned scores.

Within each component, subcomponent, attribute and/or sub-attribute, values have been weighted to reflect their importance relative to each other. ~~The judgement of the Wetland Evaluation Technical Team (WETT), the Southern Wetlands Evaluation Review Committee and the Provincial Wetlands Working Group is the basis for the relative weighting. Some values are widely considered to be of major importance (e.g., breeding habitat for an endangered species) and many points (250) are allotted to them.~~

~~At the other end of the scale are “minor” values, given only a few points.~~

~~The large number of points that can be accumulated in each of the four components means that the system provides a relatively sensitive point spread among subcomponents and attributes. The employment of high scores for some values also permits “minor” values (ones to which only a few points are allotted) to be easily included in the evaluation system.~~

~~If an evaluator is uncertain how to proceed with or interpret any component of this evaluation system, they should contact the appropriate MNR District Office for clarification. In addition to having knowledge about local natural heritage features and functions, the local MNR biologist/ecologist has access to experts in a variety of disciplines who can assist in answering natural heritage questions. Where disagreements about an evaluation occur District MNR staff may seek additional input from the MNR’s Provincial Wetlands Program. Any such advice obtained should be noted/included in the wetland evaluation file.~~

This manual sets out guidance for assessing wetlands. Evaluators should rely on their observation, data collection and research and use their professional judgement and expertise in applying the OWES.

Approval of the Wetland Evaluation

Southern manual, page 6

~~Any trained wetland evaluator may carry out a full wetland evaluation; however, all wetland evaluations must be reviewed and approved by the MNR before they are considered complete and 'official' (i.e. the wetland status may be used to make land use planning decisions). As part of the review of a submitted evaluation, MNR may amend certain scores, information, or features contained in the submitted evaluation.~~

~~The local MNR office has a detailed understanding of the natural heritage features and functions of the area, has access to current and historic reports, may be aware of relevant information and reports not readily accessible to others, and has connections with other organizations that gather natural heritage information.~~

~~Completed evaluations must be forwarded to the biologist/ecologist at the local MNR District or Area office in which the wetland is located. MNR will review and approve the evaluation. A wetland evaluation is not considered to be complete and official until MNR has signed off on the file.~~

Wetland Re-evaluations and Mapping Updates

(new section)

A wetland that has already been evaluated may be re-evaluated or an evaluated wetland boundary can be updated. A “wetland re-evaluation” means that a new wetland evaluation is undertaken in accordance with OWES, including field assessment, scoring and boundary delineation (mapping). A “mapping update” means that the outer boundary of an evaluated wetland is updated to reflect new information or changes on the land.

The following must be considered when undertaking a wetland re-evaluation or a mapping update:

- Re-evaluation of wetlands: Wetlands will retain their current status (i.e., significant or not) until such a time as a re-evaluation occurs.
- Re-evaluation of previously evaluated wetland complexes: With the exception of closely grouped wetlands, single wetland units that are part of a previously evaluated wetland complex can be re-evaluated (re-scored and re-mapped) without requiring a complete re-evaluation of all units in the existing wetland complex. Each previously evaluated wetland unit will retain its current status (e.g., significant or not) until such a time as the individual unit may be re-

evaluated. All wetland units that were previously evaluated as part of a wetland complex do not need to be re-evaluated at the same time. There is no requirement to update the wetland evaluation that applied to an entire wetland complex. The evaluation is considered a point-in-time document used to assign a status (significant or not) to each wetland that the evaluation covered (i.e., all wetland units that had previously been complexed together). Previous wetland evaluation documentation can be used as a source of information when re-evaluating a formerly complexed wetland unit.

- Mapping updates to previously evaluated wetlands: Wetlands are dynamic natural systems and the outer boundary of a wetland can be updated if new information becomes available or if the extent of the wetland on the land changes. A mapping update can be undertaken without undertaking a re-evaluation. Evaluations are point-in-time assessments to determine a wetland's status (significant or not) and are not to be 'updated'. At times decision makers may require a re-evaluation of the wetland to confirm its status.

A Complete Evaluation

(new section)

A wetland evaluation, re-evaluation or mapping update will be considered "complete" once it has been received by a decision maker addressing a land use planning and development or resource management matter.

Once an evaluation, re-evaluation or mapping update is complete, the wetland evaluator must ensure that affected landowners of the property or properties containing the wetland are made aware in writing of any new wetland evaluations or amended wetland evaluations (wetland boundary and status).

Definition of Wetlands and Wetland Areas

Southern manual page 7

In this evaluation system wetlands are defined as:

"Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants".

The term wetland is a general one and includes specific land types commonly called marshes, bogs, swamps and fens. Other terms sometimes used to describe wetlands include: mires, sloughs and peatlands. Wetlands may be relatively simple or highly complex and diverse biologically and ecologically. Within a single wetland area (i.e.

contiguous wetland) one may find very different ecological circumstances as for example, an open water marsh, a spring fed swamp forest, a floating lakeside fen, an open channel of river, and the open water edge of a lake. Despite these profound ecological differences, the entire area is considered as a single wetland. It is to be identified and evaluated as a single unit. Areas of upland where typical upland species are dominant are not to be included in the wetland area.

~~The idea of a **wetland complex** [see detailed definition under Wetland Complexes] is an extension of the above concept of a single contiguous wetland. In a wetland complex, major functional discontinuities (such as uplands or open water lakes) may subdivide the area into a number of distinctive wetland units, but the entire wetland area is evaluated as a single unit.~~

In this evaluation system, “hydric soils” refers to substrates classified as *hydric* (e.g., substrates of Moisture Regime 6 or greater) and ‘*nearly hydric*’ (e.g., Moisture Regime 5 substrates which can be present in moist conditions), as determined by the latest Ecological Land Classification standards and classes (OMNR 2009). Additional information on hydric substrates can be found under substrates (see Wetland Boundaries) on page 17.

Wetlands constructed for purposes other than wetland conservation (e.g., storm water management ponds, sewage lagoons, water treatment ponds) and in active use as such are not considered under OWES.

Agricultural Lands: It should be clearly understood that if an area no longer meets the definition of a wetland, in terms of water, soil/substrate, and vegetation characteristics, then it should not be considered to be a wetland. Conversely, land which is under agricultural use, but has retained ~~the all three defining~~ characteristics ~~and function~~ of a wetland (e.g., related to water, soil/substrate and vegetation), is still considered to be one. Cattle pasturing/grazing, e.g., in a swamp, is an example of an existing agricultural use that, while it may result in some degradation in the quality of the wetland, will usually allow the wetland to persist. In contrast, planting of crops or ~~tillage tends to destroy wetland values and thus~~ should no longer be considered as wetland. See Wetland Boundaries for more information on wetland boundaries in agricultural areas.

The Wetland Evaluation File

Southern manual, pages 8-9

~~A complete wetland evaluation file consists of the following items:~~

- ~~1. Wetland Evaluation Data and Scoring Record (WEDSR)~~
- ~~2. Five page scoring summary~~

- ~~3. Catchment basin map indicating all relevant wetland detention areas. See the section on “Preparation of Wetland Maps” for additional details. A printed copy of catchment basin map should also be included in the file.~~
- ~~4. Map(s) of the wetland boundary and vegetation communities within the wetland. See the section on “Preparation of Wetland Maps” for additional details. Printed, labelled copies of the maps should also be included in the file.~~
- ~~5. Field notes (including field mapping, field data sheets and data summary forms)~~
- ~~6. Documentation of sources of information (e.g., list reports, remote imagery and other geospatial data used, include numbers and year of air photos, etc.) Note that any personal information recorded is subject to the *Freedom of Information and Protection of Privacy Act*.~~
- ~~7. A copy of the map or digital file/program used to calculate interspersion and a map showing the watershed and other natural features adjacent or near to the wetland.~~
- ~~8. Copies of completed Rare Species Reporting Forms. Note: Any newly observed NHIC-tracked rare species or species at risk scored in the evaluation should be accompanied by a completed NHIC Species Reporting Form (or by all information necessary to complete such a form). Any rare species scored based on existing observations must be accompanied by a copy of the NHIC Element Occurrence report or other similar documentation.~~
- ~~9. Any photographs (digital or otherwise) taken during wetland evaluation (cross-referenced to the vegetation community map)~~
- ~~10. Copies of any collection labels (e.g., herbarium, insectarium labels)~~

~~It is recommended that any advice or interpretation obtained from the local MNR biologist/ecologists or the MNR Provincial Wetlands Program be included as a note in the wetland evaluation file.~~

~~Wetland evaluations require one or more field visits to the wetland being evaluated. To obtain a more accurate picture of the wetland and its functions, several field visits to the wetlands may be made at different times of the year. (moved to new section titled “field visits”)~~

~~Although site visits are an important part of any wetland evaluation, it is not expected that a wetland evaluator will traverse the entire wetland. Existing information prepared from earlier field visits allow the evaluator to utilize information collected about the site~~

~~by others. Existing information such as documented species observations, mapping and aerial photography allow the evaluator to understand the general characteristics of the wetland. Site visits allow the evaluator to verify whether existing (general or specific) information is accurate, to record new field observations, and to adjust preliminary mapped boundaries. (moved to new section titled “field visits”)~~

~~Information may be added to an existing wetland evaluation at any time. The addition of new information or the deletion of obsolete information may be required after the initial wetland evaluation has been completed. A wetland evaluation must be considered an “open file”. Any change to the wetland boundaries (e.g., deletions/additions) after the evaluation file has been approved must be documented in the file (e.g., maps showing rationale for boundaries changes). Full documentation of size/boundary changes will facilitate future review and update of the files.~~

~~The most efficient and cost effective method for evaluation of wetlands is to focus on wetlands within a drainage basin or sub-basin. This approach is most productive because wetlands in the basin are often functionally associated. Also, information from both published sources and from interviews with residents and various persons knowledgeable about the area or region (MNR staff, for example) can be conducted efficiently. As well, numerous wetlands can be visited during field trips.~~

Sources of Information

Southern manual, pages 10-11

The initial information gathering phase of the wetland evaluation process should involve personal contacts and studies of literature and information from as many sources as possible. Much of the information required in the WEDSR, such as location, land ownership, research and reports, etc. should be compiled and reviewed prior to field work. This element of the work is very important and adequate time should be allotted for its completion. ~~Contact with appropriate organizations and agencies, outlined below, is vital to the credibility of the evaluation and of the Special Features component in particular.~~

~~One of the best methods for ascertaining the exact locations of wetlands within a study area is through a review of the following:~~

- ~~1. Digital data and imagery available through Land Information Ontario~~
- ~~2. Infrared, black & white stereo aerial photographs or ortho-rectified digital aerial imagery;~~
- ~~3. National Topographic Series (NTS) maps;~~

- ~~4. Forest Resources Inventory (FRI) maps;~~
- ~~5. Regulatory or watershed based maps that may be available from a conservation authority;~~
- ~~6. Satellite imagery (such as Landsat and SPOT)~~
- ~~7. Southern Ontario Land Resource Information System (SOLRIS)~~
- ~~8. Ecological Land Classification (ELC) mapping~~
- ~~9. Digital Elevation Model (DEM) & contours~~
- ~~10. Soils mapping~~
- ~~11. Surficial geology mapping~~
- ~~12. Other wetland or natural heritage system mapping~~

~~Additional details regarding potentially useful sources of information and maps can be found in Appendix 2. NOTE: Although information sources and mapping systems like those identified above and in Appendix 2 can be useful to evaluators when carrying out an evaluation, only OWES criteria and standards determine wetland significance. Some of the above information sources provide coverage for the entire province while others are regional in scope.~~

~~The NTS maps are a useful source of information but due to their scale (1:25,000 or 1:50,000), wetlands smaller than about 5 ha may not be shown. In addition, disturbance of wetlands such as filling, dredging, channelization and the construction of new roadways that have occurred since the time of map production must be taken into account. In all cases, field checking is necessary to determine the presence of wetlands.~~

~~The WEDSR must be completed with a combination of field investigations and thorough search for existing information and uses. WEDSRs should not contain blanks. Rather, “no information available” should be clearly stated *but only after checking with appropriate MNR staff. The name of the MNR staff person, their title, and the means of the contact (e.g., telephone, email, meeting) must be entered into the evaluation record in the source of information field.*~~

It is important to conduct as much of the background information search as possible prior to the field investigation. By doing so, the evaluator will have a solid basis upon which to plan and carry out the field work.

Other agencies, organizations, programs or initiatives that may have useful biological or general wetlands information include, but are not limited to:

1. Canadian Wildlife Service
2. Ducks Unlimited Canada
3. Natural Heritage Information Centre (rare species, Environmentally Sensitive Areas, Areas of Natural and Scientific Interest, etc)
4. Bird Studies Canada
5. Ontario Breeding Bird Atlas
6. Breeding Bird Survey
7. Ontario Birds at Risk Program
8. Marsh Monitoring Program
9. Ontario Herpetofaunal Summary Atlas
10. Ontario Odonate Atlas
11. Atlas of the Mammals of Ontario
12. Naturalists clubs (for possible lists of flora and fauna)
13. Conservation authorities
14. Local MNR offices (may have information on fisheries, wildlife, forestry, recreation, hunting, fishing, trapping, significant natural areas, identified/mapped wetlands, rare species, etc.)
15. Local residents, hunters, trappers and fishermen may be able to provide information on various wildlife species and on recreational uses of the wetland
16. Municipalities (information on Official Plans, zoning, pending development proposals and ownership)
17. Ontario Ministry of the Environment (potential information on water quality and quantity)
18. Ontario Ministry of Culture (for cultural information)
19. Geological Survey of Canada (for Ontario Peatland Inventory data/reports)
20. Crown Land Use Policy Atlas (for Crown land information and maps)
21. Other environmental non-governmental organizations

Other agencies, organizations, programs or initiatives that may have useful biological or general wetlands information include, but are not limited to:

- Federal, provincial and municipal governments, conservation authorities
- Indigenous communities
- Non-government environmental organizations
- Local residents, hunters, trappers and fishermen may be able to provide information on various wildlife species and on recreational uses of the wetland
- Inventory and monitoring programs (e.g., Marsh Monitoring Program)

~~Access to reports and files should be prearranged by telephone in advance of visits to various agency offices.~~ It is absolutely essential to provide accurate and complete references to sources of ~~printed~~ information. Personal communications should be properly documented ~~in the WEDSR~~ with date, name and title of the person providing the information cited in the data records. ~~A transcript or summary of the communication should be included in the wetland file.~~

It is often advantageous to determine from government personnel, landowners or others familiar with the wetland the most efficient way to travel to and access the wetland. ~~Arrangements with landowners for access to private property must occur should be made prior to the field work.~~ Moved to new section on 'landowner permission'

Landowner Notification and Permission

(new section)

~~As a courtesy, evaluators may notify landowners that a wetland evaluation is being undertaken for a wetland located on their property.~~

Landowner permission must be obtained before accessing private property to carry out wetland evaluation field work. Arrangements with landowners for access to private property ~~must occur should be made~~ prior to the field work.

~~In cases where landowner permission can not be obtained, evaluators should conduct the evaluation using any other information they can gather (e.g., aerial imagery, information from adjacent lands, information that can be observed from roads, etc.)~~

(existing content moved from other sections above, moved to a new section to make it easier to find)

Field Visits

(new section)

Wetland evaluations require one or more field visits to the wetland being evaluated, ~~at an appropriate time of the year~~. To obtain a more accurate picture of the wetland and its functions, several field visits to the wetlands may be made at different times of the year.

Although site visits are an important part of any wetland evaluation, it is not expected that a wetland evaluator will traverse the entire wetland. Existing information prepared from earlier field visits allow the evaluator to utilize information collected about the site by others. Existing information such as documented species observations, mapping and aerial photography allow the evaluator to understand the general characteristics of the wetland. Site visits allow the evaluator to verify whether existing (general or specific)

information is accurate and to record new field observations, ~~and to adjust preliminary mapped boundaries~~

(existing content moved here from a different section)

While only a trained wetland evaluator can undertake an evaluation, it is recognized that trained evaluators may make use of other persons who may have specialized skills that can aid an evaluator. This can include having persons not trained in OWES helping an evaluator undertake field visits. The evaluator must ensure that they review the work of any untrained field assistants to ensure the criteria set out in these manuals is appropriately considered.

Timing of Field Visits

Southern manual, page 14

The timing of visits to each wetland will depend upon the season, type, size and complexity of the wetland and the amount of information that is already available.

If the wetland contains permanent open water, then one or more visits will be essential during the summer or early fall to obtain data on the extent and nature of submergent and floating vegetation as well as on the hydrological characteristics. If spring (“leaf-off”) air photos (infrared, orthophotos, B&W aerial) are available, then the extent of the wetland boundaries can be more accurately drawn compared to summer (“leaf-on”) imagery. A spring field visit, or at least an interpretation of spring imagery should be undertaken in order to develop a better understanding of the extent of seasonal flooding and the maximum extent of the wetland. Palustrine wetlands (see section 1.1.3) should be visited during the low water stage to determine direction and nature (permanent and intermittent) of surface inflow and outflow. ~~Widely dispersed wetland complexes or~~ large wetlands may require several visits to ensure that adequate information is obtained.

The characteristics of a wetland at any particular time of year are often governed by seasonal rainfall. Some wetlands are so complex that the evaluation team will need to exercise considerable judgement in determining the timing and the date(s) of field visits. The aim in all cases is to ensure that the WEDSR is as accurate, objective and complete as possible so that the conclusions drawn in the evaluation will stand up to independent verification.

~~The evaluation is conducted at a point in time. Hence, it is the conditions described and facts noted at that time that are assessed within the context of all available information. the evaluation always remains as an open file, subject to change as more information becomes available or as a consequence of changes to the wetland itself. Where information is not available, this should be noted; the WEDSR should be updated as~~

~~information becomes available, making certain that all copies of the evaluation are simultaneously updated as well.~~

Preparation for Site Visits

Southern manual, page 12-13

Site visits to wetlands, especially in remote areas, are potentially hazardous. Needless risk during field work should always be avoided and adequate safety precautions during field work are essential. In cases where hazards (especially in mires and/or geographically isolated wetlands) exist, evaluators should field-truth the wetland in groups of two or three.

Site visits allow evaluators to:

1. Determine wetland boundaries;
2. Delimit boundaries between wetland types;
3. Delimit vegetation communities;
4. Ascertain directions of drainage;
5. Check quality and authenticity of existing information;
6. Make observations of features and functions scores in the WEDSR (rare species, recreational use of wetland, economically valuable products, fish habitat)
7. Note weather conditions for the day and season;
8. Check soil/substrate types;
9. Search for seeps and marl deposits.

There are a range of constraints that impact the number and type of field visits that take place for a wetland ~~or wetland complex~~, including permissions from private landowners, condition of the site, seasonal and time constraints, the completeness of available background information, and an evaluator's expertise in aerial/satellite photo interpretation. Types of site visits include: unencumbered access through all or portions of the wetland, access via rights of way (e.g., roads, unopened municipal road allowances, hydro corridors), road side checks, water access, using binoculars in leaf-off conditions to examine the interior of a site, flying over the site, and other means of making direct observations. The completeness of existing background information and an understanding of what field observations must be and/or can be made are factors to be taken into account when planning for a site visit or visits.

~~Landowner permission must be obtained before accessing private property to carry out wetland evaluation field work. In cases where landowner permission can not be obtained, evaluators should conduct the evaluation using any other information they can~~

~~gather (e.g., aerial imagery, information from adjacent lands, information that can be observed from roads, etc.)~~ Moved to new section on 'landowner permission'

~~Table 1 contains a list of equipment which should be available to each evaluation crew.~~

A list of field guides and manuals that each evaluation team might find useful is presented in Appendix 3.

Wetland Boundaries

Southern manual, page 17

One of the most important evaluation tasks is the accurate identification and delineation of wetland boundaries. Evaluators must develop a full understanding of both the criteria for distinguishing wetlands from non-wetlands and also the methods of mapping and measurement. Wetland boundaries are not always obvious. Evaluators must be willing to invest the time needed to satisfy themselves that boundaries have been accurately located and mapped.

The outer boundary of a wetland (which determines its size) is the one which will be used in several key aspects of the evaluation. However, several internal boundary lines must also be drawn. Internal boundaries are those between the four wetland types (see Section 1.1.2) and between vegetation communities (see Section 1.2.2). Criteria for establishing internal boundaries are explained in these sections of the Biological Component.

Identification and delineation of outer wetland boundaries is based, first and foremost, on the presence and relative abundance of wetland plant species. It is important that evaluators be able distinguish wetland from upland plant species.

In many cases the outer boundary of a wetland can be clearly delineated by using plant species. However, wetland boundaries that occur in zones of gradual ecological change (ecotones) can sometimes seem indefinite. In such cases, other criteria such as substrates may help evaluators identify wetland boundaries. The nature of the underlying substrate can provide important information to help evaluators determine wetland boundaries.

In addition, ~~subject to advice from MNR,~~ elevation mapping can be used to further inform the decision as to whether site characteristics indicate a wetland or non-wetland area.

Additional guidelines for delineating wetland boundaries in specific transition areas are also provided below, including: 1) wetlands bordering upland forest, 2) wetlands

bordering lakes and rivers, 3) wetlands bordering agricultural fields, pasture or urban areas, 4) seasonally flooded lands, and 5) beaver-flooded areas.

~~NOTE: Existing wetland boundaries, regardless of their age remain in effect until they are revised and those revisions are approved by MNR.~~

Substrate

Southern manual, page 20

Substrates/soils can only be used to help determine whether an area is a wetland or not if the substrate information has been collected in the field.

Advances in soil science and better understanding of persistent features in substrates have made it possible to identify and describe “hydric” substrates. Hydric substrates have been defined by observing the association between hydrophytic vegetation and the substrates that support such wetland communities (Richardson and Vepraskas, 2001).

The primary features used to identify hydric substrates are the colours found within very moist, saturated and wet substrates, the depth at which they occur, and the type, pattern and total amount of organic material. Specific colours found within wetland substrates reflect the duration and extent of saturation: “mottles” reflect an alternation between water saturation and drying (reduction to oxidation), whereas “gley” reflect more permanently saturated and reduced conditions. Extended saturation of substrates leads to anaerobic (i.e. loss of oxygen) conditions, affecting plant establishment and growth, and is the primary factor influencing plant distribution and selecting for hydrophytic species.

The Ontario Ecological Land Classification (ELC) program has established a provincial classification of substrates. As part of this classification, hydric substrates have been identified and named. Evaluators that have been trained in using ELC may find it useful to describe and record substrate features, along with moisture regime and the substrate material, using the latest ELC substrate standards and classes (OMNR 2009).

It is important to note here that the association between wetland vegetation and hydric substrates may not always be one-to-one, but may be complicated by many different factors. Some wetland habitats exhibit hydric substrates but no hydrophytic vegetation, specifically unvegetated communities surrounded by vegetated wetland communities (see Section 1.2.2). However, an area of hydric substrates that has been drained and largely supports upland species (i.e., with less than 50% relative cover of wetland species), would **not** be a wetland under the OWES definition. ~~If there is uncertainty about wetland delineation evaluators are encouraged to consult with MNR.~~

The following moisture regime (MR) classes can be used to characterize the seasonal moisture budget of rock, mineral and organic substrates, (Ontario Institute of Pedology 2003, Harris *et al.* 1996). [no changes proposed to 'moisture class' table]

Elevation Mapping

Southern manual, page 22

Surface topography mapping, due to its strong correlation to both surface and ground water hydrology, is an indicator of the location of peat, hydric soils and wetland vegetation. It therefore may be useful to incorporate elevation information into the external wetland boundary delineation process. The MNR maintains two main sources of digital elevation data useful for wetland interpretation. These include: contours and Digital Elevation Models (DEMs).

Contour information is available on all OBM mapping and is most useful in physiographic areas of Ontario with relatively significant relief. For example, areas like the Oak Ridges Moraine have changes in elevation greater than the OBM contour interval (i.e. 5 meters) over a short horizontal distance. Consequently, wetland boundaries are well defined by the contour information. Evaluators should be aware however, that while most wetlands occur in low-lying areas, some seepage-fed wetlands are found on slopes, even steep ones. In some areas wetland boundaries are more closely associated more with the limits of groundwater exposure (as evidenced by hydric soils and wetland vegetation) than with ground surface topography. In contrast, areas such as southwestern Ontario are very flat and thus have large horizontal distances between contours. In cases such as this, where there is often a 100-meter distance or greater between contours, another elevation data source should be consulted.

DEM's are elevation images built with a number of different data sources and are generally far more useful than contours. Information such as contours, spot heights, rivers and lakes are always included in the DEM creation process. In many parts of the province DEM creation also includes a dense fabric of regularly spaced air photo interpreted elevation points. DEM's created with these data are significantly more useful for wetland boundary delineation. Although DEM images themselves can be used to interpret wetland boundaries, DEM derivatives are generally more useful for this purpose.

DEM derivatives are images that are created using DEM's. Two very useful DEM derivatives are slope and analytical hillshade. A slope image is created by calculating the rate of change in elevation for all locations on a DEM. Such an image highlights flat and steep areas. An analytical hillshade is created by simulating a light source (i.e. sun)

from a specified angle and height. Hill slopes that face the source are bright while those that do not are shadowed (dark). In this way an analytical hillshade highlights surface relief and texture and is therefore very useful for wetland mapping. DEM's can also be used to create complex surface and groundwater derivatives, however, such derivatives are not as useful due to their complexity and accompanying interpretation difficulty.

Traditional stereo air photo interpretation, while time-consuming, allows for acquisition of the most wetland specific topographic information. ~~When mapping large complexes, these data are most efficiently used as a tool to resolve boundary questions not answered by other data.~~

Wetland Edges Bordering on Lakes and Rivers

Southern manual, pages 24-25

There are some cases where very closely grouped wetlands function together as one. For example,

- areas comprised of very closely spaced small wetland ponds/pools (e.g., within 30 metres from each other) interspersed with small pockets of upland forest (e.g., a 'mosaic wetland' or a 'slough wetland')
- wetlands along a river or lake that are separated by 100 feet or less

Due to their unique nature, these types of wetlands are to be evaluated as one wetland under OWES (e.g., small individual wetland ponds are not to be evaluated separately).

In this evaluation system, lakes are defined as:

“Areas of open water that are greater than 8 ha in size and at some location are greater than 2 m in depth from the normal low water mark”

Many wetlands border on lakes, rivers, streams and reservoirs. The deep water boundary of such wetlands should be drawn at approximately the 2 m depth of the seasonally low water level (Section 1.2.2 provides additional instructions for mapping vegetation communities in/adjacent to open water). Some special situations or exceptions to the above rule are as follows:

1. Unvegetated open water areas on the lake side of a barrier beach are not considered to be wetlands (the barrier beach is included as part of the wetland except where vegetation is dominated by upland species).
2. Non-vegetated embayments or ponds <2 m deep which border on or are more or less surrounded by wetland vegetation should be considered as part of the wetland unless they are along the outer edge of the wetland adjacent to water greater than 2

m deep. NOTE: Completely unvegetated open water < 2 m deep located along the outer edge of the wetland is to be excluded from the wetland map (see Figure 2)

3. Mudflats or sandy beaches that are not separated from the wetland by a barrier beach are to be included in the wetland.
4. Vegetation communities that are dominated by emergent vegetation and are in water >2 m in depth are to be included as part of the wetland. Note that this applies only to those communities in which emergent vegetation is the dominant form (see Appendix 8).
5. For wetlands along lakes, rivers and reservoirs, the two shoreline limits may be defined by placing a compass point at the extreme end point of shoreline emergent vegetation and the pencil at the 2 m depth line (Figure 2). An arc is drawn to shoreline past the emergent vegetation. The same procedure is then repeated to define the boundary in any other open water boundary of the wetland. Submergent or sometimes emergent vegetation may be present in the open water within the arc. This approach has been used successfully along the Bay of Quinte and on the islands off Kingston. Alternatively, points of land or other shoreline discontinuities may be used to define the “upshore” or “downshore” end point of the wetland.

Wetlands on Ontario’s major lakes and rivers

There are a number of additional criteria that may be used to establish the open water boundaries of wetlands on southern Ontario’s five major rivers (St. Clair, Detroit, Niagara, St. Lawrence and Ottawa) and on the shores of Lakes Huron, St. Clair, Erie, Ontario and Simcoe:

The 2 m depth contour (at low water) is to be used to define the deep water boundary of these wetlands (see exceptions above). If the evaluator encounters underwater shoals or knolls rising like islands from deeper water and the tops of these are less than 2 m from the surface, they should be included in the wetland map and the wetland with which they are associated is to be defined as **one wetland a complex** and evaluated as such.

For wetlands along southern Ontario’s five major rivers, the upriver and downriver limits of the wetland are to be determined by the field evaluator **with final limits set by MNR**. Some of additional criteria to be used are provided below.

Limits of Wetlands that Follow Meandering Streams

Often, a narrow band of wetland vegetation will be found along the banks of a slow moving stream or river. Such wetlands offer both water and excellent “edge” for fish and wildlife. The wetland may be more or less continuous for many kilometres. The evaluator will have to consider various sorts of discontinuities such as steep banks, rapids, beaver dams, presence of agricultural lands, etc., and include the justification for delimiting the upstream and downstream wetland boundaries in the data record.

Preparation of Wetland Maps

Southern manual, page 28

The required wetland maps are used for the determination of the wetland’s evaluation score and for identifying the location and exact boundaries of the wetland. This information is essential for amendments to municipal Official Plans and zoning maps in accordance with the Provincial Policy Statement, authorized under Section 3 of the *Planning Act*. If habitat management of the wetland is contemplated, then the map becomes an essential tool for planning, monitoring, etc.

~~MNR’s land use planning decisions are supported by geographic data available through the Land Information Ontario (LIO) Warehouse. Therefore, all Wetland mapping must be done to a standard consistent with the Wetland data class in the Land Information Ontario (LIO) warehouse. The easiest way to ensure this is to generate all mapping using ESRI GIS software. Specifically, both ArcGIS (ArcMap) and ArcView have the ability to create and manipulate spatial information in an accepted MNR GIS file format: the shapefile.~~ Using said software will also aid visualization, interpretation and ensure accurate mapping.

Maps to be Prepared and Included in the Wetland Evaluation File

Southern manual, page 31

1. Wetland Boundary Map

Should be produced at a precision of no less than 1:10,000 or 1:20,000 scale (depending on your location in the province) and must be produced digitally using GIS systems. ~~A copy of the map should be stored with the evaluation file.~~ The Wetland Boundary Map should depict all of the outer boundaries of the wetland and any features (e.g., roads, rivers, streams, etc) within or adjacent to the wetland. The map might also depict any land use adjacent to the wetland. The map should be **accessible** in ArcGIS format (i.e., a shapefile) ~~and the file should also contain a disk containing complete wetland maps exported from ArcGIS~~ and depicted in either digital image or PDF format. ~~Note: It is strongly recommended that digital files be provided in an ArcGIS .mxd format.~~

2. Vegetation Community Map

This map should include all boundaries depicted in the Wetland Boundary Map as well as all internal vegetation community boundaries determined during the evaluation. The Vegetation Community Map should include field codes and community codes for each community depicted so that it can be cross-referenced with information recorded in the Wetland Data Summary Form. It also should include depiction of surface water flows and the direction of flow. NOTE: this map may be combined with the Wetland Boundary Map (#1, above) into one map product.

3. Catchment Basin Map

This map should show boundary of the wetland's catchment and all of its detention areas, including its wetlands and other additional wetlands or water bodies. ~~This map will be used to determine scoring for the Hydrological Component of the wetland evaluation and might be used during future updates of the wetland file.~~ NOTE: This map can be 'coarse' (i.e., all vegetation communities in the wetland need not be included) – its purpose is to clearly indicate that all other catchment areas were considered when calculating hydrological scores.

~~Evaluators should take all necessary aerial photographs and GIS mapping with accompanying GIS printouts into the field. At least a 1:10,000 or 1:20,000 scale map (depending on your location in the province) with the digital photo, initial external and internal vegetative wetland boundaries, contours should be adequate. Community boundaries and field numbers, wetland boundaries, locations of creeks, direction of flow, locations of significant species, etc. should be drawn added directly onto the printouts mapping. All other necessary field information should be recorded in a field notebook, on a field data sheet, or data summary form (such as provided in Appendix 4).~~

Measuring Wetland Size

Southern manual, page 31

Once the wetland map is complete and final, the size of the wetland can be easily measured in GIS. Use of GIS and digital photography adequately accounts for air photo distortion. Appendix 2 provides a lot of mapping resources that may be useful when evaluating wetlands. Once mapping is complete, the size of each vegetation community can also be determined.

One method that can be used to generate the necessary size metrics involves simple GIS queries and summaries to generate total **complex wetland** size, size of vegetation

community and percentage of total ~~complex-wetland~~ area each vegetation community accounts for. This method is the easiest and most accurate approach.

Completing the Wetland Evaluation Data and Scoring Record

Southern manual, pages 35-35

~~The wetland data record, along with the wetland map and other supporting information, comprises the permanent record of the evaluation. The record must be filled out accurately and completely. The following section provides guidance for recording information about the wetland's location. Instructions for determining the wetland's outer boundaries and for completing the remainder of the record are discussed elsewhere in this manual.~~

~~Wetland Name~~

~~Each wetland must have a unique name one formal name that is unique within the MNR District. If possible, the wetland name should be one currently registered in the Gazetteer for Ontario.~~

~~(ii) Evaluation System Edition and Revision Date~~

~~Enter the evaluation system used to evaluate wetland (i.e., North or South), the Edition Number (e.g., 1, 2, or 3) and the Edition Revision Date (e.g., December 2002).~~

~~(iii) Administrative Region, District and Area Office of the Ministry of Natural Resources~~

~~Enter name of the MNR Region, District and the Area Office if this is different from the District.~~

~~(iv) Conservation Authority Jurisdiction~~

~~Indicate the name of the conservation authority in whose geographical jurisdiction the wetland may be located.~~

~~(v) County and Regional Municipality~~

~~Enter the name of the county or regional municipality in which the wetland is located. If the wetland straddles the border of two or more jurisdictions, enter the names of all.~~

~~(vi) Township/Geographic Township & Local Municipality~~

~~Enter the name of one or more townships in which the wetland is situated and if applicable, the name of the city or town.~~

~~(vii) Lots and Concessions~~

~~Enter the Lots and Concessions in which the wetland is situated. This information can be most readily obtained from county or municipal maps. GIS shapefiles of lots and concessions may also be available from Land Information Ontario.~~

~~(viii) Map and Aerial Photograph References~~

~~(a) Longitude and Latitude: The evaluator should enter the co-ordinates of the approximate centre of the wetland or wetland complex to the nearest second.~~

~~(b) Universal Transverse Mercator (UTM) Grid Reference: Record UTM coordinate from the approximate centre of the wetland or wetland complex.~~

~~(c) National Topographic Series (NTS) Scale and Map Numbers: Each mapsheet of the NTS contains an index number. This number (e.g., 31G/10 at a scale of 1:50,000) should be entered. Record all topographic maps upon which the wetland lies and record the map editions.~~

~~(d) Aerial Photographs and/or Digital Imagery: Enter the date, scale, flight number and plate number and roll number the aerial photographs you are using. These are noted on the photos themselves. Use the most recent aerial photographs available at a scale of at least 1:10,000 or 1:20,000 (depending on your location in the province), if possible. If using digital photography record the type of photography being used (e.g., digital ortho-rectified aerial photography) as well as the date and time of year photos were taken.~~

~~(ix) Wetland Size~~

~~Wetlands considered in this evaluation can be either single contiguous areas or individual wetlands considered together as a “complex”. Guidelines for recognizing a wetland complex can be found starting on page 39. In either case, it is the total wetland area, exclusive of any adjacent uplands, that must be considered for evaluation.~~

~~In general, wetlands smaller than 2 ha (5 acres) are not evaluated. However very small wetlands can provide habitat for wildlife or serve other ecological, hydrological, hydrogeological or social functions. This is particularly true in wetland complexes. A single contiguous wetland smaller than 2 ha, and wetland complexes less than 2 ha in size (i.e., total area of all wetland units) can be evaluated provided that the rationale for including them is attached to the Wetland Evaluation Data and Scoring Record (WEDSR). (moved to new section titled “wetland size”)~~

~~In the Data Record: Identify whether the wetland consists of (a) one contiguous wetland unit or (b) more than one separate wetland unit (thus forming a complex). If (a), enter the total size of the wetland in the space provided. If (b), enter the size of each individual wetland unit and the total size of the complex in the spaces provided.~~

Wetland Size

(new section)

In general, wetlands smaller than 2 ha (5 acres) are not evaluated. However very small wetlands can provide habitat for wildlife or serve other ecological, hydrological, hydrogeological or social functions. ~~This is particularly true in wetland complexes. A single contiguous wetland smaller than 2 ha, and wetland complexes less than 2 ha in size (i.e., total area of all wetland units) can be evaluated (and undergo a full wetland evaluation) provided that the rationale for including them is attached to doing so it included in the Wetland Evaluation Data and Scoring Record (WEDSR).~~

Wetland Complexes

Southern manual, pages 39-41

~~Many areas of Ontario contain closely spaced wetlands that vary in size from a fraction of a hectare to several hundred hectares. The topography of the landscape in which these wetlands occur, the short distances between some of the wetlands, and the density of wetlands per unit of areal landscape may be so complex that delineation of the wetland units into individually recognized wetlands would not be an ecologically or functionally sound process. Such groupings of wetlands are referred to as “wetland complexes.”~~

~~Wetland complexes are commonly related in a functional way, that is, as a group they tend to have similar or complementary biological, social and/or hydrological functions. Much of the wildlife in the area of the complex is variously dependent upon the presence of the entire complex of wetlands, with each wetland unit contributing to the whole.~~

~~Not all wetlands that occur in close proximity should be considered as a complex. Whether a group of wetlands should be considered as a complex depends on the particular combination of functional circumstances, location in the landscape and other characteristics of the wetlands. For this reason, the grouping of wetland areas into a complex should only be done by experienced evaluators. The 2nd edition of the wetland evaluation manual (Environment Canada and MNR 1984) provided a number of guidelines for defining complexes. Although these guidelines served reasonably well, they have been criticized as being too vague. In this edition of the manual, guidelines for defining wetland complexes are reduced in number but increased in definition. In any complex, upland areas between the various individual wetlands of a complex are not wetland. Rather, they are to be defined as adjacent upland habitat.~~

The rules for delineating a wetland complex are:

1. ~~Watersheds: Wetlands must not be complexed across watersheds except in rare circumstances. For example, it can be difficult to determine to which watershed wetlands in major headwater areas, such as the Oak Ridges Moraine among others, belong. These wetlands can be considered for complexing because of their cumulative importance in functions such as ground water recharge, water quality improvement, flood attenuation, and erosion control. The test for determining whether a complex should be defined is the comfort level of the biologist in defending the complex on grounds of wetland function.~~

2. ~~Distance: The maximum distance between units of a complex must not exceed 0.75 km straight line distance, i.e. "as the crow flies". Note that this is different from the 2nd edition which permitted greater distances with an explanation.~~

3. ~~Lacustrine Wetlands: Lacustrine wetlands often occur at the mouths of streams entering the lake. As long as these wetlands are within the 0.75 km distance criterion, they may be considered as units of a complex, i.e. they are not considered to be in different watersheds. On the other hand, shoreline wetlands connected to one another by bands of submergent vegetation will not necessarily be complexes. Again, it is up to the professional judgement of the biologist to ensure that the complex is justified on functional grounds. See Figure 2 for instructions on determining the outer boundary of a wetland on a lake with a shoreline band of submergent vegetation.~~

~~Note that wetland units less than 2 ha in size may be included as part of the complex. Such tiny wetlands may be recognized when, in the opinion of the evaluator, the small wetland pocket may provide important ecological benefit. Some examples of such benefits would be: a grassy area used by spawning pike; an area containing a community or specimen of a rare or unusual plant species; a seepage area in which a regionally or provincially significant plant or animal species is found; or a wetland which strengthens a corridor link between larger wetlands or natural areas. The evaluator must attach to the Wetland Data Record a brief documentation of the reasons for inclusion of those areas less than 2 ha. The reasons for recognizing any group of wetlands as a complex together with the outer boundary line should receive the approval of the appropriate MNR District or Area office.~~

~~When a wetland complex is recognized, the evaluator must score the entire complex as one wetland. It is important that the evaluators map all individual wetland communities in the complex, because this will make the evaluation more accurate in describing the~~

vegetation communities, dominant species, the degree of interspersion (Section 1.2.5), and for calculations of open water (Section 1.2.6).

Figure 4 shows an example of a wetland complex made up of seven wetland units. Features to note about this complex include:

1. The complex is in a headwater area where wetlands may be complexed across watershed boundaries.
2. The wetland that is greater than 750 m from the nearest wetland unit is not included as part of the complex.

Figure 4: An evaluated wetland complex. Wetland units 1-7 are part of a single evaluated wetland complex. the wetland in the bottom left corner of the figure is more than 750m from the nearest wetland and thus is not part of the wetland complex.

1.1.1 Growing Degree-Days / Soils

Southern manual, pages 43-47

Both temperature and substrate type have a direct bearing on primary productivity of a wetland. Hence, in this evaluation these two attributes are evaluated together.

The single most important factor contributing to the creation of biomass is temperature (Leith and Whittaker 1975; Edey 1977). Thus, most species of plants growing in their natural environment will produce more biomass at 15° C than they would at 10° C. This means that, in general, more species of animals (invertebrates and vertebrates) can be sustained by wetland communities that grow in areas with more favourable temperature regimes. An index which shows the contribution of warmer temperatures to plant growth has been created (Brown *et al.* 1968) by recording the seasonal accumulation of “Growing Degree Days” (GDDs) above 5.5o C. This base temperature is chosen for the index because plant growth stops at lower temperatures.

GDDs are not necessarily related to plant hardiness. Plant hardiness zone maps are created for use in agriculture and horticulture and they are based on actual experience by growers in different parts of the country with frost sensitive species and temperature requirements of species of crop plants, garden plants, shrubs, and the like. Depth of protective snowfall, the occurrence of frost or fog, and other climatic factors are important in determining hardiness zone maps. As wetland species are native, the notion of GDDs is accepted as being more accurate for assessing productivity.

The concept of GDDs assumes that plant growth is related directly to the average daily temperature. It ignores water, nutrients, light, water body morphology, rate of grazing or harvesting, nature of drainage and kinds of vegetation forms present. Assuming that

other things are equal, the direct correlation between GDDs and plant biomass is a positive one. The number of GDDs across the landscape of Ontario has been calculated (Brown *et al.* 1968; Edey 1977). The map in Figure 5 shows the number of accumulated GDDs above 5.5° C (42° F) for southern Ontario. The lowest GDDs are found in the more northern and upland regions whereas the highest are found on Pelee Island.

GDDs are determined from Figure 5. The evaluation should be expressed as a range in which a wetland occurs; no attempt should be made to guess an absolute number.

For wetlands located within more than one GDD isogram interval, the following criteria should be followed:

- If the wetland is a single contiguous wetland, record and score for the higher GDD interval,
- ~~If the wetland is a complex, score for the GDD interval within which the majority of the wetland is located.~~

The contribution of substrate type to productivity is well established both in agriculture and forestry. The inclusion of substrates in the determination of wetland productivity is based on the assumption that higher biological productivity will result when certain substrate capability groups are present. Mineral substrates are considered to be more valuable to productivity than organic substrates even though it was the presence of a wetland environment that created the organic substrates in the first place.

It takes hundreds or thousands of years for thick layers of organic substrates to develop. Organic substrate cannot develop unless a wetland has a secure, non-fluctuating or “reliable” water supply. Water can hold only small amounts of oxygen and hence, oxidation in soil saturated with water is extremely slow. Due to rapid growth of many species of *Sphagnum* mosses (and some other genera too), net accumulation of peat is the norm for bog and fen wetlands. Wetlands which accumulate peat are frequently termed peatlands (Riley and Michaud 1989; Riley 1987, 1988).

Mineral substrates in wetlands occur in limited and localized areas, e.g., in riverine marshes, deltas and some swamps and in fens which develop on limestone seepage areas. Mineral substrates are usually characteristic of riverine flood plains and similar areas where water levels fluctuate greatly from season to season or year to year and where, because of oxidative processes, organic substrates cannot develop.

The type of substrates underlying each wetland should be determined. Soil (substrate) maps for much of southern Ontario are currently available (see Appendix 2 for a list of map resources and refer to the section on Soils Maps on page 21). These maps should

be reviewed prior to field work in order to identify those areas within the wetland for which soil designations do not exist. Identify substrate type to the greatest detail possible from the maps using the “soil type” or “soil name” in the legend of the map. Where a combined substrate type is shown (e.g., sandy loam) the second term is the dominant type and is used for scoring. For example, E (Ecclestone) “lacustrine silt loam” would be recorded as loam. Organic substrates are often simply recorded as “muck” and field checking is necessary to determine the appropriate category for scoring.

An individual wetland will commonly develop upon more than one soil type. In these cases, the percentage of the wetland area that overlies each substrate type should be estimated. In wetlands where substrate type is not designated (i.e. open water) the evaluator should try to establish substrate type in the field.

A soil auger extending to at least 60 cm should be carried in the field and used to sample substrates in each vegetation community. The soil auger or your paddle (in open water areas) can often be used to determine the depth of organic to mineral or to bedrock substrate. There is no need to determine the substrate depth if it is over 40 cm and likewise there is no need to determine substrate depth in a lakeside marsh after your paddle finds a “bottomless” organic deposit. What is expected is that the percent of area occupied by substrate groups in the evaluation have been recorded.

In lakes, one sometimes finds soft, oozy, semi-suspended substrate sometimes containing calcareous invertebrate shells. Such substrates should be designated as organic. Substrates in the flowing channel of riverine wetlands are mineral. If uncertain about whether a substrate at a particular spot is organic or mineral, the evaluator should use the following criteria (Ecological Land Classification Working Group in prep; Soil Classification Working Group 1998; Soils and Substrates Ontario Working Group In prep.):

Organic =

- (a) >40 cm depth of organic over mineral substrate; OR
- (b) Where organic substrate lies atop bedrock and is > 10 cm in depth

Mineral =

<40 cm depth of organic over mineral substrate

The following descriptions adapted from a Ducks Unlimited guide to field identification of Ontario soils may be useful:

MINERAL SUBSTRATES

Clay: Moist soil moulds easily and makes a long continuous ribbon when pressed between thumb and fingers. If the ribbon breaks off after an inch or so, there is some silt or sand mixed in, making it a clay loam.

Silt: Has a floury or talcum-powder feel when dry and is only moderately sticky and plastic when wet. It may have a soft velvety feel when moist. A thumb print often shows up well in a moist silty soil. Silt may also show some cohesion if a piece is removed from a soil profile.

Sand: Medium to coarse sand feels rough, has visibly larger grains, and has little if any structure when dry, i.e. the grains will flow individually like grains of table salt.

ORGANIC SUBSTRATES

These soils contain greater than 30% organic matter.

Fibric: The least decomposed of all organic soil materials. There are large amounts of well preserved fibres that are readily identifiable as to their botanical origin. This soil type has a rubbed fibre content of more than 40% of the organic volume, i.e. after rubbing the sample between thumb and fingers under running water, more than 40% would not be washed away as fine particles but would remain as definite fibres.

Mesic: The intermediate stage in decomposition. Has a rubbed fibre content of between 10 and 40% of the organic volume. It feels and looks sort of matted but it is hard to say for sure what the original plant was, and after rubbing between thumb and fingers in the field, much less is left as fibres.

Humic: Most highly decomposed. Has a rubbed fibre content of less than 10% of the organic volume. While not always, often the blackest colour of the three categories (mesic often browner). When rubbed between fingers, little if any matted feeling left. It feels more like a greasy slipperiness.

Appendix 9 provides more information on substrate characteristics that may be helpful to evaluators when determining soil type.

Scoring of GDD/Soils:

1. Determine the correct GDD value for your wetland (use Figure 5).
2. Select the appropriate GDD value from the evaluation table.
3. Determine the fractional area of the wetland for each soil type.

4. Multiply the fractional area of each soil type by the applicable score in the evaluation table.
5. Sum the scores for each soil type to obtain the final score (maximum score is 30 points).

~~In wetland complexes, the evaluator determines the fractional area occupied by the categories for the complex as a whole.~~

1.1.2 Wetland Type

Southern manual, pages 48-53

Content in this section is not proposed to change with this exception:

EVALUATION (1.1.2):

In wetlands with more than one wetland type, first calculate the fractional area of each wetland type (FA = area wetland type/total wetland area), then calculate partial scores for each type. Sum the result to obtain the final score. ~~For wetland complexes, the fractional area of each wetland type within the complex as a whole should be calculated.~~

1.1.3 Site Type

Southern manual, page 54

The physiographic position of a wetland in the landscape defines its site type. Four fundamentally different site types are defined in this evaluation. These are: isolated, palustrine, riverine and lacustrine. Riverine and lacustrine are further subdivided because the location of a wetland on a lake or river has a bearing on nutrient concentrations of the water and hence upon productivity. From headwaters to mouth a river system presents a continuous gradient of physical conditions (Vannote *et al.* 1980).

The site type of a wetland strongly influences its productivity based upon different sources supplying nutrients. For example, isolated and palustrine sites are considered to have low productivity since they rely on rainfall, some overland flow, and in some cases, groundwater seepage to supply nutrients. Some lakes have constant flushing. However, in most lacustrine wetlands there is no constant flow of water to replenish nutrient supplies. Productivity of riverine sites increases with distances downstream, and is very high for rivermouth wetlands. This relation is based on the principle, demonstrated by Hynes (1970), that level of nutrients in an unpolluted stream increases naturally from the headwaters to the mouth.

While there are different sources of definitions for hydrological site type, for the purposes of this manual, the definitions that will be used are presented below and illustrated in Figure 6.

With the exception of isolated sites, any particular wetland, depending on its size, complexity and physiographic position, may be comprised of one or more site types. By definition, isolated wetlands are found alone and do not include elements of the other three site types. ~~(But note that isolated wetlands can form a portion of wetland complexes.)~~ The site types invariably grade into each other. Where a wetland is comprised of several site types, the field evaluator should record a site type for each vegetation community recorded in the field. The overall percentage of each site type can then be calculated by adding the areas of each vegetation community. In some cases, consideration of contour lines on a topographic map may help to delimit types from each other. Always document the direction of flow or absence of water in drains, creeks, inflows, and outflows in the wetland and in its immediate periphery while in the field. This information on directions and amounts of flow should be entered on the wetland map.

ISOLATED [Site Type]

Southern manual, page 59

Isolated wetlands (Figure 10) are defined as wetlands that have *no surface outflow*. The sources of nutrients to isolated wetlands can include precipitation, diffuse overland flow and occasionally groundwater. An example of an isolated wetland is one formed in a depression in upland moraines (as for example in the Oak Ridges Moraine), in kettle depressions or in hollows among drumlins. If a wetland has a surface water outflow of any kind, it may not be considered to be isolated.

~~By definition, a single contiguous isolated wetland may not contain other site types. Isolated wetlands can, however, be part of a wetland complex that contains several different site types.~~

1.2.1 Number of Wetland Types

Southern manual, page 60

The more wetland types (i.e. swamp, marsh, fen or bog) that are present within a single wetland, the more diverse the habitat available for wildlife and the more kinds of microorganisms, invertebrates, vertebrates and plants are available for the support of life processes of the wetland ecosystem. Hence, the diversity of wildlife species in the wetland as a whole will be greater. Golet (1976) considered the number of wetland types to be a very important contributor to total biodiversity. ~~A wetland containing more than one wetland type should not be confused with a wetland complex; the latter may or~~

~~may not be comprised of different wetland types but the individual wetlands are always separated by non-wetland environments.~~

The scoring in the evaluation is based on the hypothesis that the addition of a second class to a wetland would increase the number of species by 50%. Thus, if a wetland type had 100 species, the addition of one additional class would add 50 more species. Hence, a factor of approximately 1.5 has been used as the increment. The principle appears fairly sound from a “values of biodiversity standpoint”. Should reliable species lists for comparing the four wetland types exist in future, these increments could be adjusted. Boundaries between wetland types should be shown on the vegetation map. The number of types should correspond to those listed in Section 1.1.2 (Wetland Types).

[no change proposed to Evaluation scores]

1.2.2 Vegetation Communities

Southern manual, pages 61-67

A vegetation community may be defined as an assemblage of plant populations living in a prescribed area. Vegetation communities provide the most important measure of biodiversity. From an ecosystems standpoint, vegetation is the most important aspect of the landscape. Trees, shrubs, herbs, mosses and other photosynthesizing organisms create the primary basis for all animal life from vertebrates to the diverse assemblages of invertebrates. Vegetation provides food for herbivores, protection from carnivores, nesting materials, places to roost and rest, and isolation during the breeding season. Vegetation also retains nutrients in the living biomass which a diverse array of detritivore invertebrates and fungi recycle to support the vegetation community of the future. As well, in themselves, plant species create varied three-dimensional ecological systems whose variations provide a rich assortment of niches not only necessary for many other plant species but within which variously adapted animal life can dwell. The more kinds of niches created by plant communities in local areas or large landscapes and the greater the number of plant species within each, the more diverse will be the faunal portion of the overall ecosystem.

Most wildlife species are adapted primarily to one or a complex of vegetation forms (physiognomic types) and, as a result, wildlife diversity in any area is closely related to vegetation form and variety which, in this evaluation, is measured through vegetation communities. Communities may be characterized according to several attributes. For the purpose of this evaluation system, vegetation communities are recognized as assemblages of plant species representing one or more “forms”. Form is the physical structure or shape of a plant, determined by such features as height, branching pattern

and leaf shape. In this evaluation, there are 16 vegetation forms recognized for wetlands; these were adapted from Golet (1976) to reflect differences not only in plant structure but also in ecology and stand density. These 16 forms are listed below, and illustrated in Figure 11.

h	deciduous trees
c	coniferous trees
dh	dead deciduous trees
dc	dead coniferous trees
ts	tall shrubs
ls	low shrubs
ds	dead shrubs
gc	herbs (ground cover)
m	mosses
re	robust emergents
ne	narrow leaved emergents
be	broad leaved emergents
f	floating plants (rooted)
ff	free floating plants
su	submerged plants
u	unvegetated

Trees and shrubs are defined as woody species with the following height categories:

- Trees: >6 m in height
- Tall shrubs: 1-6 m in height
- Low shrubs: <1 m in height

NOTE: the Ecological Land Classification (ELC) system considers a “tree” to be woody species that typically adopt a single stem growth form, are capable of achieving a Diameter Breast Height (DBH) greater than 9.5 cm and/or greater than 10 m in height, and are included in a tree list. In this Ontario Wetland Evaluation System, trees and shrubs are defined in terms of form (i.e., their height at the time of observation, **not** the height they have the *potential* to reach).

Each vegetation community may contain one or several combinations of vegetation forms. For example, a vegetation community in a swamp might consist of the following forms: deciduous trees (h), tall shrubs (ts), herbs (gc), and mosses (m). This community might be contiguous to another community in the swamp consisting of deciduous trees (h), low shrubs (ls), and herbs (gc). There may be several or more vegetation communities reflecting different combinations of forms, all found within one wetland type.

In this evaluation system, the minimum size of a vegetation community to be recognized for mapping purposes is typically 0.5 hectares. Vegetation communities should be discernable as polygons that define a break in dominant vegetation form or in wetland type. Exceptions to this rule can be made in cases where a highly specialized plant community occurs within a much larger wetland. Some examples of such exceptions include:

1. A floating sedge fen (which may contain some fen-loving orchids, or rare species requiring such habitat) at the edge of small lake;
2. A tiny remnant shrub or moss dominated bog within what is otherwise a treed bog or a swamp;
3. A patch of shoreline floating plants (rooted) which provide local specialized habitat required by species such as green frogs or bull frogs (and which might otherwise not be present or abundant in the wetland) or;
4. ~~A community in a wetland complexes when an entire wetland unit is less than 0.5 ha in size.~~

In carrying out field surveys, the evaluators must always be on the lookout for such specialized vegetation communities. They may also be identified during the preliminary aerial photograph interpretation prior to visiting the wetland. ~~The evaluation file~~ Evaluators must ~~have include documentation of the~~ rationale for inclusion of vegetation communities under 0.5 hectares.

Any one vegetation form must be present in approximately 25% of a vegetation community (absolute cover) before it is included as part of the community description. This “25% community rule” can be applied in areas where the intergradation between vegetation forms is very gradual. Judgement based on visual field observations should be the basis for applying the 25% rule. Note that the *same combination of forms* (i.e. the same community) will often occur *in many parts of a single wetland*. Each community is scored only once regardless of how many times it occurs in the wetland and regardless of whether the dominant species are different in different parts of the wetland.

Five ‘exceptions’ to the “**25% community rule**” exist:

1. **Dead trees (dh, dc):** Because of the value of dead trees (dc, dh) to wildlife, these forms should be included in the community description if they cover 10% or more of the community.
2. **Emergent vegetation in water >2 m deep:** Using the 25% rule, include all *emergent* vegetation in water >2 m deep as part of the wetland. Note that this only applies to emergent vegetation (see Figure 12 and 13) and will likely happen most often in wild rice beds.

3. **Sparsely vegetated areas along the outer edge of the wetland but within 2 m depth:** Map all areas with 10% or more vegetation cover as part of the wetland (see Figure 12 and 13). Areas along the outer edge of the wetland with small amounts of vegetation may be valuable to wildlife.
4. **Unvegetated open water <2 m deep along the outer edge of the wetland:** Open water <2 m deep along the outer edge of the wetland that is completely unvegetated is to be excluded from the wetland map (Figure 12).
5. **Pockets of unvegetated open water <2 m deep surrounded by wetland vegetation.** Map all areas of unvegetated open water that are < 2 m deep as a wetland community dominated by the 'unvegetated' vegetation form 'u' (Figure 12). This applies to unvegetated open water areas and some wetland vernal pools that are completely surrounded by wetland vegetation.

The investigator must determine the composition of each vegetation community (consisting of one or several forms) and note the dominant species of vegetation for each form. These communities are summarized, coded and placed on the wetland vegetation map and legend. Figure 3 is an example of a vegetation community map.

Scoring Vegetation Communities in the Wetland Evaluation

The scoring below is based on the fact that communities with many vegetation forms will support more animal diversity than ones with fewer forms. The total scores for each category are calculated to ensure that wetlands with a greater diversity of vegetation forms and combinations of forms will accrue more points than less diverse wetlands.

Appendix 4 provides templates that will assist in organizing field data. ~~These forms must be used by all evaluators and must be attached to the wetland evaluation file.~~

[no change proposed to Evaluation scores]

1.2.3 Diversity of Surrounding Habitat

Southern manual, page 68

Wetlands cannot be evaluated in isolation from surrounding habitat. Many wildlife species use both upland habitat and wetland habitat during their life cycles. In general, the greater the diversity of habitat immediately surrounding the wetland, the greater will be the diversity and abundance of wildlife both in the wetland and in its immediate vicinity. Surrounding natural habitat may serve as a "buffer", reducing disturbance and satisfying some habitat requirements. For animals requiring wetlands for a part of their life cycle (e.g., salamanders, frogs) a wetland will serve little purpose unless it is easily accessible.

Highly diverse upland habitat may include a mixture of upland forest habitats, agricultural fields, both pastured and cultivated, fence rows or shelter belts with

protective cover, forests, abandoned farmland, lakes, creeks or ponds, ravines, and undulating terrain. Intense human activity adjacent to a wetland may deter many species from ever using the wetland. Because of this, surrounding habitat types that reflect urbanization do not receive points.

Surrounding habitats within 1.5 km of the wetland (straight line distance, “as the crow flies”) are to be scored. an area must be at least 0.5 ha in size to be considered as a distinct patch of surrounding habitat. If parts of the wetland being evaluated have been converted to alternate uses, one should consider the converted areas as surrounding habitat.

~~In wetland complexes, this variable pertains to uplands between and among the individual wetlands of the complex as well as within 1.5 km from the outer boundaries of the wetlands located at the perimeter of the complex.~~

The principal sources of information on surrounding habitat will be aerial photographs and direct field observations.

[no change proposed to Evaluation scores]

1.2.4 Proximity to Other Wetlands and Waterbodies

Southern manual, page 69

This attribute provides a measure of habitat connectivity. The value of a wetland is enhanced when it is located near enough to other wetlands that wildlife can move between wetlands to make use of more favourable habitat, a larger food supply etc. (Golet 1976). Wetlands connected hydrologically by surface water (e.g., streams, river or lake shores), including intermittent connections, are most valuable. Wetland proximity can be especially important when a wetland is small and meets specialized needs of certain wildlife species.

When scoring this function, use should be made of topographic maps, ~~spatial data GIS data layers (e.g., MNR’s wetland data class or other wetlands identified by MNR Districts)~~, soil maps and aerial photographs but always coupled with direct observations in the field. Distances between wetlands can be measured using aerial photographs or Geographic Information Systems (GIS). Distances are to measured as straight line distance, “as the crow flies”

~~In the case of wetlands that are one contiguous area, this variable pertains to all wetlands within 4 km. in the case of wetland complexes, proximity pertains to the distance from the outer boundary of the wetland complex to the closest adjacent wetland and not to units within the wetland complex.~~

NOTE: If nearby wetlands or waterbodies are named, evaluators should provide details in the data record.

[no change proposed to Evaluation scores]

1.2.5 Interspersion

Southern manual, page 70

Interspersion gives a measure of the presence and length of ecotones or “edges” that exist between different vegetation communities. Edge refers to the line of contact between any two communities. Edge may either be relatively simple, as in the case of a shrub swamp community bordering abruptly on a cattail marsh, or more complex when many kinds of vegetation forms are present in communities in different combinations.

Most wildlife species depend upon more than one habitat type and some prefer the “edge” areas between different habitat types. Often, the number of species and the population density of some of the species are greater in the ecotone than in the communities flanking it (Odum 1971). As the interspersion of wetland vegetation increases, biodiversity within the wetland is enhanced.

Interspersion in a wetland is measured through the use of a gridded square containing equal sized squares (Figures 15 and 16). The number of times the grid lines intersect either a **wetland-upland boundary or vegetation community boundary** (*regardless of the dominant species*) is counted. For example (see Figure 14), you should not count an “internal” community boundary if its separating, for instance, S1-A and S1-B communities (see also “Creating the Vegetation Community Map” on pages 32-34); but you would count a boundary line for scoring interspersion if the dominant form is different (e.g., an h* dominated deciduous swamp versus a ts* dominated thicket swamp). The total gives an indication of the amount of interspersion present in the wetland. The higher the number of intersections, the more edge present.

Method for calculating Interspersion:

1. Determine the longest distance between outside boundaries of ~~a wetland a single wetland or wetland complex~~, i.e. find the widest portion of the wetland. This may require several measurements and comparisons. Draw a straight line between the two outer most points of the wetland. This line will not necessarily be oriented in a north/south or east/west position. It may be at any angle, but must be a straight line. This line (A) is fixed, and may not be moved, as it runs along the widest portion of the wetland and represents the centre line of the interspersion grid.
2. Measure the length of line A and divide by 12. This value (B) will represent the size of the squares to be used in the generation of the grid.

3. Divide line A into equal portions using value B.
4. Draw vertical lines perpendicular to line A at the marks defined by the value B. Then divide the vertical lines using the value B, thereby making a grid system of equal sized squares over the wetland map.
5. Count the number of times all horizontal and vertical lines cross the contact edge of vegetation communities and upland/wetland boundaries. When two intersecting grid lines lie directly over a community or outer wetland boundary line, it should be scored as two intersections. (See Figures 15 and 16 for an example).

NOTE: Calculation of interspersion can be facilitated by using GIS-based programs such as ArcMap. ~~A printed copy of the interspersion map should be included as part of the wetland evaluation file.~~

[no change proposed to Evaluation scores]

1.2.6 Open Water Types

Southern manual, page 74

This attribute addresses the value of **permanently flooded areas** to the overall habitat diversity and quality within a wetland. The relative proportion and areal configuration of permanent open water to adjacent emergent vegetation is extremely important to many species of wildlife. For example, many species of waterfowl use islands and complex meandering shorelines for nesting, feeding and resting. Likewise, frogs prefer wetlands with numerous embayments. A cover-to-water ratio approaching 1:1 is optimum for waterfowl (Golet 1976) and wetlands approaching this ratio may also be extremely important as fish nursery areas.

Areas of permanent open water are normally found in marshes and sometimes in open portions of bogs or fens. Open water in permanently flooded swamps is also considered. When assessing open water, do not consider areas where the vegetation density is so high that a duck could not swim there.

The percentage of permanent open water should be assessed for each vegetation community during the field mapping of the wetland. Using the field observations and the wetland vegetation map, the evaluator should assess both the *percentage* and *pattern* of permanent open water in the entire wetland ~~or wetland complex~~. The eight open water types are illustrated and described in Figure 17.

[no change proposed to Evaluation scores]

2.1 Economically Valuable Products

(southern manual page 79)

The presence of economically valuable plants and animals in a wetland provides a measure of human utility value that may be lost if a wetland is degraded or destroyed. Economically valuable products in a wetland must be usable on a sustainable basis to be included. Hence, gravel and sand deposits having value in road building and construction are not evaluated. Similarly, the potential for peat extraction is not scored because this would seriously impact the ecological values of the wetland.

Sources of information on economically important products of wetlands are many and varied. Published literature, government [records officials](#), local residents, and direct field observations can all play a role. ~~MNR District and area offices will be a major source of information on commercial baitfish (check for licenses issued), furbearer harvesting records and recreational uses.~~

[no change proposed to Evaluation scores]

2.2 Recreational Activities

Southern manual, pages 81-82

NOTE: Visits to the wetland by educational groups are not to be scored under this section – see section 2.4 for information on scoring of educational visits.

Although wetlands may be used for a variety of recreational activities, only those that are specifically dependent on the characteristics of the wetland itself are scored. These activities are nature appreciation, hunting and fishing. Other activities may take place in or at the edge of wetlands. These include canoeing and boating, hiking, cross-country skiing and snowmobiling. However, these activities do not depend specifically on wetland characteristics and are not scored.

Information on wetland related recreational activities can be obtained from a number of sources [including provincial wildlife staff in the MNR District or Area offices, Canadian Wildlife Service, municipalities, Indigenous communities](#), conservation authorities, environmental non-government organizations, private hunting/fishing clubs that have lands in the wetland, landowners, publications, and through direct field observations. Evaluators must collect as much factual information on recreational uses as possible from all potential sources. In all cases the recreational uses to be recorded are those that are known to occur. Personal views on potential uses should not be included.

Criteria for Hunting:

~~NOTE: If the wetland is used for hunting by Aboriginal hunters **only**, no score is assigned here; rather, the wetland receives a bonus score for Aboriginal values in Section 2.8.1.~~

Only activities that occur **in** the wetland can be scored (adjacent land use is not to be scored – i.e., using a marsh to access fishing opportunities in an adjacent lake or river is not to be scored). The score doesn't necessarily represent the number of animals caught – just the amount of time that users spend trying.

High Intensity Use: includes evidence of one or more of the following: 100 or more hunter days of recreation by persons/groups

- 10 or more hunting blinds or stands
- managed public hunting areas (e.g., the Long Point Waterfowl Unit)
- large facilities (e.g., offices, interpretive or resource centres) catering specifically to hunters using the wetland
- some examples: Long Point, Scugog Marsh, Luther Marsh

Moderate Intensity Use: includes evidence of one or more of the following:

- 21-99 hunter days of recreation by persons/groups
- 2-9 hunting blinds or stands
- promotion or recognition of the wetland on a **municipal** recreational activities/opportunities map or website (specifically noting hunting possibilities in the wetland)
- ~~• hunters regularly checked by MNR Conservation Officers~~
- 5 or more clearly marked hunting trails

Low Intensity Use: includes evidence of one or more of the following:

- 1-20 hunter days of recreation
- 1 hunting blind or stand
- reported hunting use/activity by non-agency sources
- any number of shotgun shells or arrows
- 1-4 marked hunting trails

Criteria for Nature Appreciation/Ecosystem Study:

NOTE: Nature appreciation/ecosystem study includes activities such as birding, visiting to see displays of showy wildflowers or large trees, photography, or viewing within or along the edge of the wetland.

High Intensity Use: A use can be considered to be of high intensity if the number of users has become so high or so concentrated that controls have had to be imposed on the activity. Commonly used control methods are limiting the number of users or having

certain portions of the area off limits. Some examples are the establishment of sanctuaries or the setting of limitations on the number of tours that can go through a wilderness trail per day. Use by large concentrations of people requiring the provisions of facilities (i.e. washrooms, interpretation centres, etc.) is also considered to be high intensity. Some examples of wetlands with 'High Intensity Nature Appreciation Use' are Point Pelee, Pres'quile, Luther Marsh and Lynde Shores Conservation Area (Cranberry Marsh). If numbers are available, then 100 or more recreation days.

Moderate Intensity Use: A use is moderately intensive if it occurs on a regular basis but no special controls have been put on the number of users. Large-scale amenities are usually not present, although small outhouses or interpretive trails and signs may be present. If numbers are available, then 21-99 recreation days.

Low Intensity Use: Low intensity uses are those that occur sporadically. Some examples: occasional visits by naturalists. If numbers are available, then up to 20 recreation days.

Criteria for Fishing:

NOTE: Only use of the wetland for recreational fishing/angling is to be scored here – commercial fisheries are not included.

High Intensity Use: includes evidence of one or more of the following:

- 100 or more angler days of recreation by persons/groups
- managed public fishing areas
- facilities located in/adjacent to wetland, catering to angling enthusiasts
- 10 or more ice fishing huts

Moderate Intensity Use: includes evidence of one or more of the following:

- 21-99 angler days of recreation by persons/groups
- 2-9 ice fishing huts
- ~~anglers checked regularly by MNR Conservation Officers~~
- promotion or recognition of the wetland on a ~~municipal~~ recreational activities/opportunities map or website (specifically noting angling possibilities in the wetland)

Low Intensity Use: includes evidence of one or more of the following:

- 1-20 angler days of recreation
- 1 ice fishing hut
- tackle, worm containers

[no change proposed to Evaluation scores]

2.3.2 Absence of Human Disturbance

Southern manual, page 84

The naturalness or lack of human disturbance of a wetland is generally considered as a value by many people. Natural qualities are greatest when there is little or no obvious human influence. In essence this attribute provides some measure of the obvious beauty of some wetlands that results from the appearance of an entire view of it as a complex three-dimensional natural ecosystem from which people may receive much satisfaction and pleasure.

Human impacts on wetlands are many and varied with respect to their scope, intensity and duration. Activities and items to consider include roads, utility corridors, buildings, dumps, fill, channelization, dredging, drainage ditches, control dams and other human uses. In one form or another all of these activities have impacts and are in fact “conversions to other uses”. But since the disturbance is to specific portions of the wetland, it still retains much of its ecosystem integrity and is still a functional wetland. It is up to the evaluator to judge whether infringements upon the wetland at its edge are to be considered as disturbances or whether they are to be ruled out of the wetland. However, ditches beside a wetland which drain the wetland are considered to be disturbance.

Polluted water is considered to be a form of human disturbance. Things to be noted include algal blooms, foul odours and turbidity. This does not include a stagnant swamp that is free of human disturbance, even though it may have a noxious odour.

The areal extent of disturbances should be estimated, so that localized situations can be separated from more widespread disturbances.

~~NOTE: Evaluators are asked to provide details regarding the type or extent of disturbance observed/recorded in or adjacent to the wetland. This information, which may be used by the MNR in the future to help set evaluation or enhancement priorities, should be appended to the WEDSR.~~

[no change proposed to Evaluation scores]

2.4.3 Research and Studies

Southern manual, page 87

Over the years, scientists and others have made use of certain wetlands to further the objectives of science, community planning and management. Wetlands used in this manner are considered to have enhanced social value.

When reviewing the background information on the wetland, check reports and contact government offices and any other local potential sources (e.g., colleges and universities) to determine whether any scientific research has been published. Popular articles and unpublished government reports relating to the wetland environment can be acquired [from a variety of sources. Conservation Authorities, MNR District, Area and Regional offices and local naturalist, hunting and fishing clubs.](#) Information on wetlands may be found in ANSI reports, Environmentally Sensitive Areas Reports, deer yard assessments, Ontario Geological Survey Peatland Inventories or other government or non-governmental organization reports. In addition, local naturalists club publications often carry articles regarding wetland areas and their significant flora and fauna.

The criterion for “long term research” is that a university or government research group or individual has conducted research in the wetland for at least five years and published the results, although the research may no longer be taking place. Refereed papers include those published in recognized scientific journals as well as post-graduate theses.

Environmental assessments or environmental impact reports do not qualify for scoring under this attribute. They are to be listed in the data record but not scored. Likewise, previous evaluations of the wetland are not considered to be “reports” as required for the application of this attribute. However, **information** in these reports may be used to assess other attributes in the evaluation, such as Special Features.

NOTE: include complete references for all publications scored in this section.

[no change proposed to Evaluation scores]

2.6 Ownership

Southern manual, page 89

The ownership of a wetland may have a bearing on its value to society. More people are likely to benefit from the values of a wetland if it is in some form of public ownership. Most Counties and Regional Municipalities have maps outlining areas of public and private land. Various on-line tools and databases also exist that may provide such information. [The local MNR office may be able to help confirm land ownership.](#)

Whether public or private, wetlands that are legally protected as wetlands are considered to have more value than other wetlands. Examples of legal protection include fixed-term (10-30 year) conservation agreements held by agencies such as Ducks Unlimited Canada, or wetlands protected by a legally binding conservation easement. In addition, the ecological integrity of wetlands occurring in provincial or national parks or protected areas is ensured through legal regulation of the land.

Wetlands under a voluntary stewardship agreement or those participating under the Conservation Land Tax Incentive Program (CLTIP) do not receive extra points here because there is no binding requirement for continued wetland protection.

Determine the percentage of public and private land contained in the wetland.

[no change proposed to Evaluation scores]

4.1.1 Wetland Types

Southern manual, page 115

Wetlands support distinctive plant communities, often including rare and unusual species. For example, species such as snake-mouth orchid (*Pogonia ophioglossoides*), grass-pink orchid (*Calopogon pulchellus*) and the pitcher plant (*Sarracenia purpurea*) occur only in fens or bogs. When bogs or fens are rare, these species and others adapted to these ecosystems are also rare. Unlike plants, animal species of wetlands tend to be more mobile and may depend on wetlands only for specific parts of their life cycle. Nevertheless, if vital wetland habitat is rare, animal species that depend on wetlands will also be rare.

Many wetlands in southern Ontario have been drained, filled or otherwise destroyed in the past 200 years. In extreme southern Ontario only a small fraction of the original wetlands remains (McCullough 1981; Snell 1987; Glooschenko and Grondin 1988). When wetlands are scarce, they can have unique value for that reason alone. This component of the evaluation system assesses both the rarity of wetlands in the landscape and rarity of each of the four wetland types within each of Hills (1959, 1961) Ecodistricts in southern Ontario. In 2000, MNRF updated the Hills Ecodistricts to better align with physiographic information on the landscape (Crins *et al.* 2009). Figure 24 shows the Ecodistrict boundaries for southern Ontario. NOTE: these figures are for illustrative purposes only; [evaluators should check with their local MNR office to determine the appropriate Ecodistrict for their wetland](#)

[no change proposed to Evaluation scores]

4.1.2 Species

Southern manual, pages 119-122

The causes of rarity or scarcity of species are many and varied, and may be natural or related to human activity. Rarity may be brought about by the lack of suitable habitat, habitat degradation, predation, competition, disease, pollution, habitat destruction or commercial collecting. Some species are rare because they occur in the province at

their range peripheries, while others occur naturally at low population levels. Some species have always been rare for reasons unknown.

Whatever the causes of rarity, rare species are almost universally considered to be important and worthy of protection. Rare and localized species tend to be more susceptible to extinction events than are common or more widely distributed species. Extirpation or extinction inevitably means the loss of the species within a jurisdiction or everywhere. In addition to their intrinsic value, many species have economic and direct social worth and the drastic reduction in their populations to the point of 'rarity' reduces benefits to humans accordingly.

Rare species may be encountered during the course of field work associated with wetland evaluation. However, it takes time in the field, over different parts of the season to discover what rare species are present in the wetland or using it from time to time. Thus, most information will come from existing sources. All existing literature relating to the wetland being evaluated should be investigated for information on significant species. The evaluator should examine alternative sources (e.g., scientific papers, ANSI and Environmentally Sensitive Area reports, International Biological Program reports, government reports ~~from MNR~~, conservation authority management plans or studies, naturalist club publications, consultant reports, wildlife monitoring surveys, and any other available sources).

In all cases, a species is to be scored only once and must be listed at the highest applicable category. ~~For example, an endangered species cannot also be scored as regionally significant within the same evaluation.~~

~~The local MNR biologist is the final arbiter for determining the validity of any occurrence listed in this section. Justification must be fully documented and appended to the wetland file.~~

~~Wetland re-evaluation and file updates~~

~~Although a species' status changes relatively infrequently, evaluators should re-confirm the status of species as part of the periodic file update process. Any changes to the wetland file should be fully documented and appended to the file. Wetland files are therefore maintained as 'open files', responsive to such real-world change, in order to remain as scientifically current and accurate as possible.~~

~~Documentation for an old file stands until the wetland can be re-evaluated and a survey for the rare species done at the appropriate season(s). Provided that suitable habitat is still available, it is not possible to set a standard period of time between the initial species observation and when that observation is no longer valid. Evaluators must use~~

~~common sense, consider the species biology, and refer to experts for guidance. The final decision to include or exclude the species for scoring will be made by MNR.~~

Using NHIC's Element Occurrence Data

An “element” refers to an individual component of biodiversity (e.g., a species or an ecological community). An “element occurrence” refers to a location of an element of biodiversity on the landscape (e.g., an area of land and/or water in which a species or ecological community is or was present). An “element occurrence observation” is the actual observation made of the element. Element Occurrences (EOs) are often comprised of several EO observations.

The Natural Heritage Information Centre (NHIC) maintains an extensive database of EOs in Ontario. An EO and its underlying observation data can be useful information to help evaluators determine the possible presence of a species that may be scored under this evaluation system. EO observation records identify the species, location, date of the observation, accuracy or reliability of the observation/occurrence and sometimes include notes made by the observer (such as the habitat of the occurrence).

An EO on its own should not be scored without first consulting and considering its accompanying observation data. Evaluators must ensure to the best of their ability that species identified using EO data meet the criteria for each section in 4.1.2 before being scored. ~~For example, an EO for an Endangered bird species should not be scored under section 4.1.2.1 (Reproductive Habitat for Endangered/Threatened Species) unless the underlying observation data indicates that clear breeding evidence was observed within the wetland being evaluated.~~

If there is any doubt about the relevance of the EO, the evaluator should obtain more information, ~~either from the local MNR office or from the appropriate NHIC expert.~~ If there continues to be uncertainty concerning whether or not an EO should be scored, it is best not to use it ~~(although a note should be added to the file indicating that an EO was found in the area and could be relevant for future updates or re-evaluation work).~~

~~An EO report should be attached to the wetland data record. For more information on EOs, visit NHIC's website (nhic.mnr.gov.on.ca).~~

Documentation of Species Observations

~~Except in cases where photography would result in the harassment of sensitive species (e.g., nesting birds), it is recommended that photographs be taken in the field and filed with the data record.~~ UTM coordinates (preferably through use of a GPS unit) should be recorded for all rare species observed in the field. Species observation information for

provincially-tracked breeding or reproducing species should be forwarded to the NHIC (<https://www.ontario.ca/page/report-rare-species-animals-and-plants>) MNR using the ~~Rare Species Reporting Form (or an equivalent) available on NHIC's website~~ (<http://nhic.mnr.gov.on.ca>) for incorporation into the provincial record.

The wetland evaluator must document ~~evaluation file~~ **must** include the EO ID (if scoring for an existing EO) and the observation should be submitted to the NHIC along with information associated with the observation. ~~a copy (printed or digital) of the completed NHIC Rare Species Reporting Form or copies of all sufficient information necessary to complete an NHIC Rare Species Reporting Form (if scoring a previously un-recorded species) or a copy of the information on the EO from the NHIC database (if scoring for an existing EO). Evaluations without such information will not be accepted or approved by MNR.~~

NOTE: ~~while essential to the wetland evaluation file,~~ information on the location of rare species should not be included in ~~the a~~ a publicly accessible WEDSR or final wetland map. When recording information for this component, it can be is important to distinguish between a lack of knowledge (i.e., no surveys completed in wetland), as opposed to a lack of observation (i.e., surveys completed but species not found) of the presence of rare species. ~~Evalautors~~ Evaluators should include such comments in the data record.

In all cases, the presence of all significant species listed in the wetland evaluation must be fully documented. Guidelines for proper documentation are provided below:

1. Full references for reports.
2. Full references for non-report information (e.g., Rare Breeding Bird Program), including source name, position, date and record number.
3. Photographs that accurately show identifying features of the rare species.
4. The scientific names of species scored in the following sections, especially with regards to plant or invertebrate species, must be recorded in the data record. Names should follow NHIC nomenclature.
5. Where numbers warrant or specimen identification is uncertain or tricky, voucher specimens of significant plants collected from the wetland, accurately identified and deposited in a recognized herbarium.
6. Voucher specimens of rare insect species scored in the following sections should be accurately identified, labeled and deposited in established research collections for future reference and verification. Notes on the locations of voucher specimens should accompany the data record and copies of the insectarium labels should be attached to the data record.

7. Full names, position, address and telephone numbers of observers for personal communications.
8. Full references for any verified Element Occurrence (of any species) in the NHIC's EO provincial data record ~~database. Hard copy print-outs of the EO report should be attached to the data record (include e.g., EO number, observation dates, EO rank information, observer(s), date information accessed from database).~~

~~The NHIC may be able to assist in the confirmation of specimens or high resolution photographs.~~

Animal species located outside wetland boundaries

Normally, for a species to be scored in one of the categories below, it must be found within the wetland boundaries. However, under some conditions exceptions may be made for animals, only. A number of wetland dependent wildlife species also need surrounding terrestrial habitat to complete portions of their life cycle. ~~Knowledge of upland habitat needs of these wetland dependent wildlife species is evolving, as more studies are done and scientific understanding increases. As this knowledge evolves better understanding of interactions between wetlands and surrounding terrestrial lands increases and the value of these areas to wetland processes becomes clearer.~~

Wetland evaluators may encounter wetland-dependent species outside the wetland boundary, depending on the season of visit, or just by happenstance. Common examples include: upland nesting sites for turtles; seasonal use of uplands for foraging and hibernation by some frog, toad and salamander species; upland nesting sites used by waterfowl; upland foraging by birds which nest in wetlands; and upland corridor linkages between wetland units traversed by mammals, reptiles and amphibians.

When an animal species that is ~~endangered, threatened, or~~ provincially, regionally or locally significant, is found outside the wetland in the surrounding upland, but where it also makes sound ecological sense that such an individual or group of animals is dependent on that wetland for an essential part of its life cycle, then a score can be recorded in the appropriate category. ~~No strict rules can be devised,~~ Since different animal species have different home range sizes, and utilize surrounding uplands in different seasons ~~an evaluator must use their professional judgement.~~ Also, the landscape context is critical to the decision. Where wetlands on the surrounding landscape are few, and it makes ecological sense that the animal observed outside the wetland is likely associated with that wetland, then the decision should be to include that species for scoring. Where it is not obvious, based on landscape wetland pattern, and using a sound ecological rationale, that a species is using the wetland, then the species

occurrence should not be scored. ~~The final decision to score the species rests with the local MNR District in consultation with appropriate experts. Justification must be fully documented and appended to the wetland file.~~

Upland plant species within the wetland

Rare plant species that are most commonly found in upland areas and occasionally in wetlands may be scored in some cases, if the area in which they are found is not part of a large upland area within the wetland. ~~A determination of what should be scored will be made on a case by case basis upon discussion by MNR.~~

4.1.2.1 Reproductive Habitat for Endangered or Threatened Species

Southern manual, page 123

~~The protection of endangered and threatened species and their habitats is necessary in order to slow or prevent the extirpation of species from the province, and, in some cases, to help prevent their extinction on a global basis. Several federal and provincial statutes and policies recognize the value of these critically imperiled species and provide direction regarding their protection and rehabilitation. Wetlands that provide reproductive habitat for an endangered or threatened species automatically receive very high scores for this special feature. all endangered/threatened species of wildlife and plant life, including fish and invertebrates can be scored under this section.~~

~~For the purposes of this manual, “Endangered or Threatened species” are species listed or categorized as ‘Endangered’ or ‘Threatened’ on the Species at Risk in Ontario (SARO) list. The SARO list is a regulation under the Endangered Species Act, 2007. The approved SARO list is the only approved list to be used when scoring species under this section. The SARO list is available on the internet at: www.mnr.gov.on.ca. The SARO list is revised from time to time and evaluators should ensure that they are using the most current list when scoring species for the evaluation. If you are unable to access the website, you must contact your local MNR office to obtain the SARO list.~~

~~Species scored in this section must be actively reproducing within the wetland (this includes one or more of: courtship, mating, gestation, nesting and birth). Examples that could be scored include: an active nest, observing newly hatched young, or a wetland-dependent plant growing within the wetland. Any living plant found within a wetland is considered to be reproducing. Species that nest on human made structures above or adjacent to the wetland (e.g., barn swallows on bridges) should not be scored in this section unless nesting is actually occurring in the wetland itself. Such species, however could be scored for traditional feeding in the wetland (section 4.1.2.2) if they feed on plants or animals living in the wetland and if the criteria of that section are met.~~

EVALUATION:

For each species = 250

(score is cumulative, no maximum score)

4.1.2.2 Migration, Feeding or Hibernation Habitat for an Endangered or Threatened Species

Southern manual, page 123

The survival of endangered and threatened migratory species is vitally dependent on the presence of suitable habitat along the migration route where they can find food and shelter. Such traditional migration areas, traditional hibernation areas or traditional feeding areas (not necessarily breeding habitat) are critical to the species and are scored accordingly.

The incidental observation of a migrating individual does not give the wetland status as a traditional migration, feeding or hibernation area. For migrating and feeding species, species must be recorded as using the wetland in at least two different years within a 10 year period. For hibernating species, due to high hibernation site fidelity, a single record would suffice.

Documentation must be reviewed and accepted by MNR staff for all species observed during migration before they may be listed under this category and scored.

Only animal species that are endangered or threatened can be scored under this category. Use the rules detailed in section 4.1.2.1 for determining species eligibility.

EVALUATION:

For one species = 150

For each additional species = 75

(score is cumulative, no maximum score)

4.1.2.3 and 4.1.2.4 Provincially Significant Animal and Plant Species

Southern manual, page 124

Provincially **significant tracked** species are determined by the Natural Heritage Information Centre (NHIC).

A species is considered to be provincially significant if it is tracked by the NHIC. Species lists are available on the [natural heritage information webpage](#)

<https://www.ontario.ca/page/get-natural-heritage-information>) that include whether species are tracked along with other conservation information. ~~A list of provincially tracked species is available on the NHIC web site at: nhic.mnr.gov.on.ca A list can also be generated using “Name Search” on the MNR’s Biodiversity Explorer web application: <https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/main.jsp>~~

Provincially tracked species are defined as elements of biodiversity for which there is conservation concern at a global, national or provincial level. These include species or assemblages of species (e.g. plant communities or wildlife concentration areas) and federally or provincially listed species at risk ~~including listed populations or designatable units~~. Species actively “tracked” generally have fewer than 80 recent occurrences in Ontario or are listed species at risk in Ontario. Species at risk are one subset of species tracked provincially ~~by MNR~~; therefore methods outlined in this document apply equally to species at risk as they do to all other provincially tracked species. The Natural Heritage Information Centre (NHIC) manages Ontario’s list of provincially tracked species and actively gathers and maintains observation and occurrence information for these species.

Evaluators must keep in mind that “fauna” in this section includes invertebrates, and the NHIC lists for these groups should be consulted early on in the evaluation process to gain familiarity with provincially rare butterflies, dragonflies, or mussels, for example, which may be using the wetland under investigation.

For a faunal species to be scored under this section, it must be documented to use the wetland and this use must be in support of its life cycle (~~however, see previous section on ‘animal species located outside the wetland boundaries’ and section on ‘upland plant species within the wetland’~~). Examples would be breeding or feeding for all groups including non wetland-dependent species; basking sites for turtles or snakes; and resting sites for migratory waterfowl. With respect to flora, provincially significant vascular and non-vascular plants are to be scored, and the scientific name must be included in the data record.

Clear documentation detailing what the species was doing when observed must be included in the data record under this category (e.g., feeding, undertaking a courtship display, using a hibernaculum, nesting, etc).

NOTE: Some species, generally birds, breed rarely in Ontario but are fairly common non-breeders (migrants, transients). Such species will contain a “B” as part of their provincial (S) rank (~~e.g., the Great Black-backed Gull has an s-rank of S2B~~). Such species can be scored under this category only if the evaluator has a record of the species using the wetland to breed. Other species have dual ranks, e.g., S1B, S2N.

These species may be scored as provincially significant if observed using the wetland in any way necessary to support its life cycle. In other cases species may be partially tracked, only. For example a species may be ranked as S2N, S4B if it is too common as a breeder in Ontario to be tracked but is tracked based on the rarity of winter aggregation sites or migratory concentration areas. In these situations the species may be scored under this category only for that aspect of its life cycle that is tracked.

[no change proposed to Evaluation scores]

4.1.2.5 and 4.1.2.6 Regionally and Locally Significant Species

Southern manual, page 125

Regionally and locally significant species are those that occur in a few populations or in very restricted distribution on a regional or local scale. Ecoregions and Ecodistricts are the basis for assessment of significant species; however, it is recognized that appropriately organized data do not currently exist for most groups of species. In the past, documentation of significant species has focused on counties, regional municipalities and other administrative areas. Where necessary, information organized by administrative boundaries will be used in the assessment until such time as ecoregion or ecodistrict lists are available. *For groups of species or geographic areas with no list of rare species, no score can be assigned for this component.*

It is possible to score regionally significant plant and bird species throughout southern Ontario and locally significant plant species in a number of areas of southern Ontario.

There is one list that is approved for scoring regionally significant faunal species (see Appendix 5).

~~Local species lists are based on data collected by MNR or other credible sources. In all cases, some minimum level of peer review is required, i.e., a species list developed by a MNR District Ecologist or by an external individual/group would be reviewed by other technical experts within and/or external to MNR. Approval of locally significant species lists for all flora and faunal groups rests with the local MNR Districts. Evaluators should check with local MNR offices for local species lists.~~

~~Many of southern Ontario's counties/regional municipalities have plant lists that have used by MNR District offices and incorporated into MNR regional floras: those done for the former MNR administrative regions of Southwestern Region (Oldham 1993), Central Region (Riley 1989) and Southeastern Region (Cuddy 1991). See Appendix 6 for a list of approved references to be used in assessing regional significance for plants. These references can also be used to score local significance (see notes in Appendix 6).~~

The ministry may make lists that could be used in addition to or instead of those described in Appendix 5 and 6 available for time to time.

For plant and invertebrate species, the scientific name must be included in the data record. For a species to score as regionally or locally significant there must be evidence of breeding or feeding during the breeding season, or repeat observations of use, in at least two different years within a ten year period, during migration.

[no change proposed to Evaluation scores]

4.2.2 Winter Cover for Wildlife

Southern manual, page 127

The existence in certain wetlands of significant winter cover for wildlife species is a specialized ecosystem value recognized in this section. Many species of wildlife can more readily survive if suitable winter cover exists in a wetland. Good winter cover for wildlife species would include the presence of conifers (excluding tamarack) in dense stands or mixtures of evergreens with deciduous trees and shrubs. If dense cedar is found in a wetland, for example, a variety of winter birds may select them for night roosting. Old trees with cavities may be of importance for squirrels, mice, woodpeckers, owls, raccoons, chickadees, nuthatches, and other species. In ring-necked pheasant range (i.e., in southwestern Ontario; refer to Cadman et al. 1978), a cattail marsh with or without low shrubs or wooded borders would provide good winter cover. Refer to the Significant Wildlife Habitat Technical Guide and Ecoregion criteria schedules (where applicable) for more information on identifying winter cover.

~~The level of significance for winter cover must be decided by the appropriate MNR area or District office. Provincially significant winter habitat would include wetlands that are used on a regular basis (records for at least two years) by migratory provincially significant species or wetlands that add significant value to a larger area of significant winter habitat (e.g., wetland within a large deer yard).~~

An assessment of the importance of the wetland for winter cover should be carried out using criteria described in the appropriate Significant Wildlife Habitat Ecoregion Criteria Schedule. The traditional use of a wetland by a regionally significant species will not necessarily result in the wetland scoring as significant in the Ecoregion. The evaluator and local MNR staff must judge whether the wetland is of sufficient importance to the regionally significant species to warrant this score. A wetland that scores as regionally significant will normally provide good winter cover for a number of species that do not have extensive areas of winter habitat in the Ecoregion.

Evaluators must document why the wetland is assessed as having a particular level of significance for winter cover, including sources of information.

[no change proposed to Evaluation scores]

4.2.3 Waterfowl Staging and/or Moulting Areas

Southern manual, page 128

A 'staging area' is a traditional area, usually a lake, where birds that migrate in flocks rest and feed either immediately before or during migration. Many flocks may be gathered in such an area.

A 'moulting area' is an area that waterfowl use to shed old feathers. Such areas are important to waterfowl since during the moulting period they are usually unable to fly and are susceptible to disturbance.

Certain wetlands have exceptionally high value as places where large numbers of waterfowl concentrate to moult or to feed and rest prior to migration. Long Point and Lake St. Clair are two such outstanding areas for migration in southern Ontario and are important at a national level. Other wetlands provide the same type of value on a provincial or regional level. Many Great Lakes shoreline marshes, for example, are staging areas. Wildlife biologists have also recently found that some wetlands provide critical habitat during the moulting season. Such wetlands contain highly desirable vegetation cover and water/shoreline configurations providing safety to the flightless birds.

An assessment of the importance of the wetland for waterfowl staging should be carried out using criteria described in the appropriate Significant Wildlife Habitat Ecoregion Criteria Schedule for "Waterfowl Stopover and Staging Areas (Aquatic)". Wetlands that meet the criteria for confirmed significant wildlife habitat will be considered as being provincially significant for waterfowl staging habitat and score 100 points under this section.

~~MNR District, Regional or area offices and the Canadian Wildlife Service should be consulted for areas of national, provincial, regional (Ecoregion) and Ecodistrict importance.~~ Moulting areas are poorly documented, as little research has been done. Because of this, the higher levels of this category will rarely be scored.

Note that the lowest level of significance is 'known to occur', i.e. there must be documented records of moulting or staging waterfowl before this category can be scored.

Evaluators must document why the wetland is assessed as having a particular level of significance for waterfowl staging and/or moulting, including sources of information.

NOTE: if a female with young is scored under this category for moulting, that same female can not also be scored as breeding under section 4.2.4.

[no change proposed to Evaluation scores]

4.2.4 Waterfowl Breeding

Southern manual, page 128

Waterfowl depend on wetlands and associated upland for breeding. ~~Significant areas for waterfowl breeding should be determined by consulting District, Area and Regional Offices of the MNR, the Natural Heritage Information Centre, the Eastern Habitat Joint Venture Program or MNR Waterfowl Specialists, as well as the Canadian Wildlife Service (Environment Canada).~~ Most Ontario wetlands would be categorized as being no more than locally significant. If permanent open water marsh exists, the wetland should also be scored as “habitat suitable.”

An assessment of the importance of the wetland for waterfowl breeding should be carried out using criteria described in the appropriate Significant Wildlife Habitat Ecoregion Criteria Schedule for “Waterfowl Nesting Area”. Wetlands that meet the criteria for confirmed significant wildlife habitat will be considered as being provincially significant for waterfowl breeding habitat and score 100 points under this section.

Evaluators must document why the wetland is assessed as having a particular level of significance for waterfowl breeding, and fully document sources of information.

[no change proposed to Evaluation scores]

4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area

Southern manual, page 129

All wetlands have some significance as migratory bird stopover areas and a few, such as certain wetlands along the north shores of Lakes Erie and Ontario in particular, are places where passerines and/or shorebirds in great numbers stop to rest and feed for short periods during migration. ~~“Provincial significance” as migratory passerine stopover areas would be applicable to places such as Point Pelee, Rondeau, Long Point and Presqu’île. Certain inland wetlands can also be singled out as being significant at an ecoregion or ecodistrict level. MNR or CWS staff must finalize the level of significance for all wetlands.~~

An assessment of the importance of the wetland as a bird stopover area should be carried out using criteria described in the appropriate Significant Wildlife Habitat Ecoregion Criteria Schedule for: Shorebird Migratory Stopover Areas and Landbird Migratory Stopover Areas. Wetlands that meet the criteria for confirmed significant wildlife habitat in either category will be considered as being provincially significant as bird stopover habitat and score 100 points under this section.

Evaluators must document why the wetland is assessed as having a particular level of significance as a migratory passerine, shorebird or raptor stopover area and fully document all sources of information.

[no change proposed to Evaluation scores]

4.2.6.1 Spawning and Nursery Habitat

Southern manual, pages 131-132

If the significance of the spawning and nursery habitat present in the wetland is known ~~(from MNR staff or available studies)~~, assessment is based upon the relative importance of the wetland at an Ecoregion (e.g., 6E), Ecodistrict (e.g., 6E-12) or local level (e.g., ecosite or community landscape level). For many areas in ~~southern~~ Ontario, ~~the Province maintains an online database of fish records. MNR has a large repository of fish collection records that are housed in local district offices.~~ These records ~~and district staff~~ can be good sources of information ~~for determining the significance of fish habitat~~. The level of significance of the fish habitat is determined based on a number of factors, including:

- the location of the wetland,
- the area of the fish habitat,
- the size and number of fish populations using the habitat,
- the dependency of these populations on the wetland
- the scarcity of this habitat at the relevant ecological level (i.e., Ecoregion or EcoDistrict)

Wetlands with fish habitat significant at the Ecoregion level may be those that contain one or more unique characteristics pertaining to the fish species or populations using the wetland. Examples of this might be the walleye spawning run in Minesing Swamp; a wetland which provides spawning or nursery habitat for a population of fish rare in the Ecoregion.; or, a wetland which provides habitat for one of the best or most representative populations of Brook Trout in the Ecodistrict. Any fish species listed on the SARO list ~~(see 4.1.2)~~ that uses the wetland as spawning or nursery habitat will result in the wetland being scored “significant at the Ecoregion” level. Similar criteria can

be applied to fish habitat significant at an Ecodistrict level. An example would be a species listed on an Ecodistrict-significant list (~~by an MNR District or an equivalent county/regional municipal list used by an MNR District, see 4.1.2.6~~) that uses the wetland as spawning or nursery habitat.

For all habitat determined to be either significant at an Ecoregion or Ecodistrict level, documentation supporting that significance must be attached to the evaluation. All other fish habitat is considered to be locally significant, with no documentation required. ~~MNR staff must review and accept both the criteria and the level of significance determined.~~

If the level of significance of the spawning and nursery habitat within a wetland is not known, then assessment is based upon qualitative and quantitative information gathered in the field. This assessment divides the type of fish habitat present into three broad categories, Low Marsh, High Marsh and Swamp. It is the presence of these habitats, rather than actual use that is being assessed.

Low Marsh contains permanent water and, therefore, provides year-round fish habitat. Such habitats are typically open water marshes containing submergent and possibly emergent vegetation. High Marsh is seasonally dry and dominated by emergent vegetation, which may be used as spring spawning or nursery habitat.

Swamp communities containing fish habitat may be either seasonally flooded or permanently flooded. For example, swamps along rivers, creeks and lakes that are inundated in the spring often provide spawning and nursery habitat for such species as northern pike, yellow perch, carp, bullheads and minnows. For seasonally flooded swamp communities to be considered as fish habitat, fish must have access to the area from areas of permanent water. Permanently flooded swamp communities providing fish habitat are most often in the form of beaver ponds or other flooded areas. These areas may be directly connected to other fish habitat, or may be isolated. Unlike Low and High Marsh, the assessment of the swamp fish habitat is not specific to vegetation forms in the swamp; it is based on area alone.

In the qualitative assessment of the fish habitat, diversity is evaluated based on the dominant form in the vegetation communities providing fish habitat and follows the concepts outlined in Janecek (1988). A quantitative assessment is added in the form of a size factor (see Table 8 below). Appendix 7 lists the key vegetation groups that must be used for habitat-based scoring. A detailed example of the habitat-based scoring procedure is presented below *[Table 8]*

In most cases, evaluators will assess the entire vegetation community for its ability to provide permanent or seasonal fish habitat. However, in some cases, a large community is encountered, where only a portion of the community's area is available as

fish habitat. In this case, evaluators need to record the % of the community that functions as fish habitat. Only the area of the vegetation community that supports fish habitat can be used in the scoring of this attribute. The data summary form in Appendix 4 can be used to calculate areas in these cases.

Evaluators should record both a high and low estimated percentage of the vegetation community that can be used as fish habitat. Area is calculated by averaging the high and low percentages. This is the area that should be used when scoring for 'Spawning and Nursery Habitat.

[no change proposed to Evaluation scores]

4.2.6.2 Migration and Staging Habitat

Southern manual, page 140

The second fish habitat value that is assessed is migration and staging habitat. Again, two methods of assessment are possible, based on the available knowledge of the value of the wetland for providing these habitats. If fish migration and/or staging habitat is present and the significance of the wetland is known (~~from MNR staff or available studies~~), assessment is based on the relative importance of the wetland at a Ecoregion, Ecodistrict or local level. Wetlands with fish habitat significant at the Ecoregion level may be those that contain one or more unique characteristics pertaining to the fish species or populations using the wetland. For example, if the critical to a significant population of fish it could be significant at the Ecoregion level. Similar criteria may be applied to fish habitat significant at a Ecodistrict level. ~~As with spawning and nursery habitats, MNR staff must assess the level of significance of the fish migration and staging habitat within a wetland. If other sources are used, such as fisheries studies, MNR staff must review and accept both the criteria and the level of significance determined.~~ If fish migration and/or staging habitat is present but the level of significance is not known, assessment is based upon the presence of designated site types.

[no change proposed to Evaluation scores]

4.4 Great Lakes Coastal Wetlands

Southern manual, page 142

Coastal wetlands along the Great Lakes and St. Lawrence River provide significant value to Ontario, including valuable habitat for fish and wildlife and opportunities for recreation. In addition, protection and rehabilitation of coastal wetlands and the values they provide is the focus of international conservation efforts through vehicles such as the Great Lakes Water Quality Agreement under the International Joint Commission,

the Great Lakes Wetland Conservation Action Plan, and the Great Lakes Commission. In recognition of the value of these wetlands as an international resource, this section assigns a score to them based on their size. Note that the value being scored is the coastal nature of the wetland. ~~In the case of a wetland complex which includes inland wetland units, a score is assigned on the basis of the size (combined size, if there is more than one coastal unit in the complex) of the coastal units, only (as defined below).~~

A 'coastal' wetland is defined as follows (modified from the Strategic Plan for Wetlands in the Great Lakes Basin):

any wetland that is on the Great Lakes (Lakes Ontario, Erie, Huron and Superior) or their connecting channels (Lake St. Clair, St. Mary's, St. Clair, Detroit, Niagara, and St. Lawrence Rivers) (see figure 26a), OR

any wetland that is on a tributary to the Great Lakes or their connecting channels (see #1 above) and lies, either wholly or in part, downstream of a line located 2 km upstream (as 'the crow flies') of the 1:100 year floodline (plus wave run-up) of the large water body to which it is connected OR, (see figure 26b).

If the 1:100 year floodline is not known, use a line 2 km from the shore of the Great Lake, connecting channel or defined major river as the defining boundary (i.e., wetlands on tributaries within 2 km of one of the defined water bodies are to be considered "coastal").

~~NOTE: Even though only the coastal wetland units are scored under this section, the entire wetland is considered a 'coastal' wetland for planning and reporting purposes.~~

[no change proposed to Evaluation scores]

5.0 Documentation of Wetland Features Not Included in the Evaluation

Southern manual, pages 146-149

~~5.1 Invasive Species~~

~~5.2 Vernal Pools~~

~~5.3 Species of Special Interest~~

~~5.4 Important Drinking Water Area~~

~~5.5 Area of Wetland Restoration Potential~~

Glossary

Southern manual, pages 156-162

The only part of this section proposed to change:

~~Wetland complex: A group of wetland units that are functionally linked to one another. The outer boundary of any one unit is no more than 750 m away from the outer boundary of one or more other units in the complex.~~

Wetland Evaluation Data and Scoring Record

Southern manual, pages 163-207

Section will be edited to reflect many of the above changes

Updating First and Second Edition OWES Files to the Third Edition

Southern manual, pages 208-218

Delete this section entirely

Appendix 1 – Provincially Significant Wetlands

Southern manual, page 221

OWES evaluations are provided to decision makers addressing land use planning, development and resource management matters. The ministry has determined that a wetland is provincially significant when it has been identified as such using this manual. ~~The determination of whether a wetland is provincially significant is based on an OWES evaluation that has been approved by MNR.~~ In Ontario, there are two evaluation manuals – one for the area generally south of the southern edge of the Canadian Shield (encompassing Hills Site Regions 6 & 7) and one for the area north of this line (encompassing Hills Site Regions 2 through 5). Both manuals provide direction for gathering data on an assortment of functions and values of wetlands which are divided into four categories (biological, social, hydrological and special features). These functions and values are assigned numerical scores which cannot exceed 250 points in any category or 1000 points overall.

~~Revisions to the manuals are necessary from time to time due mainly to increased scientific understanding of wetland ecosystems. Any questions about the application or scoring of the OWES should be directed to the local MNR biologist/ecologist or the Provincial Wetlands Program (Chair of MNR's Wetland Evaluation Technical Team). An evaluation is not complete until it has been reviewed and approved by MNR.~~

DEFINITION

For both northern and southern Ontario a provincially significant wetland is any wetland that:

1. Achieves a total score of 600 or more points, or
2. Achieves a score of 200 or more points in either the Biological component or the Special Features component.

Locally Important Wetlands

The wetland evaluation system for northern and southern Ontario is designed to identify important wetlands on a provincial scale. However, all wetlands have value, both to society and intrinsically.

Municipalities may determine that some of these 'other' wetlands are significant on a local scale and may decide to protect them. These wetlands can include: (a) evaluated wetlands that have been identified as not provincially significant; and (b) partially evaluated and unevaluated wetlands that have been confirmed as wetland habitat and mapped using the ground-based OWES methodology or interpretations of remote-sensed imagery. In addition, the following attributes may assist the municipality in identifying these locally important wetlands.

1. Ground Water Discharge: Accurate identification of ground water discharge requires detailed hydrogeological studies. Full score (30 points) in the ground water discharge section of the wetland evaluation suggests a ground water discharge function for the wetland. Before development occurs in such a wetland, additional hydrogeological studies are encouraged.
2. Hydrology: A high score in the total score for the hydrological component indicates that the wetland likely performs an important function at a local or even regional scale.
3. Social value: High scores for Educational Uses and/or any of the sub-components of Recreational Activities suggest a high local value for the wetland.
4. Aboriginal Values/cultural Heritage: A wetland that receives the bonus score for either of these values may be important on the local scale.

Planning Boundary

The wetland boundary as identified during the wetland evaluation process is used as a 'planning boundary' by municipalities and the province when applying direction outlined in the Provincial Policy Statement. "Old" wetland boundaries (i.e., boundaries determined from wetland evaluations completed over 20 years ago) stay in use until they are revised using approved wetland boundary mapping methods (as outlined in this manual).

Appendix 10 – Wetland Plant List

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This wetland plant list is intended to support the delineation of the authoritative and only list to be used to delineate wetland boundaries using the Ontario Wetland Evaluation System. The list is to be used to apply the 50% rule, and is not intended as an exhaustive list of all species that may be scored under the Special Features component.

In this evaluation system wetlands are defined as: *“Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants”.*

This definition, and the list of wetland plant species below, includes those species that occur primarily in wetlands (identified as “wetland indicators”) as well as those “water tolerant” plant species that can occur in both wetlands and uplands. The intent of the “50% wetland vegetation” rule is to judge where plant species cover consists mostly (>50%) of wetland plants. This rule uses relative cover, and assesses the relative abundance of wetland plant species to upland plant species cover. It is very important to note that the 50% rule is not based on the number of species, but on the relative cover of species.

All plant species, native and introduced and in all vegetation community layers must be taken into consideration. Where tree and/or shrub forms are present the evaluator should first look at these woody vegetation layers to determine if the site is dominated by wetland indicators. These woody vegetation forms are the best indicators of long term site conditions. However, some species that can dominate or co-dominate in wetlands may also occur in upland habitats. Where these woody vegetation species do not clearly indicate upland or wetland other vegetation layers (forms) should be used to assist in the determination of wetland or upland conditions. The presence and relative cover of wetland indicators can also help. If an examination of all layers of vegetation does not determine whether the 50% rule has been met, substrates can be used to help determine whether the area is wetland or upland.

When there are contradictory messages from different vegetation layers, use the dominant layers as your primary indicator. In situations where there is a discrepancy between the vegetation and substrate indicators, rely upon the “50% wetland vegetation rule”.

This Wetland Plant List may be updated from time to time and any such updates will be made available on a website. Contact MNR for the most recent version of the list.

Proposed Updates to the Ontario Wetland Evaluation System 2022-10-25