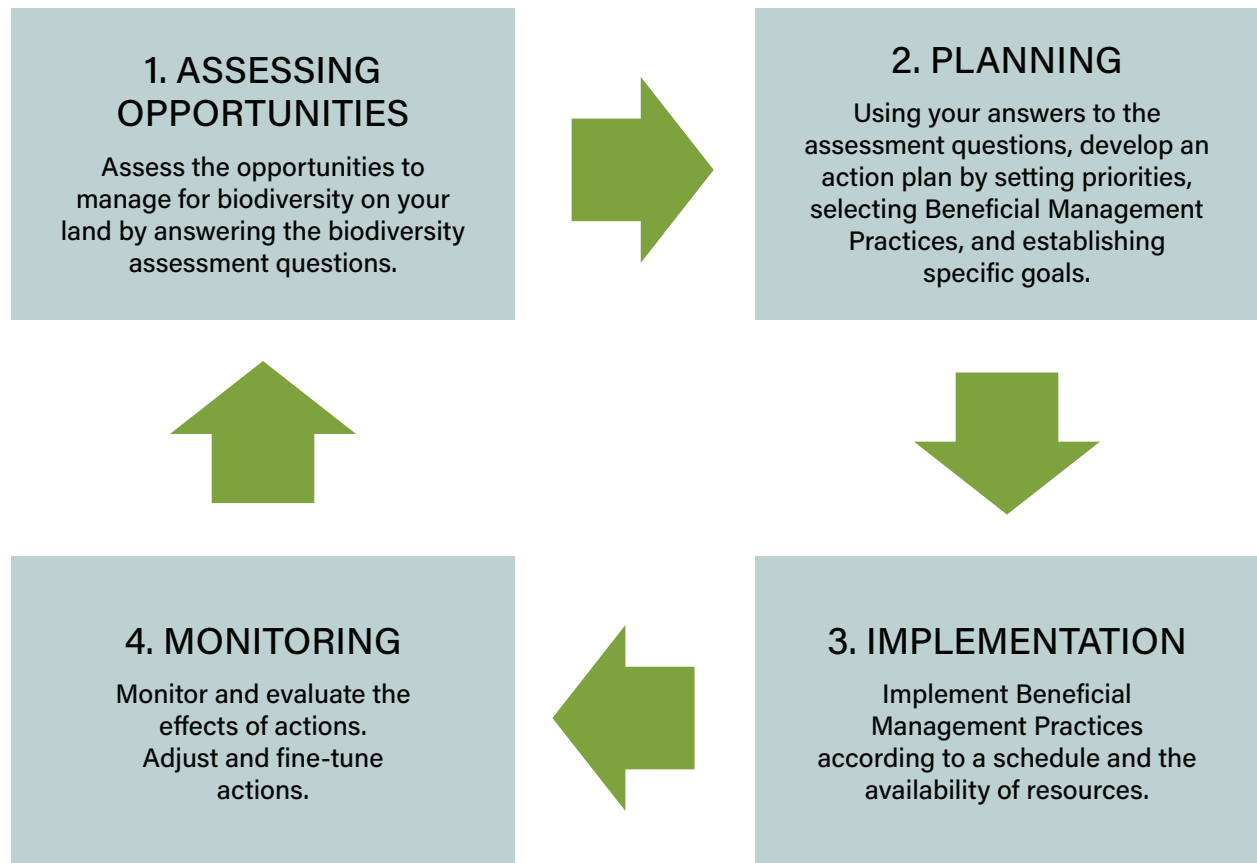


# 3 DEVELOPING A BIODIVERSITY MANAGEMENT PLAN

## A FOUR-STEP ADAPTIVE MANAGEMENT PROCESS FOR DEVELOPING A PLAN

This section presents an adaptive management process that producers can use to develop a biodiversity plan for their farm or ranch. The process involves the following four steps, and can be completed by individuals or in collaboration with neighbours, local community organizations, or watershed groups.



## Step 1: Assessing Opportunities

This step of the planning process includes 17 questions about ecosystems and other features on the farm, and 2 additional questions about areas beyond the farm. The answers to these questions will guide you in selecting appropriate Beneficial Management Practices (BMPs) to implement on your property. Because this guide is a general tool, not all the assessment questions will apply to all farming and ranching operations.

## Step 2: Planning

Planning involves determining what your priorities are in terms of managing for biodiversity, selecting the BMPs that are most applicable to your operation, and then setting goals for what you wish to achieve by implementing the BMPs. The goals need to be specific and have measurable outcomes—for example, reduce the percentage of pastures that are infested with invasive plant species.

## Step 3: Implementation

Prior to implementing the BMPs, determine if any special approvals or permits are required and if there are programs that can help you defray the costs of implementation. A schedule for implementing the BMPs also needs to be developed, and the results of your plan need to be documented.



Regulatory approvals  
may be required.

## Step 4: Monitoring

Monitoring involves collecting, recording, analyzing, and interpreting data on the state of your farm before any work is done and after your BMPs have been implemented. Taking photographs is a good way to record the implementation of your BMPs. Use a marker (steel post, marked fence post, or marked tree) so you can take photos from the same spot at about the same time every year. Record the date, location, and photo direction.

Monitoring will help you determine if your biodiversity goals are being met, or if they or your Biodiversity Management Plan needs to be modified. To be effective, monitoring must be repeated at regular intervals, under similar conditions, and at the same time each year. This provides data and images that are consistent and comparable among years, which will give you a sense of the trends and outcomes of your management activities over time.

These steps are collectively referred to as an adaptive management process because they allow you to continually improve your management practices. This is achieved by reviewing the monitoring results of the BMPs you implemented, assessing the effectiveness of your action plan in achieving your stated goals, re-assessing your opportunities for achieving any unmet goals, and refining your management activities accordingly. The process is repeated as long as improvements in your management system are needed or desired.

## How Does the Process Link to the Biodiversity Principles?

You are encouraged to use your own knowledge along with the Biodiversity Principles to develop a plan that works for you. These principles cover most of the concepts that need to be considered when managing for biodiversity.

## Where Can I Use This Process?

This process can be used on most agricultural operations in British Columbia.

## STEP 1 - ASSESSING OPPORTUNITIES

This step allows you to assess the opportunities to manage for biodiversity on your farm or ranch.

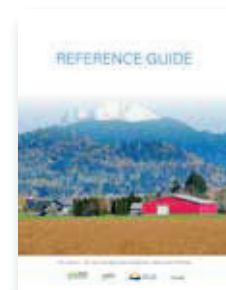
### Preparation

The following materials will help you complete your assessment:

- ▶ a previously developed Environmental Farm Plan map
- ▶ a map of your property, which may include topographical, survey, or hand drawn maps; air photos, or orthophotos
- ▶ coloured pencils for marking the map
- ▶ a transparent grid overlay (optional)
- ▶ a blank Assessment Worksheet

### Other resources you can draw upon include:

- ▶ your EFP Planning Advisor
- ▶ Ministry of Agriculture Agrologists
- ▶ local government websites or hard copy mapping services
- ▶ FrontCounter BC
- ▶ GeoGratis internet map site
- ▶ GoogleEarth
- ▶ Appendix C of *Develop With Care*
- ▶ habitat type maps, including online sensitive habitat (species at risk) mapping provided by the BC Conservation Data Centre
- ▶ regional habitat atlas resources as published online by the Community Mapping Network
- ▶ landscape features maps
- ▶ soils mapping
- ▶ cadastral maps
- ▶ topographic maps
- ▶ aerial photos
- ▶ historic photos and records
- ▶ regional mapping showing habitat connections or potential connections
- ▶ Fish Wizard mapping
- ▶ Hectares BC



*Implemented EFP*

## BASIC PLAN STRUCTURE

The Biodiversity Plan consists of the following:

### 1. Background

Include a brief written account or mapping of:

- ▶ the location of your operation (including linkages from your farm/ranch to surrounding landscape features);
- ▶ your production systems;
- ▶ your management practices.

## 2. Habitat and Land Use Types

As applicable, identify the following features on your map:

- i. roads, driveways, buildings, equipment storage areas, corrals, feedlots, lawns, gardens, rock outcroppings
- ii. greenhouses and/or polyhouses
- iii. annual crops
- iv. cultivated (tame) perennial forage crops
- v. orchards, vineyards, tree farms
- vi. forest
- vii. native grasslands
- viii. aquatic features such as wetlands, ponds, ditches, streams, and lakes
- ix. riparian areas such as the margins of wetlands, ponds, ditches, streams, rivers, and lakes
- x. linear habitats such as windbreaks, hedgerows, uncultivated fencelines, ravines, gullies, and other corridors of native or semi-natural vegetation
- xi. any special features such as dens, burrows, nest sites, wildlife trees that you know of that may exist on your farm

Note: Fallow land should be mapped in the category that reflects its anticipated future use. On your map, estimate the portion of your farm represented by each of these categories (refer to Figure 6 as an example).

## 3. Ecological Information

- ▶ biogeoclimatic zones (general and detailed information, including a map)
- ▶ species at risk
- ▶ species richness/biodiversity index
- ▶ adjacent habitat types that provide or might provide biodiversity connections or corridors

**Find the general location of your farm on Figure 4,  
and note the species richness of your area on your map.**

**To learn if species at risk, threatened and endangered species (red-listed species), or species of conservation concern (blue-listed) occur on your property, contact your local Ministry of Environment office and/or go to the BC Conservation Data Centre iMap website:**

<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/known-locations-of-species-and-ecosystems-at-risk/cdc-imap-theme>

**This mapping site allows you to find records of species at risk in your area.**

The B.C. Conservation Data Centre database is dynamic and is based on best-known information. The addition and upkeep of records is an ongoing process with edits taking place on a daily basis. The BC Conservation Data Centre collects data from many sources. Not all the data are the result of comprehensive or site-specific field surveys and many areas in BC have never been thoroughly surveyed. The absence of occurrences does not necessarily mean that there are no species or ecosystems at risk present; only that there are none currently recorded in our database. A detailed assessment of the property conducted during the appropriate season is the only way to confirm presence or absence of species or ecosystems at risk.

## 4. Assessment Worksheet

## 5. Action Plan Worksheet

## 6. Monitoring plan and schedule

## Content Considerations:

- ▶ Ensure all maps have a legend, a north arrow, and, as applicable, a geographical reference such as a road or watercourse.
- ▶ If possible, provide a scale on each map.
- ▶ Locate your farm on all maps, if possible.
- ▶ Include photos of your farm. They can highlight key biodiversity issues and can be used as photo points for tracking changes over time.
- ▶ Identify and include the species richness of your farm or ranch.
- ▶ Identify species at risk that may be present on your farm.
- ▶ Note any identified fish species and fish presence in watercourses.
- ▶ Include information on invasive species that are present, and available information on any invasive species that you think may become a problem on your farm in the future.

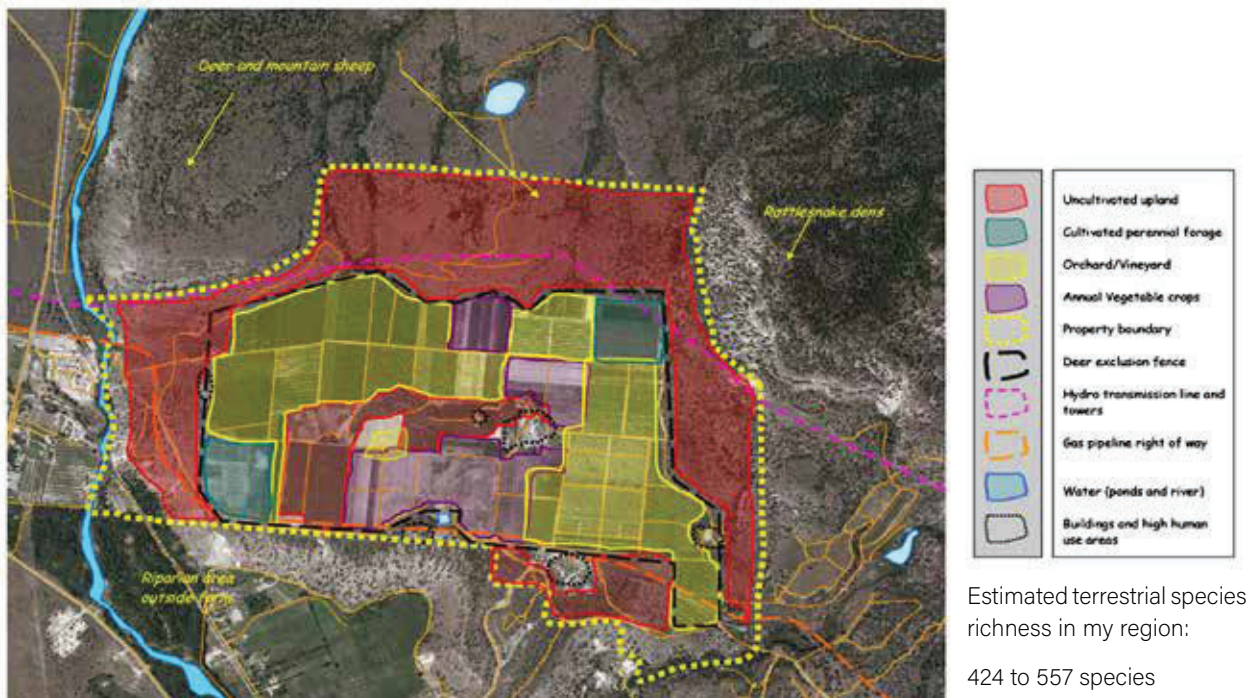


Figure 6 Example of a Completed Biodiversity Map

Sample Biodiversity Management Plans are included in the next section of the guide. A review of these plans can help you get a feel for what your plan will contain.

### KEY CONSIDERATIONS WHEN ADDRESSING THE ASSESSMENT QUESTIONS

- Remember—retaining both natural and semi-natural habitat is likely the easiest and most effective way to maintain biodiversity on your farm. If you have maintained areas of either natural or semi-natural habitat on your farm, you have likely already achieved many biodiversity objectives.
- Many of the assessment questions refer to the opportunities to enhance areas of your farm. Enhancing includes all actions and management activities on the farm that *improve* existing habitat, *restore* lost habitat, or *create* new habitat where none existed previously.
- Enhancing habitat must be done with care and a good understanding of the objectives and risks involved. It is important to consult with technical authorities to ensure that the enhancement undertaken achieves the desired objectives and does not unexpectedly endanger existing biodiversity.
- Where an assessment question does not apply to your farm simply note it as not applicable in the notes column.

**TABLE 1: ASSESSMENT QUESTIONS FOR DEVELOPING THE BIODIVERSITY PLAN**

<b>ASSESSMENT QUESTIONS ON THE FARM</b>	
	<b>RIPARIAN HABITAT</b>
<b>1</b>	What are the opportunities to enhance the riparian habitat on your farm?
<b>2</b>	What are the opportunities to increase the connectedness of riparian habitat within your farm?
	<b>AQUATIC AREAS, INCLUDING WETLANDS</b>
<b>3</b>	What are the opportunities to enhance aquatic habitat on your farm?
<b>4</b>	What are the opportunities to increase the connectedness of aquatic habitat within your farm?
	<b>FOREST AND WOODLANDS</b>
<b>5</b>	What are the opportunities to enhance forest or woodland habitat on your farm?
<b>6</b>	What are the opportunities to increase the connectedness of forest or woodland habitat within your farm?
<b>7</b>	What are the opportunities to modify your forest management practices, including their intensity and/or timing, to benefit biodiversity?
	<b>GRASSLANDS, SHRUBLANDS, AND NATIVE PASTURES</b>
<b>8</b>	What are the opportunities to enhance grassland, shrubland, and native pasture habitats on your farm?
<b>9</b>	What are the opportunities to increase the connectedness of grassland, shrubland, and native pasture habitats within your farm?
<b>10</b>	What are the opportunities to modify your native pasture management practices, including their intensity and/or timing, to benefit biodiversity?
	<b>WILDLIFE, INCLUDING KEYSTONE SPECIES AND SPECIES AT RISK</b>
<b>11</b>	What are the opportunities to enhance habitat for wildlife, keystone species, and species at risk that may occur on your farm?
	<b>INVASIVE AND NOXIOUS SPECIES</b>
<b>12</b>	What are the opportunities to control invasive or noxious species on your farm?
	<b>CROPS AND LIVESTOCK</b>
<b>13</b>	What are the opportunities to enhance perennial crop areas on your farm to benefit biodiversity?
<b>14</b>	What are the opportunities to modify your farm management practices, including their intensity and/or timing, to benefit biodiversity?
<b>15</b>	What are the opportunities to increase the mix of crop and/or livestock species on your farm?
<b>16</b>	What are the opportunities to manage for soil biodiversity on your farm?
	<b>CONFLICTS WITH WILDLIFE</b>
<b>17</b>	What are the opportunities to minimize conflicts between agriculture and wildlife?
<b>ASSESSMENT QUESTIONS BEYOND THE FARM</b>	
<b>18</b>	What are the opportunities to increase the connectedness of habitat across neighbouring landscapes?
<b>19</b>	What are the opportunities for your farm to contribute to a regional biodiversity conservation initiative?



## Assessment Opportunities

Four categories are used for answering the assessment questions:

### Achieved

A review of your farming operation determines there is nothing more related to this question that can reasonably be done to manage for biodiversity. For example, the riparian area on your farm has been fenced to control livestock access, it supports a desirable mix of vegetation, and it has stable stream banks.

### Some Opportunity

There are opportunities to enhance biodiversity on your farm either because of the activities you have already initiated or because of the features on your farm. For example, the riparian area on your farm has been fenced to control livestock access, but there is little riparian vegetation, and some stream bank erosion is still occurring.

### Considerable Opportunity

There are some very important things you can do in response to this question that will help you manage for biodiversity. For example, the riparian area on your farm has not been fenced to control livestock access, there is no riparian vegetation present, and stream bank erosion is occurring.

### Not Applicable

There are neither relevant features on your farm nor regional opportunities related to the question. For example, there are no riparian areas on your farm.

### GENERAL PRINCIPLES FOR MANAGING HABITAT PATCHES:

- ▶ one large patch is better than many small patches;
- ▶ several patches close together are better than several patches far apart;
- ▶ a cluster of patches is better than a line of patches;
- ▶ a patch linked to another patch by a corridor of habitat generally is better than two isolated patches;
- ▶ a compact (circular) patch with a low ratio of edge to area is better than an elongated patch with a high ratio of edge to area.

N.F. Payne and F.C. Bryant. 1994 *Techniques for Wildlife Habitat Management of Uplands*. McGraw-Hill, New York.

First review the overall applicability of the question. If it is not applicable, check the "Not Applicable" box and move on to the next question. If the question is applicable, review each opportunity and tick the answer that corresponds most closely to your current situation. If the individual opportunity within the question is not applicable, make that comment in the notes column. It is important to note that the list of examples provided for each category is not exhaustive; it is only meant to help you identify the opportunities you have for managing for biodiversity. Check only one box for each biodiversity assessment opportunity in the tables below.

A sample plan has been included as a separate section in the guide to assist you in completing your plan.

## “On the Farm” Assessment

The 17 questions for the “On the Farm” portion of the assessment provide an overview of your whole operation in relation to biodiversity. Use your map and background information to help answer the assessment questions.

The most important contribution you can make to biodiversity on your farm or ranch is to retain native and semi-natural areas, and the connections between them (*Biodiversity Principles 1–4*). On your map, Habitat and Land Use Type categories (i) to (xii) (Pages 58 and 59) cover all the native and semi-natural areas on your farm, including small and large patches and linear habitats (e.g., fencelines). The greater the size of these areas, the more connection there is between them, and how close they are to one another, all lead to a higher potential to retain biodiversity.

The next most important contribution you can make to biodiversity is to retain the natural ecosystem functions of the native and semi-natural areas on your property (*Biodiversity Principle 6*) and provide diversity, both in habitat structure and species of native and domestic plants and animals (*Biodiversity Principles 5, 7, and 8*).

## “Beyond the Farm” Assessment

While it is important to manage for biodiversity on your farm, it is equally, if not more, important to consider how an individual farm can contribute to biodiversity on a larger regional scale. This is necessary because during their life cycle, many animals and plant seeds and pollen often move over large areas that extend well beyond the farm boundary. Facilitating the movement of species may also help them respond or adapt to stresses such as drought, fire, or disease. Meeting the needs of wide-ranging species requires management strategies that operate at the landscape scale. The 2 questions for the “Beyond the Farm” are part of an overview assessment that is intended to help you determine how your farming or ranching operation can contribute to managing for biodiversity on this larger scale.



## RIPARIAN HABITAT



### QUESTION 1

What are the opportunities to enhance the riparian habitat on your farm?

- ▶ Typically, riparian habitats are among the most productive and biologically diverse areas on any farm or ranch.

Regulatory approvals may be required.

Look for the following opportunities to enhance the riparian habitats on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no riparian habitats on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Riparian habitat is vegetated by a variety of healthy native plant species of differing structures and/or heights.	<input type="checkbox"/> Riparian habitat is vegetated but with a limited number of native plants species, and those present exhibit few differences in structure and/or height.	<input type="checkbox"/> Riparian habitat has few, if any, native plant species present, and those present exhibit minimal differences in structure and/or height.	
<input type="checkbox"/> No weed or invasive or noxious plant species are present in the riparian area.	<input type="checkbox"/> Weed species are present but there are no invasive or noxious plant species in the riparian area.	<input type="checkbox"/> There are significant populations of weed species and/or invasive and/or noxious plant species present in the riparian area.	
<input type="checkbox"/> There are no livestock in the riparian area, or livestock are managed in a way that protects the riparian area from damage.	<input type="checkbox"/> Livestock have some access to the riparian area and are damaging vegetation and/or bank stability.	<input type="checkbox"/> Livestock have uncontrolled access to the riparian area and are causing significant damage to native plants and bank stability.	
<input type="checkbox"/> Numerous wildlife species are present in the riparian area.	<input type="checkbox"/> Some wildlife species are present in the riparian area.	<input type="checkbox"/> Wildlife species are rarely seen in the riparian area.	
<input type="checkbox"/> Machinery is not used in the riparian area.	<input type="checkbox"/> Machinery is sometimes used in the riparian area.	<input type="checkbox"/> Machinery is frequently used in the riparian area.	
<input type="checkbox"/> Roads and/or crops are located well away from riparian areas.	<input type="checkbox"/> Roads and/or perennial crops are set back a moderate distance from riparian areas.	<input type="checkbox"/> Roads and annual crops are located very near riparian areas.	

### QUESTION 2

What are the opportunities to increase the connectedness of riparian habitat within your farm?

- ▶ Connecting riparian areas may be the best way to increase habitat connections on your farm.

Regulatory approvals may be required.

Look for opportunities to increase the connectedness of riparian habitat on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no opportunities to increase the connectedness of riparian habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> There are riparian areas on your land that are already connected to other habitat, and they provide a travel corridor for wildlife.	<input type="checkbox"/> There is one riparian area on your farm, but there are patches of other native or semi-natural areas that could be connected to it.	<input type="checkbox"/> There are several unconnected riparian areas on your land that are close together and could be connected.	



## AQUATIC AREAS, INCLUDING WETLANDS



### QUESTION 3

#### What are the opportunities to enhance aquatic habitat on your farm?

- ▶ Enhancing aquatic habitat can make significant contributions to biodiversity.

Regulatory approvals may be required.

Look for opportunities to enhance aquatic habitat on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There is no aquatic habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Aquatic habitat on your farm has been maintained, enhanced, and/or created, and is healthy.	<input type="checkbox"/> Some aquatic habitat can be enhanced by improving water storage, restoring previously drained wetlands, and/or improving water management.	<input type="checkbox"/> Large areas of aquatic habitat can be readily enhanced by improving water storage, restoring previously drained wetlands, and/or improving water management.	
<input type="checkbox"/> Banks of watercourses, including wetlands, are intact and not slumping, compacted, or eroded.	<input type="checkbox"/> There are some slumping, compacted, or eroded watercourse banks.	<input type="checkbox"/> Banks of watercourses show significant slumping, compaction, and/or erosion.	
<input type="checkbox"/> Watercourses have a mature canopy of vegetation cover, which moderates water temperatures.	<input type="checkbox"/> Watercourses have some vegetation cover.	<input type="checkbox"/> Watercourses have no vegetation cover.	
<input type="checkbox"/> There are no livestock present or livestock access to aquatic habitat is controlled, and buffers have been established.	<input type="checkbox"/> Livestock access to aquatic habitat can be controlled, and buffers can be enhanced.	<input type="checkbox"/> There is significant livestock access to aquatic habitat that is causing damage, and the use of buffers is limited.	
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Where possible, aquatic habitat has been enhanced by developing off-channel habitat within the floodplain.	<input type="checkbox"/> There are some opportunities to enhance aquatic habitat by developing off-channel habitat within the floodplain.	<input type="checkbox"/> There are significant opportunities to enhance aquatic habitat by developing off-channel habitat within the floodplain.	
<input type="checkbox"/> Watercourses are able to overflow their banks during high water and access the historic floodplain.	<input type="checkbox"/> Watercourses are able to overflow some of their banks during high water but can not access all of the historic floodplain.	<input type="checkbox"/> Watercourses are not able to overflow their banks during high water or access the historic floodplain.	
<input type="checkbox"/> Aquatic habitats are protected from farming impacts.	<input type="checkbox"/> Some areas of aquatic habitat could benefit from improved farm management practices.	<input type="checkbox"/> Several or large areas of aquatic habitat could benefit from improved farm management practices.	
<input type="checkbox"/> Aquatic habitats are not receiving pollutants and sedimentation from your farm.	<input type="checkbox"/> Aquatic habitats show some evidence of sedimentation and pollutants coming from your farm.	<input type="checkbox"/> Aquatic habitats show extensive evidence of sedimentation and/or pollutants coming from your farm.	

## QUESTION 4

What are the opportunities to increase the connectedness of aquatic habitat within your farm?



Regulatory approvals may be required.

- ▶ Connecting aquatic habitats, particularly to larger systems, can significantly increase habitat value.
- ▶ Connecting aquatic habitats can also bring incompatible aquatic species into contact with one another. It is very important to get advice from technical experts and agencies on your proposed plans before you begin any work of this nature.

Look for opportunities to increase the connectedness of aquatic habitat on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no opportunities to increase the connectedness of aquatic habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Connections between aquatic habitats exist or have been restored.	<input type="checkbox"/> There are few natural or modified aquatic areas (a short drainage ditch or section of channelized stream) that can be relocated and/or restructured to become connected to a more natural functioning area.	<input type="checkbox"/> There are several natural or modified aquatic areas (a long drainage ditch or channelized stream) that can be relocated and/or restructured to become connected to more natural functioning areas.	
<input type="checkbox"/> There is a network of habitats, such as riparian areas, woodlands, hedgerows, fencerows, or uncultivated areas that connect the aquatic areas on your farm.	<input type="checkbox"/> There is an aquatic area on your farm, and there are patches of other native or semi-natural areas that could be connected to it.	<input type="checkbox"/> There are several unconnected aquatic areas on your land that are close together and could be connected.	
<input type="checkbox"/> There are no existing structures such as a dykes, dams, or closed culverts on your property that impair fish passage.	<input type="checkbox"/> There is an existing structure such as a dyke, dam, or closed culvert on your property.	<input type="checkbox"/> There are existing structures such as a dykes, dams, or closed culverts on your property.	

## FOREST AND WOODLANDS

### QUESTION 5

#### What are the opportunities to enhance forested or woodland habitat on your farm?

- ▶ Sizeable patches of forest provide interior core habitat that supports a wide range of biodiversity values. In large patches, the interior core is buffered from edge effects associated with differences in microclimates and with agricultural activities, such as cultivation and crop management. Enhancing existing forest and woodland areas by increasing their size can enhance the size and integrity of the interior core and protect it from edge effects.

Look for the opportunities to enhance the forested or woodland habitat on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There is no opportunity to enhance forested or woodland habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Forests and woodlands are either in a natural state or are managed sustainably.	<input type="checkbox"/> Forests and woodlands could be managed in a more sustainable manner.	<input type="checkbox"/> Forests and woodlands are not managed for sustainability.	
<input type="checkbox"/> Forests and woodlands on your land have a diverse and healthy understory (grasses, forbs, and shrubs) with good structural diversity.	<input type="checkbox"/> Forests and woodlands on your land have some understory (grasses, forbs, and shrubs), but it is not well established or has limited structural diversity.	<input type="checkbox"/> Forests and woodlands on your farm have little or no understory (grasses, forbs, shrubs) due to grazing or forest management activities.	
<input type="checkbox"/> Livestock do not graze in the forest or the grazing is managed to minimize impacts on biodiversity.	<input type="checkbox"/> Livestock do graze in the forest and grazing has some impacts on biodiversity.	<input type="checkbox"/> Livestock do graze in the forest and grazing is unmanaged.	
<input type="checkbox"/> Forests and woodlands have a diversity of native plant species.	<input type="checkbox"/> Forest and woodland plant diversity could be enhanced by planting native species.	<input type="checkbox"/> Forest and woodland plant diversity could be enhanced considerably through natural regeneration or by planting a variety of native species.	
<input type="checkbox"/> There are few weeds and/or invasive plant species in your forest, and they are controlled.	<input type="checkbox"/> Weeds and/or invasive plant species are present in your forest and may be competing with forest species.	<input type="checkbox"/> Weeds and/or invasive plant species are common in your forest but can be controlled.	
<input type="checkbox"/> Many wildlife trees/snags and coarse woody debris are present and are protected during harvesting.	<input type="checkbox"/> Some wildlife trees/snags and coarse woody debris are present and are protected during harvesting activities.	<input type="checkbox"/> No wildlife trees/snags or coarse woody debris are present or are not protected during harvesting.	
<input type="checkbox"/> Numerous wildlife species are present in the forested areas on your farm.	<input type="checkbox"/> Some wildlife species are present in the forested areas on your farm.	<input type="checkbox"/> Wildlife is rarely seen in the forested areas on your farm.	
<input type="checkbox"/> Your forests and woodlands include many non-timber forest products which provide species diversity.	<input type="checkbox"/> Your forests and woodlands include some non-timber forest products.	<input type="checkbox"/> Your forests and woodlands include few if any non-timber forest products.	

## QUESTION 6

What are the opportunities to increase the connectedness of forest and woodland habitat within your farm?

- ▶ Patches of habitat that are connected by perennial vegetation provide much higher quality habitat for plants and animals than isolated patches.

Look for opportunities to increase the connectedness of forested or woodland habitat on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no patches of forest/woodland on your farm, or there is only one patch with no opportunity to connect it to native habitat.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> All forested areas are connected by uncultivated land, shelterbelts, hedgerows, wooded fencerows, and/or riparian corridors.	<input type="checkbox"/> There are a few patches of forested areas that are far apart but they could be connected.	<input type="checkbox"/> There are multiple patches of forested areas close together that could be connected.	

## QUESTION 7

What are the opportunities to modify your forest management practices, including their intensity and/or timing, to benefit biodiversity?

- Forestry practices modify habitat structure and composition. The intensity and timing of these changes may have positive or negative effects on biodiversity from the stand to the landscape scale.

Look for the following opportunities to modify your forest management practices on your farm, including their intensity or timing, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no forest lands present on your farm, forest lands have been left in a native state, or there are no activities that need to be modified.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Forestry operations maintain native plant species.	<input type="checkbox"/> Forestry operations maintain some native plant species.	<input type="checkbox"/> Forestry operations do not maintain native plant species.	
<input type="checkbox"/> Forestry operations maintain structural diversity.	<input type="checkbox"/> Forestry operations maintain some structural diversity.	<input type="checkbox"/> Forestry operations do not maintain native structural diversity.	
<input type="checkbox"/> Forest regeneration includes a variety of locally adapted tree species.	<input type="checkbox"/> Forest regeneration includes a few locally adapted tree species.	<input type="checkbox"/> Forest regeneration does not include locally adapted tree species.	
<input type="checkbox"/> Forestry activities that use heavy equipment occur in winter or at other times when soil impacts can be minimized.	<input type="checkbox"/> Forestry activities that use heavy equipment are limited during periods when soils are wet.	<input type="checkbox"/> Soil conditions are not taken into account when heavy equipment is used in the forest.	
<input type="checkbox"/> The timing and intensity of harvesting trees and/or non-timber forest products is managed to allow desired plants to successfully set seed or reproduce vegetatively.	<input type="checkbox"/> The timing and intensity of harvesting trees and/or non-timber forest products is sometimes managed to allow desired plants to successfully set seed or reproduce vegetatively.	<input type="checkbox"/> The timing and intensity of harvesting trees and non-timber forest products is not timed to allow desired plants to successfully set seed or reproduce vegetatively.	
<input type="checkbox"/> Livestock grazing is scheduled to allow desired plants to successfully set seed or reproduce vegetatively.	<input type="checkbox"/> Livestock grazing could be better managed to allow desired plants to successfully set seed or reproduce vegetatively.	<input type="checkbox"/> Livestock grazing can be managed to allow grass, forb, and shrub layers to regenerate and new tree seedlings to reach a size where they cannot be damaged or killed by browsing.	
<input type="checkbox"/> All forest and grazing management activities are timed to avoid sensitive periods in the life cycles of native wildlife species, such as breeding, nesting, and denning.	<input type="checkbox"/> Some forest and grazing management activities are timed to avoid sensitive periods in the life cycles of native wildlife species.	<input type="checkbox"/> Life cycles of local wildlife are not known, and management activities are not timed to avoid sensitive periods in the life cycles of native wildlife species.	

Achieved	Some Opportunity	Considerable Opportunity	Notes
<ul style="list-style-type: none"> <li>❑ Livestock do not graze in forested areas, or grazing and browsing is managed such that structural layers, species composition, health, and vigour of the understory vegetation is well maintained.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Livestock graze in forested areas, and grazing and browsing has caused some changes to structural layers, species composition, health, and vigour of the understory vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Livestock graze in forested areas, and grazing and browsing has caused extensive changes to structural layers, species composition, health, and vigour of the understory vegetation.</li> </ul>	
<ul style="list-style-type: none"> <li>❑ Both large and small woody debris is maintained on the forest floor.</li> </ul>	<ul style="list-style-type: none"> <li>❑ No large woody debris is maintained on the forest floor.</li> </ul>	<ul style="list-style-type: none"> <li>❑ No woody debris is maintained on the forest floor.</li> </ul>	
<ul style="list-style-type: none"> <li>❑ Forest roads are developed and maintained in a way that minimizes impacts to biodiversity.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Forest roads are developed and maintained in a way that does not fully minimize impacts to biodiversity.</li> </ul>	<ul style="list-style-type: none"> <li>❑ The placement and maintenance of forest roads does not take into consideration impacts to biodiversity.</li> </ul>	



## GRASSLANDS, SHRUBLANDS, AND NATIVE PASTURE

### QUESTION 8

What are the opportunities to enhance grassland, shrubland, and native pasture habitats on your farm?

- ▶ Healthy and biologically diverse native grasslands, shrublands, and pastures are resistant to drought, pests, and invasion by invasive or noxious species. With proper management, these areas can preserve biodiversity while providing high-quality forage with minimal external inputs.

Look for opportunities to enhance grassland, shrubland, and native pasture habitats on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no grasslands, shrublands, or native pastures on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Grazing is managed to optimize production and maintain biodiversity.	<input type="checkbox"/> Grazing is managed but production and the maintenance of biodiversity is not optimized.	<input type="checkbox"/> Grazing is not managed.	
<input type="checkbox"/> There are many varieties of native plants species, including shrubs, in your native pasture.	<input type="checkbox"/> There are few native plants species, including shrubs, in your native pasture.	<input type="checkbox"/> There are no native plants species, including shrubs, in your native pasture.	
<input type="checkbox"/> Native pastures on your land have a diversity of vegetation structure with different heights of grasses, forbs, and shrubs.	<input type="checkbox"/> Native pastures on your land have some diversity of vegetation structure.	<input type="checkbox"/> Native pastures on your land have little diversity of vegetation structure.	
<input type="checkbox"/> There are no bare, trampled, or eroded areas in your native pastures.	<input type="checkbox"/> There are a few bare, trampled, or eroded areas in your native pastures.	<input type="checkbox"/> There are extensive bare, trampled, or eroded areas in your native pastures.	
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> There are few weeds and/or invasive plant species, and they are controlled.	<input type="checkbox"/> Weeds and/or invasive plant species are present and may be out-competing native plants.	<input type="checkbox"/> Weeds and/or invasive plant species are common but can be controlled.	
<input type="checkbox"/> Plant litter is present.	<input type="checkbox"/> Plant litter is minimal.	<input type="checkbox"/> Plant litter is lacking.	
<input type="checkbox"/> All marginal and erodable lands are in perennial cover.	<input type="checkbox"/> Most marginal and erodable lands are in perennial cover.	<input type="checkbox"/> Marginal and erodable lands are in annual crop production.	
<input type="checkbox"/> There is limited ingrowth of trees on your native pastures.	<input type="checkbox"/> Ingrowth of trees on native pastures is affecting the variety of species present.	<input type="checkbox"/> Ingrowth of trees is significantly limiting the variety of species present.	

## QUESTION 9

What are the opportunities to increase the connectedness of grassland, shrubland, and native pasture habitats within your farm?

- ▶ The biodiversity value of grasslands, shrublands, and native pastures increases significantly when they are connected to other native or semi-natural areas.

Look for opportunities to increase the connectedness of the grassland, shrubland, and native pasture habitats on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no native grasslands, shrublands, or native pastures on your farm, or there is only one patch of such habitat and no opportunity to connect it to other native or semi-natural habitat.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> There are two or more patches of grassland/shrubland/native pasture, and they are joined.	<input type="checkbox"/> There is only one patch of grassland/shrubland/native pasture present but there are patches of other native or semi-natural areas (e.g., forest or riparian areas) that could be connected to it.	<input type="checkbox"/> There are two or more patches of grassland/shrubland/native pasture close together, and they could be joined.	

## QUESTION 10

What are the opportunities to modify your native pasture management practices, including their intensity and/or timing, to benefit biodiversity?

- ▶ Managed grazing maintains healthier and more productive plants.
- ▶ Managing grazing frequency and intensity helps increase soil stability and moisture retention, and limits the occurrence and numbers of invasive plant species.

Look for opportunities to modify native pasture management practices on your farm, including timing and intensity, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There is no native pasture on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> The intensity and timing of livestock grazing is managed so that plants have sufficient resources and time to respond to grazing and can sustain themselves in the plant community.	<input type="checkbox"/> Intensity and timing of livestock grazing is based on a calendar schedule rather than on observing how much plants have grown/regrown or how much leaf material has been consumed.	<input type="checkbox"/> Grazing intensity and timing is not managed.	
<input type="checkbox"/> Livestock are moved among pastures in a different pattern and order each year.	<input type="checkbox"/> Livestock are moved among pastures but in the same pattern and order each year.	<input type="checkbox"/> Livestock are not moved among pastures.	
<input type="checkbox"/> Grazing occurs when invasive plant species are most susceptible so that their seed dispersal is minimized.	<input type="checkbox"/> Grazing occurs when invasive plant species are somewhat susceptible so that their seed dispersal is significant.	<input type="checkbox"/> The timing of grazing does not take invasive plant species management into account.	
<input type="checkbox"/> Timing of grazing takes soil moisture condition into account.	<input type="checkbox"/> Timing of grazing sometimes takes soil moisture condition in account.	<input type="checkbox"/> Timing of grazing does not take soil moisture conditions into consideration, but it could be.	
<input type="checkbox"/> Grazing of native pastures occurs when plants (including their leaves and roots) have fully recovered from previous grazing events.	<input type="checkbox"/> Sometimes grazing of native pastures includes periods of effective rest.	<input type="checkbox"/> Grazing of native pastures does not provide effective rest periods for plants (including their leaves and roots) to fully recover from previous grazing events.	

Achieved	Some Opportunity	Considerable Opportunity	Notes
<ul style="list-style-type: none"> <li><input type="checkbox"/> Livestock distribution within pastures is well managed and maximizes success of desirable plant species, applies pressure on invasive plant species, and promotes vegetation conditions that are preferred by local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Livestock distribution within pastures is managed but could be improved.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Livestock distribution within pastures is not managed.</li> </ul>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Intensity and timing of livestock browsing of woody species is monitored, and heavy or repeated browsing is avoided.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Livestock are moved based on forage consumption, but the focus has been on grasses and forbs; more attention could be paid to woody species.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Browsing occurs but there is no specific management to prevent repeated heavy use of woody species.</li> </ul>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Haying and mowing are avoided in the evening when wildlife are bedded down.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Haying and mowing are sometimes undertaken at night.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Haying and mowing are undertaken at night with no consideration given to minimizing impacts on wildlife.</li> </ul>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Seeding is timed to reduce wildlife disturbance during the breeding season.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Seeding is sometimes timed to reduce wildlife disturbance during the breeding season.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Seeding is rarely timed to reduce wildlife disturbance.</li> </ul>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Grazing management activities are timed to avoid sensitive periods in the life cycles of local native wildlife species, such as breeding, nesting, and denning.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Some grazing management activities are timed to avoid sensitive periods in the life cycles of native wildlife species.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Life cycles of local wildlife are not known; therefore, grazing management activities may not be timed to avoid sensitive periods in the life cycles of native wildlife species.</li> </ul>	

## WILDLIFE, INCLUDING KEYSTONE SPECIES AND SPECIES AT RISK

### QUESTION 11

**What are the opportunities to manage habitat for wildlife, particularly keystone species, and species at risk (SAR) habitat that may occur on your farm?**

- ▶ If you have a keystone species or a species at risk on your property, it is likely that there is also habitat supporting other species on your farm. It is worth noting, however, that the mere presence of these species does not necessarily mean that the habitat overall is being optimally managed, as it may be part of a wider network of critical habitat. Opportunities to improve habitat management may still exist.
- ▶ If you suspect, but are unsure, that you have keystone species or SAR (or habitat for these species) on your property, the opportunities provided in this assessment question may also apply to you.
- ▶ You may not actually observe SAR on your farm because some species are very small, secretive, cryptically coloured, or active mainly at night; however, your property may contain specialized habitat features that these species use. These could include wildlife trees/snags, riparian areas, snake dens, creeks, or cliffs. Such features are important to protect because they may be quite rare in the surrounding landscape.

Look for opportunities to retain or enhance habitat for wildlife. Keystone species and species at risk are of particular value for biodiversity management. Determine if these species may be present on your farm, and then determine the appropriate practices to manage and enhance their habitat.

Assessment of Opportunities			
<input type="checkbox"/> <b>Does not apply. There are no records of species at risk for your area. Wildlife species, including keystone species and species at risk, are well represented on your farm.</b>			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Species at risk are seen regularly on your property, and your farm has specific habitats or habitat features that support these species.	<input type="checkbox"/> There are historical records or there have been occasional sightings of species at risk in your area or on your property, but further habitat enhancement is needed to recover the species' habitat or habitat features.	<input type="checkbox"/> Species at risk have been observed in your area or on your property in the past and are known to use specific habitats or habitat features, which you can retain and/or enhance.	
<input type="checkbox"/> Keystone species occur on your property, and their habitat is protected and/or maintained.	<input type="checkbox"/> It is suspected that there may be keystone species on your property as there are others that occur in surrounding habitats similar to those found on your farm.	<input type="checkbox"/> There are no keystone species on your property but they occur in surrounding habitats similar to those found on your farm.	
<input type="checkbox"/> Opportunities to enhance wildlife habitat, diversity, and population levels have been identified and implemented.	<input type="checkbox"/> There are some opportunities to enhance wildlife habitat, diversity, and population levels generally on the farm.	<input type="checkbox"/> There are numerous opportunities to enhance wildlife habitat, diversity, and population levels on the farm.	

Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Opportunities to set aside (protect and maintain) natural and semi-natural habitat for wildlife have been identified and implemented.	<input type="checkbox"/> Some areas, including connectivity corridors, of natural and semi-natural habitat exist on the farm which can be set aside (protected and maintained) for wildlife, without overly compromising agricultural activities.	<input type="checkbox"/> Many areas, including connectivity corridors, of natural and semi-natural habitat exist on the farm, which can be set aside (protected and maintained) for wildlife, without overly compromising agricultural activities.	
<input type="checkbox"/> Several farm practices have been implemented to support biodiversity, including agriculturally-beneficial species (e.g. pollinators), without overly compromising agricultural activities.	<input type="checkbox"/> Some farm practices have been implemented to support biodiversity, including agriculturally beneficial species.	<input type="checkbox"/> No farm practices have been implemented to support biodiversity, including agriculturally beneficial species.	
<input type="checkbox"/> Farming activities are planned and conducted in a manner that attempts to avoid wildlife disturbance, injury, or death by conducting such activities during times of day, or times of the year, that minimize disturbances to these species.	<input type="checkbox"/> Farming activities are sometimes, but not always, planned or conducted in a manner that attempts to avoid wildlife disturbance, injury, or death.	<input type="checkbox"/> Disturbance, injury, or death of wildlife is not considered when planning or undertaking farming activities.	

## INVASIVE AND NOXIOUS SPECIES

### QUESTION 12

What are the opportunities to control invasive and noxious species on your farm?

- ▶ Non-native plants, animals, and micro-organisms can spread and cause serious and often irreversible damage to Canada's ecosystems, economy, and society.

Look for opportunities to control both terrestrial and aquatic invasive and noxious species on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no invasive and noxious species on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> There are few invasive and noxious species on your farm, and they are controlled with the objective of eradicating them.	<input type="checkbox"/> You can minimize the occurrence of invasive and noxious species on your farm, but eliminating them is a major challenge.	<input type="checkbox"/> You may be able to significantly reduce or eliminate invasive and noxious species on your farm.	

## CROPS AND LIVESTOCK

### QUESTION 13

What are the opportunities to enhance perennial crop areas on your farm to benefit biodiversity?

- ▶ Perennial crop areas include tame pastures, vineyards, orchards, and other long-term crops. These areas are not the equivalent of native areas, but they contribute to biodiversity.
- ▶ Conversion of annual cropped areas to perennial crop areas can increase biodiversity by improving soil condition and creating more diverse habitats.
- ▶ Consideration of the life cycle of wildlife species within perennial crop areas, and timing of farm activities, such as mowing, spraying, pruning, application of fertilizers and manure, so that they have the least impact to wildlife species can make an important contribution to biodiversity.

Look for opportunities to enhance perennial crop areas on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no perennial cropping opportunities on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Perennial crop areas are a significant component of your farm.	<input type="checkbox"/> Some perennial crop areas occur on your farm, but there is opportunity to convert additional areas from annual crops to perennial.	<input type="checkbox"/> There are limited areas of perennial crops and annual crops provide the only cover on your farm.	
<input type="checkbox"/> Perennial crop areas are maintained in a healthy state, which minimizes the need for rejuvenation.	<input type="checkbox"/> Perennial crop areas are not well maintained and require rejuvenation.	<input type="checkbox"/> Perennial crop areas are not well maintained and require frequent rejuvenation.	
<input type="checkbox"/> Alternate pastures are used to reduce pressure on native pastures at critical times.	<input type="checkbox"/> Alternate pastures could be used to reduce pressure on native pastures at critical times.	<input type="checkbox"/> It is possible to access additional grazing lands and reduce pressure on native pastures at critical times.	



## QUESTION 14

What are the opportunities to modify your farm management practices, including their intensity and/or timing, to benefit biodiversity?

- ▶ Minimizing pollution is essential to supporting biodiversity in terrestrial and aquatic habitats.
- ▶ Intensive agriculture tends to be associated with increased environmental disturbance, which disrupts the composition, structure, and function of ecosystems, including the productivity of agricultural soils.

Look for opportunities to modify the intensity of crop and/or livestock management practices on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no opportunities to modify the intensity of crop and/or livestock management practices on your farm			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Integrated pest management is used to determine the best approach to controlling pests.	<input type="checkbox"/> Integrated pest management is sometimes used to determine the best approach to controlling pests.	<input type="checkbox"/> Integrated pest management is not considered when determining the best approach to controlling pests.	
<input type="checkbox"/> Pesticides, including insecticides, herbicides, fungicides, or rodenticides are stored appropriately in secure facilities that are located away from aquatic areas.	<input type="checkbox"/> Pesticides are stored in one facility but in a manner that does not fully meet current standards. They may also be located close to aquatic areas.	<input type="checkbox"/> Pesticides are stored in various locations around the farm. They are neither stored in secure facilities nor in a manner that meets current standards. They may also be located close to aquatic areas.	
<input type="checkbox"/> Pesticides are applied only in accordance with label specifications, and an appropriate buffer is maintained to protect waterways from spray drift and runoff.	<input type="checkbox"/> Pesticides are not applied in full accordance with label specifications, and an appropriate buffer is not maintained to protect waterways from spray drift and runoff.	<input type="checkbox"/> Pesticides are not applied in accordance with label specifications, and appropriate buffers are not maintained to protect waterways from spray drift and runoff.	
<input type="checkbox"/> The selection of insecticides and timing of application is managed to minimize impacts on pollinating and other beneficial insects.	<input type="checkbox"/> The selection of insecticides and timing of application is sometimes managed to minimize impacts on pollinating and other beneficial insects.	<input type="checkbox"/> The selection of insecticides and timing of application does not consider the impacts on pollinating and other beneficial insects.	
<input type="checkbox"/> Where possible, pesticides are applied using non-broadcast applications.	<input type="checkbox"/> There some are opportunities to apply pesticides using non-broadcast applications.	<input type="checkbox"/> There are frequent opportunities to apply pesticides using non-broadcast applications.	
<input type="checkbox"/> Nutrient inputs are applied at rates based on the requirements of last year's crop.	<input type="checkbox"/> Nutrient inputs are applied at rates based soil testing results.	<input type="checkbox"/> Nutrient inputs are applied at rates using estimated nutrient requirements.	
<input type="checkbox"/> Manure is stored and applied in such a way that minimizes pollution.	<input type="checkbox"/> Manure is either not stored or not applied in a manner that minimizes pollution.	<input type="checkbox"/> Manure is neither stored nor applied in a manner that minimizes pollution.	

Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Fertilizers are stored in such a way that they minimize pollution.	<input type="checkbox"/> Fertilizers are not always stored in a manner that minimizes pollution.	<input type="checkbox"/> Fertilizers are not stored in a manner that minimizes pollution.	
<input type="checkbox"/> Fuel and other petroleum products are stored and dispensed in a manner that minimizes pollution.	<input type="checkbox"/> Fuel and other petroleum products are either not stored or not dispensed in a manner that minimizes pollution.	<input type="checkbox"/> Fuel and other petroleum products are neither stored nor dispensed in a manner that minimizes pollution.	
<input type="checkbox"/> Multiple pastures are rotationally grazed, and the order of grazing is changed each year.	<input type="checkbox"/> Pastures are rotationally grazed but are used in the same order each year.	<input type="checkbox"/> Pasture rotation is infrequent, and pastures are used in the same order each year.	
<input type="checkbox"/> Pastures are given adequate rest during the growing season.	<input type="checkbox"/> Pastures are given some rest during the growing season.	<input type="checkbox"/> Pastures are grazed continuously and season-long.	
<input type="checkbox"/> Grazing of areas with thin soils and steep slopes is avoided when soils are wet.	<input type="checkbox"/> Grazing of areas with thin soils and steep slopes sometimes occurs when soils are wet.	<input type="checkbox"/> Grazing of areas with thin soils and steep slopes often occurs when soils are wet.	
<input type="checkbox"/> Mowing is done in a way that maintains strips of blooming, native flowering plants for pollinating insects.	<input type="checkbox"/> Mowing is sometimes done in a way that maintains strips of blooming, native flowering plants for pollinating insects.	<input type="checkbox"/> Mowing often coincides with peak native flower blooming periods; native flowering plants are not maintained for pollinating insects.	
<input type="checkbox"/> Irrigation is managed to conserve water.	<input type="checkbox"/> Some irrigation practices that conserve water have been implemented.	<input type="checkbox"/> Flood and sprinkler irrigation could be modified to conserve water.	
<input type="checkbox"/> Drainage is managed in a way that takes biodiversity and best practices into consideration.	<input type="checkbox"/> Most drainage is managed in a way that takes biodiversity and best practices into consideration.	<input type="checkbox"/> Drainage is not managed in a way that takes biodiversity and best practices into consideration.	

## QUESTION 15

### What are the opportunities to increase the mix of crop and/or livestock species on your farm?

- ▶ Increasing the mix of crop and livestock species contributes to both species and genetic diversity on the farm, and may also increase the overall productivity of your farm.

Look for opportunities to increase the mix of crop and/or livestock species on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no opportunities to increase the mix of crop and/or livestock species on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Your operation includes a wide diversity of crop species.	<input type="checkbox"/> Your operation includes some diversity of crop species.	<input type="checkbox"/> Your operation includes only a very limited diversity of crop species.	
<input type="checkbox"/> Your operation includes a diversity of livestock species.	<input type="checkbox"/> Some additional livestock species could be included in your operation.	<input type="checkbox"/> There is an opportunity to include a significant diversity of livestock species in your operation.	
<input type="checkbox"/> The diversity of crops in your operation creates a variety of habitats for desirable wildlife species, including pollinators and the natural enemies of pests.	<input type="checkbox"/> There is some diversity of crops in your operation, and they create some habitat for desirable wildlife species, including pollinators and the natural enemies of pests.	<input type="checkbox"/> There is a limited diversity of crops in your operation, which creates little habitat for desirable wildlife species, including pollinators and the natural enemies of pests.	

## QUESTION 16

### What are the opportunities to manage for soil biodiversity on your farm?

- ▶ Maintaining a diverse biological community in soils creates a healthy environment for plants.
- ▶ Maintaining soil biodiversity can also help with pest and disease control.
- ▶ The benefits of diversified crop rotations, together with reduced tillage and especially no tillage, can dramatically increase soil productivity while reducing costs.
- ▶ Generally, mixed- and inter-cropping systems increase above-ground diversity. Because below-ground diversity often mirrors above-ground diversity, these systems tend to have more diverse soil biotic communities.

Look for opportunities to manage for soil biodiversity on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no soil-bound crops on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Zero tillage is practiced.	<input type="checkbox"/> Zero tillage is sometimes practiced.	<input type="checkbox"/> Tillage is commonly used to control weeds and prepare the soil for seeding.	
<input type="checkbox"/> Nutrient inputs are mainly organic (animal manure and/or green manure).	<input type="checkbox"/> Nutrient inputs are a mix of organic (animal manure and/or green manure) and commercial fertilizers.	<input type="checkbox"/> Nutrient inputs are almost exclusively derived from commercial fertilizers.	
<input type="checkbox"/> Nutrient inputs are applied at rates based on the requirements of last year's crop.	<input type="checkbox"/> Nutrient inputs are applied at rates based on soil testing results.	<input type="checkbox"/> Nutrient inputs are applied at rates based only on experience from previous years or on estimated requirements.	
<input type="checkbox"/> Cover crops are used regularly to create green manures and contribute to structural diversity.	<input type="checkbox"/> Cover crops are sometimes used to create green manures and contribute to structural diversity.	<input type="checkbox"/> Cover crops are not used.	
<input type="checkbox"/> Crop rotations are regular and include both legumes and grasses, which are selected based on their contribution to soil health.	<input type="checkbox"/> Crop rotations, when practiced, do not include legumes.	<input type="checkbox"/> Crop rotation is not practiced.	
<input type="checkbox"/> Field activities are managed so that wet soil conditions and soil compaction are avoided.	<input type="checkbox"/> Field activities are sometimes managed to avoid wet soil conditions and soil compaction.	<input type="checkbox"/> Field activities are not managed to avoid wet soil conditions and soil compaction.	
<input type="checkbox"/> Fall-sown crops are frequently used to protect soil through the winter and early spring.	<input type="checkbox"/> Fall-sown crops are sometimes used to protect soil through the winter and early spring.	<input type="checkbox"/> Fall-sown cover crops are not used.	

## CONFLICTS WITH WILDLIFE



### QUESTION 17

What are the opportunities to minimize conflicts between agriculture and wildlife?

Regulatory approvals may be required.

- Conflicts generally occur when wildlife have access to agriculturally produced food sources. This can result in unnaturally high concentrations of wildlife.

Look for opportunities to minimize conflicts between agriculture and wildlife on your farm, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no conflicts between agriculture and wildlife on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Opportunities to reduce conflicts with wildlife have been identified and implemented.	<input type="checkbox"/> The risk of conflict exists due to the availability of some unsecured food sources and the presence of large wildlife populations, and there are some limited opportunities to mitigate this risk.	<input type="checkbox"/> The risk of conflict is high due to the availability of unsecured food sources, and there are opportunities to mitigate this risk.	



Regulatory approvals may be required.

**QUESTION 18**

What are the opportunities to increase the connectedness of habitats across neighbouring landscapes?

- ▶ Large cultivated areas, roadways, and fencelines can fragment habitats and disrupt plant and animal movements across the landscape. This can lead to loss of important habitat, increased mortality risks, and reduced genetic mixing within species. Maintaining habitat connections across the landscape is a key component of managing for biodiversity.
- ▶ Connectedness can be achieved by maintaining native or semi-natural corridors or habitat patches along property lines. Landscape connectedness can be accomplished by working with neighbours to strategically link patches.

Look for opportunities to increase the connectedness of habitats across neighbouring landscapes, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no uncropped areas or aquatic habitat on your land, or there is only one patch of uncropped area on your land with no opportunity to connect it to habitat in adjacent lands.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> All uncropped areas of the same type are connected to similar areas in the neighbouring landscape. They are connected by perennially vegetated corridors that are barrier-free and are managed to retain a high diversity of native plant species.	<input type="checkbox"/> There are at least two isolated uncropped areas on your land that could be connected to similar areas in the neighbouring landscape.	<input type="checkbox"/> There are several isolated uncropped areas on your land, and they could be readily connected to similar areas in the neighbouring landscape.	
<input type="checkbox"/> Corridors from your farm to the neighbouring landscape are managed to minimize disturbance of wildlife that use them and to maintain healthy and diverse plant communities.	<input type="checkbox"/> There is a corridor on your land that could be connected to a neighbouring landscape and could be managed to improve its use by specific species or groups of species. This could be done without adversely affecting your operation.	<input type="checkbox"/> There are several habitat corridors on your land that could be connected to a neighbouring landscape and could be managed to improve their use by specific species or groups of species. This could be done without adversely affecting your operation.	
<input type="checkbox"/> All watercourses are barrier-free, or include a safe passage for native fish, amphibians, and other aquatic wildlife around or through the barrier. Natural water flows occur in all watercourses.	<input type="checkbox"/> Some barriers are present in watercourses, and water flow is occasionally impeded.	<input type="checkbox"/> Water flow in surface watercourses is impeded, and watercourse segments have become isolated or dead-end streams.	

## QUESTION 19

What are the opportunities for your farm to contribute to a regional biodiversity conservation initiative?

- ▶ Several regional biodiversity initiatives around the province are contributing to biodiversity conservation and enhancement. Participation in these initiatives by landowners is often a key part of achieving success.

Look for opportunities to contribute to a regional biodiversity initiative, and then determine the appropriate practices to achieve them.

Assessment of Opportunities			
<input type="checkbox"/> Does not apply. There are no active stewardship initiatives in your region.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
<input type="checkbox"/> Management of important habitat, such as riparian areas, forests, streams, wetlands, and grasslands on your farm is coordinated with a local or regional biodiversity initiative.	<input type="checkbox"/> Management of important habitat, such as riparian areas, forests, streams, wetlands, and grasslands on your farm could be coordinated with a local or regional biodiversity initiative.	<input type="checkbox"/> Management of important wildlife habitat, such as riparian areas, forests, streams, wetlands, and grasslands, at the landscape level has been not been considered in your community but could be initiated.	



## STEP 2 - PLANNING

### MOVING FROM ASSESSMENT TO PLANNING – COMPLETING THE ACTION PLAN WORKSHEET

#### Setting Priorities

From the assessment questions you rated as *Considerable Opportunity* or *Some Opportunity*, select the ones that you want to take action on and record them on the Action Plan Worksheet on page 87. List the *Considerable Opportunities* first.

FARM: <i>TLN Ranch/ Low Bench</i>		Developed By: <i>Smith</i>	DATE DEVELOPED: <i>April 2020</i>	Page <i>1</i> of <i>1</i>	
Questions to Be Acted Upon	Proposed BMP or BMP Practice Code	Specific Goal(s) Related to BMP(s)	Proposed Monitoring		Date Completed, Approvals or Permits Required, and Other Comments
			What	When	
Question #1 <i>Enhance riparian habitat</i>	<i>BMP 1.4: Retain a wide variety of native plants that are adapted to living in riparian areas</i>	<i>Allow shrub layer to regenerate</i>	<i>Increase in native plants and wildlife populations. New growth on shrubs</i>	<i>Spring and when moving livestock</i>	
Question #6 <i>Increase connectedness of forest habitat within farm</i>	<i>BMP 6.7: Connect forested areas along riparian corridors</i>	<i>Allow wildlife to travel through my farm</i>	<i>Watch for wildlife in the connected habitat</i>	<i>Spring</i>	

## Selecting Beneficial Management Practices

The Beneficial Management Practices (BMPs) in this guide (page 90) provide a starting point for managing biodiversity on your land. Using the Biodiversity BMP list, select BMPs that are relevant to your selected assessment questions. From that list, select the BMPs that you want to implement on your land. Once you have selected your BMPs, enter them into the Action Plan Worksheet.

Note: Because this guide is a general tool, not all the assessment questions will apply to all farming and ranching operations. You are encouraged to use your own knowledge along with the Biodiversity Principles to develop a plan that works for you. You may need to search for other solutions that are best suited to your operation and to biodiversity in your area. Your EFP Planning Advisor can provide advice, if needed. Additional sources of information on BMPs related to agriculture and biodiversity are provided in Appendix 1, *Biodiversity Resources for Farms and Ranches*. You may also wish to consult the other guides in Canada-BC Environmental Farm Plan program series:

- ▶ Drainage Management Guide
- ▶ Grazing Management Guide
- ▶ Irrigation System Assessment Guide
- ▶ Nutrient Management Reference Guide
- ▶ Riparian Management Field Workbook for Streams and Small Rivers

## Setting Goals

After selecting the BMPs, you will need to set goals that are specific to them and what you want to achieve on your farm or ranch. This will help you determine if your investment in a BMP has been successful. The goals should be specific, measurable, and related to your activities. Write down your goals and then review them to determine if there are any opportunities to integrate goals or activities. For example, by controlling livestock access to riparian areas you may eliminate the need for revegetation, which may happen naturally with reduced grazing pressure.

Once you have finalized your goals, enter them into your Action Plan Worksheet. Some example goals are provided here:

**Priority:** Improve riparian areas.

**Goal:** Re-vegetate shrubs and trees in grazed riparian area in west pasture.

**Priority:** Increase crop diversity.

**Goal:** Plant two new varieties of potatoes and establish a Saskatoon berry patch for local sales.

**Priority:** Retain native habitat on land.

**Goal:** Remove from production two small parcels of land in the east quarter that are currently not economical to farm, and seed them down with perennial or native plants.

## STEP 3 - IMPLEMENTATION

Implementing the BMPs you selected will involve the following steps:

### Getting Agency Approvals

Determine if agency approvals are needed to implement the various parts of your plan. If so, be sure to get the necessary approvals such as permits or other authorizations before beginning any project. For more complex projects, you may wish to seek the advice of an environmental professional.

### Securing Funding

Some BMPs will be easier than others to implement, either logistically or financially. Outside funding sources and community organizations may be able to provide the additional financial resources you need. Identify and apply to any programs that may help defray the costs of materials, labour, or consultative services needed to implement the BMPs you selected.

### Determining Timing

Determine the timing needed to most effectively implement the BMPs you selected, and work according to that schedule.

### Accessing Technical References

Contact your EFP Planning Advisor, check the references identified in this guide, and search the Internet for any technical references you may need to implement your plan.

### Seeking Professional Advice

Ask your EFP Planning Advisor and farm organization for contact information for other respected professionals who may be able to help you implement your plan. Contact agency resources in your community or region (Appendix 2).

### Securing Equipment, Materials, and Other Resources

When implementing a BMP, ensure you have the right equipment and materials on hand when you need them. Consider the on-farm resources that you have access to.

### Maintaining BMPs

Try to ensure that any maintenance required to successfully achieve the BMP is undertaken in a timely manner.

### Documenting the Project

Document the existing conditions on your property before implementing the BMPs—for example, 25% of the pasture land base is infested with knapweed. Then record which BMPs were implemented and when. This will help you monitor your efforts.

### Linking to the Environmental Farm Plan and Other Planning Processes

If you have implemented an Environmental Farm Plan, many of the actions you are taking may already be benefiting biodiversity on your property. This guide provides you with an opportunity to expand your EFP to include biodiversity more specifically in your management actions. Determine if you can participate in any regional biodiversity initiatives.

### TABLE 3 ACTION PLAN WORKSHEET

List the assessment questions that you scored as Considerable Opportunity or Some Opportunity and which you want to take action on. Using the BMP list, select the BMPs that you want to implement on your land. Set goals that are specific to the BMPs and what you want to achieve in your operation. Determine what you will monitor and when to check if your goals are being met. See the Sample Biodiversity Management Plan section of the guide for an example.

Farm: Questions Number	BMP	Developed By: Specific Goal(s) Related to BMP(s)	Date Developed:		Proposed Monitoring When	Date Completed, Approvals or Permits Required, and Other Comments	Page ____ of ____
			What				

Farm:		Developed By:	Date Developed:		Page ____ of ____
Questions Number	BMP	Specific Goal(s) Related to BMP(s)	Proposed Monitoring What	Proposed Monitoring When	Date Completed, Approvals or Permits Required, and Other Comments

## TABLE 4 BIODIVERSITY BENEFICIAL MANAGEMENT PRACTICES

Note: This is a list of biodiversity BMPs that could apply to your operation. It should not be considered a comprehensive list because BMPs are frequently site-specific and change with new knowledge. Also, some BMPs may be relevant to more than one question. Remember regulatory approvals may be required (See the relevant question).

BENEFICIAL MANAGEMENT PRACTICES		
ON THE FARM		RIPARIAN HABITAT
Question 1	BMP	What are the opportunities to enhance the riparian habitat on your farm?
	1.1	Develop a Riparian Management Plan using the EFP <i>Riparian Management Field Workbook</i> and the assistance of your EFP advisor and learn about the specific characteristics of your riparian areas.
	1.2	Develop off-channel watering and/or construct fencing that controls livestock access to riparian areas and watercourses.
	1.3	Manage the timing and extent of grazing in riparian areas to protect native species, leave ample residue/litter, and avoid creating wet trampled spots (e.g., avoid overgrazing forbs and shrubs).
	1.4	Retain a wide variety of native plants that are adapted to living in riparian areas.
	1.5	Construct or relocate facilities and roads away from riparian areas.
	1.6	Retain natural riparian areas.
	1.7	Improve bank stability through riparian plantings.
	1.8	Where appropriate, use thorny shrubs (e.g., hawthorn) or dense plantings of conifers to deter livestock from using riparian restoration areas.
	1.9	Avoid or minimize the impact of farm machinery use in or around riparian areas.
Question 2	BMP	What are the opportunities to increase the connectedness of riparian habitat within your farm?
	2.1	Connect or reconnect riparian habitats by leaving an uncultivated corridor between them.
	2.2	Join riparian habitats by maintaining uncultivated areas, planting native vegetation, a shelterbelt, or a hedgerow between them.

ON THE FARM		AQUATIC AREAS, INCLUDING WETLANDS
<b>Question 3</b>	<b>BMP</b>	<b>What are the opportunities to enhance aquatic habitat on your farm?</b>
	<b>3.1</b>	Follow the EFP <i>Drainage Management Guide</i> .
	<b>3.2</b>	Keep existing wetlands intact.
	<b>3.3</b>	Keep equipment above the high water mark of wetlands.
	<b>3.4</b>	Where possible, allow natural cycles and events to take place (e.g., periodic flooding; fallen trees left in stream to provide habitat).
	<b>3.5</b>	Enhance aquatic habitat by maintaining features that provide habitat complexity, such as large woody debris.
	<b>3.6</b>	Avoid obstructing water flows with harvesting debris.
	<b>3.7</b>	Allow selected areas to flood to provide habitat for migratory waterfowl.
	<b>3.8</b>	Re-establish drained wetlands by restoring their original drainage pattern.
	<b>3.9</b>	Limit storm water movement into natural watercourses.
	<b>3.10</b>	Install sediment traps where necessary, especially to avoid transporting sediments into watercourses.
	<b>3.11</b>	Improve stream crossings by using clear span bridges or open bottom culverts to enhance fish passage where fish are present.
	<b>3.12</b>	Construct artificial wetlands to improve water quality and enhance aquatic habitat.
	<b>3.13</b>	Leave stream meanders and channels.
	<b>3.14</b>	Enhance canopy development over watercourses to reduce water temperatures.
	<b>3.15</b>	Control livestock access to waterways.
	<b>3.16</b>	Develop livestock watering systems away from aquatic areas.
<b>Question 4</b>	<b>BMP</b>	<b>What are the opportunities to increase the connectedness of aquatic habitat within your farm?</b>
	<b>4.1</b>	Connect or reconnect aquatic habitat on your farm by removing barriers or other isolating factors but only when aquatic invasive species are not present.
	<b>4.2</b>	Minimize the risk of trapping fish in seasonally wetted connections to aquatic habitat.
	<b>4.3</b>	Appropriately size and place culverts so that fish passage is not impeded.
	<b>4.4</b>	Incorporate natural substrates such as gravel in open bottom culverts when constructing fish passage.
	<b>4.5</b>	Connect aquatic habitats by leaving an uncultivated corridor between them.
	<b>4.6</b>	Join aquatic habitats by planting native vegetation, a shelterbelt, or a hedgerow between them.
	<b>4.7</b>	Provide safe passage for fish, amphibians, and other aquatic wildlife where it is not incorporated into existing dykes, dams, or closed culverts.



ON THE FARM		FOREST AND WOODLANDS
Question 5	BMP	What are the opportunities to enhance forest or woodland habitat on your farm?
	<b>5.1</b>	Develop a forest management plan.
	<b>5.2</b>	When planting, use locally adapted species, favouring native species.
	<b>5.3</b>	Manage the timing and intensity of livestock use of forested pastures and tree/shrub stands in native pastures to avoid heavy browsing and maintain healthy shrub/tree populations.
	<b>5.4</b>	Identify existing or potential old-growth stands for protection from cutting and deadwood removal; protect as much old-growth as possible.
	<b>5.5</b>	Protect rare woodland communities. Talk to your local conservation organizations to learn more about woodland communities in your region and their significance in the region, province, and country.
	<b>5.6</b>	Where appropriate, reforest or regenerate clearings or fields within forested areas to benefit biodiversity.
	<b>5.7</b>	Where appropriate, reduce the number of forest edges and increase forest size by planting or regenerating trees around forested edges.
	<b>5.8</b>	Minimize the number and total length of forest access roads.
	<b>5.9</b>	Protect stick nests (nests built by large birds, such as raptors and herons) by establishing vegetation buffers and minimizing activities near the nests; consult the appropriate agency for specifics regarding individual species.
	<b>5.10</b>	Use large woody debris, brush piles, temporary fencing, seedling shelters, and some weed control practices to protect seedlings until they become established.
	<b>5.11</b>	Establish or maintain non-timber forest products such as berries, nuts, mushrooms, vines, specialty trees, and shrubs.
	<b>5.12</b>	Leave large rotting or hollow logs for habitat.
	<b>5.13</b>	Create habitat and improve nutrient cycling by leaving branches, tree tops, cull logs, and log portions at felling sites rather than at landings.
	<b>5.14</b>	Leave windrows, brush piles, chip piles, and fallen or cut off branches.
	<b>5.15</b>	Try to retain a few large trees that protrude above the forest canopy so they can be used by raptors.
	<b>5.16</b>	Where safe to do so, retain dead and standing trees for wildlife habitat.
	<b>5.17</b>	Try to retain six or more cavity trees per hectare for birds.

Question 6	BMP	What are the opportunities to increase the connectedness of forest or woodland habitat within your farm?
	6.1	Replant or allow natural regeneration to (re)connect wooded areas on you farm.
	6.2	Connect wooded areas by maintaining wooded fencerows and riparian areas.
	6.3	Where appropriate to your region, plant shelterbelts or hedgerows with multiple native species, including forbs, shrubs, and trees.
	6.4	Manage for, or restore, diverse buffers of native trees, shrubs, grasses, and forbs to support wildlife.
	6.5	Integrate management of trees and livestock pasture (silvopasture).
	6.6	Retain uncultivated land between forested areas.
	6.7	Connect forested areas along riparian corridors.
Question 7	BMP	What are the opportunities to modify your forest management practices, including their intensity and/or timing, to benefit biodiversity?
	7.1	Conserve wildlife trees, rock piles, and other wildlife habitat features such as snake hibernacula.
	7.2	Undertake forest operations when soils are dry or frozen to minimize soil and root disturbance.
	7.3	Do not schedule forest harvesting during breeding seasons of known wildlife species.
ON THE FARM		GRASSLANDS, SHRUBLANDS, AND NATIVE PASTURES
Question 8	BMP	What are the opportunities to enhance grassland, shrubland, and native pasture habitats on your farm?
	8.1	Develop and implement a Grazing Management Plan. Refer to the EFP <i>Grazing Management Guide</i> for details. Consider implementing a monitoring plan to assess grazing practices. As necessary, modify your Grazing Management Plan.
	8.2	Use a variety of livestock distribution tools, including fencing (permanent and electric), herding, off-site watering, and strategically located salt, minerals, and supplemental feed in order to manage grazing on native areas and to create a diverse plant community (types, sizes, ages).
	8.3	Control timing and intensity of grazing to retain native plant communities and encourage a range of plant heights.
	8.4	Familiarize yourself with the growth cycle of key forage plants in order to better manage grazing. Allow plants an effective rest period in order to establish good vegetative growth prior to grazing.
	8.5	Balance forage demand with supply so that sufficient plant material, including litter, remains. This will help maintain forage and range health, conserve moisture, and protect soil from erosion and organic matter loss.

Question 8	GRASSLANDS, SHRUBLANDS, AND NATIVE PASTURES continued	
	8.6	Where appropriate, use more than one livestock type to enhance grazing management options.
	8.7	Restore or establish local native species of forages, shrubs, and trees.
	8.8	Restore or rejuvenate pastures to optimize production and biodiversity.
	8.9	Increase the perennial crop area of your farm.
	8.10	To reduce tree ingrowth, implement juvenile or pre-commercial thinning activities using manual, chemical, and/or mechanized techniques.
	8.11	Manage ingrowth by developing Christmas tree production.
	8.12	Control grazing to allow deep rooted perennial native plants to regenerate and structural diversity to increase.
	8.13	Control browsing by livestock so that shrubs remain healthy and vigorous.
Question 9	BMP	What are the opportunities to increase the connectedness of grassland, shrubland, and native pasture habitats within your farm?
	9.1	Connect grasslands, shrublands, and native pastures by planting local native species of forages, shrubs, and trees between them.
	9.2	Connect grasslands, shrublands, and native pastures by leaving an uncultivated corridor or tame pasture between them so natural infilling occurs.
	9.3	Connect grasslands, shrublands, and native pastures by leaving a shelterbelt or hedgerow between them.
	9.4	Connect grasslands, shrublands, and native pastures by maintaining a well vegetated riparian corridor.
Question 10	BMP	What are the opportunities to modify your native pasture management practices, including their intensity and/or timing, to benefit biodiversity?
	10.1	Balance pasture forage consumption with supply so that sufficient plant material, including litter, remains.
	10.2	Manage grazing timing and intensity so enough native plant species are able to set seed and maintain viable populations.
	10.3	Delay grazing of native grasses that are adapted to late season use, and graze tame pastures or annual forages early in the season.
	10.4	Use rotational grazing practices rather than season-long grazing to achieve rest and recovery of native plants.
	10.5	Defer grazing in some areas that are used by ground-nesting birds until late in the nesting season.
	10.6	Use timed grazing to help control weeds. For example, to control the spread of Canada thistle, graze just before budding to weaken the plants and prevent them from going to seed.

ON THE FARM		WILDLIFE, KEYSTONE SPECIES, AND SPECIES AT RISK
Question 11	BMP	What are the opportunities to enhance habitat for wildlife, keystone species, and species at risk that may occur on your farm?
	<b>11.1</b>	Learn to identify important native, pest, and keystone species on your land. Work with local experts on how you can foster desirable species and discourage undesirable ones.
	<b>11.2</b>	Install bird and/or bat boxes to increase available habitat.
	<b>11.3</b>	Restrict livestock and equipment from sensitive nesting areas.
	<b>11.4</b>	Avoid disturbing stick nests (nests built by large birds, such as raptors and herons).
	<b>11.5</b>	Avoid forestry operations within 1 km of a heronry during nesting season.
	<b>11.6</b>	Conserve wildlife trees, rock piles, and other wildlife habitat features, such as snake hibernacula.
	<b>11.7</b>	Manage areas around stick nests (nests built by large birds, such as raptors and herons) by establishing vegetation buffers and minimizing activities near the nests; consult the appropriate agency for specifics regarding individual species.
	<b>11.8</b>	Provide nesting and perch sites to attract raptors that prey on rodents.
	<b>11.9</b>	Try to retain a few large trees that protrude above the forest canopy so they can be used by raptors.
	<b>11.10</b>	Try to retain six or more cavity trees per hectare for birds.
	<b>11.11</b>	Do not schedule forest harvesting during breeding seasons of known wildlife species.
	<b>11.12</b>	Manage for, or restore, diverse buffers of native trees, shrubs, grasses, and forbs to support wildlife.
	<b>11.13</b>	Buffer sensitive wildlife habitats from agricultural activities by using hedgerows and buffer strips.
	<b>11.14</b>	Plan crop rotations so some fields provide food and cover for wildlife.
	<b>11.15</b>	Consider using non-lethal predator control.
	<b>11.16</b>	Keep disruptive agricultural activities away from known wildlife corridors to reduce wildlife conflicts.
	<b>11.17</b>	Intercrop vegetables or other crops with suitable plants that are likely to attract beneficial insects, improve soil fertility, and/or support wild pollinators.
	<b>11.18</b>	Establish hedgerows, shelterbelts, and/or uncultivated strips with clusters of sequentially flowering native trees, shrubs, and forbs in unused areas that are prone to weeds—e.g., around telephone poles, in odd shaped pieces of land, unirrigated field corners, and along fencelines.
	<b>11.19</b>	Time haying and mowing to avoid causing wildlife disturbance, injury, or death.
	<b>11.20</b>	Use a flushing bar and/or mow fields either from one edge to another, or from the centre to the edge to give wildlife an escape route.
	<b>11.21</b>	Encourage the growth of native vegetation, including flowering plants, to provide habitat and food for beneficial predators.

ON THE FARM		INVASIVE AND NOXIOUS SPECIES
<b>Question 12</b>	<b>What are the opportunities to control invasive noxious species on your farm?</b>	
	<b>12.1</b>	Prevent invasive plant and animal species, including fish species, from establishing by managing access or by early eradication.
	<b>12.2</b>	Learn to identify invasive and noxious species. For example, learning to identify weeds and invasive plants, particularly at the seedling stage, using the <i>Guide to Weeds in BC</i> and/or the <i>Field Guide to Noxious and other Selected Weeds of British Columbia</i> facilitates early control.
	<b>12.3</b>	Develop a comprehensive management strategy to deal with invasive species; use farm management practices, such as using certified seed, to reduce the risk of noxious invasive plant species from becoming established.
	<b>12.4</b>	Restore native plants to areas where weeds have been removed and/or to patches of bare ground where weeds may appear.
	<b>12.5</b>	Use an integrated management approach to invasive species (cultural, mechanical, chemical, and biological).
	<b>12.6</b>	Prevent noxious weeds from going to seed by using mowing or other control practices; control weeds along farm roads and trails to prevent weeds from spreading.
	<b>12.7</b>	Prevent movement of weeds to new locations such as when livestock move from a weed infested area to a non-infested area.
	<b>12.8</b>	Wash equipment before travelling to “clean” areas to prevent the spread of noxious or invasive species.
	<b>12.9</b>	Before importing animals or plant material from other provinces or countries, check with the Canadian Food Inspection Agency for permit requirements and other restrictions.
	<b>12.10</b>	Report the presence of any unusual plants or animals to the Canadian Food Inspection Agency, the nearest BC Ministry of Agriculture office, or the Invasive Plant Council of BC as soon as possible.
ON THE FARM		CROPS AND LIVESTOCK
<b>Question 13</b>	<b>What are the opportunities to enhance perennial crop areas on your farm to benefit biodiversity?</b>	
	<b>13.1</b>	Wherever possible, use locally adapted native plant species and their seeds.
	<b>13.2</b>	Use forages, including legumes, in crop rotations to improve soil structure and reduce runoff, erosion, and nutrient loss.
	<b>13.3</b>	Use cover crops on annual crop land near vegetative buffers and riparian areas to limit bare soil created by late-season crop harvests.

Question 14	What are the opportunities to modify your farm management practices, including their intensity and/or timing, to benefit biodiversity?	
	14.1	Develop and implement a Nutrient Management Plan using the EFP <i>Nutrient Management Reference Guide</i> .
	14.2	Develop sufficient and appropriate manure storage facilities.
	14.3	Apply fertilizers, composts, and manure based on the nutrient content of last year's crop, petiole testing, and/or soil analysis.
	14.4	Develop and implement an Integrated Pest Management Plan.
	14.5	Develop appropriate pesticide storage.
	14.6	Use pesticide and nutrient application practices and equipment that minimize drift or spray into adjacent watercourses.
	14.7	Avoid spraying in windy or rainy conditions.
	14.8	Plant windbreaks or buffers between sprayed areas and sensitive native habitat and watercourses.
	14.9	Practice alley-cropping by growing crops between trees that are planted in rows.
	14.10	Avoid or minimize the application of insecticides and fungicides during times when pollinating and other beneficial insects are active.
	14.11	Wherever possible, use non-broadcast methods of pesticide application, such as band and spot treatment.
	14.12	Use compost mulch to manage weeds and fungal and insect pests.
	14.13	Develop appropriate storage for petroleum products.
	14.14	Develop and implement an Irrigation Plan using the EFP <i>Irrigation System Assessment Guide</i> .
	14.15	Withdraw irrigation and livestock water at or below licensed rates, and use acceptable water management practices.
	14.16	During exceptionally dry years, manage water use in a manner that preserves biodiversity.
	14.17	Modify irrigation equipment to increase water efficiency.
	14.18	Modify irrigation equipment to prevent backflow of altered irrigation water into watercourses.
	14.19	Use screened intakes to protect fish when using surface water withdrawals.
	14.20	Understand the hydrology of your area.
	14.21	Use drip and other efficient forms of irrigation to minimize water use and maximize water received by trees and vines.
	14.22	Recycle wastewater from milkhouses, fruit and vegetable washing facilities, and greenhouses in order to remove nutrients.
	14.23	Improve irrigation efficiency by increasing soil organic matter content or the depth of organic matter on the soil surface (e.g., mulch, crop residue, or cover crops).

Question 14	CROPS AND LIVESTOCK continued	
	14.24	Review the EFP <i>Drainage Management Guide</i> to identify best practices for drainage management.
	14.25	With appropriate technical assistance and approvals, consider improving drainage features that benefit biodiversity.
	14.26	Maintain or plant hedgerows, shelterbelts, ditches, and riparian areas to prevent runoff containing sediment and nutrients from polluting aquatic areas.
	14.27	Time grazing to allow effective growth or regrowth of native plants to maintain viable populations.
	14.28	Contain and treat livestock diseases.
Question 15	BMP	What are the opportunities to increase the mix of crop and/or livestock species on your farm?
	15.1	Diversify your cropping system to include multiple types and varieties of crops. Consider cultivating heritage varieties and locally-adapted landraces.
	15.2	Grow mixed crops with a variety of flowers.
	15.3	Diversify your crop rotation by adding legumes such as peas and beans.
	15.4	Plant pastures and hayland with multiple species, using legumes and other forage species that are adapted to your area.
	15.5	Diversify your livestock system to include multiple types and varieties of livestock.
	15.6	Consider raising heritage stock or rare breeds.
Question 16	BMP	What are the opportunities to manage for soil biodiversity on your farm?
	16.1	Minimize tillage and other field operations.
	16.2	Prevent soil compaction from livestock and use of heavy machinery on wet soil.
	16.3	Maintain soil health by using potentially lower cost options such as crop rotation, cover cropping, and green manure.
	16.4	Leave plant residues to enhance organic matter.
	16.5	Choose crop rotations that include high residue plants with large amounts of roots. Manage grazing to maintain plants, including roots, in a vigorous state.
	16.6	Keep ground covered with perennial cover, crop residue, standing stubble, or cover crops.
	16.7	Stop harvesting if your vehicles create ruts.
	16.8	Apply only enough fertilizer to replace the nutrients harvested with the crop.
	16.9	Modify seeding and post-seeding implements for low disturbance placement of seeds and fertilizer.
	16.10	Grow winter annuals to minimize field equipment activity in the spring.
	16.11	Use companion cropping or strip cropping.

ON THE FARM		CONFLICTS WITH WILDLIFE
<b>Question 17</b>	<b>BMP</b>	<b>What are the opportunities to minimize conflicts between agriculture and wildlife?</b>
	<b>17.1</b>	Protect food sources from wildlife by using fencing or structures.
	<b>17.2</b>	Remove unsecured food sources such as windfalls in orchards.
	<b>17.3</b>	Where appropriate, design and build fencing that allows passage of wildlife.
	<b>17.4</b>	Use wildlife-proof fencing (e.g., for ungulates or snakes) only in specific areas of concern (e.g., stack yards). When using such fences over larger areas, work with local experts to ensure that critical wildlife travel routes are not completely blocked.
	<b>17.5</b>	Use scare devices, visual or auditory. Scare devices are most effective when they are used over short periods.
	<b>17.6</b>	Understand how to manage bird netting in order to minimize impacts on wildlife.
	<b>17.7</b>	Use guardian animals to protect livestock.
	<b>17.8</b>	Allow hunters access to your land during hunting seasons.
	<b>17.9</b>	Plant lure crops or crops that are less desirable to wildlife.
	<b>17.10</b>	Locate compost heaps, livestock, beehives, and other food sources away from forests, thickets, and natural travel corridors used by bears.
OFF THE FARM		
<b>Question 18</b>	<b>BMP</b>	<b>What are the opportunities to increase connectedness of habitat across neighbouring landscapes?</b>
	<b>18.1</b>	Observe wildlife movements and provide appropriate corridors to neighbouring properties by connecting native and semi-natural areas.
	<b>18.2</b>	Connect habitats to those on neighbouring properties by leaving a corridor uncultivated and allowing natural infilling to occur.
	<b>18.3</b>	Connect habitats to those on neighbouring properties by planting native vegetation, a shelterbelt, or tame grass.
	<b>18.4</b>	Replace pipes or culverts that restrict safe passage of native fish and other wildlife with a clear span bridge or pipe arch.
	<b>18.5</b>	Work with natural resource management specialists and local conservation organizations to identify key actions that will contribute to maintaining biodiversity and related healthy, functioning landscapes and watersheds in your region.
<b>Question 19</b>	<b>BMP</b>	<b>What are the opportunities for your farm to contribute to a regional biodiversity conservation initiative?</b>
	<b>19.1</b>	Participate in regional biodiversity initiatives.
	<b>19.2</b>	Manage native areas as a valuable resource by working with natural resource management specialists and local conservation organizations to identify key actions that will contribute to maintaining biodiversity and related healthy, functioning landscapes and watersheds.
	<b>19.3</b>	Through collaboration with neighbours, strive to maintain at least 20% of the regional landscape as non-cropped (i.e., native and semi-natural areas).



## STEP 4 - MONITORING

Biodiversity is like agriculture—situations change from year to year with weather, management practices, and what is happening next door. Therefore, you should consider establishing a monitoring program to determine if your biodiversity goals are being met or if they or your Biodiversity Management Plan need to be modified.

Keep in mind that achieving some goals will take longer than others and will depend on your location. For example, plants grow much more quickly in the Fraser Valley than they do in the Peace River area.

Aim to do your biodiversity monitoring every year, and keep the results on file. To be consistent and to have comparable results, you should try to monitor at the same time each year. You can use your assessment as a record of changes on your property and as a tool to update your management plans and biodiversity goals.

The steps involved in monitoring the success of the BMPs you implemented are as follows:

### Identifying Measures of Success Relative to Goals

This can include recording general observations related to your biodiversity goals, such as an increase in bird numbers, or savings on crop inputs.

### Developing a Photo Record

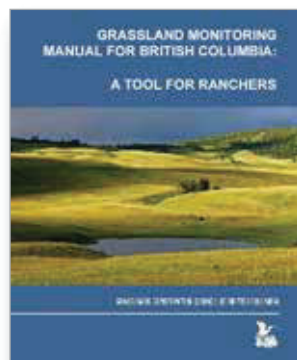
Note and photograph any key changes—for example, take pictures of your field before and after you put in a hedgerow.

### Making Drawings

Add the changes you have made to your farm map so you can maintain an overview of the activities you have undertaken.

### Accessing Monitoring Information

If you need further guidance on how to use photo-points to monitor the success of your Biodiversity Management Plan, consider accessing Chapter 6 (Conducting Photo-point Monitoring) of the Grassland Conservation Council of *British Columbia's Grassland Monitoring Manual for British Columbia: A Tool for Ranchers* ([http://bcgrasslands.org/wp-content/uploads/2018/01/bc\\_grassland\\_monitoring\\_manual\\_for\\_bc.pdf](http://bcgrasslands.org/wp-content/uploads/2018/01/bc_grassland_monitoring_manual_for_bc.pdf)) or the Ministry of Agriculture's Monitoring Grazing Lands factsheet [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/biodiversity/grazing/649000-8\\_monitoring\\_grazing\\_lands\\_grazing\\_factsheet\\_no7.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/biodiversity/grazing/649000-8_monitoring_grazing_lands_grazing_factsheet_no7.pdf)



## Linking to Stewardship Groups

Biodiversity conservation is most effective when it is coordinated at the community level. Often, local stewardship groups and landowners share a common goal of managing for biodiversity. By working together, they can conserve biodiversity at a scale that extends beyond individual property lines.

Local stewardship groups can help landowners retain or enhance natural areas and resources by providing information, resources, specialists, labour, and even financial assistance for activities ranging from habitat assessment to project planning and implementation. For example, Ducks Unlimited Canada has worked with numerous landowners in constructing wetlands. These areas provide wildlife habitat and help store water which can be used for livestock and irrigation. Both the landowner and the environment benefit from these collaborative efforts.

Local watershed groups can also help landowners contribute to biodiversity conservation beyond their property. For instance, watershed groups may offer funding and resources to help stabilize stream banks and construct off-site watering, which can provide additional benefits of improving fish habitat and water quality. By coordinating their conservation efforts with local stewardship groups, individual landowners can reduce their costs and contribute most meaningfully to broader-scale conservation goals.

## ADAPTIVE MANAGEMENT

The approach to managing for biodiversity outlined in this guide is referred to as adaptive management. It gives you the opportunity to refine your management goals and improve your management practices by reviewing the results you have achieved to date. The process can be repeated as long as improvements in your management system are needed or desired. Using this approach will enhance your success in managing for biodiversity on your land.