4 SAMPLE PLAN

CLINE AGRI HEALTH CENTRE

Information for this biodiversity plan was gathered from field reconnaissance work completed on September 10th 2019, in combination with completion of the biodiversity question worksheets (Planning for Biodiversity, A guide for BC Farmers and Ranchers), and reference material available from various sources. Also foundational to the species lists and some other information found in this plan is contributed to the draft Westwood Farm report prepared by University students through the Mount Arrowsmith Biosphere Region Research Institute (MABRRI) at Vancouver Island University (VIU).

ENVIRONMENTAL FARM PLAN

Biodiversity Management Plan

Biodiversity Management Plan
Cline Agri Health Centre March 2019

GENERAL LOCATION

Cline Agri Health Centre Farm is located on South-Central Eastern Vancouver Island in Nanaimo in the Westwood area of Jingle Pot road, near Cathers Lake. The Millstone River transects the property. The total area of the property is 19 hectares and is bounded by Westwood Rd to the east, subdivisions to the south, forest and farms to the west and a combination of subdivisions, East Wellington Road Park, forest and hay land (East Wellington Road Park) to the north. West Marsh Park and Buttertub Marsh Park are also close by, across the highway.

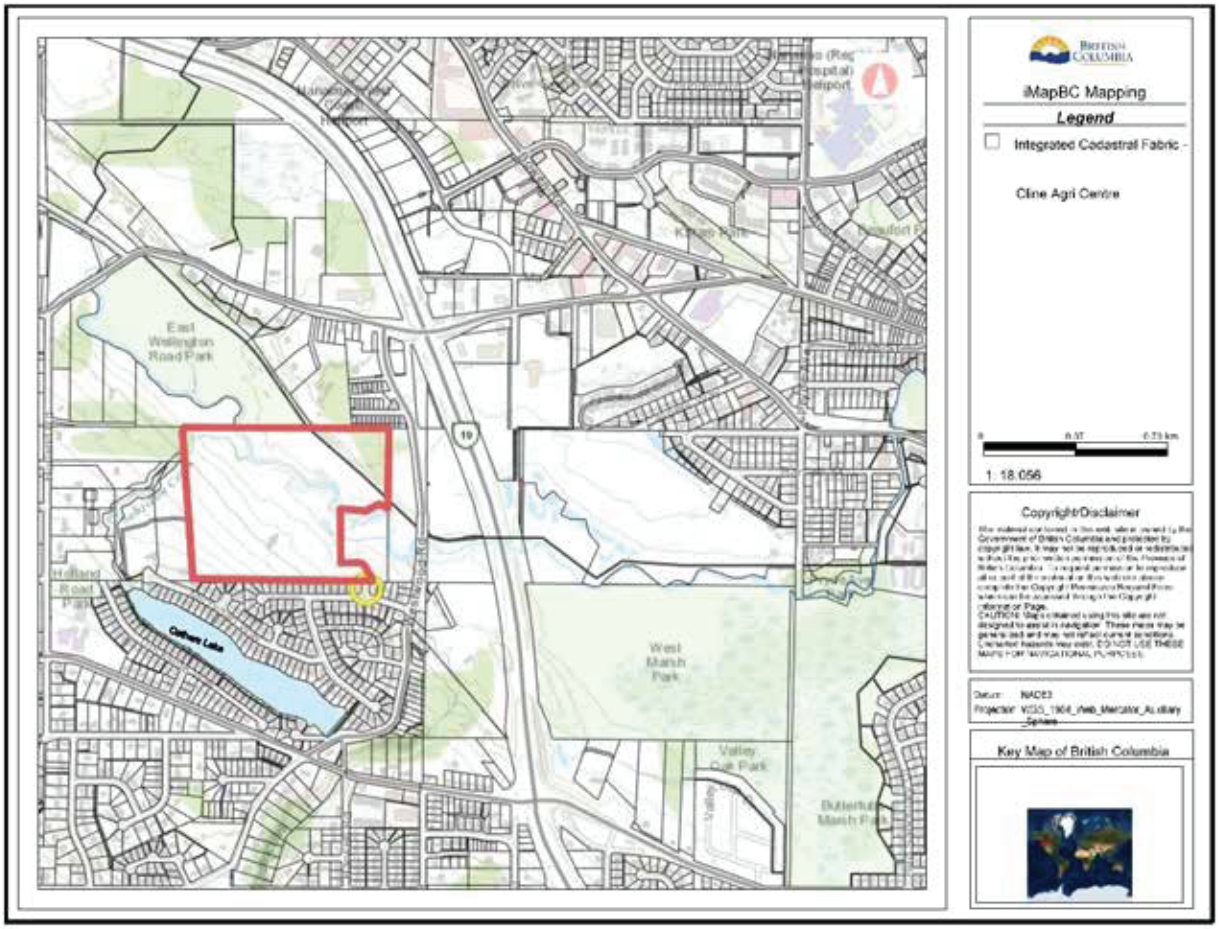

Figure 1: Location of farm

The farm has a varied landscape with natural forests, a river (Millstone River) and ephemeral stream (Sabiston Creek), associated riparian areas and a variety of perennial and annual crops. The farm is within the Georgia Depression (Nanaimo Lowland Ecosection) and the Coastal Douglas Fir Moist Maritime (CDFmm) Biogeoclimatic Zone.

Figure 2: BEC Zones, Subzones, Variants

There is nearby municipal land (green fill area on map below) and conservation land (hatched green area labelled West Marsh, part of the Buttertubs Marsh) that creates opportunities for connectivity with larger somewhat natural ecosystems.

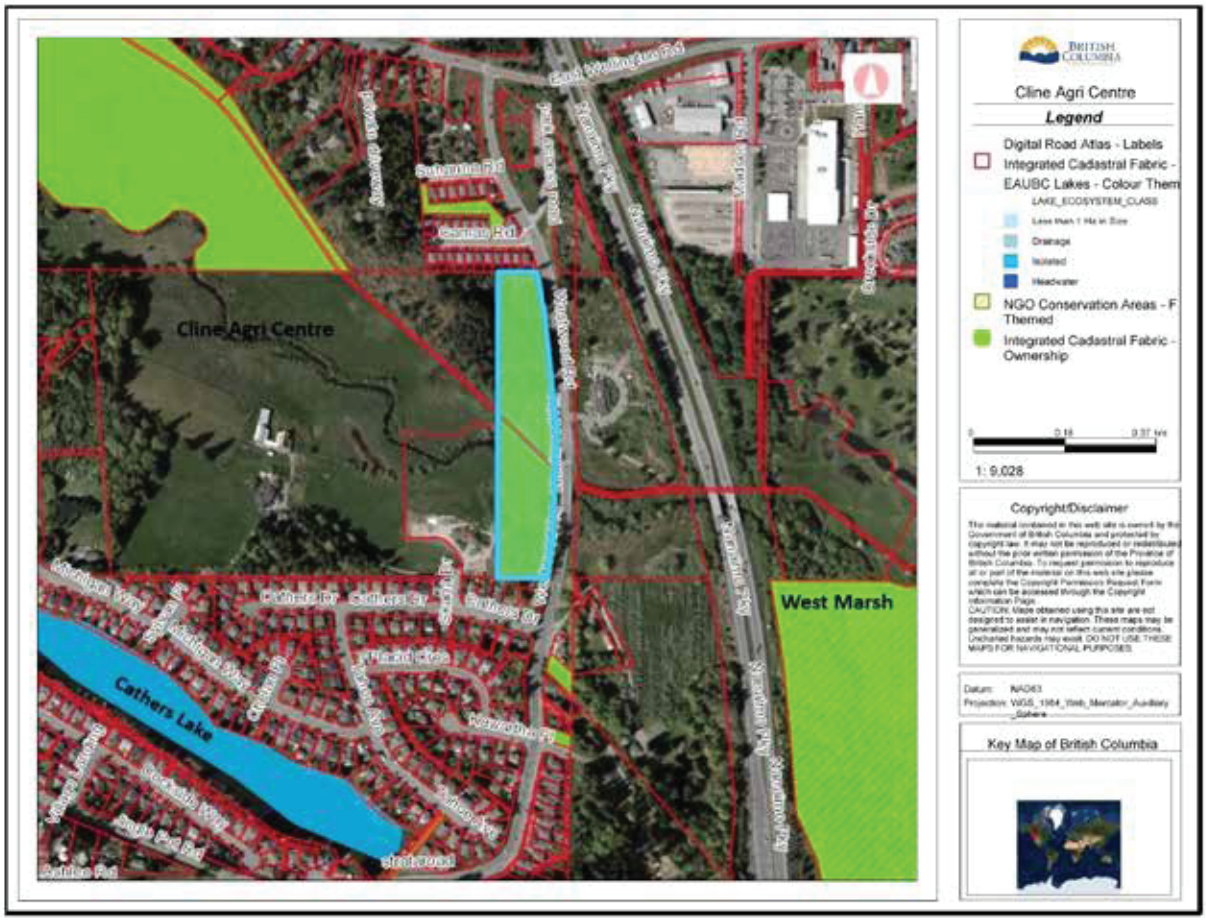

Figure 3: Location of farm and connectivity to natural ecosystems

FARM DESCRIPTION AND PRODUCTS PRODUCED

Cline Agri Health Centre is primarily a blueberry farm with 1.2 hectares (3 acres) in production but also produces 5.6 hectares (14 acres) of hay and is cooperating with Nanaimo Food Share in the development of a large garden to assist Nanaimo's disadvantaged families. A large variety of crops are produced in the Food Share garden area.

Figure 4: Food share garden

The blueberry field consists largely of imperfectly drained Brigantine sandy loams. Most of the hay land lies adjacent to the Millstone River on moderately well drained silt loam Chemainus soils.

A further 2.4 hectares (6 acres) is in the development of a newly planted Empress Tree plantation. The area of the Empress tree plantation consists of moderately well drained loamy sands.

The northeast corner of the property is treed and consists of thin rapidly drained sandy loams of the Salalakim soil series soils over bedrock. Both the Brigantine and Dashwood soils have low nutrient and water holding capacity, therefore benefiting from slow release nutrient applications and drip irrigation systems scheduled to provide regular irrigation. Chemainus soils have excellent water holding capacity.

There is an old barn of over a century in age and newer barn with high roof and eaves with potential to support barn swallows and Barn owls.

The open hay, blueberry and Empress Tree fields currently provide excellent foraging habitats. As Empress Trees Grow there will be significantly fewer foraging opportunities for predator bird species.

SITE HISTORY AND MANAGEMENT PRACTICES

The Cline Agri Health Centre rests on one of the few farmed remnants of the historic Westwood farm which occupied 1000 acres. The land was purchased by Joseph Westwood in 1864 and was passed through the family for generations, even housing former mayor and MLA Earle Cathers Westwood. Large gardens would have been a significant part of pioneer life on the farm. The farm was historically operated as a dairy farm producing milk and feed. The centuries old practice of harvesting up to the edge of the Millstone River and removing all the large tree species, likely contributed to significant incising of the river into the erodible loam soils. More recent changes in farming practices including an expanded riparian buffer have contributed to the recovery of the Millstone River where it transects the farm.

Much of the original historic farm was converted to residential development offering minimal opportunities for biodiversity. The 19 ha Cline Agri Health Centre Farm is one of the few remaining large land parcels in the area and as such it provides opportunity for higher biodiversity values and connectivity to nearby conservation areas.

The farm is 470 metres from the 55-hectare Buttertubs marsh conservation area and bird sanctuary. The Millstone river and its riparian corridor connects the property to this valuable habitat.

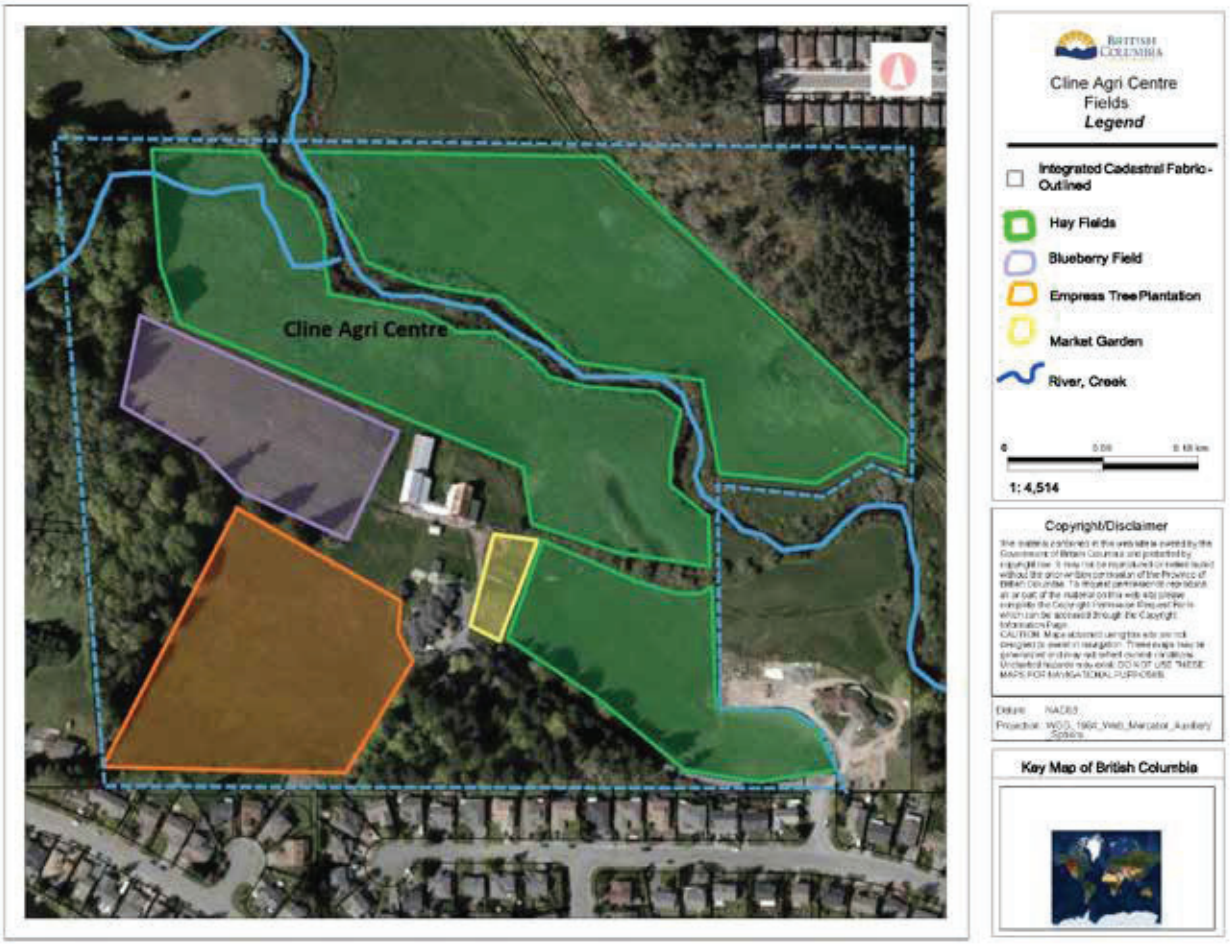

Figure 5: Location of farm crops

The unirrigated hayland is harvested with a single cut of hay late in the year (July-August). Haying is mostly set back from the rivers edge leaving a buffer that helps protect the adjacent riparian river vegetation. The hayed crop is a mix of tall fescue, reed canary grass, quack grass, vetch and other species. The hayed portion of the farm could benefit from being renovated and reseeded to create a more productive crop. Flooding of this area is an issue so flood tolerant species would be more competitive.

Water supplies consist of both a shallow well and reservoir on Cathers Lake. The reservoir is licensed for 27,753.3 m^3/year (22.5 acre feet/year). Irrigation water use on the farm is relatively well managed. Drip emitters are used as a water conservation measure. However, due to the low moisture-holding capacity of the Dashwood and Brigatine soils, irrigation management is a challenge.

Both the blueberry and empress trees benefit from high efficiency drip irrigation systems. The empress trees will only be irrigated for the initial years of the planting.

In 2019 the blueberries produced a minimal crop succumbing to bird damage. Both the Blueberries and Empress trees are fenced to exclude deer thus limiting the migration of larger wildlife across the landscape in these areas.

Figure 6: Crops, farm buildings, river, forested areas

Cline Agri Health Centre completed an EFP in the winter of 2018. The farms practices of fuel, fertilizer, and pesticide storage, mixing, and use are in compliance with regulations and EFP recommendations.

Weed management is reliant on maintenance and mowing of competitive vegetation. Invasive weeds are plentiful in the area, both in terms of variety and abundance. Invasive weeds of note include Scotch broom in the Garry oak ecosystem, Daphne in the south and west forest areas, reed canary grass and black berry in riparian areas as well as some Canada thistle and Tansy Ragwort. Of the invasive species the broom in the Garry oak ecosystem is the most damaging to species biodiversity. The rare Garry oak ecosystem contains many plant species at risk which in turn host butterfly and bird species at risk.

Habitat Communities:

The south-east coast of Vancouver Island lies within the Coastal Douglas Fir Moist Maritime (CDFmm) Biogeoclimatic Zone.

- The Coastal Douglas-fir (CDF) ecological zone makes up about 0.3% of BC's total area.
- The CDF is by far the smallest and rarest of the 16 ecological zones in BC.
- The CDF contains the highest diversity of plant species in BC.
- The CDF contains the highest diversity of over-wintering bird species in Canada.

Cline Agri Health Centre's land base contains a wide range of habitats which are sustainably managed. The Millstone River is possibly the most diverse, providing habitat for many plant, wildlife and aquatic species. The Millstone River flows from NW to SE, dividing the farm north and south. The deep waters and some undercut banks of the Millstone River provide refuge for many species including Coho Salmon Smolts. Historic observations of steelhead were recorded in 1993.

1. Riparian

The riparian vegetation of Millstone River includes both native and non-native shrubs and trees. Maple and oak tree planting is evident. Rose, snowberry, willow, cherry, hardhack, cascara (cascara is a yellow listed species) and hawthorn is also present. Invasive blackberry, daphne, and reed canary grass are also common.

Figure 7: Millstone river, riparian vegetation

Figure 8: Riparian vegetation, shrubs

Tall trees are sparse along the riverbank, except for more recent plantings. Enhancing taller structural vegetation, trees, through infill planting could help protect the banks of Millstone River as well as improve shading of the aquatic area which would improve fish and aquatic species habitat. Managing competing vegetation would be necessary to establish new trees and shrubs. Use of landscape cloth mats is recommended. Tree cages would likely also be needed to control deer browsing.

Figure 9: Planted trees

Sabiston Creek flows out of Cathers Lake and into the Millstone River during precipitation and high water events. It has a shallow streambed, and its riparian area consisting primarily of grasses may be somewhat modified by historic hay and or grazing practices. The remnants of cattails and rushes are present at the lower end of the stream where it flows into Millstone River. This small stream could also benefit from the creation of a buffer from haying and grazing to protect the narrow band of riparian vegetation along its banks.

2. Terrestrial

Terrestrial habitat within the boundary of the Cline Agri Farm includes natural forest areas, farm fields, and cropped areas. Patches of natural forest are found on the north, south and west boundary of the property. The forest areas are modified from past logging and human use. The Garry Oak ecosystem in the north east corner of the property has some good cover of Garry Oak but also has broom and non-native grasses present. The rocky upland bench in the North East corner with rare Garry oak habitats can be host to a diversity of plant species- note at least 95% of Garry oak habitat Provincially has been lost and the remainder is in decline. The rocky plateau area consists of Douglas fir, snowberry, red huckleberry, bracken fern, Oregon grape, salal, arbutus and ocean spray in the denser forested areas. Garbage was observed in this area likely due to the proximity to a main road.

Figure 10: Rocky plateau, douglas fir and understorey vegetation

Garry oak, Arbutus, moss, grass species and invasive broom are present in the open areas and bluffs facing SW.

Figure 11: Garry oak ecosystem, NE corner of farm

Figure 12: Garry oak, arbutus, SW exposed rocky bluff

Garry oak arbutus plant communities are red listed provincially. The bottom of the bluff adjacent to the hay field is rose, hardhack and reed canary grass.

Figure 13: Rose, hardhack, reed canary grass adjacent to hay field and bluff

Forested areas on the south and west boundary of the farm are a mix of Douglas fir, Big Leaf maple and cherry. The understorey contains thimbleberry, ocean spray, Oregon grape, sword fern, bracken fern, snowberry with some invasive non-native holly and daphne present.

A newly planted Empress tree plantation is also on the South-west side of the property. Diversity and biodiversity is currently limited but as the plantation becomes established it will connect the two native forest areas to the east and west together.

Perrenial cropped areas, hay, blueberry, and Empress Tree fields also provide some habitat diversity. Hay fields may provide cover in the spring for grassland nesting birds like the Savannah sparrow. Haying later in the season after young birds have fledged is the current farm practice. These areas also provide forage and habitat for voles and other small mammals and reptiles. These species in turn provide a food source for raptors such as red-tailed hawks that might frequent the farm.

Figure 14: Hayfield, habitat for grassland nesting birds, small mammals
Annual cropped areas like the Food Share garden can support a host of insects, soil organisms and most importantly pollinators especially if bee friendly crops and intercrops are planted.

3. Aquatic

Cathers Lake, while not on the farm, is the farm's licensed water storage and contains a diversity of aquatic and wildlife species including the Red listed Western Painted Turtle. The University students through the Mount Arrowsmith Biosphere Region Research Institute (MABRRI) at Vancouver Island University (VIU) also noted during their survey that two nonnative turtle species are also now present in the lake, Red-Eared and Yellow-Bellied Sliders, likely domestic pets released into the lake or river. Unfortunately, these non-native turtles can outcompete the native Western Painted Turtle for food and habitat. Note: the farm is responsible for the dam which maintains Cathers Lake. A 1960's agreement between the City of Nanaimo and the licensee allows two thirds of the lakes water to be used for irrigation.

Figure 15: Cathers Lake, resorvoir

Figure 16: Cathers Lake home to red listed western painted turtle

The lake historically supported rainbow trout however invasive bullfrogs have likely eradicated this species. Purple Martin are found in nearby Westwood lake and Buttertubs Marsh and would likely do well on the shores of Cathers Lake.

SPECIES AT RISK

The species at risk listed below are either known to be present or have a likelihood of being present on the property. Other species at risk could be present. Red-list: Extirpated, Endangered, or Threatened, Blue-list: Special Concern, Yellow-list: Secure, SNR: Species Not Ranked

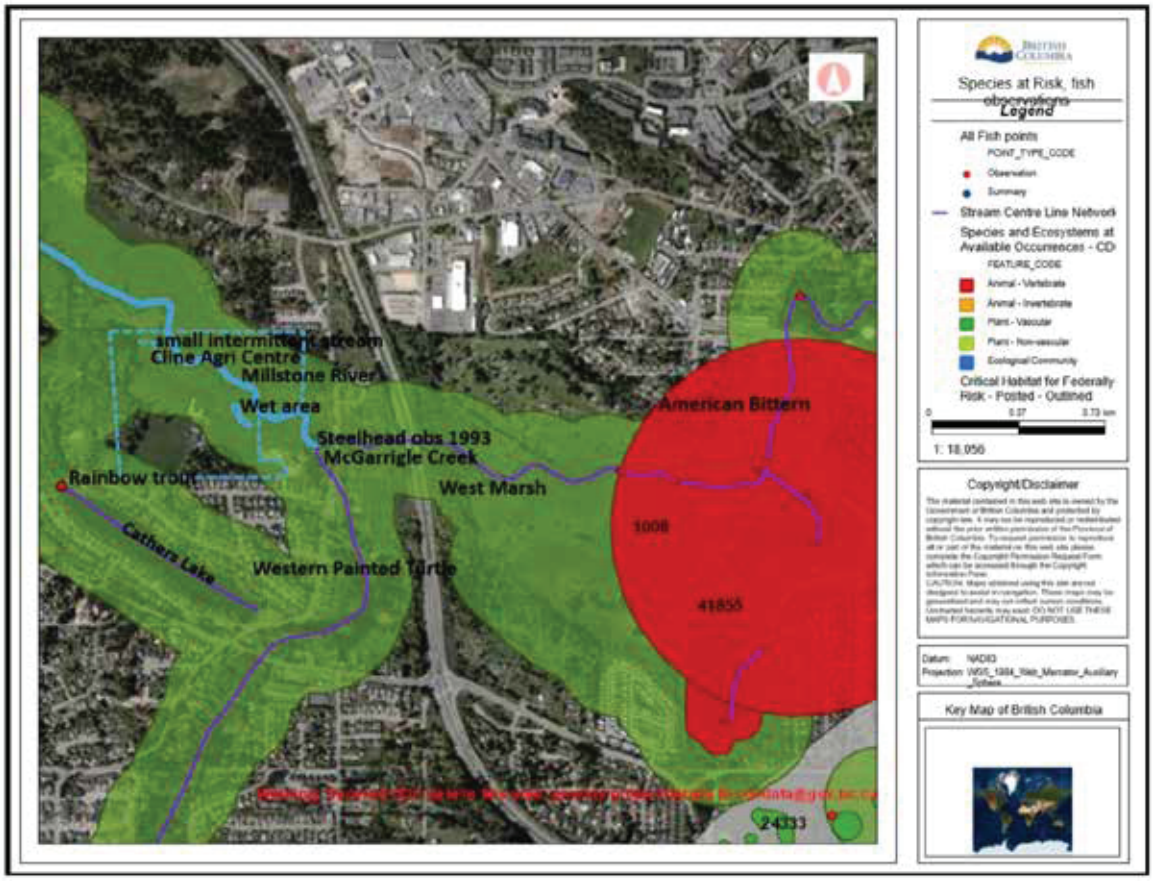

Figure 17: Proximity of farm to species at risk

Cathers Lake contains a highly at risk (red listed) population of Western Painted Turtle which attempts to lay its eggs on the urbanized slopes of Cathers Lake. The Western Painted Turtle is the only freshwater turtle native to British Columbia. Newly hatched turtles may succumb to heavy predation by a very strong invasive population of American bullfrogs also resident in the lake.

Figure 18: Western Painted Turtle

Figure 19: Western Painted Turtle nest areas and protection

Cathers Lake once provided habitat for a vibrant trout population which has been eliminated by the ravages of the bullfrog population preying on fry.

American bittern is a blue listed species and a year-round resident and breeder in the area. It is found more frequently in and near wetlands and lakes but can also be an infrequent visitor to cultivated fields. Adjacent riparian and river ecosystem on the Cline Agri Centre Farm may provide some suitable foraging and possible nesting habitat for this species. It has been observed in nearby Buttertubs Marsh.

Figure 20: American bittern

Purple Martin are found in close by Westwood lake and Buttertubs Marsh and would likely do well on the shores of Cathers Lake : Human encroachment and development caused the loss of almost all natural Purple Martin nesting spots, typically tree cavities along foreshore areas, to less than 10 in British Columbia in the 1980s. Through recovery efforts, there are now 1,150 nesting pairs and 90 colony sites. The artificial nest box program accounts for almost all Purple Martin nesting today. This species was almost extirpated (locally extinct) in BC and through recovery efforts is now listed as a species of special concern (blue-listed). There may be opportunities to provide nest boxes on the shores of Cathers Lake.

4. Terrestrial

Reptiles: The red-legged frog is a resident of cool forest streams and treed wetlands. A blue listed species in BC. The Sharp-tailed snake is small (adults are 20 to 45 cm long and the thickness of a pencil) and harmless, like all snakes on Vancouver Island. A Red listed species in BC.

BIRDS:

Birds	Description	Red listed	Blue Listed
Barn Owl	Barn owls are medium-sized owls, earthy-coloured, with distinctive flat, heart-shaped white faces and no ear tuft.	✓	
Screech Owl	Western screech owls live along the west coast of North America, from Alaska to Mexico.	✓ (Western BC)	✓ (Alaska to Mexico)
Marbled Murrelet	The marbled murrelet lives along the entire coast of British Columbia, and commonly winters in the Georgia Strait region.	✓	
Northern Goshawk	This large hawk is about 60 cm long, has a wingspan of just over one meter, a light grey chest and belly, a blue-grey back, and prominent white stripes over its bright red eyes.	✓	
Purple Martins	Purple martins are the largest swallow in North America, at 17 to 20 cm in length. If not present it could likely be established at Cathers Lake with the placement of nest boxes.		✓
Western Grebe	The western grebe is a large water bird coloured black and white with a long bill and a red eye. It is specialized for diving, with legs set far back on its body (making for effective propulsion but awkward walking).	✓	
Peregrine Falcon	The peregrine falcon is a crow-sized falcon with a dark blue-grey back and head, and lighter underparts, sometimes with a buff-coloured chest.	✓ (Coastal BC)	✓ (Interior BC)
Coastal Vesper Sparrow	The coastal vesper sparrow is considered "critically imperiled" in BC, with only one known nesting site located at the Nanaimo airport. Vesper sparrows nest on the ground in open grassy areas such as Gary oak meadows.	✓	
Green Herons	Green herons are about 43 cm long, with much shorter necks and legs than great blue herons.		✓

The great blue heron is a statuesque bird, standing over 1 metre tall with its neck outstretched. Is Blue listed in BC. Great blue herons have been spotted at the farm.

Figure 21: Great Blue Heron (Ardea Herodias). Photo taken July 2019, Millstone River, photo credit to the authors of the Westwood farm project inventory and assessment.

The horned lark has a dark brown back, yellow face and breast with a dark facial mask and breast band, and tiny black feather tufts on the back of its head. with the widespread loss of grassland habitats, it is now on the brink of extinction. Horned larks nest on the ground in open grassy areas such as Garry oak meadows.

Western Bluebird a member of the thrush family is 15 to 18 cm long. Males are deep purple and blue on top and a paler blue underneath; females are a more muted shade of blue, with a grey throat and belly and have a white eye-ring. Once extirpated from Vancouver Island they are now subject to recovery efforts.

Barn Swallow, blue listed. A fair number of barn swallows make home in the large barns at the Cline Agri Centre Farm and 27 were sited by the Vancouver Island University Survey Team led by Dr. Eric Demer (Mount Arrowsmith Biosphere Region Research Institute, September 2019)

- Olive-sided Flycatcher, blue listed
- Short-eared Owl, blue listed
- Long-billed Curlew, blue listed
- Ancient Murrelet, blue listed
- Band-tailed Pigeon, blue listed
- Common Murre, red listed
- Brandt's Cormorant, red listed
- Brant, blue listed
- Cackling Goose, blue
- Long-tailed Duck, blue
- California Gull,

- Blue Surf Scoter, blue
- Red-necked Phalarope, blue
- Double-crested Cormorant, blue
- Snowy Owl, blue
- Caspian Tern, Blue

BATS:

- Townsend 's big-eared bat, blue listed
- Keen's Long Eared Myotis, red listed

BUTTERFLIES:

- Common ringlet, red listed
- Icariodes Blue, red listed – may be extirpated
- Dun skipper, blue listed
- Greenish blue, red listed may be extirpated
- Propertius duskywing, blue listed
- Island large marble, red listed
- Taylor's checkerspot, red listed
- Chalcedon checkerspot, red listed
- Moss's elfin, blue listed
- Bremner's fritillary / Zerene fritillary, blue listed

Gary Oak meadows are particularly important for many of the plants needed by butterflies.

Yellow Sand-verbena (blue listed), Beach Bindweed (blue listed), American Glehnia (blue listed), Fleshy Jaumea (blue listed) Black Knotweed (blue listed), NAR Contorted-pod Evening primrose (red listed), Western yellow buttercup (red listed) are species associated with Garry oak meadows.

MOTHS:

- Sand-verbena Moth (red)

SPIDERS:

- Georgia Basin Bog Spider (blue)

OTHER

Wild pollinators such as bumblebees benefit from the diversity of plants found in the Foodshare garden, however the riparian and Garry oak habitats provide the greatest opportunities for sustaining wild pollinator populations and in turn the wild pollinators sustain the plants requiring pollination and their ecosystems. The Foodshare garden could further provide for wild pollinators by increasing the diversity of wild flowering plants. Controlling the invasive broom in the Garry oak ecosystem would encourage the growth of many plant species at risk.

The Westwood Farm report lists 40 bird species as being present at the Cline Agri Centre Farm.

The bird survey information in the table below is from a draft Westwood Farm report prepared by University students through the Mount Arrowsmith Biosphere Region Research Institute (MABRRI) at Vancouver Island University (VIU), September 2019.

5.2.1.1 Bird Survey (DRAFT)

In the bird survey for Westwood Farm, 40 species of birds were observed:

Scientific Name	Common Name
Spinus tristis	American goldfinch
Turdus mirgatorius	American robin
Calypse anna	Anna's hummingbird
Haliaeetus leucocephalus	Bald eagle
Patagioenas fasciata	Band-tailed pigeon
Hirundo rustica	Barn swallow
Pheuticus melanocephalus	Black-headed grosbeak
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	Brown headed cowbird
Bombycilla cedrorum	Cedar waxwing
Poecile rufescens	Chestnut-backed chickadee
Spizella passerina	Chipping sparrow
Corvus corax	Common raven
Gepthyiypis trichas	Common yellowthroat
Dryobates pubescens	Downy woodpecker
Sturmus vulgaris	European starling
Haemorhous mexicanus	House finch
Colaptes auratus	Northern flicker
Stelgidopteryx serripennis	Northern rough winged swallow
Corvus caurinus	Northwestern crow

Scientific Name	Common Name
Oreothlypis celata	Warbler
Empidonax difficilis	Pacific-slope flycatcher
Spinus pinus	Pine siskin
Haemorhous purpureus	Purple finch
Sitka canadensis	Red-breasted nuthatch
Sphyrapicus ruber	Red-breasted sapsucker
Agelaius phoeniceus	Red-winged blackbird
Columba livia	Rock pigeon (feral pigeon)
Selasphorus rufus	Rufous hummingbird
Passerculus sandwichensis	Savannah sparrow
Melospiza melodia	Song sparrow
Pipilo maculatus	Spotted towhee
Catharus ustulatus	Swainson's thrush
Tachycineta bicolor	Tree swallow
Cathartes aura	Turkey vulture
Tachycineta thalossina	Violet-green swallow
Vireo gilvus	Warbling vireo
Piranga ludoviciana	Western tanager
Empidonax traillii	Willow flycatcher
Setophaga petechia	Yellow warbler

Other species identified at the Cline Agri Centre farm by Vancouver Island University Survey Team, 2019.

Contribution	Flora/Fauna	Category	Scientific Name	Common Name
MABRRI	Fauna	Fish		Minnows (unidentified)
MABRRI	Fauna	Fish	*Pacifastacus leniusculus*	Signal crayfish
MABRRI	Fauna	Mammal	*Odocoileus hemionug columbianus*	Black-tailed deer
MABRRI	Fauna	Mammal	*Lepus sylvaticus*	Cottontail rabbit
MABRRI	Flora	Flora	*Equisetum arvense*	Field horsetail
MABRRI	Flora	Flora	*Myosotis scarpioides*	Forget-me-nots
MABRRI	Flora	Flora	*Heracleum mantegazzianum*	Giant hogweed
MABRRI	Flora	Flora	*Rubus discolor*	Himalayan blackberry
MABRRI	Flora	Flora	*Crataegus pinnatifida*	Mountain hawthorn
MABRRI	Flora	Flora	*Rosa nutkana*	Nootka rose
MABRRI	Flora	Flora	*Laucanthemum vulgare*	Oxeye daisy
MABRRI	Flora	Flora	*Physocarpus capitatus*	Pacific ninebark
MABRRI	Flora	Flora	*Rosa roodsii*	Prairie/wood rose
MABRRI	Flora	Flora	*Destuca rubra*	Red fescue
MABRRI	Flora	Flora	*Cirsium vulgare*	Spear thistle

Appendix Assessment questions for developing thebiodiversity plan

Questions 7, 8, 9 and 10 do not apply

RIPARIAN HABITAT

QUESTION 1

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

Regulatory approvals may be required.

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

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			
❑ Does not apply. There are no riparian habitats on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Riparian habitat is vegetated by a variety of healthy native plant species of differing structures and/or heights.	☒ Riparian habitat is vegetated but with a limited number of native plants species, and those present exhibit few differences in structure and/or height.	❑ Riparian habitat has few, if any, native plant species present, and those present exhibit minimal differences in structure and/or height.	consider removal of invasive species and planting of more native shrubs and trees in riparian area of Millstone River and Sabiston Creek.
❑ No weed or invasive alien plant species are present in the riparian area.	❑ Weed species are present but there are no invasive alien plant species in the riparian area.	☒ There are significant populations of weed species and/or invasive alien plant species present in the riparian area.	Significant Reed canary grass, black berry and some Holly, Daphne and Canada thistle
☒ There are no livestock in the riparian area, or livestock are managed in a way that protects the riparian area from damage.	❑ Livestock have some access to the riparian area and are damaging vegetation and/or bank stability.	❑ Livestock have uncontrolled access to the riparian area and are causing significant damage to native plants and bank stability.	If livestock grazing occurrs in the future recommend fencing to maintain riparian buffer.
❑ Numerous wildlife species are present in the riparian area.	☒ Some wildlife species are present in the riparian area.	❑ Wildlife species are rarely seen in the riparian area.	Blue listed Great Blue heron and many other bird species observed.
❑ Machinery is not used in the riparian area.	☒ Machinery is sometimes used in the riparian area.	❑ Machinery is frequently used in the riparian area.	Machinery is operated in the area of Sabiston creek which is ephemeral.
❑ Roads and/or crops are located well away from riparian areas.	☒ Roads and/or perennial crops are set back a moderate distance from riparian areas.	❑ Roads and annual crops are located very near riparian areas.	Approximately 3m buffer in many areas.

QUESTION 2

Regulatory approvals may be required.

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.

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			
❑ Does not apply. There are no opportunities to increase the connectedness of riparian habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
☒ Does not apply. There are no opportunities to increase the connectedness of riparian habitat on your farm.	❑ 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.	❑ There are several unconnected riparian areas on your land that are close together and could be connected.	The Millstone river transects the prop erty providing habitat connections. Riparian areas are somewhat connected to adjacent forest areas.

AQUATIC AREAS, INCLUDING WETLANDS

QUESTION 3

Regulatory approvals may be required.

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

► Enhancing aquatic habitat can make significant contributions to biodiversity.

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

ASSESSMENT OF OPPORTUNITIES			
❑ Does not apply. There is no aquatic habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Aquatic habitat on your farm has been maintained, enhanced, and/or created, and is healthy.	☒ Some aquatic habitat can be enhanced by improving water storage, restoring previously drained wetlands, and/or improving water management.	❑ Large areas of aquatic habitat can be readily enhanced by improving water storage, restoring previously drained wetlands, and/or improving water management.	
❑ Banks of watercourses, including wetlands, are intact and not slumping, compacted, or eroded.	☒ There are some slumping, compacted, or eroded watercourse banks.	❑ Banks of watercourses show significant slumping, compaction, and/or erosion.	
❑ Watercourses have a mature canopy of vegetation cover, which moderates water temperatures.	☒ Watercourses have some vegetation cover.	❑ Watercourses have no vegetation cover.	Tall tree cover over the Millstone is sparse. Shrub cover is good.
☒ There are no livestock present or livestock access to aquatic habitat is controlled, and buffers have been established.	❑ Livestock access to aquatic habitat can be controlled, and buffers can be enhanced.	❑ There is significant livestock access to aquatic habitat that is causing damage, and the use of buffers is limited.	If grazing occurs in the future, fencing and offsite watering is recommended to maintain riparain health.

ASSESSMENT OF OPPORTUNITIES			
❑ Does not apply. There is no aquatic habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Where possible, aquatic habitat has been enhanced by developing offchannel habitat within the floodplain.	☒ There are some opportunities to enhance aquatic habitat by developing off-channel habitat within the floodplain.	❑ There are significant opportunities to enhance aquatic habitat by developing off-channel habitat within the floodplain.	East of the barn a wetland could be redeveloped. This would reduce hay crop.
☒ Watercourses are able to overflow their banks during high water and access the historic floodplain.	❑ Watercourses are able to overflow some of their banks during high water but can not access all of the historic floodplain.	❑ Watercourses are not able to overflow their banks during high water or access the historic floodplain.	
❑ Aquatic habitats are protected from farming impacts.	☒ Some areas of aquatic habitat could benefit from improved farm management practices.	❑ Several or large areas of aquatic habitat could benefit from improved farm management practices.	Increase riparian buffer.
☒ Aquatic habitats are not receiving pollutants and sedimentation from your farm.	❑ Aquatic habitats show some evidence of sedimentation and pollutants coming from your farm.	❑ Aquatic habitats show extensive evidence of sedimentation and/or pollutants coming from your farm.	

QUESTION 4

Regulatory approvals may be required.

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

- 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			
❑ Does not apply. There are no opportunities to increase the connectedness of aquatic habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Connections between aquatic habitats exist or have been restored.	☒ 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.	❑ 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.	Sabiston Creek could be vegetated with shrubs.
☒ There is a network of habitats, such as riparian areas, woodlands, hedgerows, fencerows, or uncultivated areas that connect the aquatic areas on your farm.	❑ 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.	❑ There are several unconnected aquatic areas on your land that are close together and could be connected.	
❑ There are no existing structures such as a dykes, dams, or closed culverts on your property that impair fish passage.	☒ There is an existing structure suchas a dyke, dam, or closed culvert onyour property.	❑ There are existing structures such as a dykes, dams, or closed culverts on your property.	Cathers Lake dam is not on the farm property but is a farm responsibility

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			
❑ Does not apply. There is no opportunity to enhance forested or woodland habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
☒ Forests and woodlands are either in a natural state or are managed sustainably.	❑ Forests and woodlands could be managed in a more sustainable manner.	❑ Forests and woodlands are not managed for sustainability.	Dying trees are selectively harvested. Garbage and weeds present in some areas.
❑ Forests and woodlands on your land have a diverse and healthy understory (grasses, forbs, and shrubs) with good structural diversity.	☒ Forests and woodlands on your land have some understory (grasses, forbs, and shrubs), but it is not well established or has limited structural diversity.	❑ Forests and woodlands on your farm have little or no understory (grasses, forbs, shrubs) due to grazing or forest management activities.	Rare Garry oak ecosystem contains broom and some conifers. Manage broom and maintain open canopy by controlling conifer regen.
☒ Livestock do not graze in the forest or the grazing is managed to minimize impacts on biodiversity.	❑ Livestock do graze in the forest and grazing has some impacts on biodiversity.	❑ Livestock do graze in the forest and grazing is unmanaged.	
❑ Forests and woodlands have a diversity of native plant species.	☒ Forest and woodland plant diversity could be enhanced by planting native species.	❑ Forest and woodland plant diversity could be enhanced considerably through natural regeneration or by planting a variety of native species.	Once the broom and conifers are controlled in the Garry oak meadow, native species could be planted with the support of the Garry oak recovery team.

ASSESSMENT OF OPPORTUNITIES			
❑ Does not apply. There is no opportunity to enhance forested or woodland habitat on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ There are few weeds and/or invasive plant species in your forest, and they are controlled.	☒ Weeds and/or invasive plant species are present in your forest and may be competing with forest species.	❑ Weeds and/or invasive plant species are common in your forest but can be controlled.	Scotch broom, Daphne, Holly compete with native species. Removal of these would benefit native plant recovery.
❑ Many wildlife trees/ snags and coarse woody debris are present and are protected during harvesting.	☒ Many wildlife trees/ snags and coarse woody debris are present and are protected during harvesting.	❑ No wildlife trees/snags or coarse woody debris are present or are not protected during harvesting.	Dead or dying trees could be protected for wildlife use. Leave section of trunk for wildlife tree to encourage cavity nesting species.
☒ Numerous wildlife species are present in the forested areas on your farm.	❑ Some wildlife species are present in the forested areas on your farm.	❑ Wildlife is rarely seen in the forested areas on your farm.	
❑ Your forests and woodlands include many non-timber forest products which provide species diversity.	☒ Your forests and woodlands include some non-timber forest products.	❑ 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			
❑ 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
❑ All forested areas are connected by uncultivated land, shelterbelts, hedgerows, wooded fencerows, and/or riparian corridors.	☒ There are a few patches of forested areas that are far apart but they could be connected.	❑ There are multiple patches of forested areas close together that could be connected.	

WILDLIFE SPECIES AT RISK

QUESTION 11

What are the opportunities to enhance habitat for wildlife, keystone species, and species at risk that may occur on your farm?

- ► If you have a species at risk on your property, you are doing a good job of managing for biodiversity, and it is likely you are also supporting other species that are benefiting your operation.
- ► You may not actually observe species at risk 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, snake dens, or cliffs. Such features are important to protect because they may be quite rare in the surrounding landscape.

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			
❑ Does not apply. There are no records of species at risk for your area, and wildlife species, including keystone species, native to your area are well represented on your farm..			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Species at risk are seen regularly on your property, and your farm has specific habitats or habitat features that support these species.	☒ There are historical records (more than 10 years old) or have been occasional sightings of species at risk in your area or on your property, but habitat enhancement is needed to recover the species' habitat or habitat features.	❑ Species at risk have been observed in your area or on your property in the last 10 years and have used specific habitats or habitat features, which you can retain and/or enhance.	The rare Garry oak ecosystem has the potential for hosting many rare and endangered species. There are opportunities to enhance Barn owl, Barn swallow and Great blue heron habitat.
❑ Keystone species occur on your property, and their habitat is protected.	☒ There are some keystone species on your property and there are others that occur in surrounding habitats similar to those found on your farm.	❑ There are no keystone species on your property but they occur in surrounding habitats similar to those found on your farm.	A Savannah sparrow was spotted in 2019 and American bittern are in nearby marshes and could frequent farm. Cathers lake is home to the Western painted turtle.

ASSESSMENT OF OPPORTUNITIES			
❑ Does not apply. There are no records of species at risk for your area, and wildlife species, including keystone species, native to your area are well represented on your farm..			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Opportunities to enhance wildlife habitat, diversity, and population levels have been implemented.	☒ There are some opportunities to enhance wildlife habitat, diversity, and population levels.	❑ There are numerous opportunities to enhance wildlife habitat, diversity, and population levels.	At risk pollinator species could be enhanced through planting wild flowering plant species. Continue to plant and maintain large trees/ shrubs in riparian area along river.
❑ Farming activities are managed in a manner that attempts to avoid wildlife disturbance, injury, or death.	☒ Farming activities are sometimes managed in a manner that attempts to avoid wildlife disturbance, injury, or death.	❑ Disturbance, injury, or death of wildlife is not considered when undertaking farming activities.	Ground nesting birds in the hay fields would be protected through late harvesting of hay crops. Savanah sparrows were sited by VIU students.

INVASIVE ALIEN SPECIES

QUESTION 12

What are the opportunities to control invasive alien 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 alien species on your farm, and then determine the appropriate practices to achieve them.

ASSESSMENT OF OPPORTUNITIES			
❑ Does not apply. There are no invasive alien species on your farm..			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ There are few invasive alien species on your farm, and they are controlled with the objective of eradicating them.	❑ You can minimize the occurrence of invasive alien species on your farm, but eliminating them is a major challenge.	☒ You may be able to significantly reduce or eliminate invasive alien species on your farm.	Remove invasive plant spepcies such as Daphne, holly and Canada Thistle. Community efforts to control American bull frog populations in Cathers lake should be supported.

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			
❑ Does not apply. There are no perennial cropping opportunities on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
☒ Perennial crop areas are a significant component of your farm.	❑ Some perennial crop areas occur on your farm, but there is opportunity to convert additional areas from annual crops to perennial.	❑ There are limited areas of perennial crops and annual crops provide the only cover on your farm.	Most of the farm is dedicated to Blueberries, hay and empress tree production.
☒ Perennial crop areas are maintained in a healthy state, which minimizes the need for rejuvenation.	☒ Perennial crop areas are not well maintained and require rejuvenation.	❑ Perennial crop areas are not well maintained and require frequent rejuvenation.	Hay crop areas would benefit from tilling and reseeding.
❑ Alternate pastures are used to reduce pressure on native pastures at critical times.	❑ Alternate pastures could be used to reduce pressure on native pastures at critical times.	❑ It is possible to access additional grazing lands and reduce pressure on native pastures at critical times.	NA

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			
❑ 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
☒ Integrated pest management is used to determine the best approach to controlling pests.	❑ Integrated pest management is sometimes used to determine the best approach to controlling pests.	❑ Integrated pest management is not considered when determining the best approach to controlling pests.	
❑ Pesticides, including insecticides, herbicides, fungicides, or rodenticides are stored appropriately in secure facilities that are located away from aquatic areas.	❑ 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.	❑ 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.	NA
❑ Pesticides are applied only in accordance with label specifications, and an appropriate buffer is maintained to protect waterways from spray drift and runoff.	❑ 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.	❑ Pesticides are not applied in accordance with label specifications, and appropriate buffers are not maintained to protect waterways from spray drift and runoff.	NA
❑ The selection of insecticides and timing of application is managed to minimize impacts on pollinating and other beneficial insects.	❑ The selection of insecticides and timing of application is sometimes managed to minimize impacts on pollinating and other beneficial insects.	❑ The selection of insecticides and timing of application does not consider the impacts on pollinating and other beneficial insects.	NA
❑ Where possible, pesticides are applied using non-broadcast applications.	❑ There some are opportunities to apply pesticides using non-broadcast applications.	❑ There are frequent opportunities to apply pesticides using nonbroadcast applications.	NA

ASSESSMENT OF OPPORTUNITIES			
❑ 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
❑ Nutrient inputs are applied at rates based on the requirements of last year's crop.	❑ Nutrient inputs are applied at rates based soil testing results.	❑ Nutrient inputs are applied at rates using estimated nutrient requirements.	
☒ Manure is stored and applied in such a way that minimizes pollution.	❑ Manure is either not stored or not applied in a manner that minimizes pollution.	❑ Manure is neither stored nor applied in a manner that minimizes pollution.	Pelletized chicken manure on blueberries
❑ Fertilizers are stored in such a way that they minimize pollution.	❑ Fertilizers are not always stored in a manner that minimizes pollution.	❑ Fertilizers are not stored in a manner that minimizes pollution.	NA
❑ Fuel and other petroleum products are stored and dispensed in a manner that minimizes pollution.	❑ Fuel and other petroleum products are either not stored or not dispensed in a manner that minimizes pollution.	❑ Fuel and other petroleum products are neither stored nor dispensed in a manner that minimizes pollution.	NA
☒ Multiple pastures are rotationally grazed, and the order of grazing is changed each year.	❑ Pastures are rotationally grazed but are used in the same order each year.	❑ Pasture rotation is infrequent, and pastures are used in the same order each year.	Applies to future proposed grazing.
☒ Pastures are given adequate rest during the growing season.	❑ Pastures are given some rest during the growing season.	❑ Pastures are grazed continuously and season-long.	Applies to future proposed grazing.
☒ Grazing of areas with thin soils and steep slopes is avoided when soils are wet.	❑ Grazing of areas with thin soils and steep slopes sometimes occurs when soils are wet.	❑ Grazing of areas with thin soils and steep slopes often occurs when soils are wet.	Applies to future proposed grazing.
☒ Mowing is done in a way that maintains strips of blooming, native flowering plants for pollinating insects.	❑ Mowing is sometimes done in a way that maintains strips of blooming, native flowering plants for pollinating insects.	❑ Mowing often coincides with peak native flower blooming periods; native flowering plants are not maintained for pollinating insects.	Late season mowing maintains flowering plants
☒ Irrigation is managed to conserve water.	❑ Some irrigation practices that conserve water have been implemented.	❑ Flood and sprinkler irrigation could be modified to conserve water.	Drip irrigation in place.
❑ Drainage is managed in a way that takes biodiversity and best practices into consideration.	❑ Most drainage is managed in a way that takes biodiversity and best practices into consideration	❑ Drainage is not managed in a way that takes biodiversity and best practices into consideration	NA

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			
❑ 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
❑ Your operation includes a wide diversity of crop species.	☒ Your operation includes some diversity of crop species.	❑ Your operation includes only a very limited diversity of crop species.	
❑ Your operation includes a diversity of livestock species.	❑ Some additional livestock species could be included in your operation.	☒ There is an opportunity to include a significant diversity of livestock species in your operation.	
❑ The diversity of crops in your operation creates a variety of habitats for desirable wildlife species, including pollinators and the natural enemies of pests.	☒ 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.	❑ 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			
❑ Does not apply. There are no soil-bound crops on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Zero tillage is practiced.	❑ Zero tillage is sometimes practiced.	☒ Tillage is commonly used to control weeds and prepare the soil for seeding.	Vegetable production areas use tillage.
❑ Nutrient inputs are mainly organic (animal manure and/or green manure).	☒ Nutrient inputs are a mix of organic (animal manure and/or green manure) and commercial fertilizers.	❑ Nutrient inputs are almost exclusively derived from commercial fertilizers.	
❑ Nutrient inputs are applied at rates based on the requirements of last year's crop.	❑ Nutrient inputs are applied at rates based soil testing results.	☒ Nutrient inputs are applied at rates based only on experience from previous years or on estimated requirements.	Soil testing would be beneficial.
❑ Cover crops are used regularly to create green manures and contribute to structural diversity.	❑ Cover crops are sometimes used to create green manures and contribute to structural diversity.	☒ Cover crops are not used.	Cover and relay cropping is recommended with the vegetable crops.
❑ Crop rotations are regular and include both legumes and grasses, which are selected based on their contribution to soil health.	❑ Crop rotations, when practiced, do not include legumes.	❑ Crop rotation is not practiced.	Recommended crop rotation and legumes for vegetable production
❑ Field activities are managed so that wet soil conditions and soil compaction are avoided.	☒ Field activities are sometimes managed to avoid wet soil conditions and soil compaction.	❑ Field activities are not managed to avoid wet soil conditions and soil compaction.	
❑ Fall-sown crops are frequently used to protect soil through the winter and early spring.	☒ Fall-sown crops are sometimes used to protect soil through the winter and early spring.	❑ Fall-sown cover crops are not used.	Recommend fall sowing of cover crops.

CONFLICTS WITH WILDLIFE

QUESTION 17

Regulatory approvals may be required.

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

- 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			
❑ Does not apply. There are no conflicts between agriculture and wildlife on your farm.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
❑ Opportunities to reduce conflicts with wildlife have been identified and implemented.	☒ 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.	❑ The risk of conflict is high due to the availability of unsecured food sources, and there are opportunities to mitigate this risk.	Deer and starling pest pressures. Fencing used to reduce deer impact. Bird scare devices considered in blueberry field.

BEYOND THE FARM

QUESTION 18

Regulatory approvals may be required.

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			
❑ 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
☒ 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.	❑ There are at least two isolated uncropped areas on your land that could be connected to similar areas in the neighbouring landscape.	❑ There are several isolated uncropped areas on your land, and they could be readily connected to similar areas in the neighbouring landscape	
☒ 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.	❑ 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.	❑ 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.	Corridors could be enhanced.
❑ 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.	☒ Some barriers are present in watercourses, and water flow is occasionally impeded.	❑ Water flow in surface watercourses is impeded, and watercourse segments have become isolated or dead-end streams.	Cathers lake dam

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			
❑ Does not apply. There are no active stewardship initiatives in your region.			
Achieved	Some Opportunity	Considerable Opportunity	Notes
☒ 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.	❑ 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.	❑ 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.	Cooperation with Vancouver Island University and the City of Nanaimo is great to see. Coooperation with GOERT Garry oak ecosystem recovery team is encouraged.

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.

Table 3: Action Plan Worksheet

FARM:	Developed By:	DATE DEVELOPED:	Page ____ of ____

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
			When	What	
1. Opportunities to enhance riparian habitat.		*Improve weed control in riparian area. Remove Reed Canary grass, blackberry and daphne.*	*2020/2021*	*Reduce competion with native species. Monitor flora and fauna.*	*There may be opportunities to work with stream recovery groups and volunteers to help remove invasive species.*
3. Opportunities to increase connectiveness of aquatic habitat.	*1002: Riparian Habitat Establishment.*	*Site prep and plant native large trees and shrubs in riparian area of Millstone River and Sabiston Creek. Protection of new planting from competition and deer browse required.*	*2020/2021*		*High opportunity to enhance biodiversity of riparian area and improve aquatic habitat for fish and other aquatic species by planting native trees and shrubs increasing shading of river and stream and improving bank holding capacity, reducing erosion.*
4. Opportunities to enhance aquatic habitat.	*1002/1003*	*If grazing occurs in future, consider fencing riparian areas to protect from grazing. This can be portable electric.*	*2020/2021*	*Monitor health and condition. Riparian habitat assessment.*	*Funding may be available. Check with Ardcorp. Leave sufficient buffer adjacent to river and stream to protect riparian vegetation from haying and grazing. Funding may be available for fencing. Check with Ardcorp.*
5. Opportunities to enhance forest woodland habitat.		*The forested northeast corner of the farm contains rare Garry oak ecosystem. Remove invasive and non native species (i.e. broom). Other forest areas remove holly and daphne.*	*2020/2022*	*Assess native plant presence and recovery.*	*Check with Garry oak recovery team.* *Non native species like broom, holly, and daphne compete with native species.*
		Maintain some snags in forested areas for wildlife enhancement (cavity nesters).	*2020/2021*	*Assess cavity nesting species presence, abundance.*	*This is a trade-off between salvage logging and wildlife. Be sure to consider the net benefit of salvaging versus leaving some potential wildlife trees.*

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
			When	What	
11. Opportunity to enhance species at risk		*A barn owl nest box could be constructed in the barn.*	*2020/2021*	*Monitor success.*	
		Reconfigure eaves if necessary to accommodate barn swallows. They are already present so may not be necessary.	*2020*	*Monitor presence, abundance.*	
	2207: Create pollinator habitat.	*Plant pollinator species. Consider working with a consultant to recommend suitable species. May work well in Food Share garden area or other areas on the farm.*	*2020/2021*	*Monitor population and species presence.*	*Funding may be available. Check with Ardcorp.*
	2206: Hayland management to enhance wildlife survival.	*Manage timing of haying to accomodate nesting species (Savanah sparrow, snakes)*	*2020... annually*	*Monitor nesting birds.*	*Recommend haying in late July, early August after birds have fledged.*
		Funding for flushing bar to mount on hay cutting equipment may be available. Check with Ardcorp.	*annually*	*Monitor nesting birds.*	
		Leave sufficient stubble height when haying, not only to benefit crop health but also to provide wildlife habitat, hiding cover for small mammals.		*Monitor fatality of species if any.*	*3-4 inches minimum stubble.*