

## COMMON HABITATS IN AGRICULTURAL ONTARIO

Most rural properties have several habitat types within their boundaries. In this booklet, they are grouped as follows:

### FARMLANDS

- Croplands
- Pastures
- Odd and Abandoned Areas
- Farmsteads
- Windbreaks, Shelterbelts and Treed Fencerows

### WOODLANDS

- Woodlots and Plantations

### AQUATIC

- Watercourses (streams and drains)
- Lakes and Ponds

### TRANSITIONAL

- Wetlands
- Streambanks and Shorelines

This section describes each of these types to help you identify which ones exist, or could exist, on your property. A chart on pages 22-23 identifies animal species commonly found in each one. Things you can do to improve habitat quality are described in the next section (beginning page 24).

**Remember, in most cases it is the habitat you manage – through protection, restoration, creation or disturbance – not the wildlife itself.** The exception is nuisance wildlife, e.g., white-tailed deer can be directly managed through hunting to reduce habitat destruction and conflict with humans.

In agricultural areas, fish and wildlife often need more than one type of habitat to obtain food, water, shelter and space. Some habitats meet more of these requirements than others. Some are more suitable for certain species. All habitats contribute to sustainable farm operations and wildlife populations, and all are part of larger ecosystems.

Actions you take in one area may affect habitat in other areas. Consider tile drains. When you increase peak flows in a stream as a result of tile drainage, you may increase erosion. Erosion in turn will degrade aquatic habitats within your property and downstream.

The illustration on pages 10-11 depicts habitat types within a typical rural landscape.



Fish and wildlife often require more than one habitat to fulfill their needs for food, water, cover and space.



In agricultural areas, streams, creeks and drains are common aquatic habitats.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## F A R M L A N D S

### CROPLANDS

**Croplands** are areas planted to grains and oilseeds, forages, tree fruits (orchards), other horticultural crops and/or specialty crops.

**Fragile croplands** may be profitable to farm in the short term, but run a high risk of soil loss through water and wind erosion, compaction and/or flooding. This will eventually reduce land capability.

**Marginal croplands** aren't profitable to farm. They may be too steep and dry, or have soils that are too shallow, stony, or very poorly drained.



Steeply sloping croplands are vulnerable to erosion. These fragile lands are more suitably retired to trees, shrubs and grasses.



Some steeply sloping lands are too marginal for crop production and, if left alone, may provide good habitat.



Stony fields usually aren't profitable to farm. Such marginal lands are better suited to wildlife habitat plantings.



Seasonally flooded cropland makes excellent habitat for migrating birds. During their spring migration through southern Ontario en route to nesting areas in the Northwest Territories, tundra swans feed on waste grain.



## COMMON HABITATS IN AGRICULTURAL ONTARIO

1 Croplands

2 Pastures

3 Odd and Abandoned Areas

4 Farmsteads

5 Windbreaks, Shelterbelts and Treed Fencerows

6 Woodlots and Plantations

7 Wetlands

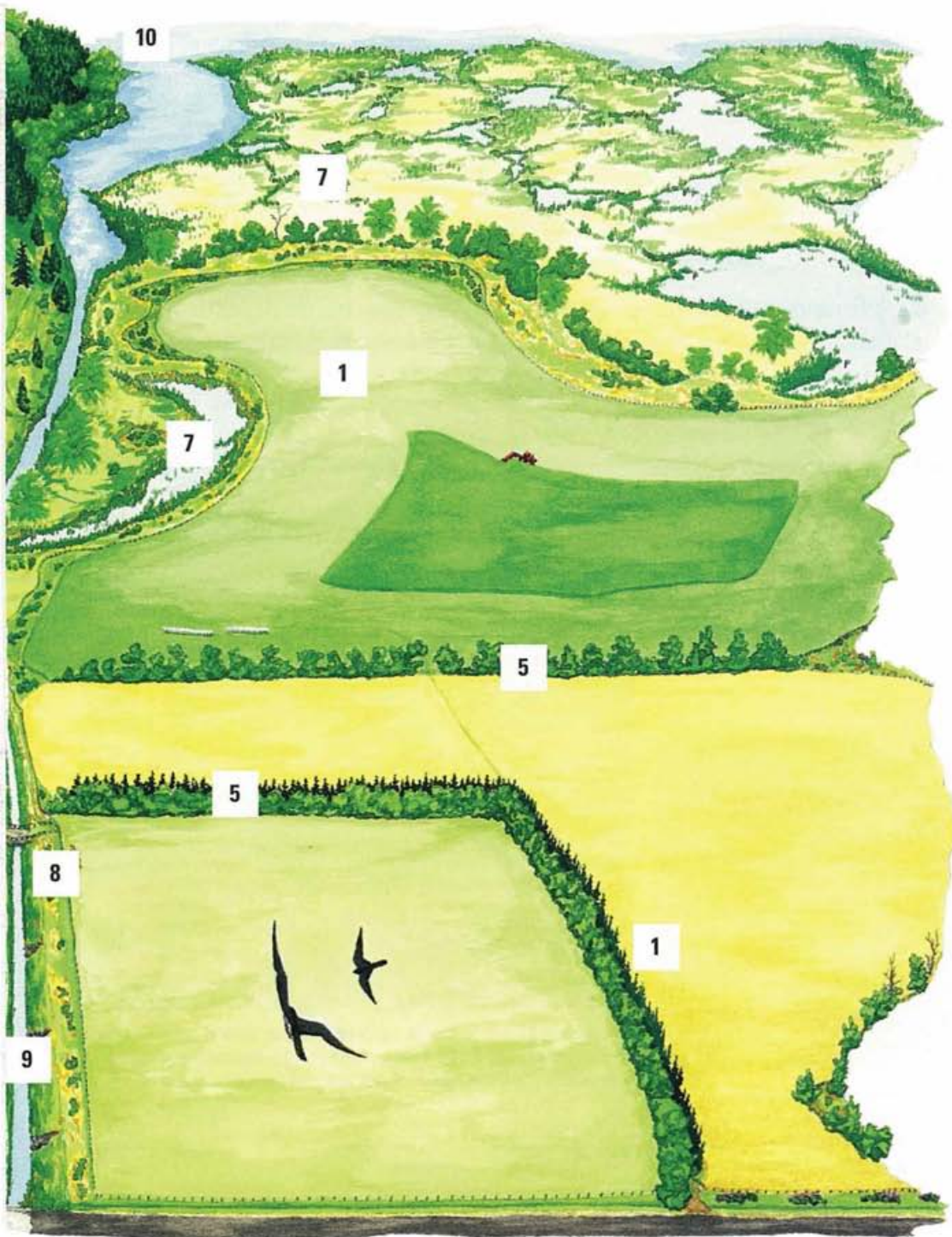
8 Streambanks and Shorelines

9 Watercourses

10 Lakes and Ponds









# COMMON HABITATS IN AGRICULTURAL ONTARIO

## F A R M L A N D S

### PASTURES

**Pastures** are lands used regularly for livestock grazing. Most permanent pastures are established on lands that are:

- poor quality
- impractical to crop
- near livestock housing, or
- near water sources.

Some pastures on highly productive lands are also used for hay. Pasture is often combined with cereal-forage rotations.

**Fragile pastures**, which may include the shorelines of lakes and ponds and the banks along watercourses, may be prone to compaction or erosion. **Marginal pastures** are too wet, shallow or stony to be very productive.

There are two types of **grazing** on pasture:

- **extensive**: low-density grazing on unimproved marginal lands – not usually reseeded, fertilized, or with weeds controlled
- **intensive**: high-density grazing, often rotational – usually reseeded, fertilized and treated for weed control.



Extensively grazed pastures are commonly associated with cow-calf or sheep operations on marginal lands. Some waterfowl and many species of songbirds build their nests on the ground in these areas. Delaying haying and keeping livestock out of nesting areas – ideally until mid July – gives many young birds the chance to fledge and leave the nest. Ideally, buffers around wetlands should be fenced and periodically clipped to control shrub growth and maintain good nesting cover.



Intensively grazed pastures, such as this one, should be managed to prevent animal waste from entering water bodies or wetlands. Use fencing to keep livestock out of these sensitive areas.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## F A R M L A N D S

### ODD AND ABANDONED AREAS

Odd and abandoned areas offer habitat between croplands and natural areas.

**Odd** areas include small uncropped areas, field corners, farmstead ruins, very steep slopes and/or wet spots.

**Abandoned** farmlands are often former croplands or pastures that are too fragile or marginal to farm.



Field corners can provide a wide range of food and cover for many species of insects, birds, mammals and reptiles.



Woodcock use odd and abandoned areas for nesting, cover and feeding.

### FARMSTEADS

The farmstead can provide the best opportunity for enjoying certain kinds of wildlife. It usually includes the home, lawn and gardens, barn, drivesheds, other buildings, lanes, the farmyard, farm ponds, exercise yards and paddocks.



Choose wildlife shrubs, like this elderberry, for landscaping. They provide food and cover for songbirds such as the pine grosbeak.



Trees around the farmstead increase property values and offer you, livestock and wildlife some shelter from the elements.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## F A R M L A N D S

### WINDBREAKS, SHELTERBELTS AND TREED FENCEROWS

Windbreaks, shelterbelts and treed fencerows are strips of permanent vegetation located around croplands, orchards, pastures and farmsteads. They protect crops, livestock and the farmstead from the elements. They also provide valuable wildlife corridors that connect habitat types such as woodlands and wetlands, allowing wildlife to move more easily between them.



*Windbreaks* are trees planted along the edges of fields, and range from one to five rows in width. They help control soil erosion caused by wind or water. Conifers, such as these white cedars, and poplars are commonly used.



*Shelterbelts* are planted trees (usually conifers) around farmsteads and along roadways. Normally more than five rows wide, they reduce heat loss by wind, and provide shade in summer.



*Treed fencerows* are strips of trees and shrubs, three to 10 metres wide (10-33 ft), planted or naturally seeded from nearby woodlots. They provide food and cover for wildlife, and connect different habitats on the farm.



Fencerows provide important habitat for species like the bluebird, which eat crop-damaging insects.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## WOODLANDS

Woodlands are any continuous part of the farm landscape dominated by forest tree cover and other forest vegetation. Trees can be either:

- **hardwood** – broadleaved (deciduous) trees that lose their leaves in the fall such as maple, beech, ash and oak, or
- **conifer** – cone-bearing, evergreen trees such as pine, spruce, cedar and hemlock. Most conifers retain their needles year-round; however, tamarack and the non-native European and Japanese larches lose their needles in the fall.

## WOODLOTS AND PLANTATIONS

**Natural woodlots** include upland woodlands and lowland forests, such as cedar valleys or wooded swamps. They are naturally vegetated and, in southern Ontario, usually consist of hardwood or mixed hardwood and conifer species.

**Plantations** are reforested areas often located on erosion-prone land and/or on marginal cropland. They may contain conifers (for use as polewood, nursery stock or Christmas trees), hardwoods (for nut crops, timber or nursery stock) or a combination of both. Over time, plantations convert to mixed-forest vegetation.

## Winter Migration

Canadian and tropical landscapes have changed dramatically in the last century, leaving less habitat for migrant songbirds such as the ruby-throated hummingbird, wood thrush, bobolink and many species of warblers. Conservation of both the summer and winter habitats in Canada and the tropics is critical to the survival of these birds.

Natural woodlands on southern Ontario farms consist mostly of hardwood (deciduous) trees.



Gray treefrogs live in woodlands where they feed on many kinds of insects. They hibernate in crevices of tree trunks and in leaf litter. You may have trouble seeing them – they change colour to blend with their surroundings. Their toes have suction cups to help them climb.



Poor quality lands can be planted to conifers like pine and spruce because they can tolerate the extreme growing conditions of open fields. This kind of plantation is of limited value to wildlife. As other plants move in over time, habitat value will increase.



The 20th century has seen a substantial decline in woodland birds due to habitat loss. Since 1965, across eastern North America, there have also been declines of grassland and shrubby habitat birds. This is due partly to the switch from pasture to row-cropping, and the removal of treed fencerows. You can help improve breeding success for several species, such as this scarlet tanager, by implementing BMPs.



### *Global Recognition of the Importance of Wetlands*

In 1971, the Convention on Wetlands of International Importance was signed in Ramsar, Iran. The Convention provides a framework for international cooperation for the conservation of wetland habitats. Canada has over 30 Ramsar sites, five of which are in Ontario. Three more Ontario sites are under consideration.



The woodland in the upper photo is actually a wooded swamp – a type of wetland. Wet in spring and dry in summer, wooded swamps provide terrific habitat for many wildlife species, and can be managed for fuelwood and other timber products. Cardinal flowers are often found along the edges of wooded swamps in late summer.

## COMMON HABITATS IN AGRICULTURAL ONTARIO

### TRANSITIONAL

**Transitional** habitats separate terrestrial (upland) habitats from aquatic habitats. For example, marshes that separate pastures from lakes, or ravines that separate croplands from streams, are transitional. Well-vegetated transitional habitats are essential to the health of lakes, rivers, streams and the hundreds of fish and wildlife species that use them. They also act as buffers, protecting aquatic habitats from the effects of land use practices.

There are two major types: **wetlands** and **streambanks and shorelines**.

### WETLANDS

Wetlands are Ontario's most diverse and productive habitat. Hundreds of fish and wildlife species depend on them – some for their entire life cycles, others periodically or at critical stages. Without wetlands, many species wouldn't survive. Some of Ontario's rarest plant and animal species are found only in wetlands.

Wetlands share these characteristics:

- seasonally or permanently covered by shallow water
- water tables at or near the surface for most of the growing season
- water-saturated soils, often consisting of layers of muck (organics)
- water-tolerant or water-loving plants such as cattails, rushes, white cedar or silver maple.

There are four main types:

#### swamps

- vegetation dominated by trees or shrubs
- periodically or permanently flooded – some swamps are so dry in late summer that many landowners don't recognize them as wetlands (see photo on left)

#### marshes

- vegetation dominated by rushes, reeds, cattails, sedges, etc.
- periodically or permanently flooded

#### bogs

- vegetation dominated by sphagnum moss, and sometimes low shrubs, sedges and black spruce
- peat-filled depressions with stable water levels, usually fed by rainwater or snowmelt

#### fens

- vegetation dominated by sedges, mosses, grasses, reeds and low shrubs
- usually located where ground water discharges to the surface.

Swamps and marshes are the most common wetland types remaining in southern Ontario; bogs and fens are rare.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## TRANSITIONAL



In May, wood ducks nest in tree cavities in wooded swamps.



Wildflowers like this pitcher plant are found in bogs. This flower is one of Ontario's few carnivorous plants.



Many species of birds, such as this black tern, use marshes for all their habitat needs.



The round-leaved sundew is commonly found in fens. Like the pitcher plant, the sundew is carnivorous – obtaining nitrogen from the insects it consumes.



## COMMON HABITATS IN AGRICULTURAL ONTARIO

### TRANSITIONAL

#### STREAMBANKS AND SHORELINES

These transitional habitats, often called **riparian zones**, are sloping strips of land that separate streams, lakes and ponds from dry uplands. Along shorelines they extend from the water's edge up to the high water mark. Around rivers and streams, the riparian zone includes the entire floodplain.

In intensively farmed areas, cropland often marks the dry edge of these zones. If they're stable and well-vegetated, streambanks and shorelines act as buffers, helping protect aquatic habitats from adjacent land uses.

Vegetated streambanks and shorelines offer habitat, shade and sources of food for hundreds of terrestrial, aquatic and semi-aquatic wildlife species.



Grassed buffer strips along watercourses can provide good habitat for ground-nesting birds – if they're wide enough. Wider buffers offer superior water quality protection and habitat.



Shown here is a river flowing through a well-forested riparian valley.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## A Q U A T I C

### WATERCOURSES

Watercourses are bodies of flowing water, and include the following:

#### streams and creeks

- smaller watercourses that empty into rivers or lakes
- often fed by springs, overland flow or small ponds/wetlands

#### rivers

- larger watercourses that empty into larger rivers or lakes
- fed mostly by lakes, other rivers, or streams and creeks

#### drains

- channelized streams or creeks, or excavated channels
- designed to remove water efficiently from lands
- fed mostly by overland flow and from tile drains.

Based on summer water temperatures, watercourses can provide cold-, cool- and/or warm-water habitats. All three types can be present along the length of a watercourse. Knowing the temperature characteristics of a watercourse will help you determine which fish and wildlife species to manage for, and which BMPs to use.



Large shallow bays in rivers are similar to lakes. They provide habitat for muskellunge, pike, sunfish, and largemouth bass as shown here.

Well-designed municipal drains, when shaded and carefully maintained, can provide habitat for species such as northern pike and even brook trout.



Cold-water streams usually have gravel bottoms and are fast flowing. They are home to sport fish such as brown trout.



## COMMON HABITATS IN AGRICULTURAL ONTARIO

### A Q U A T I C

#### COLD WATER

- temperatures rarely exceed 18°C during summer months
- often spring-fed; often found in headwater areas; usually well-shaded
- rich in oxygen, low in nutrients; swift flowing; coarse-textured bottom
- little aquatic plant growth, except in margins
- formerly widespread, but now limited, particularly in southern Ontario
- preferred by rainbow, brook and brown trout, spawning salmon, and aquatic insects such as mayflies and stoneflies

#### COOL WATER

- temperatures rarely exceed 18-24°C during summer months
- often found in midsections of streams, rivers and drains
- intermediate levels of oxygen and nutrients
- some were cold-water streams prior to being degraded as a result of loss of shade trees and increased runoff
- widespread in Ontario
- used by northern pike, muskellunge, yellow perch, walleye, minnows

#### WARM WATER

- summer water temperatures often reach 24-30°C
- often found in lower sections of watercourses
- many were previously cold- or cool-water streams that have been degraded; some are badly polluted; many are poorly shaded
- often have low levels of oxygen and high levels of nutrients
- bottom materials can range from mud to gravel or rock
- may contain heavy growth of cattails, rushes, algae, pondweeds, etc.
- used by largemouth bass, rock bass, sunfish, minnow species; if severely degraded few sport fish will be present
- widespread in Ontario, particularly in urbanized and agricultural areas

### LAKES AND PONDS

Lakes and ponds are standing water bodies that provide cold-, cool- and/or warm-water fish habitat as described previously. Lakes are usually greater than eight hectares in area; ponds are smaller.

The most productive part of a lake or pond is the **littoral zone**, where sunlight can reach the bottom – usually in shallow, near-shore areas. This zone contains diverse habitats used by many species of fish, waterfowl, shorebirds, mammals, amphibians, reptiles and aquatic insects. These near-shore areas are easily degraded by human activities, and are the focus of BMP activity.

Most lakes and ponds are either rich or poor in nutrients. Some lakes can have areas with both characteristics. Nutrient-rich lakes and ponds tend to have moderate to dense aquatic plant growth. Nutrient-poor lakes and ponds have limited aquatic plant growth.



# COMMON HABITATS IN AGRICULTURAL ONTARIO

## A Q U A T I C

There are five basic **pond** types:

### **in-stream (online)**

- created by damming natural, permanently flowing watercourses
- normally not approved by OMNR

### **bypass**

- located beside watercourses
- fed and drained by separate channels connected to the watercourse
- properly managed, bypass ponds can be useful to fish and wildlife

### **impoundment**

- created by damming intermittent streams, draws or valleys
- can be valuable to wildlife

### **isolated or dugout (no inflow or outflow)**

- usually fed by springs or surface water runoff, or by pumping from wells or water bodies
- tend to have fewer impacts on natural water bodies
- can provide good habitat for some fish and wildlife species

### **sheetwater (temporary)**

- occur in cultivated fields in spring and fall
- can provide important breeding habitat for amphibians, and important migration and feeding habitat for waterfowl.

For more information on ponds and their management, see the BMP booklets, *Water Management* and *Irrigation Management*.

Even small ponds can provide all the habitat needs for amphibians like the bullfrog, Ontario's largest frog. The male bullfrog's low-pitched "jug-o-rum" mating call is heard in late spring. Adult bullfrogs are voracious, and will eat anything they can catch.



In many parts of Ontario, like the Rideau Lakes area, farms back onto lakeshores. Where sustainable farming practices are used, and where vegetated buffers are adequate, these lakes and their shorelines can provide habitat for many species of fish and wildlife. This shoreline could be improved by planting a vegetated buffer.



## ANIMALS YOU MIGHT SEE ON YOUR PROPERTY

| TYPICAL ANIMALS   | FARMLANDS |          |                         |            |  |
|---|-----------|----------|-------------------------|------------|--|
|   | Croplands | Pastures | Odd and Abandoned Areas | Farmsteads | Windbreaks, Shelterbelts and Fencerows |
| <b>BIRDS</b>  |           |          |                         |            |  |
| • of Farmlands: e.g., flicker<br>American goldfinch             | ■         | ■        | ■                       | ■          | ■                                      |
| • of Woodlands: e.g., veery,<br>Eastern wood-peewee             |           |          | ■                       | ■          | ■                                      |
| • of Open Areas: e.g., Eastern<br>meadowlark, E. kingbird       | ■         | ■        | ■                       | ■          | ■                                      |
| • of Wetlands: e.g., red-winged<br>blackbird, belted kingfisher |           | ■        | ■                       |            |  |
| <b>HERONS</b>   |           |          |                         |            |  |
| Shorebirds: e.g., killdeer, snipe                               |           | ■        | ■                       |            |  |
| <b>FALCONS, HAWKS AND OWLS</b>                                  | ■         | ■        | ■                       | ■          | ■                                      |
| <b>WILD TURKEY</b>  | ■         | ■        | ■                       |            | ■                                      |
| <b>RUFFED GROUSE/ WOODCOCK</b>                                  |           | ■        | ■                       |            | ■                                      |
| <b>HUNGARIAN PARTRIDGE</b>                                      | ■         | ■        | ■                       | ■          | ■                                      |
| <b>SHARP-TAILED GROUSE</b>                                      |           | ■        | ■                       |            | ■                                      |
| <b>MALLARD</b>  | ■         | ■        | ■                       |            | ■                                      |
| <b>WOOD DUCK</b>  |           |          |                         |            | ■                                      |
| <b>CANADA GOOSE</b>   | ■         | ■        |                         |            |  |
| <b>MAMMALS</b>  |           |          |                         |            |  |
| <b>BATS</b>   |           | ■        | ■                       | ■          | ■                                      |
| <b>SQUIRRELS/ CHIPMUNK</b>                                      |           |          | ■                       | ■          | ■                                      |
| <b>GROUNDHOG/ MICE/ VOLES</b>                                   | ■         | ■        | ■                       | ■          | ■                                      |
| <b>BEAVER</b>   |           | ■        | ■                       |            |  |
| <b>MUSKRAT</b>  |           |          |                         |            |  |
| <b>RABBIT AND HARES</b>   | ■         | ■        | ■                       | ■          | ■                                      |
| <b>PORCUPINE</b>  |           |          | ■                       | ■          | ■                                      |
| <b>RACCOON</b>  | ■         | ■        | ■                       | ■          | ■                                      |
| <b>SKUNK</b>  | ■         | ■        | ■                       | ■          | ■                                      |
| <b>WEASELS/ MARTEN</b>  | ■         | ■        | ■                       |            | ■                                      |
| <b>MINK/ OTTER</b>  |           |          |                         |            |  |
| <b>DEER</b>   | ■         | ■        | ■                       |            | ■                                      |
| <b>MOOSE</b>  |           |          |                         |            |  |
| <b>COYOTE</b>   | ■         | ■        | ■                       |            | ■                                      |
| <b>RED FOX</b>  | ■         | ■        | ■                       | ■          | ■                                      |
| <b>WOLF</b>   |           | ■        | ■                       |            | ■                                      |
| <b>BLACK BEAR</b>   |           | ■        | ■                       |            | ■                                      |
| <b>AMPHIBIANS AND REPTILES</b>                                  |           |          |                         |            |  |
| <b>FROGS/ TOADS</b>   | ■         | ■        | ■                       | ■          | ■                                      |
| <b>SALAMANDERS/ NEWTS</b>                                       |           |          |                         |            | ■                                      |
| <b>LIZARDS (e.g., SKINK)</b>                                    |           |          | ■                       |            | ■                                      |
| <b>TURTLES</b>  |           |          |                         |            |  |
| <b>SNAKES</b>   | ■         | ■        | ■                       | ■          | ■                                      |
| <b>FISH</b>   |           |          |                         |            |  |
| <b>TROUT/ SALMON</b>  |           |          |                         | Ponds      |  |
| <b>PIKE</b>   |           |          |                         |            |  |
| <b>LARGEMOUTH BASS/ SUNFISH</b>                                 |           |          |                         | Ponds      |  |
| <b>SMALLMOUTH BASS</b>  |           |          |                         | Ponds      |  |
| <b>YELLOW PERCH</b>   |           |          |                         | Ponds      |  |
| <b>WALLEYE</b>  |           |          |                         |            |  |
| <b>MUSKELLUNGE</b>  |           |          |                         |            |  |
| <b>MINNOW SPECIES</b>   |           |          |                         | Ponds      |  |

Some species like the wolf, otter and bear are not found in the extreme southwestern part of the province, while skink (Ontario's only lizard) occur in limited areas. Some northern species like the sharp-tailed grouse and marten are also included.



## WOODLANDS

## TRANSITIONAL

## AQUATIC

## Woodlots

## Plantations

Wetlands  
Swamps (s),  
Marshes (m),  
Bogs (b) and  
Fens (f)Streambanks  
and Shorelines  
(riparian)

## Watercourses

Lakes  
and  
Ponds

|              |   |           |   |   |   |
|--------------|---|-----------|---|---|---|
| ■            | ■ |           |   |   |   |
| ■            | ■ | ■ s       |   |   |   |
|              |   |           |   |   |   |
|              |   | ■ s,m,b,f | ■ | ■ | ■ |
| ■ (colonies) |   | ■ s,m     | ■ | ■ | ■ |
|              |   | ■ s,m,b,f | ■ | ■ | ■ |
| ■            | ■ | ■ s,m,b,f | ■ | ■ | ■ |
| ■            | ■ | ■ s       | ■ |   |   |
| ■            | ■ | ■ s       | ■ |   |   |
| ■            |   |           | ■ |   |   |
|              |   | ■ s,m     | ■ | ■ | ■ |
| ■            |   | ■ s,m     | ■ | ■ | ■ |
|              |   | ■ s,m     | ■ | ■ | ■ |

|            |   |         |   |   |   |
|------------|---|---------|---|---|---|
| ■          | ■ | ■ s,m   | ■ |   |   |
| ■          | ■ | ■ s     | ■ |   |   |
| ■          | ■ | ■ s     | ■ |   |   |
| ■ (swampy) |   | ■ s,m   | ■ | ■ | ■ |
|            |   | ■ s,m   | ■ | ■ | ■ |
| ■          | ■ | ■ s     | ■ |   |   |
| ■          | ■ |         |   |   |   |
| ■          | ■ | ■ s,m   | ■ |   |   |
| ■          | ■ |         |   |   |   |
| ■          | ■ | ■ s,m   | ■ | ■ | ■ |
| ■          | ■ | ■ s     | ■ | ■ | ■ |
| ■          | ■ | ■ s,m,b | ■ | ■ | ■ |
| ■          | ■ |         | ■ |   |   |
| ■          | ■ | ■ s     | ■ |   |   |
| ■          | ■ | ■ s     | ■ |   |   |
| ■          | ■ | ■ s     | ■ |   |   |

|   |   |           |   |   |   |
|---|---|-----------|---|---|---|
| ■ | ■ | ■ s,m,b,f | ■ | ■ | ■ |
| ■ | ■ | ■ s,m,b,f | ■ | ■ | ■ |
| ■ |   | ■ s       | ■ |   |   |
| ■ |   | ■ s,m,b,f | ■ | ■ | ■ |
| ■ | ■ | ■ s,m,b,f | ■ | ■ | ■ |

## WATER TEMPERATURE PREFERENCES

|  |         |                            |           |           |
|--|---------|----------------------------|-----------|-----------|
|  |         |                            | Cold      | Cold      |
|  | ■ s,m   | ■ (floodplains in spring)  | Cool      | Cool      |
|  | ■ m     |                            | Warm      | Warm      |
|  |         |                            | Cool      | Cool      |
|  | ■ m     |                            | Cool      | Cool      |
|  | ■ s,m   |                            | Cool      | Cool      |
|  | ■ m     | ■ (shallow bays in spring) | Warm      | Warm      |
|  | ■ s,m,f |                            | Cold>Warm | Cold>Warm |