

APPENDIX "A"

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APPENDIX A-1

Essex Region Conservation Authority Correspondence

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From: Ashley Gyori <AGyori@erca.org>
Sent: March 23, 2023 8:16 AM
To: Tony Peralta
Cc: Kevin Money; Janice Dougherty; Shawn Stasko; Lu-Ann Marentette (lmarentette@leamington.ca); Matthew Shiha; Kathryn Arthur; Dan Lebedyk; James Bryant
Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029
Attachments: Lebo Creek Watershed Rehab - Sediment Pile HGL Assessment

Good morning Tony,

Thank you for the additional information attached and below. I've had an opportunity to review the information provided and based on the submitted material and the HGL Assessment, our office's concerns with respect to the natural hazards (flooding and erosion) under Section 28 of the *Conservation Authorities Act* have been satisfied. We look forward to receiving the Lebo Creek report.

Please note that our office does not review proposals on behalf of other agencies (i.e. Department of Fisheries and Oceans, Ministry of the Environment, Conservation and Parks, Ministry of Natural Resources and Forestry, etc.). It is the proponent's responsibility to ensure that all applicable authorizations have been obtained from these agencies.

If you have any questions or would like to discuss further, please do not hesitate to contact me.

Kind regards,



ASHLEY GYORI
Regulations Analyst
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311 • Essex, Ontario • N8M 1Y6
agyori@erca.org • essexregionconservation.ca

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The ERCA Office is now open to the public **Tuesdays, Wednesdays and Thursdays** to provide "counter service"; however, services continue to be delivered online and through email. Please consult ERCA's website for more information and direction regarding online services (i.e. permitting, cottage bookings, seasonal passes etc.).

From: Tony Peralta <tony@peraltaengineering.com>
Sent: Thursday, March 16, 2023 2:16 PM
To: Ashley Gyori <AGyori@erca.org>
Cc: Kevin Money <KMoney@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Lu-Ann

Marentette (Imarentette@leamington.ca) <Imarentette@leamington.ca>; Matthew Shiha <matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>; Dan Lebedyk <DLebedyk@erca.org>; James Bryant <JBryant@erca.org>

Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Good afternoon Ashley;

Further to our telephone discussion, you identified potential concerns regarding the placement of sediment within the floodplain of the Lebo Creek Drain as part of this project. Trucking of this material was considered for this project. However, in addition to the substantial cost to truck this material, (and more importantly) having large dump trucks traversing through these sensitive areas would introduce adverse impacts and disruption to the fragile native floodplain soils, creating compaction/rutting, destabilization of the soils, and further compounding the effects of sedimentation within the floodplain area. Not to mention the significant impacts on the native species and wildlife within these naturalized floodplains. Furthermore, the manoeuvring of these large dump trucks would require additional tree removal and more clear-cutting of the wooded areas. Based on the details outlined above, we have elected not to remove the excavated soils from the project site.

With that being said, we understand that there may be potential impacts on the floodplain by placing the excavated sediment within the working corridors of the Lebo Creek Drain. Therefore, to verify these impacts on the Lebo Creek Drain, Alain Michaud, P.Eng. has run this scenario through the Lebo Creek Master Drainage Study model and found that this material will not create any adverse impacts on the floodplain of the drainage system. Attached you will find Alain's email confirming these details.

We trust that the information provides additional clarifications and is satisfactory for your review. If you have any further questions, comments, or concerns regarding this project, please feel free to contact us.

Regards,



Tony Peralta, P.Eng.

tony@peraltaengineering.com | 519-733-6587 x 122

N.J. Peralta Engineering Ltd. - Consulting Engineers

45 Division St. N., Kingsville ON N9Y 1E1

peraltaengineering.com

IMPORTANT: We have temporarily relocated to Unit 1-38 Erie Street North, Leamington ON N8H 2Z3 during the construction of the new office building at our Kingsville location.

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From: Tony Peralta

Sent: Thursday, February 23, 2023 5:00 PM

To: Ashley Gyor <AGyori@erca.org>

Cc: Kevin Money <KMoney@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Lu-Ann Marentette (Imarentette@leamington.ca) <Imarentette@leamington.ca>; Matthew Shiha

<matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>; Dan Lebedyk <DLebedyk@erca.org>

Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Good afternoon Ashley;

Further to the correspondence outlined below and our ongoing collaboration with ERCA Staff, we are now in a position to finalize the Engineer's Report for this project. As you are aware, the wetland component of this project has already been constructed with guidance and permits from your office.

Based on your comments regarding spoils in the woodlots and floodplain areas (between Mersea Road 5 and County Rd 34), the following is a summary of how we intend to address spoils in these areas:

- With the large scope of work proposed for this project, we have attempted to provide measures to reduce overall costs. As such, we are trying to avoid unnecessary trucking of excavated materials and keeping these spoils within the project area.
- Through the wooded areas, where the majority of sediment and dead wood is intended to be removed, the primary working corridor will have an extended width of 15.0m where the majority of the work will be conducted. A secondary working corridor has been established on the opposite side of the drain primarily for the hand-removal of dead wood and minor improvements utilizing small utility vehicles, and tractor backhoes.
- All spoils removed from the open channel shall be deposited in the working corridors in randomly placed piles (no larger than 1.5-metre long x 1.5-metre wide x 1.0-metre high) on higher lands (where possible) between the various trees/brush and located a minimum distance of 6.0 metres (19.68 ft.) from the finished top of the drain bank. This will allow the natural conveyance of runoff without obstructions and the removal of floodplain storage.
- As part of the access to the drain and deadwood removal, all removed trees or fallen timber shall be cut into logs having lengths no longer than 2.0m. These logs shall be piled at the extreme limit of the working corridors for the use of the adjacent landowner.

For all agricultural areas, mostly outside of the floodplain, the spoil is intended to be spread onto the adjacent working corridors, having a maximum thickness of 100mm.

As previously noted, a Constraints Analysis and Mitigation Plan have been provided as part of this project. Upon awarding a contractor for this project, a walkthrough will be required with a qualified biologist to ensure that any tertiary species are protected during construction.

We trust that this information is satisfactory. However, if you have any concerns or require additional information, please contact us at your earliest opportunity. Upon your overall acceptance, we will be looking to finalize the Engineer's Report for consideration by the affected landowners.

Regards,



Tony Peralta, P.Eng.

tony@peraltaengineering.com | 519-733-6587 x 122
N.J. Peralta Engineering Ltd. - Consulting Engineers
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From: Ashley Gyori <AGyori@erca.org>

Sent: Friday, December 17, 2021 1:44 PM

To: Tony Peralta <tony@peraltaengineering.com>

Cc: Kevin Money <KMoney@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Kory Snelgrove <kory@peraltaengineering.com>; Lu-Ann Marentette (lmarentette@leamington.ca) <lmarentette@leamington.ca>; Matthew Shiha <matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>; Dan Lebedyk <DLebedyk@erca.org>

Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Good afternoon Tony,

Our apologies for the delay in response. We have had the opportunity to review the available information and the draft design for the proposed drainage works to the Lebo Creek Drain. We can confirm that we are supportive of the general wetland design. In order for this phase of the project to move forward, we will require a copy of the stamped final drawings and a completed Application for Permit form. At such time that the additional phases are ready to move forward, we will be required to issue a subsequent approval for the additional works.

It should be noted that the use of silt fencing and straw bales for erosion and sediment control is something that this office can support, provided that the ESC measures are inspected and utilized appropriately. If it is determined upon inspection by the engineer that the ESC measures are not adequate, appropriate modifications should be made.

With respect to the additional drainage works that will follow the construction of the wetland, it appears that there is a significant amount of spoil material to be removed from the watercourse between Mersea Road 5 and County Rd 34. As this area has a natural floodplain associated with it, the final engineering report should address the placement of the spoil so as to ensure that there are no adverse flooding effects as a result of any spoil taking up storage area. Some solutions to this may include spreading the spoil on the high areas adjacent to the natural floodplain, spreading at a very minimal depth, spreading in a manner to allow for water to flow around any piled areas, trucking off site, any combination thereof, etc. The selected solution should be specified in the report as having no adverse impacts on the floodplain.

Additionally, as per our recent discussion, could you please provide the 1:100 year flood level at the location of the wetland to ensure that any future development on the adjacent property will be protected to the 1:100 year standard? It would be greatly appreciated.

We look forward to receiving the stamped final drawings and the Application for Permit form for the wetland.

If you have any questions, please do not hesitate to contact me.

Kind regards,



ASHLEY GYORI
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**** Please note that I will be away from the office from Monday, December 20th, 2021 until January 4th, 2022.****

**** Please note that the ERCA office is closed to the public; however, staff are continuing to respond to inquiries and review applications in a modified capacity. We appreciate your understanding and patience at this time.****

From: Tony Peralta <tony@peraltaengineering.com>
Sent: Friday, December 10, 2021 1:47 PM
To: Dan Lebedyk <DLebedyk@erca.org>; Ashley Gyori <AGyori@erca.org>
Cc: Kevin Money <KMoney@erca.org>; Tim Byrne <TByrne@erca.org>; Dan Jenner <DJenner@erca.org>; James Bryant <JBryant@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Kory Snelgrove <kory@peraltaengineering.com>; Lu-Ann Marentette (lmarentette@leamington.ca) <lmarentette@leamington.ca>; Matthew Shiha <matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>
Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Good afternoon Dan;

Thank you for providing your comments.

Through our discussions and correspondence with LGL, a Mitigation and Monitoring Implementation Plan is intended for this project. This plan will include a pre-construction screening and monitoring during construction. We will be sure to forward your comments to the prospective Consultant implementing this plan.

We trust that this information will help satisfy your concerns. If you have any further questions or comments, please feel free to contact us.

Regards,

Tony Peralta, P.Eng.

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From: Dan Lebedyk <DLebedyk@erca.org>
Sent: Friday, December 10, 2021 12:32 PM
To: Tony Peralta <tony@peraltaengineering.com>; Ashley Gyori <AGyori@erca.org>
Cc: Kevin Money <KMoney@erca.org>; Tim Byrne <TByrne@erca.org>; Dan Jenner <DJenner@erca.org>; James Bryant <JBryant@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Kory Snelgrove <kory@peraltaengineering.com>; Lu-Ann Marentette (lmarentette@leamington.ca) <lmarentette@leamington.ca>; Matthew Shiha <matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>
Subject: RE: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Dear Tony et al.,

I have reviewed all of the documents and provide the following for your information and consideration.

With respect to the proposed wetland creation on the east side of the Lebo Creek Drain, immediately north of Mersea Road 5, I have no concerns with the project from a natural heritage perspective. The project is separated from the White Oak Woods Environmentally Significant Area by Mersea Road 5. Therefore the wetland creation project is not anticipated to result in any negative impacts to existing significant natural heritage features.

With respect to work within the two existing Environmentally Significant Areas (ESAs) - White Oak Woods and Sweetfern Woods (background information attached), the proposed works on the Lebo Creek should not have a negative impact on the upland terrestrial significant natural heritage associated with these features. The works will be taking place within the Lebo Creek watercourse valleyland, and as stated, *"The intent within these natural feature areas is to cause as little disturbance as possible by utilizing the wider working corridors and meandering around mature trees."* It is recommended that the project biologists strive to familiarize themselves with all of the rare species that may be present within these significant natural heritage features, and attempt to protect these species from disturbance; not just those species at risk which are currently regulated under the Ontario *Endangered Species Act*.

Please do not hesitate to contact me if you should have any questions or require any additional information.

Thank you.

Sincerely,



DAN LEBEDYK
Biologist/Ecologist
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From: Tony Peralta <tony@peraltaengineering.com>

Sent: Wednesday, December 1, 2021 4:18 PM

To: Ashley Gyori <AGyori@erca.org>

Cc: Kevin Money <KMoney@erca.org>; Dan Lebedyk <DLebedyk@erca.org>; Tim Byrne <TByrne@erca.org>; Dan Jenner <DJenner@erca.org>; James Bryant <JBryant@erca.org>; Janice Dougherty <Jdougherty@leamington.ca>; sstasko@leamington.ca; Kory Snelgrove <kory@peraltaengineering.com>; Lu-Ann Marentette <lmarentette@leamington.ca> <lmarentette@leamington.ca>; Matthew Shiha <matthew@peraltaengineering.com>; Kathryn Arthur <KArthur@erca.org>

Subject: Lebo Creek Drain Watershed Rehabilitation Project - Municipality of Leamington - D15-029

Good morning Ashley;

My apologies for the lengthy email.

Further to the correspondence outlined below and our ongoing collaboration with ERCA Staff, we are now in a position where we are ready to finalize the Engineer's Report for this project. With your limited involvement to date, the following is a brief synopsis of the project:

The Lebo Creek Drain is located within the Municipality of Leamington and extends from its outlet within Hillman Marsh, upstream in a northwesterly direction, to its top-end located at the intersection of Highway No. 77 and Mersea Road 7. As illustrated within the attached plan, portions of which are designated as a Municipal Drain and others as a Natural

Watercourse. Portions of the nature watercourse meander through wooded areas and others through farm properties. Within the wooded area, there have been some blockages due to fallen trees and accumulation of debris and sediment, thus causing some flooding issues to upstream lands and roads. As you are aware, the Municipality and the Conservation Authority do not have the right to alter or maintain the channel through the natural watercourse/riparian sections of this drain. Therefore, with the lack of riparian landowner participation, the Municipality has requested that the natural watercourse sections of the drain be designated as a Municipal Drain, through the provisions of the Drainage Act. As a result, our firm has been appointed by the Municipality of Leamington to prepare an Engineer's Report pursuant to the Drainage Act for the improvements and legalization of the Lebo Creek Drain.

The overall goal for this project is to establish the Lebo Creek as a Municipal Drain and relieve the system of flooding while providing the least amount of disturbance as possible. In order to convert this drain as a Municipal Drain, access routes and working corridors will need to be established along the length of the worksite, in order to provide provisions for current improvements and future maintenance. In consultation with DFO and MNRF/MECP, we have retained a Biological Consultant (LGL Limited) to prepare an Environmental Constraints Analysis that identify any affected species and Mitigation Plans to address the protection of the identified species. Further to the Municipality's buffer strip policy, we will also be implementing buffer strips within the worksite on all agricultural lands.

In addition to transitioning the Lebo Creek to a Municipal Drain, we have also worked with the MNRF and ERCA's Conservation Division towards implementing green infrastructure into the system. In consultation with the Municipality, Kevin and Kate we have been able to work with prospective landowners towards implementing a wetland as part of this project. All of which will gain the benefits of being part of the Engineer's Report through the provisions of the Drainage Act.

With ERCA's assistance, we have been able to procure funding to implement green infrastructure. With outside funding having specific timelines for completion, this watershed rehabilitation project will be completed under two stages. The first stage of this project is intended to commence shortly (prior to the adoption of the Municipal Drain) and will be for the construction of a new wetland located immediately north of Mersea Road 5 and adjacent to the east side of the Lebo Creek Drain. The second stage of this project is to be completed following the adoption of our Engineer's Report through Municipal By-Law, which will include drainage improvements to the existing Municipal Drain together with the legalization of the natural watercourse and buffer strip implementation.

As we work to finalize the Engineer's Report, the following is a summary of our design proposal:

- Under this project, we will be cleaning and restoring the design grades of the existing municipal drain portions downstream of Mersea Road 12 through approximately Stations 4+050.6 to 5+071.5 and Stations 9+843.0 to 12+490.6. The intent is to maintain the intended flow regime of the system by creating minimal bank trimming, as shown in the attached cross-sections.
- This report also intends to legalize the natural watercourse portion of Lebo Creek through Stations 5+071.5 to 9+843.0 and Stations 12+490.6 to 13+209.4. As such, we will be establishing designed drain grades and cross-section parameters for removing accumulated sediment in the drain bottom throughout the course of the natural watercourse. You will notice that aside from the portion between Mersea Road 5 and County Road 34, there will be minimal sediment removal.
- Previously established Municipal Drain working corridors will be incorporated in our report. For the current natural watercourse section that will become part of the Municipal Drain, we have established new working corridors through the course of this length of the drain, with consideration being given to minimize disturbance to existing forests.
- Brushing and tree removal will be included throughout the stretch of the drain improvements, including the removal of fallen trees and debris within the natural watercourse portion that is currently causing blockages and upstream flooding. The intent within these natural feature areas is to cause as little disturbance as possible by utilizing the wider working corridors and meandering around mature trees.
- 3.0m wide grassed buffer strips on both sides of the drain are to be established and installed along any agricultural farmlands, downstream of Mersea Road 12.

- As part of our appointment, we have been asked to review all existing bridge structures within the entire length of the Lebo Creek Drain. Through our evaluation, we found that the majority of the structures are in good shape, hydraulically appropriate and will remain in place. However, we have identified one concrete span farm crossing that has reached the end of its serviceable lifespan. The Owner of this access has identified that this structure is not being used and is no longer required. Therefore, this structure will be removed and abandoned as part of this project. All pedestrian bridges within the system will be deemed private and will have no status with respect to the Drainage Act.
- In efforts to improve water quality, habitat, along with providing additional storage and flow attenuation for the drain, we have designed a wetland as illustrated on the attached plans. As noted above, the wetland has been incorporated in consultation with the Municipality of Leamington and ERCA. Attached you will find plans outlining the new wetland pond and the details are as follows:
 - The wetland pond will have varying side slopes with a sediment forebay and two (2) deep pools throughout.
 - As part of this wetland pond design, a weir will be installed within the bottom of the Lebo Creek Drain to divert approximately half of the base flows during the summer months. During periods of high flow, the flows will be able to freely pass over the weir. At the weir location, the drain will be slightly widened to maintain flow characteristics as the rest of the open channel.
 - In order to facilitate the installation of the proposed weir, the accumulation of sedimentation within the Lebo Creek Drain will be removed.
 - The inlet and outlet pipes allow stormwater to freely pass through the system with no adverse effects to the system.
 - In order to protect the adjacent residential lands from adverse flooding, a berm shall be installed along the east limit of the project site to ensure that the lands to the east are protected.
 - The original intent of the project was to retain all excavated fill on the project site. In our latest discussions with the property owner, he has identified that he no longer requires the excavated clean fill material. In light of this information, ERCA and the Municipality have identified a need for excess fill material to be used at the Hillman Marsh improvement project and will be looking to have this material trucked to this location.
- As previously noted, all of the above works have been completed in consultation with ERCA's biologist, MNRF/MECP and DFO, through our Biological Consultant (LGL Limited). Based on the consultation, LGL Limited has prepared a Constraints Analysis and Mitigation Plan which has been submitted to DFO and the MECP for a Species at Risk Review. I've attached these documents for your review and they will be further included in our final report.

Although it is important to receive general acceptance of the above proposal, we were able to procure funding for the wetland pond construction with a limited window for implementation. The Municipality is in the process of getting landowner agreements in place for this work. As such, **we ask that you review and provide comments on the wetland details at your earliest convenience towards acquiring the appropriate permits from ERCA for the wetland construction.**

We trust that this information is satisfactory. However, if you have any concerns or require additional information, please contact us at your earliest opportunity. Upon your overall acceptance, we will be looking to finalize the Engineer's Report for consideration by the affected landowners.

Regards,

Tony Peralta, P.Eng.

N.J. Peralta Engineering Ltd.
 45 Division Street North
 Kingsville, ON N9Y 1E1
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From: Cynthia Casagrande <CCasagrande@erca.org>
Sent: Monday, May 30, 2016 10:04 AM
To: Lu-Ann Marentette <lmarentette@leamington.ca>
Cc: Lindsay Dean <ldean@leamington.ca>; Kevin Money <KMoney@erca.org>; Dan Lebedyk <DLebedyk@erca.org>; Tim Byrne <TByrne@erca.org>; Dan Jenner <DJenner@erca.org>; Tony Peralta <tony@peraltaengineering.com>; Richard Wyma <RWyma@erca.org>
Subject: Notice - Site Meeting regarding the Lebo Creek Drain

Dear Lu-Ann:

This office has received the Notice of Site Meeting scheduled for Thursday, June 2, 2016 regarding the proposed works to the Lebo Creek Drain. Mr. Tim Byrne, Director of Watershed Management Services will be attending this meeting. I have been unable to confirm if Mr. Kevin Money, Director of Conservation Services will also be attending.

Please note the attached emails below will help answer Mr. Tony Peralta's, P. Eng. question regarding the biological assessment.

If further information or clarification is required, please do not hesitate to contact this office.

Yours truly,

Cynthia Casagrande
Regulations Coordinator
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6
(519) 776-5209, Ext. 349

From: Kevin Money
Sent: April-15-16 10:10 AM
To: Dan Lebedyk; Cynthia Casagrande; Tim Byrne
Subject: RE: Re: Notification - Section 78 report for Lebo Creek Drain -

I think that Dan's email is appropriate. Leamington was told that they would still be required to undergo permitting requirements from ERCA and MNR. Their goal is to create/design a drainage report that alleviates flooding, minimizes environmental impacts within the PSW and improves water quality through the creation of a mandatory 3 meter buffers of either side of the drain.

In no way am I or MNR staff suggesting that Leamington try to circumvent regulatory processes. We are providing them with suggestions on how to minimize environmental impact, which they seem to be receptive to.



KEVIN MONEY
Director of Conservation Services
Essex Region Conservation Authority
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From: Dan Lebedyk
Sent: April 15, 2016 9:47 AM
To: Cynthia Casagrande; Kevin Money; Tim Byrne
Subject: RE: Re: Notification - Section 78 report for Lebo Creek Drain -

With respect to the Terms of Reference for the biological assessment, the primary consideration would be to ensure that the proposed activities will not contravene any regulations under the Ontario *Endangered Species Act (ESA)*, as administered by the Ontario Ministry of Natural Resources and Forestry (MNRF). A proper, formal screening of the project, as per the standard Technical Memo issued by the MNRF, should be completed in order to ensure that the appropriate authorizations have been issued. I do agree that no assumptions should be made with respect to MNRF's involvement in the proposed project and this being taken as equivalent to an official authorization.

In addition, I would like to review the specific details with respect to the proposed activities to ensure that overall the resulting activities would not result in an interference to the wetland, in accordance with our Section 28 Regulations. Up to this point, I have only had some casual conversations with respect to the proposed project and have not reviewed any details with respect to specific proposed activities or the timing of those activities.

I hope that the above clarifies the information requirements necessary to further the various approval processes for this project. Cynthia in her correspondence dated April 13, 2016 below adequately and accurately describes the various considerations that this project will need to address. Please do not hesitate to contact me if you should have any questions or require any additional information.

Thank you.

Sincerely,



DAN LEBEDYK
Conservation Biologist
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311 • Essex, Ontario • N8M 1Y6
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From: Cynthia Casagrande
Sent: Thursday, April 14, 2016 3:23 PM
To: Kevin Money; Tim Byrne
Cc: Dan Lebedyk
Subject: RE: Re: Notification - Section 78 report for Lebo Creek Drain -

Gentlemen:

The call as to whether ERCA would require a Biological inventory/study for the proposed works was triggered through a preliminary review with Mr. Dan Lebedyk, Biologist, with respect to Section 28 of CA Act. Just because ERCA and MNRF are at the table with possible funding – doesn't mean that the proposed works are automatically good without the necessity of being scrutinized under all applicable regulations.

And...any review or comments regarding biological assessment would be coming from Mr. Lebedyk. I was going to direct the email request from Mr. Tony Peralta to Mr. Lebedyk.

Please advise accordingly.

Thanks,

Cynthia Casagrande

Regulations Coordinator
Essex Region Conservation Authority
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Essex ON N8M 1Y6
(519) 776-5209, Ext. 349

From: Tony Peralta [<mailto:tony@peraltaengineering.com>]

Sent: April 14, 2016 11:25 AM

To: Cynthia Casagrande

Cc: Lindsay Dean; Kevin Money; Richard Wyma; John Henderson; Lu-Ann Marentette; Dan Jenner; Tim Byrne

Subject: [SPAM] - Re: Notification - Section 78 report for Lebo Creek Drain - Sending mail server found on dnsbl.sorbs.net

Good morning Cynthia;

Thank you for providing comments on this project.

As per our March 24th, 2016 meeting with the Town, Kevin Money and Dave Richards (of the MNRF), it is intended to provide provisions within the Engineer's Report and work closely with ERCA during construction to minimize disturbance when establishing the working corridors within the wooded areas of the drain.

Although we are still in the early stages of this project, based on the above, we wish to seek clarification on the extents of the "biological assessment" requested for this project.

Thank you for your time and attention to this matter. We look forward to your response.

Regards,

Tony Peralta, P.Eng.

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----- Original Message -----

Subject: Re: Notification - Section 78 report for Lebo Creek Drain

From: Cynthia Casagrande <CCasagrande@erca.org>

To: Lindsay Dean <ldean@leamington.ca>, Kevin Money <KMoney@erca.org>, Richard Wyma <RWyma@erca.org>

Cc: "John Henderson" <JHenderson@erca.org>, "Lu-Ann Marentette" <lmarentette@leamington.ca>, "Dan Jenner" <DJenner@erca.org>, "Tony Peralta" <tony@peraltaengineering.com>, "Tim Byrne" <TByrne@erca.org>

Date: Wed Apr 13 2016 14:26:57 GMT-0400 (Eastern Standard Time)

Dear Lindsay:

Re: Lebo Creek Drain Project

This email will serve that the Essex Region Conservation Authority (ERCA) has received your notification dated March 24, 2016 under Section 78(2) of the Drainage Act for the initiation of the Lebo Creek Drain project. It is our understanding that N. J. Peralta Engineering Ltd. is to be appointed to prepare a report on the Lebo Creek Drain to legalize the portions of the drain that do not form part of the existing municipal drain and to review the possibility of including a wetland within the drain. The following information is provided with regard to the subject section of the Lebo Creek Drain.

The subject lands are located within the limit of regulation (Section 28 of the *Conservation Authorities Act*) for the Lebo Creek Drain which is under the jurisdiction of the Essex Region Conservation Authority. Prior to undertaking work in this area, a "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Permit" is required from this office. As the scope of the project is refined, there will be the need to ensure that the proposed works will not aggravate or increase flood levels, and further, the proposed works will not decrease the floodplain storage area associated with this waterway.

The Lebo Creek Drain is currently a natural watercourse and not a municipal drain. Based on a review of our files, this office advises that there are local natural heritage features (Provincially Significant Wetland, etc.) within this section of the watercourse. It is the Municipality's responsibility to contact other provincial or federal agencies that may have concerns with this proposal.

During the design of the project, as there are significant natural heritage features identified, this office would request a biological assessment of the identified features as part of our requirements under Section 28 of the *Conservation Authorities Act*. The proponent would have a qualified biologist undertake a biological assessment of the proposed works. The purpose of the biological assessment is to ensure that the proposed works will not adversely impact any natural heritage issues and/or to determine measures that will mitigate any potential adverse impacts. For any biological assessment that is required in order to satisfy issues related to the *Conservation Authorities Act*, the cost of the biological assessment is the responsibility of the proponent.

With respect to the Department of Fisheries and Oceans (DFO) concerns and comments, as of November 25, 2013 due to amendments to the *Fisheries Act* coming into effect, the previous partnership agreements between DFO and Conservation Authorities have lapsed. The proposed works to the Lebo Creek Drain will need to be self-assessed by the Municipality of Leamington, the proponent, through the DFO website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Through the self-assessment process, the proponent will be able to determine if the proposed works will require a formal authorization under the *Fisheries Act*.

In order to obtain a federal authorization, it may be necessary to provide habitat offsetting for the proposed works. In general, the resulting habitat impacts must be replaced with equivalent habitat features. Determining if a proposed project is acceptable/compensatable would require biological

investigations and would depend on the actual proposed works. The costs related to the biological investigations are the responsibility of the proponent.

The DFO will also need to be contacted regarding the *Species at Risk Act* for federally listed aquatic species at risk fish and mussels and associated approval requirements.

The Lebo Creek Drain may contain significant species (aquatic species at risk as well as plants, animals, habitat, etc.) that are protected under the provincial *Endangered Species Act*. The ERCA does not screen for species that are protected under the provincial *Endangered Species Act*. It is the proponent's responsibility to ensure all issues related to the provincial *Endangered Species Act* are addressed. All inquiries regarding the provincial *Endangered Species Act* should be made with the Aylmer office of the Ontario Ministry of Natural Resources and Forestry (MNRF) (ESAScreeningRequest.AylmerDistrict@ontario.ca).

In addition to the above, it is our understanding that representatives from the MNRF, Municipality, and ERCA have been in preliminary discussions regarding this proposed project and possible funding sources to complete same. The wetland feature identified is proposed to be located on ERCA-owned lands at the outlet of the Lebo Creek. It needs to be stated clearly that while the natural heritage features are important components to this waterway, the ultimate project proposed will need to demonstrate that all aspects of natural hazards (ie. flooding, floodplain storage, Section 28 of CA regulations) have been satisfactorily addressed. Prior to your consultant from N. J. Peralta Engineering Ltd. moving forward with preparing a Section 78 report for the Lebo Creek Drain design for any proposed works, we recommend that they contact this office to discuss same.

If further information or clarification is required, please do not hesitate to contact this office.

Yours truly,

Cynthia Casagrande
Regulations Coordinator
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6
(519) 776-5209, Ext. 349

From: Lindsay Dean [<mailto:ldean@leamington.ca>]
Sent: March-24-16 1:32 PM
To: Kevin Money; Richard Wyma
Cc: Cynthia Casagrande; John Henderson; Lu-Ann Marentette
Subject: Notification - Section 78 report for Lebo Creek Drain

Good Afternoon,

This email serves as notification under Section 78(2) of the Drainage Act for the initiation of the Lebo Creek Drain project.

The Council of The Corporation of the Municipality of Leamington, at its meeting held Monday, March 21, 2016 enacted the following resolution:

No. C-77-16

That N.J. Peralta Engineering be appointed to prepare a report on the Lebo Creek Drain, pursuant to Section 78 of the Drainage Act to legalize the portions of the drain that do not

form part of the existing municipal drain and to review the possibility of including a wetland within the drain;

That all costs for the project be charged to Account # 10-7-0680-7680-945000-200102;

And that the Essex Region Conservation Authority be advised of the proposed improvements. (Report DR-3-16)

After 30 days, N.J. Peralta Engineering will be appointed to proceed with this project.

Thanks,

Lindsay Dean

Assistant Drainage Superintendent
Municipality of Leamington
111 Erie Street North
Leamington, ON N8H 2Z9
519-326-5761 (phone) Ext. 1310
519-326-2481 (fax)

APPENDIX A-2

LGL Limited Biological Constraints Analysis & Mitigation Plan

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DRAFT ENVIRONMENTAL CONSTRAINTS ANALYSIS

**LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT,
MUNICIPALITY OF LEAMINGTON (PROJECT D15-029)**

prepared for:

**N. J. Peralta Engineering Ltd.
Consulting Engineers**



Municipality of
Leamington
live | play | work

prepared by:

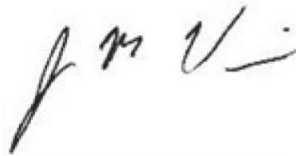


MARCH 2018

DRAFT ENVIRONMENTAL CONSTRAINTS ANALYSIS

**LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT,
MUNICIPALITY OF LEAMINGTON (PROJECT D15-029)**

prepared by:

A handwritten signature in black ink, appearing to read 'J. M. Venier', is centered below the 'prepared by:' text.

JUDSON VENIER, M.Sc
Senior Fisheries Biologist

MARCH 2018

LGL Project # TA8698

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1.0 INTRODUCTION

The Municipality of Leamington is undertaking a study to determine and assess environmental constraints on the Lebo Creek Drain, portions of which flow through agricultural lands and are designated as a Municipal Drain, and portions of which flow through natural areas and are designated as a Natural Watercourse. The overall goal of the study is to aid in the re-designation of the Lebo Creek Drain as a Municipal Drain for its entire length so that, under the *Drainage Act*, flooding of adjacent lands can be relieved as it occurs, while also limiting the disturbance to the natural areas associated with the drain. The study limits are presented in **Figure 1**.

This assignment is being conducted by N.J. Peralta Engineering Limited and LGL Limited on behalf of the Municipality of Leamington. This Environmental Constraints Analysis documents the results of data collection in the Spring of 2017 and the analysis of these data in relation to the sensitivity of the natural environment and the species that inhabit these areas.

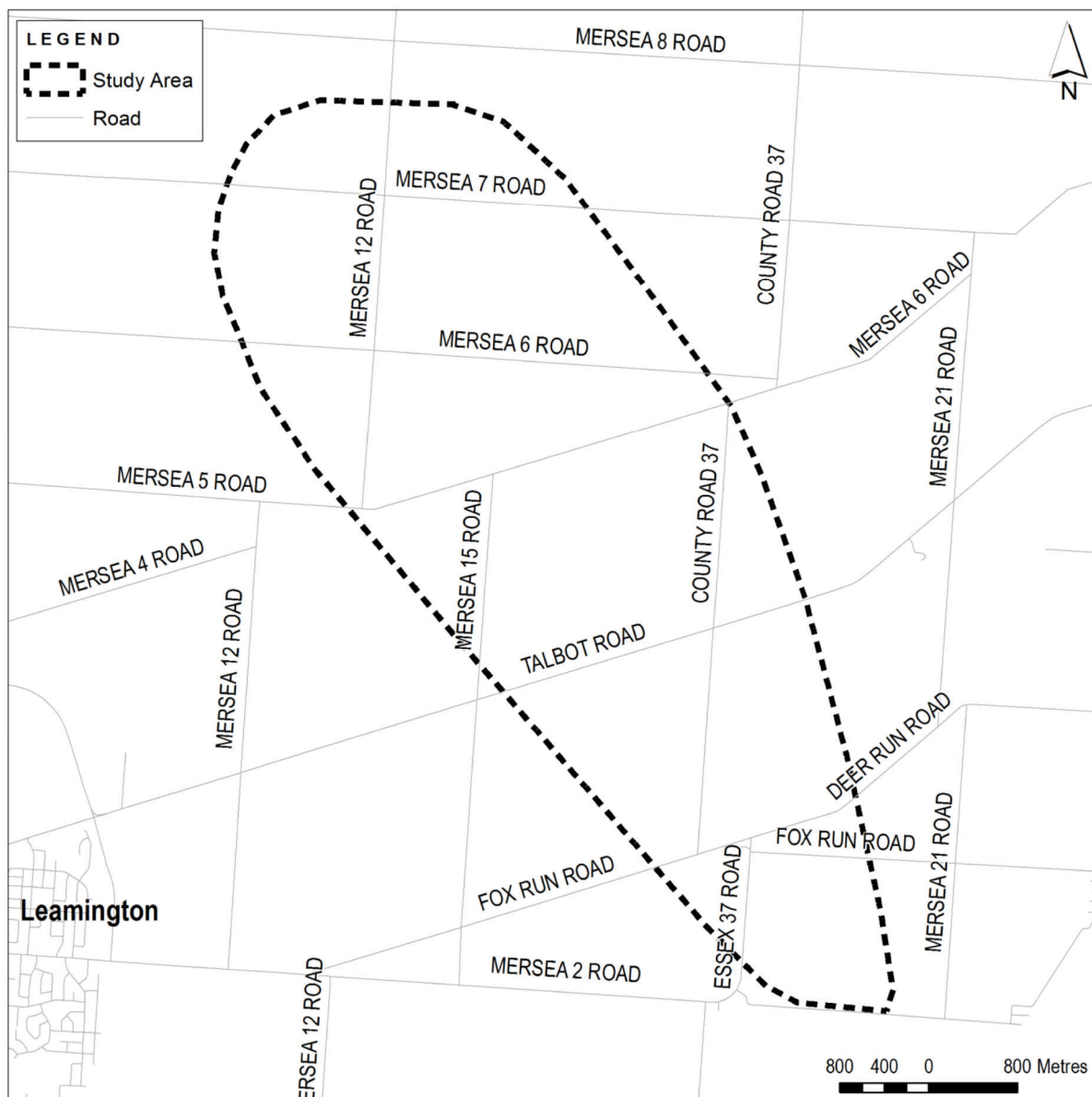


FIGURE 1. KEY PLAN

Lebo Creek Drain is a mixture of channelized Municipal Drains, which can be accessed to alleviate flooding risks, and Natural Watercourse, which has typical restriction for access and in-water/near water works imposed by existing legislation (e.g., the *Fisheries Act*). Some of the areas of Natural Watercourse along the Lebo Creek Drain are associated with forest habitats. Historically, these forests had a large component of ash trees (*Fraxinus* spp.), a genus of large deciduous trees. In particular Black Ash (*Fraxinus nigra*) inhabiting the swamp forests associated with the Hillman Swamp Wetland Complex from Mersea Road 5 south. In the early 2000s, the emerald ash borer (*Agrilus planipennis*), an exotic invasive insect species, decimated the ash population of Southwest Ontario killing the majority of the ash trees. Over time these trees have fallen, sometimes into the watercourses and drains causing jams. These jams eventually fill with debris carried from upstream and dam water flow causing flooding of the surrounding forest and agricultural lands. In areas where current drain designation is Municipal Drain, these jams/dams can be quickly removed to restore normal water flow and relieve flooding. In those designated Natural Watercourse, access is limited, either by natural features, or because these areas in which the jams/dams occur are on private land.

This report identifies the natural features found along the Lebo Creek Drain through the Natural Watercourse areas, discusses the constraints that these features pose to access routes and work areas, and provides recommendations for avoidance and/or mitigation.

2.0 EXISTING CONDITIONS

The following discussion outlines the existing environmental conditions within the study area and identifies natural heritage areas and/or features of environmental sensitivity and/or significance.

2.1 Aquatic Habitats and Communities

The Lebo Creek subwatershed, along with the Hillman Creek subwatershed, drains into Hillman Marsh downstream of Fox Run Road. The total area that these two subwatersheds drain is 74 km² with 18 km of stream length (Hayman *et al.* 2005), of which approximately half (9 km of stream length) is found in the Lebo Creek system. Like most Essex Region watersheds, Lebo Creek is low-gradient (Hayman *et al.* 2005). Hillman Marsh is a “controlled” wetland with limited connectivity to the upstream Lebo Creek or Lake Erie. According to Hayman *et al.* (2005), the marsh does “not contribute to fish habitat in the lake or river directly” and there is a sediment barrier at the creek mouth that negatively affects fish diversity and abundance in the creek.

Lebo Creek has a warmwater thermal regime (D. Lebedyk, ERCA, Pers. Comm.) and supports a limited fish community. As reported in Hayman *et al.* (2005) and supplemented by ERCA data (T. Dufour, ERCA, Pers. Comm.), 16 fish species have been captured in Lebo Creek during 1999 to 2001 sampling at five locations (upstream at Mersea Road 6, “lake effect”/mid-stream at Talbot Road and downstream of Mersea Road 19 and “mouth” at Mersea Road 2 and in Hillman Marsh). These species, and their capture locations, are presented in **Table 1**. Please note that ERCA provided fish data for several sampling locations within the downstream portion of Hillman Marsh to which both Lebo Creek Drain and Hillman Creek contribute. Additional species were captured at these locations that are typical of large marshes associated with the Great Lakes. While there is a possibility of some of these species using upstream habitats within Lebo Creek Drain during certain times of the year, they are not discussed in this report. All of the species discussed herein are common species typical of warmwater systems, wetlands or open shoreline habitats. No species at risk were captured. In addition, no other aquatic species at risk have been reported in the area (DFO 2017; NHIC 2018).

TABLE 1.
HISTORIC FISH COLLECTION RECORDS WITHIN THE STUDY AREA

Scientific Name	Common Name	Lebo Creek	COSEWIC	SARA	MNRF	Provincial
<i>Dorosoma cepedianum</i>	Gizzard Shad	x,z	-	-	-	S4
<i>Cyprinus carpio</i>	Common Carp	x,y,z	-	-	-	SNA
<i>Semotilus atromaculatus</i>	Creek Chub	y,z	-	-	-	S5
<i>Luxilus cornutus</i>	Common Shiner	z	-	-	-	S5
<i>Pimephales promelas</i>	Fathead Minnow	y,z	-	-	-	S5
<i>Notropis atherinoides</i>	Emerald Shiner	x,y	-	-	-	S5
<i>Notropis hudsonius</i>	Spottail Shiner	x	-	-	-	S5
<i>Catostomus commersonii</i>	White Sucker	y,z	-	-	-	S5
<i>Ictalurus punctatus</i>	Channel Catfish	x				S4
<i>Ameiurus natalis</i>	Yellow Bullhead	x	-	-	-	S4
<i>Ameiurus nebulosus</i>	Brown Bullhead	x	-	-	-	S5
<i>Morone chrysops</i>	White Bass	x	-	-	-	S4
<i>Lepomis cyanellus</i>	Green Sunfish	x,y,z				S4
<i>Pomoxis annularis</i>	White Crappie	x	-	-	-	S4
<i>Lepomis gibbosus</i>	Pumpkinseed	x,y	-	-	-	S5
<i>Perca flavescens</i>	Yellow Perch	x	-	-	-	S5

Notes: Fish presence data from Haymen *et al.* (2005)

x = river mouth capture location

y = lake effect/mid-stream capture location

z = headwaters capture location

Water quality was measured at a single location downstream of Talbot Road for the Fish Habitat Management Plan (Hayman *et al.* 2005) and was found to be very poor. High levels of phosphorus, nitrates and bacteria, likely a result of agricultural and greenhouse runoff, was higher than most other sites sampled within Essex Region. This poor water quality, combined with the low habitat diversity, is the likely cause of the low fish diversity and abundance reported in Hayman *et al.* (2005).

Field Investigations

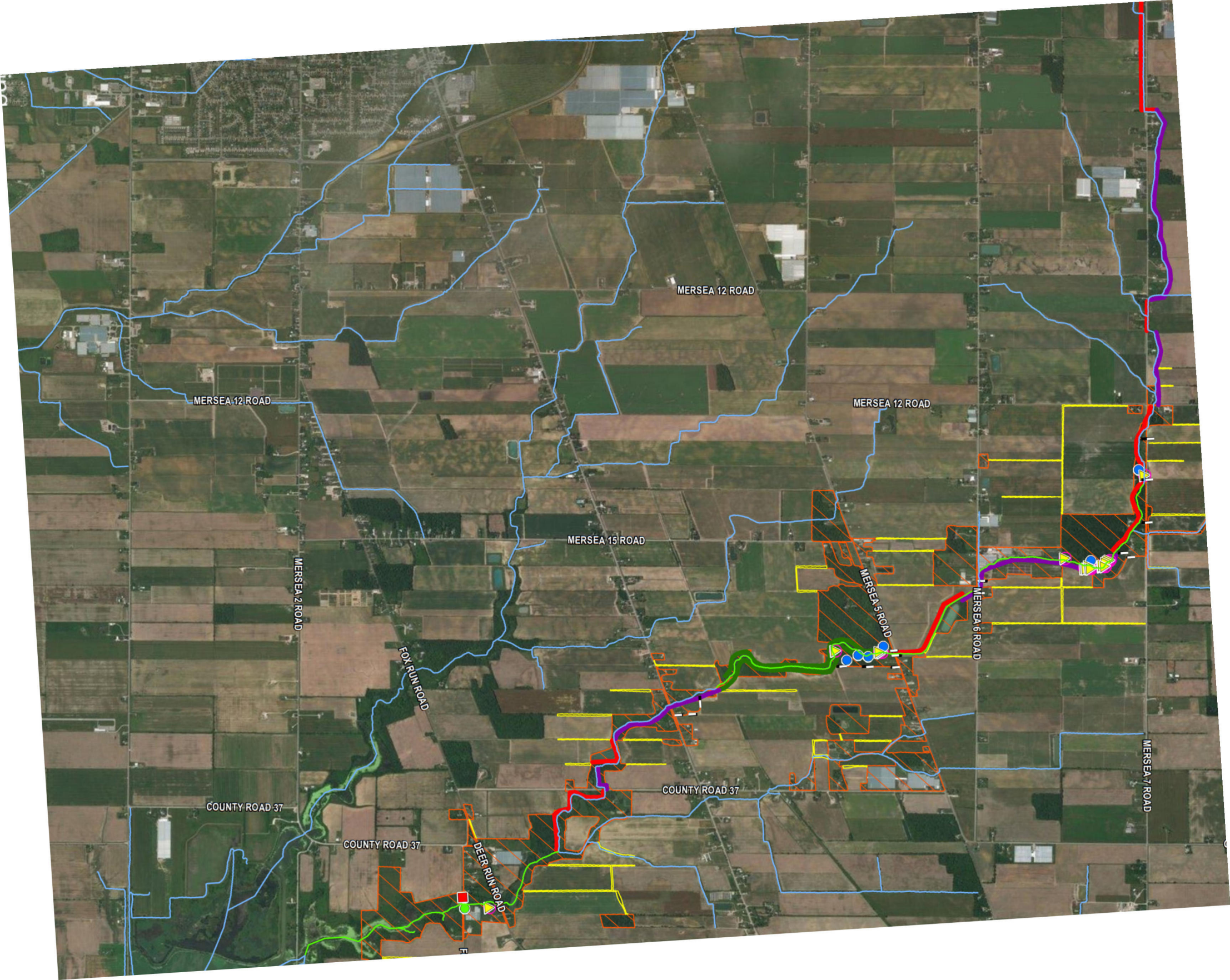
LGL biologists visited Lebo Creek Drain at its natural channel locations on May 2, June 15 and June 16, 2017 to observe existing aquatic habitat conditions. **Figure 2** presents the location of the watercourse surveyed within the study area. An aquatic habitat summary is presented below which describes existing conditions observed during the field investigations.

Lebo Creek was investigated mainly at natural watercourse areas and were accessed at road crossings throughout the study area. These were at Mersea Road 7, Mersea Road 5, Talbot Road, County Road 37/Mersea Road 19, Deer Run Road and Fox Run Road. At all locations during the May site visit (with the exception of the Deer Run Road and Fox Run Road locations which were only visited during the June surveys) water was at or over the bankfull level. In several instances, the water had overflowed the channel and was actively flowing through the floodplains. The most severe of these instances was in the forest downstream of Mersea Road 5 where downed trees and other flotsam had created debris jams that caused the flooding. Throughout much of this reach the forest (the White Oak Woods ESA and Hillman Swamp Wetland Complex) was flooded. Another moderately flooded area was located south of County Road 37/Mersea Road 19, where water had breached the banks and flooded the adjacent forest. During the May 2017 site visit, habitat features associated with the watercourse could not be discerned due to the high water levels and turbid flows. However, it was evident that woody debris was very common and likely constitutes the majority of instream fish habitat. Riparian vegetation consists of deciduous forest with a moderately dense canopy cover, except where ash trees had comprised most of the large trees. In these areas, considerable light penetration to the watercourse and riparian areas was evident.

Conditions were very different during the June site visits. Water was flowing within the channel banks and was clear. Banks are generally steep and show signs of erosion in some locations. The dominant morphology is runs, with riffles and pools also present. As observed in the May site visit, woody debris forms the majority of instream cover for fish. Channel widths average 4 m and depths from less than 10 cm in riffles to up to 50 cm in pools. Average depth is 15 cm to 20 cm. Bankfull width and depth are approximately 5 m and 150 cm, respectively. Substrates are comprised of silt, sand, cobble and detritus.

No aquatic species at risk are known to be present in Lebo Creek within the vicinity of the study area.

FIGURE 2. LEBO CREEK DRAIN, EASTERN FOX SNAKE CONSTRAINT HABITAT AND SAR LOCATIONS



2.2 Vegetation and Vegetation Communities

Field investigations were undertaken along the ‘natural’ sections of the Lebo Creek Drain to confirm the presence/absence of plant species at risk and to identify opportunities/constraints for access road construction. During the field investigations a high level Ecological Land Classification was undertaken. The geographical extent, composition, structure and function of vegetation communities were identified through air photo interpretation and field investigations. Air photos were interpreted to determine the limits and characteristics of the vegetation communities in the study area. Field investigations were conducted on June 15 and 16, 2017.

Vegetation communities were classified according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee *et al.* 1998). The community was sampled using a plotless method for the purpose of determining general composition and structure of the vegetation. Plant species status was reviewed for Ontario (Oldham 2009). Vascular plant nomenclature follows Newmaster *et al.* (1998) with a few exceptions that have been updated to Newmaster (2005).

2.2.1 Vegetation Communities

Vegetation communities within the study are comprised of natural/semi-natural features which are restricted to immediately adjacent to the watercourse and are comprised of forest and wetland communities. These areas are generally of higher quality and contain a high proportion of specialized and native plant species. Disturbance is evident along the community edges. Evidence of disturbance includes a high proportion of non-native plant species that are well adapted to persist in areas that are regularly disturbed including species that are adapted to high light conditions, limited soil moisture, and species that are tolerant of salt spray.

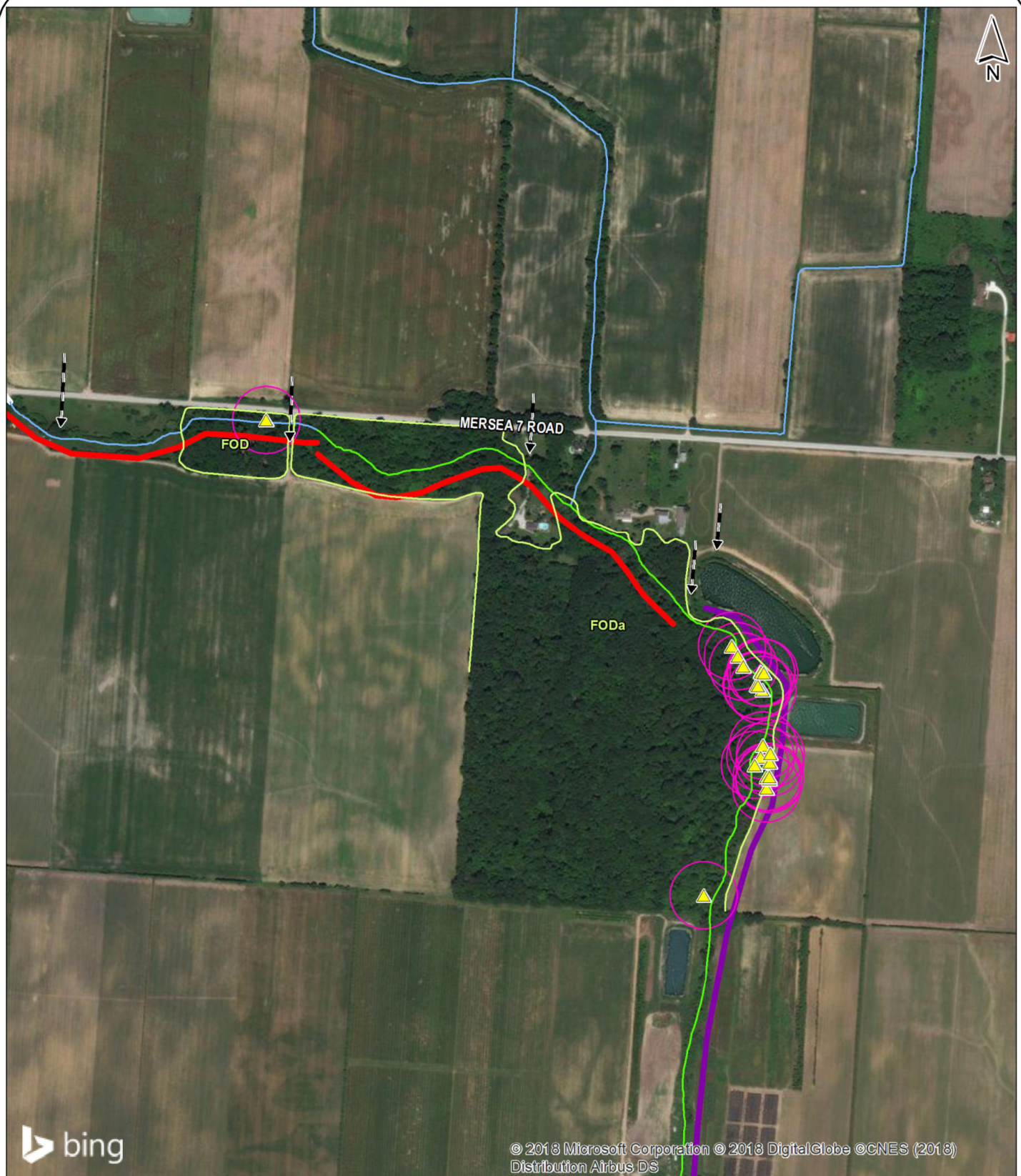
Three Ecological Land Classification (ELC) community types were identified within the study limits during LGL’s botanical surveys. The community types include: Deciduous Forest (FOD), Shallow Marsh (MAS) and Swamp Thicket (SWT). All of the vegetation communities identified within the study area are considered widespread and common in Ontario and are secure globally. These communities are delineated in **Figures 3a to 3c** and are described in **Table 2**.

2.2.2 Flora

A total of 109 plant species have been recorded within the study area. Nine of these plants could only be identified to genus and are not included in the following calculations. Of the 100 plants identified to species, eighty-two (82%) plant species identified are native to Ontario and eighteen (18%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix A**. Definitions of the acronyms and species ranks used in **Appendix A** are described in **Appendix B**.

2.2.3 Species at Risk

A total of 22 butternuts (*Juglans cinerea*) were identified adjacent to the watercourse within the ‘natural’ areas of the Lebo Creek Drain. Butternut is regulated as Endangered by the Ontario *Endangered Species Act, 2007* (ESA) and the Canada *Species at Risk Act*. The locations of the butternut are presented on **Figures 2 and 3a-3c**. Butternut has a 50 m minimum protection zone and as such, it is recommended that no access roads to the Lebo Creek Drain are placed within 50 m of a butternut tree.



NATURAL HERITAGE

- Wetland Not evaluated per OWES
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain).
- Drain (established corridors)

Vegetation Communities

- Vegetation Community Boundary
- FOD Deciduous Forest

Maintenance Corridors

- Access Route
- North and East Side of Drain
- South and West Side of Drain
- Both Sides of Drain

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

100 50 0 100 Metres



Project: TA8698	Figure: 3a
Date: September, 2018	Prepared By: MWF
Scale: 1 : 8000	Checked By: LMC



NATURAL HERITAGE

- Hillman Swamp Wetland Complex (ER 41)
- Provincially Significant Wetland
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain)
- Drain (established corridors)

Vegetation Communities

- Vegetation Community Boundary
- Deciduous Forest

Maintenance Corridors

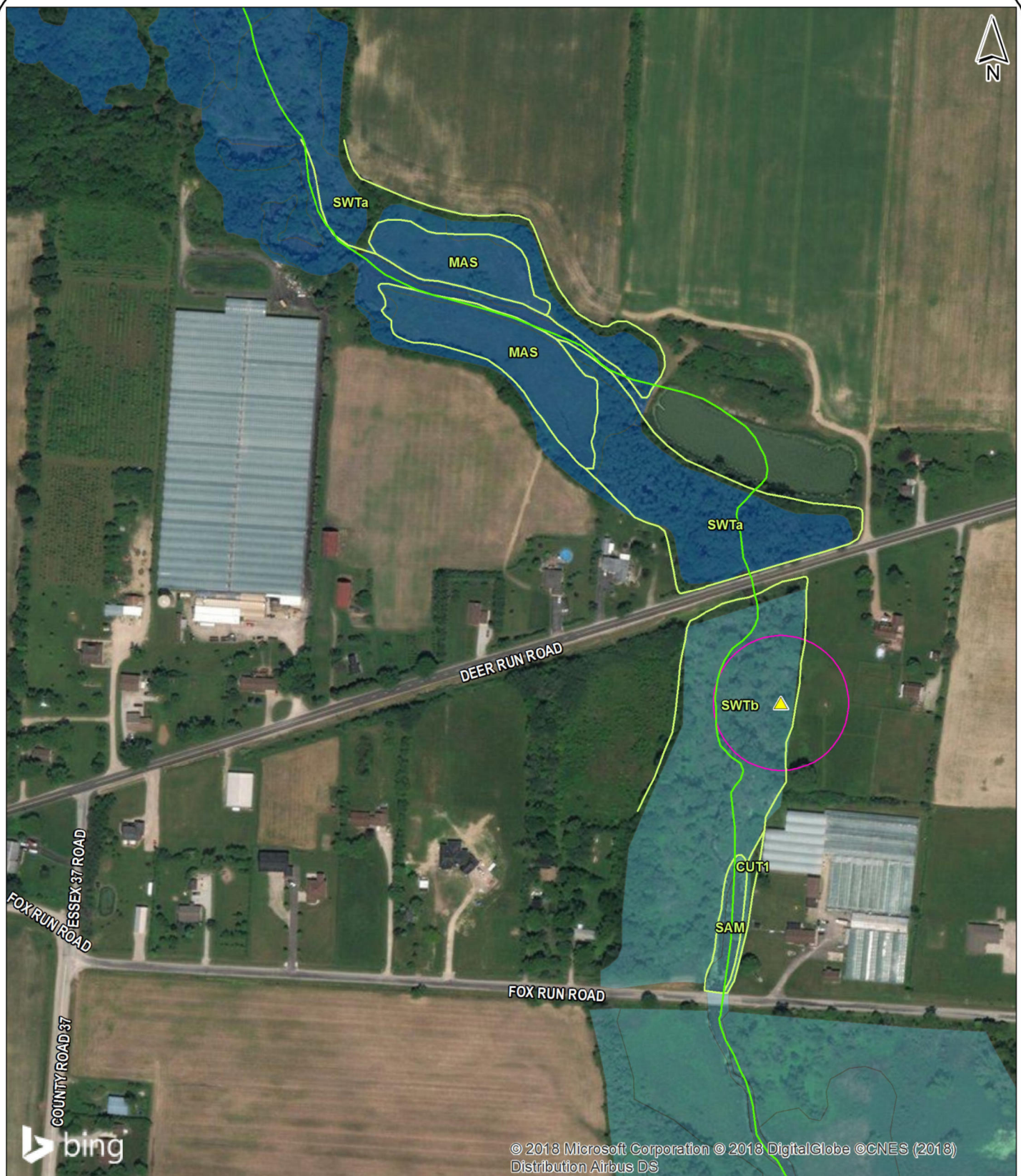
- Access Route
- North and East Side of Drain
- South and West Side of Drain
- Both Sides of Drain

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

100 50 0 100 Metres



Project: TA8698	Figure: 3b
Date: September, 2018	Prepared By: MWF
Scale: 1 : 8000	Checked By: LMC



NATURAL HERITAGE

- Hillman Swamp Wetland Complex (ER 41)
Provincially Significant Wetland
- Hillman Marsh
Provincially Significant Wetland
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain)

Vegetation Communities

- Vegetation Community Boundary
- MAS** Shallow Marsh
- SAM** Mixed Shallow Aquatic
- CUT1** Mineral Cultural Thicket Ecosite
- SWT** Thicket Swamp
- FOD** Deciduous Forest

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

80 40 0 80 Metres



Project: TA8698	Figure: 3c
Date: September, 2018	Prepared By: MWF
Scale: 1 : 4000	Checked By: LMC

TABLE 2. SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Community Characteristics
TERRESTRIAL – NATURAL/SEMI-NATURAL			
FOD	Deciduous Forest		
FOD	Deciduous Forest	Canopy cover: includes black walnut (<i>Juglans nigra</i>), red oak (<i>Quercus rubra</i>), basswood (<i>Tilia americana</i>), eastern cottonwood (<i>Populus deltoides</i> ssp. <i>deltoides</i>), and shagbark hickory (<i>Carya ovata</i> var. <i>ovata</i>). Understory cover: includes sassafras (<i>Sassafras albidum</i>), hawthorn (<i>Crataegus</i> sp.), choke cherry (<i>Prunus virginiana</i> var. <i>virginiana</i>), multiflora rose (<i>Rosa multiflora</i>), white elm (<i>Ulmus americana</i>), and basswood. Ground cover: includes moneywort (<i>Lysimachia nummularia</i>), white avens (<i>Geum canadense</i>), red raspberry (<i>Rubus idaeus</i> ssp. <i>idaeus</i>), and violet (<i>Viola</i> sp.).	• Tree cover >60 % (FO). • Deciduous trees >75 % of canopy cover (D). • Site conditions and substrate types variable.
WETLAND			
MAS	Shallow Marsh		
MAS	Shallow Marsh	Emergent Trees/Shrubs: includes white willow (<i>Salix alba</i>) and red-osier dogwood (<i>Cornus sericea</i> ssp. <i>sericea</i>). Ground Cover: includes blue-joint grass (<i>Calamagrostis canadensis</i>), curly-leaf dock (<i>Rumex crispus</i>), and field bindweed (<i>Convolvulus arvensis</i>).	• Tree and shrub cover <25% with variable flooding regimes (water depth <2m) (MA). • Water up to 2 m deep (MAS). • Mineral soil (2). • Cattails are dominant (-1).
SWT	Swamp Thicket		
SWT	Swamp Thicket	Canopy: includes black walnut, silver maple (<i>Acer saccharinum</i>), and willow (<i>Salix</i> sp.). Understory: includes willow and silver maple. Ground Cover: includes reed canary grass (<i>Phalaris arundinacea</i>), fowl meadow grass (<i>Glyceria striata</i>), spotted touch-me-not (<i>Impatiens capensis</i>), and bitter nightshade (<i>Solanum dulcamara</i>).	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Tree cover <25% hydrophytic shrubs >25% (T).

2.3 Wildlife and Wildlife Habitat

Field investigations were conducted to document wildlife and wildlife habitat and to characterize the nature, extent and significance of wildlife usage within the study area on June 15 and 16, 2017. Wildlife investigations were focused within and adjacent to the existing Lebo Creek Drain right-of-way from Fox Run Road to Mersea Road 7, Leamington, Ontario. Direct observations, calls and tracks were used to record wildlife present within the study area. A summary of survey date(s), tasks, weather and personnel for both visits is presented in **Table 3**. The methodology and results of these surveys are described in the following sections.

TABLE 3.
SUMMARY OF DATE OF INVENTORY, TASK, WEATHER AND PERSONNEL

Date of Inventory	Task	Weather	LGL Personnel
June 15, 2017	Wildlife survey	No cloud cover, 23°C, wind 10 km/hr	Lisa Catcher, Todd Hagedorn
June 16, 2017	Wildlife survey	No cloud cover, 24°C, wind 5 km/hr	Lisa Catcher, Todd Hagedorn

2.3.1 Wildlife Habitat

The study area is located in a predominantly agricultural setting with higher quality wildlife habitat limited to several natural heritage features. A summary of natural heritage features identified within the study area is provided below.

The Lebo Creek Drain passes through a woodland south of Mersea Road 7. This woodland is described as a deciduous forest vegetation community. Given the relatively large and contiguous nature of this natural area, it is likely that it provides locally significant habitat for wildlife species typically associated with aquatic, riparian zone and forest/forest edge habitat types.

The second woodland that the Lebo Creek Drain passes through is south of Mersea Road 5. This deciduous forest community provides forest and forest edge habitat for a number of species and also serve as corridor/movement habitat for wildlife species.

Another section of the Lebo Creek Drain that provides locally significant forest wildlife habitat and acts as a corridor for wildlife movement is the section between Mersea Road 19 to Deer Run Road.

Between Deer Run Road and Fox Run Road the Lebo Creek Drain passes through two vegetation communities, an Ash Mineral Deciduous Swamp and a Sumac Cultural Thicket. These communities provide more locally significant habitat for wildlife species with an affinity for forested areas and provides a corridor for wildlife to travel throughout the agricultural landscape.

Anuran (frogs and toads) and bird species identified within or in the vicinity of the aquatic section of the Lebo Creek Drain indicates that the drain likely provides anuran breeding habitat and breeding habitat for aquatic and semi-aquatic bird species (see **Section 2.3.2**).

Cultural meadow, manicured, and agricultural habitat types were found across the study area and were generally associated with agricultural, and residential lands. Agricultural lands which were more actively managed such as row crops (e.g., corn, soy, etc.) contained a low amount of wildlife diversity. Manicured habitats contained a limited wildlife assemblage and generally support species which tolerate highly disturbed areas. Cultural meadows were found to contain a moderately diverse wildlife assemblage. These communities likely provide nesting habitat for some bird species.

Since natural areas within the study area are generally limited and given the cleared landscape practices associated with agricultural environments, natural areas found within and in the vicinity of the study area likely provide locally significant wildlife habitat. However, outside of these natural areas, the disturbed landscape supports limited natural heritage features, resulting in the presence of low to moderately diverse assemblage of wildlife species which are generally considered tolerant of anthropogenic features and disturbance.

2.3.2 Fauna

Based on field observations, 43 species of wildlife could be verified in the study area and the majority of these records came from identification (through calls and sightings) of bird species with more modest numbers of herpetofauna and mammal species identified. The wildlife assemblage is for the most part typical of agricultural settings and includes wildlife species that are tolerant of human activity and habitat disturbance. A summary of wildlife species documented in the study area during field investigations is presented in **Table 4**. The methodology used to record wildlife was a wandering transects with targeted effort on areas identified as locally significant wildlife habitat along the Lebo Creek Drain.

2.3.2.1 Herpetofauna Species

Five herpetofauna species were documented during 2017 surveys. The three anuran species recorded were American Bullfrog (*Lithobates catesbeianus*), Green Frog (*Lithobates clamitans*) and Northern Leopard Frog (*Lithobates pipiens*). All anurans were observed visually. Given the agricultural and disturbed nature of the study area, anuran use is expected to be limited, but most prevalent within aquatic and riparian habitat. The two reptile species observed were the Eastern Foxsnake (Carolinian Population, *Pantherophis gloydi*) and Midland Painted Turtle (*Chrysemys picta marginata*). The Midland Painted Turtle will use the aquatic and riparian habitat. The Eastern Foxsnake will use drain features for life process including hibernation, movement/dispersal, oviposition and feeding. Given the cleared agricultural setting, drainage features and other naturalized vegetation will form the most suitable habitat areas for this species.

Eastern Foxsnake was the only reptile species at risk identified in/near the study area. The location of the Eastern Foxsnake was several meters west of the Fox Run Road Bridge and the Lebo Creek Drain. This snake had recently been struck by an automobile and was dead. The Eastern Foxsnake will be discussed further in **Section 2.3.3**.

American Bullfrog is considered an area-sensitive species according to the Significant Wildlife Habitat Technical Guide (MNRF 2000) as indicated in **Table 4**. This species is typically associated with aquatic communities.

TABLE 4.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA BY LGL

Type	Scientific Name	Common Name	S-Rank	Schedule	COSEWIC	SARA	SARO	FWCA	MBCA	SWH-TG Area Sensitive Species	Interior Species	Local	LGL
Amphibians	<i>Lithobates catesbeianus</i>	American Bullfrog	S4					G		X			X
	<i>Lithobates clamitans</i>	Green Frog	S5										X
	<i>Lithobates pipiens</i>	Northern Leopard Frog	S5		NAR								X
Birds	<i>Setophaga ruticilla</i>	American Redstart	S5B						X	X		level 3	X
	<i>Turdus migratorius</i>	American Robin	S5B						X				X
	<i>Scolopax minor</i>	American Woodcock	S4B						X			level 4	X
	<i>Icterus galbula</i>	Baltimore Oriole	S4B						X				X
	<i>Hirundo rustica</i>	Barn Swallow	S4B	No Schedule	THR		THR		X			level 3	X
	<i>Poecile atricapillus</i>	Black-capped Chickadee	S5						X				X
	<i>Cyanocitta cristata</i>	Blue Jay	S5					P					X
	<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	S4B						X	X	X	level 4	X
	<i>Toxostoma rufum</i>	Brown Thrasher	S4B						X			level 1	X
	<i>Bombycilla cedrorum</i>	Cedar Waxwing	S5B						X				X
	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	S4B						X			level 4	X
	<i>Geothlypis trichas</i>	Common Yellowthroat	S5B						X				X
	<i>Picoides pubescens</i>	Downy Woodpecker	S5						X				X
	<i>Sayornis phoebe</i>	Eastern Phoebe	S5B						X			level 4	X
	<i>Contopus virens</i>	Eastern Wood Pewee	S4B	No Schedule	SC		SC		X				X
	<i>Ardea herodias</i>	Great Blue Heron	S4						X				X
	<i>Myiarchus crinitus</i>	Great Crested Flycatcher	S4B						X				X
	<i>Passer domesticus</i>	House Sparrow	SNA										X
	<i>Troglodytes aedon</i>	House Wren	S5B						X				X

Type	Scientific Name	Common Name	S-Rank	Schedule	COSEWIC	SARA	SARO	FWCA	MBCA	SWH-TG Area Sensitive Species	Interior Species	Local	LGL
	<i>Passerina cyanea</i>	Indigo Bunting	S4B						X				X
	<i>Zenaida macroura</i>	Mourning Dove	S5						X				X
	<i>Colaptes auratus</i>	Northern Flicker	S4B						X				X
	<i>Icterus spurius</i>	Orchard Oriole	S4B						X			level 3	X
	<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	S4						X			level 2	X
	<i>Buteo jamaicensis</i>	Red-tailed Hawk	S5		NAR			P					X
	<i>Agelaius phoeniceus</i>	Red-winged Blackbird	S4										X
	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S4B						X				X
	<i>Melospiza melodia</i>	Song Sparrow	S5B						X				X
	<i>Actitis macularius</i>	Spotted Sandpiper	S5						X			level 3	X
	<i>Tachycineta bicolor</i>	Tree Swallow	S4B						X				X
	<i>Cathartes aura</i>	Turkey Vulture	S5B					P				level 3	X
	<i>Poocetes gramineus</i>	Vesper Sparrow	S4B						X			level 3	X
	<i>Vireo gilvus</i>	Warbling Vireo	S5B						X				X
	<i>Dendroica petechia</i>	Yellow Warbler	S5B						X				X
	<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	S4B						X			level 3	X
Invertebrate	<i>Calopteryx maculata</i>	Ebony Jewelwing	S5										X
Mammals	<i>Castor canadensis</i>	Beaver	S5					F					X
	<i>Sciurus carolinensis</i>	Eastern Gray Squirrel	S5					G					X
	<i>Procyon lotor</i>	Northern Raccoon	S5					F					X
Reptiles	<i>Pantherophis gloydi</i>	Eastern Foxsnake (Carolinian Population)	S2	Schedule 1	END	END	END	P					X
	<i>Chrysemys picta marginata</i>	Midland Painted Turtle	S5					P					X

2.3.2.2 Bird Species

The study area contained a moderate number of breeding bird species representing several habitat types. A summary of the bird species, and species ranks are presented in **Table 4**.

A total of 35 species of birds were observed during the field investigation. Species which were most commonly encountered across the study area were generally species associated with open-country/agricultural/forest/ and forest edge habitat types.

Two bird species observed have been classified as area-sensitive and/or interior species. The first is the Blue-gray Gnatcatcher (*Poliophtila caerulea*), which is considered area-sensitive and an interior species. The second is American Redstart (*Setophaga ruticilla*) an area-sensitive species (MNR 2000) as shown in **Table 4**.

Barn Swallow (*Hirundo rustica*) was the only species at risk recorded in/near the study area. The location on this record was from the east side of the Lebo Creek Drain, north of Fox Run Road. All Barn Swallows were observed foraging. **Section 2.3.3** has more details about the Barn Swallow.

Eastern Wood Pewee (*Contopus virens*) were found in many of the forest habitats. Two Eastern Wood Pewees were found in the deciduous forest south of Mersea Road 7. Another four individuals were heard calling in the woodland south of Mersea Road 5.

Species of conservation concern identified by LGL were Barn Swallow, American Redstart, Brown Thrasher (*Toxostoma rufum*), Turkey Vulture (*Cathartes aura*), Vesper Sparrow (*Pooecetes gramineus*), Orchard Oriole (*Icterus spurius*), Red-bellied Woodpecker (*Melanerpes carolinus*), Yellow-billed Cuckoo (*Coccyzus americanus*) and Spotted Sandpiper (*Actitis macularius*). Barn Swallow, Brown Thrasher, Turkey Vulture, and Vesper Sparrow are open-country birds. American Redstart, Orchard Oriole, Red-bellied Woodpecker and Yellow-billed Cuckoo are forest birds. The spotted sandpiper is a riparian bird, but also inhabits dryer, open habitats such as agricultural fields (Cadman *et al.* 2007).

2.4.2.3 Mammal Species

Two mammal species were identified by LGL during field investigations in the study area. An eastern grey squirrel (*Sciurus carolinensis*) was observed visually on the west side of Lebo Creek Drain north of Deer Run Road. Evidence of beaver (*Castor canadensis*) was found in the form of chew marks on woody debris throughout the Lebo Creek Drain. An additional mammal species, northern raccoon (*Procyon lotor*) was observed (through vocalizations) using nest boxes provided for Wood Duck (*Aix sponsa*) along Lebo Creek Drain south of Mersea Road 5 on May 2, 2017. The mammal species documented represent an assemblage that readily utilizes human influenced landscapes.

2.3.3 Species at Risk

Thirty of the recorded bird species are protected under the *Migratory Birds Convention Act* (MBCA) and three bird species are protected under the *Fish and Wildlife Conservation Act* (FWCA). Two bird species are not afforded any legislative protection. The three mammal species identified are each afforded protection under the FWCA. The FWCA also protects three of the herpetofauna species. The Blue-gray Gnatcatcher is considered both area-sensitive and an interior species and American Redstart is area-sensitive, according to the Significant Wildlife Habitat Technical Guide (MNR 2000) (see **Table 4**).

Of the 43 wildlife species recorded within the study area, two are listed/regulated under the Ontario ESA. Barn Swallow is regulated as 'Threatened' under the ESA. Eastern Foxsnake is ranked as 'Endangered' and is also regulated under the ESA. Another species, the Eastern Wood Pewee, is listed on the Species at Risk in Ontario List as 'Special Concern'; however, this species is not regulated and consequently does

not receive habitat protection under the ESA. There is also the potential for endangered bat species (i.e., eastern small-footed myotis (*Myotis leibii*), little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*) and tri-coloured bat (*Perimyotis subflavus*)).

For each of the species identified above, their respective legal status, biological requirements, and habitat suitability of the study area are discussed below and summarized in **Table 5**.

Eastern Foxsnake

The Carolinian population of Eastern Foxsnake is classified as ‘Endangered’ in the ESA. The Recovery Strategy for the Eastern Foxsnake – Carolinian and Georgian Bay Populations in Ontario (2010) states that the habitat needs of the Eastern Foxsnake in Hillman Marsh (approximately 1.4 km away) are natural and slightly disturbed open habitats including marshes. Eastern Foxsnakes will not often use agricultural fields. Eastern Foxsnakes have also been reported to hibernate in human created features, such as canal dikes, in the area. A dead Eastern Foxsnake was found west of Fox Run Road where it crosses the Lebo Creek Drain (see **Figure 2**). The entire Lebo Creek Drain provides habitat, including hibernacula and oviposition, sites for this species. The likelihood of Eastern Foxsnakes using the Lebo Creek Drain is increased due to the high density of agricultural land use in the surrounding areas. High constraint habitat areas, which likely function as important habitat for Eastern Foxsnake, are presented in **Figure 2**. Given the study area’s proximity to Hillman Marsh (an area identified as Eastern Foxsnake habitat) and the dead individual found immediately adjacent to the study area, it is likely that the lands present within the study area are considered regulated habitat (under the ESA) for Eastern Foxsnake. Consultation with MNRF, Aylmer District Office would be required to confirm potential implication of the ESA.

Barn Swallow

As noted above, Barn Swallow is regulated as ‘Threatened’ under the ESA. Barn Swallow generally builds mud nests on bridges, walls, ledges and barns (Cadman *et al.* 2007). Barn Swallow typically forages in open areas such as agricultural lands, meadows or over water. Barn Swallows were observed foraging east of Fox Run Road where it crosses the Lebo Creek Drain in June 2017 (**Figure 2**). No Barn Swallow nests were found in culverts or bridge structures present in the study area. No habitats considered suitable for nesting (e.g., bridges, larger culverts or man-made structures) were identified within the study area.

Eastern Wood Pewee

Eastern Wood Pewee is listed as ‘Special Concern’ under the ESA and SARA; however, this species is not a regulated species (Endangered or Threatened) under the ESA. Eastern Wood Pewee is a forest species, typically associated with forest openings, clearing or edges. Eastern Wood Pewee were observed at two different forest during the surveys conducted in 2017. The first forest was south of Mersea Road 7 where two individual Eastern Wood Pewees were heard, and the second was the forest south of Mersea Road 5 along the Lebo Creek Drain, where four individuals were heard.

Bats

There are currently four bat species listed as ‘Endangered’ under the ESA: eastern small-footed myotis; little brown myotis; northern myotis; and, tri-colored bat. The MNRF administers the ESA in the province of Ontario. The ESA affords protection for both individuals of these species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for SAR bats, habitat is protected according to the general definition provided in the ESA. Specifically, according to section 2(1), the *Act* protects “an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding”. Mature trees which could contain suitable habitat for SAR bats were identified within the study area. Forested areas that contain mature trees along the Lebo Creek Drain between Fox Run Road and Mersea Road 7 have the potential to provide habitat to SAR bats.

**TABLE 5.
WILDLIFE SPECIES AT RISK SUMMARY**

Scientific Name	Common Name	Location (s)	ESA	SARA	Last Observed Date	Preferred Habitat*	Potential Habitat in Study Area
<i>Pantherophis gloydi</i>	Eastern Foxsnake	West of Fox Run Road where it crosses the Lebo Creek Drain	END	END	2017	Unforested areas like old fields, and marshes, will also use forests occasionally	The Lebo Creek Drain is likely habitat and hibernacula.
<i>Hirundo rustica</i>	Barn Swallow	East of Fox Run Road where it crosses the Lebo Creek Drain	THR	-	2017	Open-country and agricultural	Open-country and agricultural habitat types at the locations identified provide habitat suitable to support foraging Barn Swallow. No Barn Swallow nests were found within culverts or bridge structures present in the study area.
<i>Contopus virens</i>	Eastern Wood Pewee	The forest south of Mersea Road 7 and the forest south of Mersea Road 5 along the Lebo Creek Drain	SC	-	2017	Forest species, typically associated with forest openings, clearing or edges	Two forest communities were confirmed as habitat.
<i>Myotis leibii</i> , <i>Myotis lucifugus</i> , <i>Myotis septentrionalis</i> , <i>Perimyotis subflavus</i>	eastern small-footed myotis, little brown myotis, northern myotis tri-coloured bat	Unknown	END	-	2017	Forests, roost under loose bark and in the cavities of trees.	Forest communities within the study area have the potential to function as suitable habitat for the species. Forested areas that contain mature trees along the Lebo Creek Drain between Fox Run Road and Mersea Road 7.

*Preferred habitat is based on a review of secondary sources; however, these species may be found in other habitats.
For definitions of the acronyms used in this table, refer to **Appendix C**

2.4 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources and Forestry, Essex Region Conservation Authority and the Municipality of Leamington. A review of the MNRF Natural Heritage Information Centre (NHIC 2017) indicates that there are two Provincially Significant Wetlands (PSWs), one Area of Natural and Scientific Interest (ANSI) and three Environmentally Significant Areas identified within the study area.

The Hillman Swamp Wetland Complex is a PSW that exists nearly continuously along Lebo Creek Drain from Mersea Road 5 south to Deer Run Road. It includes a large portion of the forest on the south side of Mersea Road 5. The Hillman Marsh PSW is a very large wetland associated with the Lake Erie coastline mainly south of the study area. The northernmost portion of the wetland extends up to Deer Run Road.

The Hillman Creek Marsh and Woodlots ANSI includes natural habitats along Lebo Creek Drain from east of Merseas Road 19 to south of Fox Run Road.

The Sweetfern Woods Environmentally Significant Area is located in the forest habitat south of Mersea Road 7 and includes the Lebo Creek Drain riparian area. The White Oak Woods ESA is located in the forest habitat south of Mersea Road 5 and includes the Lebo Creek Drain riparian corridor. The last ESA is the Hillman Marsh Environmentally Significant Area located from Deer Run Road to south of Fox Run Road outside of the study area.

In addition, the Lebo Creek Drain riparian corridor south of Talbot Road to Deer Run Road is considered Significant Valley Lands by ERCA.

3.0 CONSTRAINTS AND RECOMMENDATIONS

In order to establish access routes and working areas in Natural Watercourse areas for the facilitation of flood relief and prevention, the potential natural heritage features of the area need to be considered. These constraints can be divided into parts corresponding to those discussed in the previous sections.

3.1 Aquatic Habitat and Communities

The warmwater fish community and fish habitat found within Lebo Creek Drain are relatively typical of Southwest Ontario. The relatively low species diversity and abundance of fishes is characteristic of an impaired system. There are no species at risk and no significant habitat features. Connectivity with productive habitats associated with Hillman Marsh is poor and thus upstream migration and seeding is limited. The main constraint with fish and fish habitat is that Lebo Creek Drain constitutes fish habitat and, as such, is regulated under the *Fisheries Act*. DFO, the agency that administers the *Act*, is concerned that there will be a loss of existing habitat features (email from J. Epp-Martindale, DFO, December 2, 2016). However, the designation of the Natural Watercourse portions of the Lebo Creek Drain system, and subsequent improvements for flow, can potentially be offset through the maintenance of existing habitat features and targeted habitat enhancements, such as those presented in Hayman *et al.* (2005) suggested by ERCA and MNRF in the June 22, 2016 meeting at the Leamington Municipal Office. Improvements to water quality, baseflow and habitat diversity could have an overall positive effect on the system and enhance the watercourse on private lands. Instream habitat improvements or floodplain wetlands, along with improving habitats, could slow flows enough to alleviate concerns that water will flow too quickly.

DFO has also suggested that alternatives to dredging of the entire length of the Lebo Creek Drain be considered and that such actions would result in a *Fisheries Act* authorization. Instead, spot dredging, staged dredging or targeted works at problem areas was suggested. To maintain fish habitat and reduce

negative impacts, such methods are recommended based on the fish community that is currently occupying habitat within Lebo Creek Drain. Because it is a warmwater system, in-water work should not be completed between March 15 and July 15 to protect sensitive life stages of fish.

3.2 Vegetation and Vegetation Communities

Vegetation communities found in the Natural Watercourse areas of the Lebo Creek Drain are common within Ontario and are not recognized as needing any special protections. The plant species at risk which were listed in the MNRF email of July 18, 2016 were not encountered during LGL field investigations along the Lebo Creek Drain corridor. However, 22 butternut trees were located within the study area (see **Figures 2** and **3a-3c**). As stated in Section 2.2.3, this species is Endangered and regulated under the *Endangered Species Act, 2007*. Each tree has a 50 m radius minimum protection zone and infringement into this zone could result in further need for consultation with MNRF or permitting under the *Act*. The largest clusters of butternuts are located within the Lebo Creek Drain riparian area in the Sweetfern Woods ESA south of Mersea Road 7. The northern cluster is located mainly on the west bank and would not be affected by the preferred access route on the north and east sides of the watercourse, should any works need to be performed in this area (see **Figure 3a**). All of the southern cluster are located on the east side of the watercourse and, as a result, this area should be avoided if at all possible. Regardless of tree locations, any access into the riparian area will likely fall into the 50 m protection zones of individual trees, including those outside of clusters (e.g., south of Mersea Road 5 and Deer Run Road). As such, consultation with MNRF when entering any areas around butternuts should be conducted.

In general, vegetation clearing should be kept to the minimum area necessary to complete the work. When selecting access routes and working corridors, care should be taken to avoid the need to remove trees which shade the watercourse and provide habitat for wildlife. Working in the winter when the ground is frozen and vegetation is dormant can also be done to minimize disturbance to vegetation and wildlife. The use of heavy equipment (especially tracked vehicles) should be minimized or avoided where possible, as these machines can damage the root systems of trees.

Enhancement of the riparian vegetation corridor throughout the Lebo Creek Drain through the establishment of buffer strips and plantings of native vegetation should also be considered. These will strengthen banks to mitigate against erosion, slow flows when banks are breached and provide habitat for wildlife.

3.3 Wildlife and Wildlife Habitat

As evident in **Figure 2** and described in **Section 2.3.3**, the entire Lebo Creek Drain corridor is either high or moderate constraint habitat for Eastern Foxsnake, an Endangered species. Because they are known to occur in close proximity to the study area and a road killed Eastern Foxsnake was found within the study area, any works along the drain should constitute consultation with MNRF prior to commencement. It is likely that a strategy can be developed through this consultation to minimize potential conflicts with the species while allowing works to proceed.

Other wildlife species at risk listed by the MNRF as potentially occurring within the study area, with the exception of Barn Swallow and Eastern Wood-pewee, were not encountered during the surveys completed for this project. As Barn Swallow is an open-country species, and it was not found to be nesting on any Lebo Creek Drain crossing structures or culverts, effects on this species are not expected. Effects on Eastern Wood-pewee, a forest bird encountered during the surveys in the forest communities south of Mersea Road 7 and Mersea Road 5, can be mitigated by conducting any works outside of the breeding bird season (end of March through to end of August with peak nesting from May through July) to avoid disturbing nesting birds. However, if works do need to occur during the breeding bird season, a nesting survey can be completed prior to work to ensure no direct disturbance to nesting birds occurs and compliance with the *Migratory Birds Convention Act*.

In general, keeping disturbance to a minimum is recommended to avoid conflicts with wildlife. Removal of snags is not recommended as these dead trees provide habitat for many species of wildlife, including cavity nesting birds and SARs such as bats.

3.4 Designated Natural Areas

All Natural Watercourse areas of Lebo Creek Drain are associated with lands with special environmental designations. Disturbances to these areas should be minimized to the extent possible to avoid impacts to their ecological functions. Consultation with the designated agencies (ERCA, MNRF) may be required before access to these areas will be permitted. Plans for access, corridors, removal operations and disposal of materials will all likely be necessary when working in these areas.

4.0 CONCLUSION

Specific constraints involved in this project are related to the endangered butternut trees. Their locations are established as are minimum protection zones surrounding them. Avoidance of these protection zones is recommended, but where it is not possible, consultation with MNRF will be required.

General constraints are related to fish/fish habitat, Eastern Foxsnake habitat (the entire Lebo Creek Drain corridor) and the designated natural areas. Prior to working within these general constraints areas, consultation with managing agencies will be required. This will likely involve detailed work and mitigation plans, and may also involve restoration planning and/or compensation.

5.0 REFERENCES

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APPENDIX A
WORKING VASCULAR PLANT CHECKLIST

VASCULAR PLANT LIST

[illegible]

<i>Vitis riparia</i>	riverbank grape	G5	S5		X		X	X		
ACERACEAE	MAPLE FAMILY									
<i>Acer negundo</i>	manitoba maple	G5	S5		X	X	X	X		
* <i>Acer platanoides</i>	norway maple	G?	SE5		X	X				
<i>Acer saccharum</i> var. <i>saccharum</i>	sugar maple	G5T?	S5		X	X				
ANACARDIACEAE	SUMAC FAMILY									
<i>Rhus hirta</i>	staghorn sumac	G5	S5		X	X				
APIACEAE	PARSLEY FAMILY									
* <i>Daucus carota</i>	wild carrot	G?	SE5		X	X	X			
ASCLEPIADACEAE	MILKWEED FAMILY									
<i>Asclepias syriaca</i>	common milkweed	G5	S5		X		X			
BORAGINACEAE	BORAGE FAMILY									
* <i>Echium vulgare</i>	blueweed	G?	SE5		X		X			
PLANTAGINACEAE	PLANTAIN FAMILY									
* <i>Plantago lanceolata</i>	ribgrass	G5	SE5		X	X	X			
* <i>Plantago major</i>	common plantain	G5	SE5		X	X	X			
OLEACEAE	OLIVE FAMILY									
* <i>Syringa vulgaris</i>	common lilac	G?	SE5		X	X				
RUBIACEAE	MADDER FAMILY									
<i>Galium asprellum</i>	rough bedstraw	G5	S5		U		X			
DIPSACACEAE	TEASEL FAMILY									
* <i>Dipsacus fullonum</i> ssp.	wild teasel	G?T?	SE5		X		X			

LILIACEAE	LILY FAMILY									
<i>Lilium philadelphicum</i>	wood lily	G5	S5			X				

* Non-native species
X present
Refer to **Appendix B** for species rank definitions.

APPENDIX B
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

Appendix C. Species Rank

SRANK Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.

S1	Critically Imperiled in Ontario because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.
S2	Imperiled in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.
S3	Vulnerable in Ontario due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	Apparently Secure —Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	Secure —Common, widespread, and abundant in Ontario.
SX	Presumed Extirpated – Species or community is believed to be extirpated from Ontario.
SH	Possibly Extirpated – Species or community occurred historically in Ontario and there is some possibility that it may be rediscovered.
SNR	Unranked —Conservation status in Ontario not yet assessed
SU	Unrankable —Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA	Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#	Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

COSEWIC (Committee on the Status of Endangered Wildlife in Canada):		OMNR (Ontario Ministry of Natural Resources):	
END	Endangered	END	Endangered
THR	Threatened	THR	Threatened
SC	Special Concern	SC	Special Concern
Local Status: York		Legal Status:	
U	Uncommon	SARA	<i>Species at Risk Act</i> – Schedules (1), (2), (3)
R1-R10	Rarity Status (1-10 denotes number of stations at which a locally rare species is found) (Varga <i>et al.</i> 2000)	ESA	<i>Endangered Species Act</i>

LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT MITIGATION PLAN

**AS AUTHORIZED UNDER O.REG 242/08, SECTION
23.9 OF THE ONTARIO *ENDANGERED SPECIES ACT***



prepared for

The Municipality of Leamington

by



**AUGUST 2021
LGL PROJECT TA8698**

LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT

MITIGATION PLAN

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March 29, 2019	2	Second Draft- with updates proposed by Kathleen Buck at OMNF
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August 2021
LGL PROJECT TA8698

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GLOSSARY

Construction: Alteration, land clearing, earth moving, grading, excavating, grading, digging, and any work or undertaking in connection with the project.

Exclusion fence: A barrier which excludes specified organisms from entering or exiting a particular area.

Habitat: The area or environment in which an organism or community of organisms lives. Habitat encompasses air, water, food, shelter, and space required for survival.

Hibernaculum: A protective overwintering structure in which an organism would hibernate (Plural: hibernacula).

Potential habitat: A feature or area that exhibits general characteristics of suitable habitat but has either not been subject to evaluation or field observation to determine suitability or that would require enhancement for it to be considered suitable for any life processes of the species.

Project Area: The Project Area encompasses Lebo Creek Drain from Highway 77 to Mersea Road 2.

Significant Habitat: Specialized habitats for a given species which are essential to their survival. Examples include: hibernacula, egg-laying/nest site and thermoregulation feature.

Suitable habitat: A feature or area that, through evaluation or field observation, has been determined to be consistent with confirmed features or areas.

Qualified Biologist: For the purposes of this Mitigation and Monitoring Plan, monitoring and implementation of mitigation measures is dependent upon a Qualified Biologist overseeing such activities. The following is a list of qualifications and experience necessary to perform such a task: **knowledge of the Species at Risk Act, knowledge of Ontario species at risk flora and fauna, relevant experience conducting herpetofauna monitoring and/or site-screening exercises, relevant experience with SAR mitigation and monitoring on construction sites, experience with the Migratory Birds Convention Act, experience identifying Ontario birds and bird nests and experience conducting environmental inspections on construction sites.**

Qualified Inspector: For the purposes of this Mitigation and Monitoring Plan, monitoring and implementation of mitigation measures is dependent upon a Qualified Inspector overseeing such activities. The following is a list of qualifications and experience necessary to perform such a task: **knowledge of the Species at Risk Act, knowledge of Ontario species at risk flora and fauna, experience with the Migratory Birds Convention Act and experience conducting environmental inspections on construction sites.**

1.0 INTRODUCTION

LGL Limited has been retained by N. J. Peralta Engineering Ltd. on behalf of the Municipality of Leamington to ensure project activities related to the Lebo Creek Drain Watershed Rehabilitation Project are completed in compliance with the Ontario *Endangered Species Act (ESA)*, 2007. The objective of the Project is the re-designation of the Lebo Creek Drain as a Municipal Drain for its entire length so that, under the *Drainage Act*, maintenance to the Lebo Creek Drain can be completed as it is required to mitigate flood risk, while also limiting the disturbance to the natural areas associated with the drain. The Project addresses the need to establish working corridors along the drain in order to perform regular maintenance on the drain. LGL conducted a field study of the Project Area in the spring of 2017. Through that effort, LGL identified individuals and habitat for species at risk (SAR) protected under the Ontario *ESA*.

1.1 PURPOSE

The Lebo Creek Drain Watershed Rehabilitation Project Mitigation Plan has been prepared to provide detailed information for species at risk confirmed to be present (or potentially present) within the Project Area and to detail site specific mitigation to ensure that works associated with the project do not contravene the Ontario *ESA*. The project area includes the Lebo Creek Drain corridor from Highway 77 in the north end to Mersea Road 2 at the south end (see Figure 1). The Mitigation Plan also provides direction and guidance to the persons and organizations implementing this Plan on behalf of the Municipality. All project works shall be carried out with the mitigation described in this document. A glossary of terms used in this plan is provided above.

1.2 SITE OVERVIEW AND DESCRIPTION OF WORKS

Lebo Creek Drain is a mixture of channelized Municipal Drains, which can be accessed to alleviate flooding risks, and Natural Watercourse, which has typical restriction for access and in-water/near water works imposed by existing legislation (e.g., the *Fisheries Act*). Some of the areas of Natural Watercourse along the Lebo Creek Drain are associated with forest habitats. Historically, these forests had a large component of ash trees (*Fraxinus* spp.), a genus of large deciduous trees. In particular Black Ash (*Fraxinus nigra*) inhabiting the swamp forests associated with the Hillman Swamp Wetland Complex from Mersea Road 5 south. In the early 2000s, the emerald ash borer (*Agrilus planipennis*), an exotic invasive insect species, decimated the ash population of Southwest Ontario killing the majority of the ash trees present within the Project Area. Over time these trees have fallen, sometimes into the watercourses and drains, causing jams. These jams may eventually fill with debris carried from upstream and dam water flow causing flooding of the surrounding forest and agricultural lands. In areas where current drain designation is Municipal Drain, these jams/dams can be quickly removed to restore normal water flow and relieve flooding. In those designated Natural Watercourse, access is limited, either by natural features, or because these areas in which the jams/dams occur are on private land. In the spring of 2017, LGL completed a field survey to identify potential SAR concerns in the project area. The results are presented in the “Lebo Creek Drain Constraints Analysis” report (LGL March 2018).

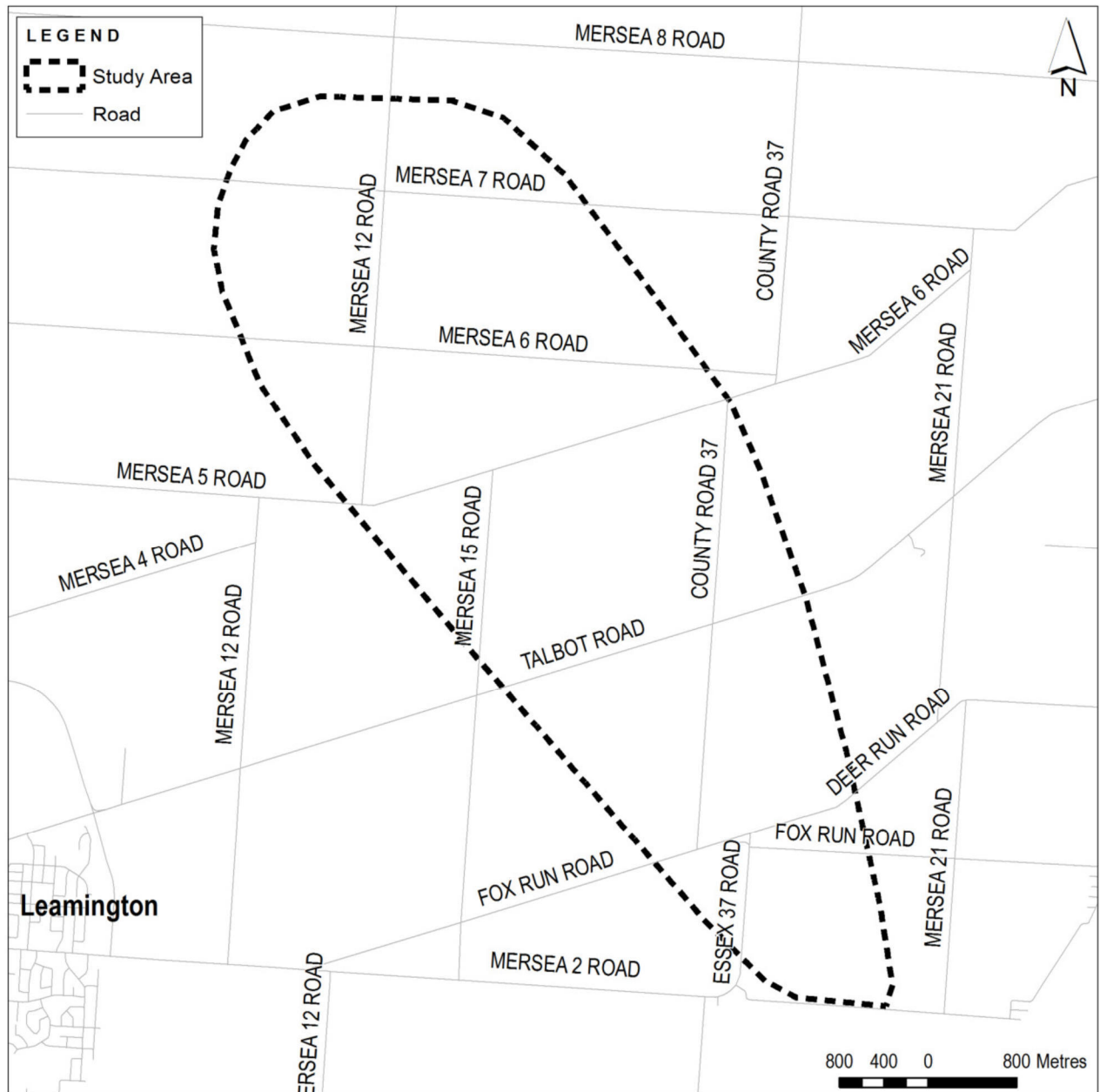


Figure 1 Key Map.

2.0 ONTARIO ENDANGERED SPECIES ACT (ESA)

The Lebo Creek Drain Constraints Analysis report (LGL March 2018) confirmed several SAR in the study area, and also identified others as having potential to be in the study area. The report was then presented to the Municipality of Leamington staff as well as Ontario Ministry of Natural Resources and Forestry (OMNRF) staff at a meeting on July 5, 2018. The discussion at the meeting included determining the path to move forward and navigate the Ontario *ESA* (2007). It was determined that as sections of Lebo Creek Drain are either classified as a drain, or will be classified as a drain according to the Drainage Act, that the project qualifies for an exemption under Ontario Regulation 242/08 section 23.9 (1) (*ESA* 2007) (see Appendix B).

Pursuant to Section 9 (1) of the *Endangered Species Act* states that no person shall;

...”kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered, or threatened species”...

Pursuant to Section 10(1) of the *Endangered Species Act*, no person shall damage or destroy the habitat of;

...”(a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species”...

Ontario Regulation 242/08, section 23.9 (1) (*ESA* 2007) states that an exemption applies if the project involves

“Improving or maintaining drainage works, if an agreement for the improvement or maintenance was filed under subsection 2 (2) of the Drainage Act.”

Prior to commencing any drainage works, the Municipality must submit a “Notice of Drainage Work Activity Form” on the Registry and prepare a Mitigation Plan. The form must include the location of the proposed activity, and the name of all SAR species potentially affected by the activity. The Mitigation Plan must be updated every five years, or when species in the project area are uplisted or delisted. In addition, the town must prepare an annual report by Dec 31 of each year outlining the activities performed in the prior 12 month period and how impacts to SAR were mitigated or avoided. The report should address the success of the mitigation measures employed and any changes recommended for future works. The report must be kept on file for 5 years and be provided to the MNRF upon request.

The exemption regulation does not cover the following species (as per table 1, section 23.9, subsection 2, of O.Reg. 242/08 (see Appendix B)). While these species were not identified in the project area, should they be found, works must be halted and consultation with the MNRF, Aylmer District Office will be required:

- Bogbean Buckmoth (*Hemileuca sp. I*)
- Cherry Birch (*Betula lenta*)
- False Hop Sedge (*Carex lupuliformis*)
- False Rue Anemone (*Enemion biternatum*)
- Gray Fox (*Urocyon cinereoargenteus*)
- Heart-leaved Plantain (*Plantago cordata*)
- Pugnose Minnow (*Opsopoeodus emiliae*)
- Scarlet Ammannia (*Ammannia robusta*)
- Small-mouthed Salamander (*Ambystoma texanum*)
- Unizexual Ambystoma (Small-mouthed Salamander dependent population) (*Ambystoma laterale-texanum*)
- Spotted Gar (*Lepisosteus oculatus*)
- Toothcup (*Rotala ramosior*)

2.1 CONTACT INFORMATION

Maintenance, improvement and repair of Lebo Creek Drain will be completed by the Town of Leamington. As per the requirement of exemption regulation 242/08 (see Appendix B), the following is the contact information for the individual responsible for the drainage infrastructure within the municipality:

Company Name: The Municipality of Leamington
Contact: Lu-Ann Marentette, Drainage Superintendent
Address: 111 Erie St N, Leamington, ON N8H 2Z9
Telephone: 519-326-5761
Fax: 519-326-2481
Email: lmarentette@leamington.ca

2.2 PROJECT RELATED SPECIES AT RISK

Species at Risk (SAR), as they apply to the Project, are assumed to include those protected under the Ontario *ESA*, 2007, which is under the authority of the Ministry of Natural Resources and Forestry. As a result of the 2017 habitat screening effort, a 'short list' of SAR was identified as having available and suitable habitat

within the project area (LGL March 2018). Of the 43 wildlife species recorded by LGL within the study area, three are listed/regulated under the Ontario *ESA* for species and habitat protections:

- Eastern Foxsnake (*Pantherophis gloydi*) is listed as ‘Endangered’ and is also regulated under the Ontario *ESA*. Regulated habitat for this species is presented on Figure 2.
- A total of 22 Butternuts (*Juglans cinerea*) were identified adjacent to the watercourse within the ‘natural’ areas of the Lebo Creek Drain. Butternut is regulated as ‘Endangered’ under the Ontario *ESA*, 2007 as well as the federal *Species at Risk Act*. The locations of the butternut are presented on Figure 2 and Figures 3a-c).
- Barn Swallow (*Hirundo rustica*) is regulated as ‘Threatened’ under the Ontario *ESA*. This species was observed foraging in the study area, but no nests were found in culverts, on bridges along the Lebo Creek Drain or elsewhere in the study area.
- Another species, the Eastern Wood Pewee (*Contopus virens*), is listed on the Species at Risk in Ontario List as ‘Special Concern’; however, this species is not regulated and consequently does not receive habitat protection under the Ontario *ESA*.
- There is also the potential for four endangered bat species (i.e., Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*)). These species were not confirmed but are assumed to be present where suitable habitat exists.

For each of the species identified above, their respective legal status, biological requirements, and habitat suitability of the study area are discussed below and summarized in **Table 1**.

2.2.1 Eastern Foxsnake

The Carolinian population of Eastern Foxsnake is classified as ‘Endangered’ under the Ontario *ESA*. The Recovery Strategy for the Eastern Foxsnake – Carolinian and Georgian Bay Populations in Ontario (MNRF 2010) states that the habitat needs of the Eastern Foxsnake in Hillman Marsh (approximately 1.4 km away) are natural and slightly disturbed open habitats including marshes. Eastern Foxsnakes will seldom use agricultural fields. Eastern Foxsnakes have also been reported to hibernate in human created features, such as canal dikes and drainage features, in the area. A dead Eastern Foxsnake was found west of Fox Run Road where it crosses the Lebo Creek Drain (see Figure 2). The entire Lebo Creek Drain provides suitable habitat, including hibernacula, thermoregulation and oviposition sites for this species. The likelihood of Eastern Foxsnakes using the Lebo Creek Drain is increased due to the high density of agricultural land use in the surrounding areas. High constraint habitat areas, which likely function as important habitat for Eastern Foxsnake, are presented in Figure 2. Given the study areas proximity to Hillman Marsh (an area identified as Eastern Foxsnake habitat) and the dead individual found immediately adjacent to the study area, it is likely that the lands present within the study area are considered regulated habitat (under the Ontario *ESA*) for Eastern Foxsnake. Consultation with MNRF, Aylmer District Office (Dave Richards - Meeting on July 5, 2018 at Municipality of Leamington office) has confirmed that this species is of most concern for this project and Mitigation Plan.

Protected habitat for this species is identified on Figure 2. The habitat regulation protects important habitat features including hibernacula (and a 100m buffer around hibernacula), egg laying, communal shedding and communal basking sites (and a 30m buffer around those sites (MNRF 200)). Areas suitable for foraging, thermoregulation, hibernation and movement within 1.5km of an area that is used by an Eastern Foxsnake are also protected. Areas used for thermoregulation, foraging and hibernation in the study area may include hedgerows, marshes, old fields, forest, and other similar areas. Other areas, such as active agricultural fields and some urban areas are also included as regulated habitat. Lakes and rivers, below the historical low water mark, are excluded. Figure 2 illustrates the high constraint regulated habitat in red, and the moderate constraint regulated habitat (mainly hedgerows) in yellow.

2.2.2 Butternut

As noted above, Butternut is regulated as ‘Endangered’ under the Ontario *ESA*. It generally grows in rich, moist, and well-drained soils often found along streams. In Ontario, the Butternut Generally grows alone or in small groups in deciduous forests as well as in hedgerows. Figures 3A-C provides the locations of all 22 Butternut individuals identified in the study area. The MNRF has identified a habitat zone for Butternut to range from 25m to 50m from the tree.

2.2.3 Barn Swallow

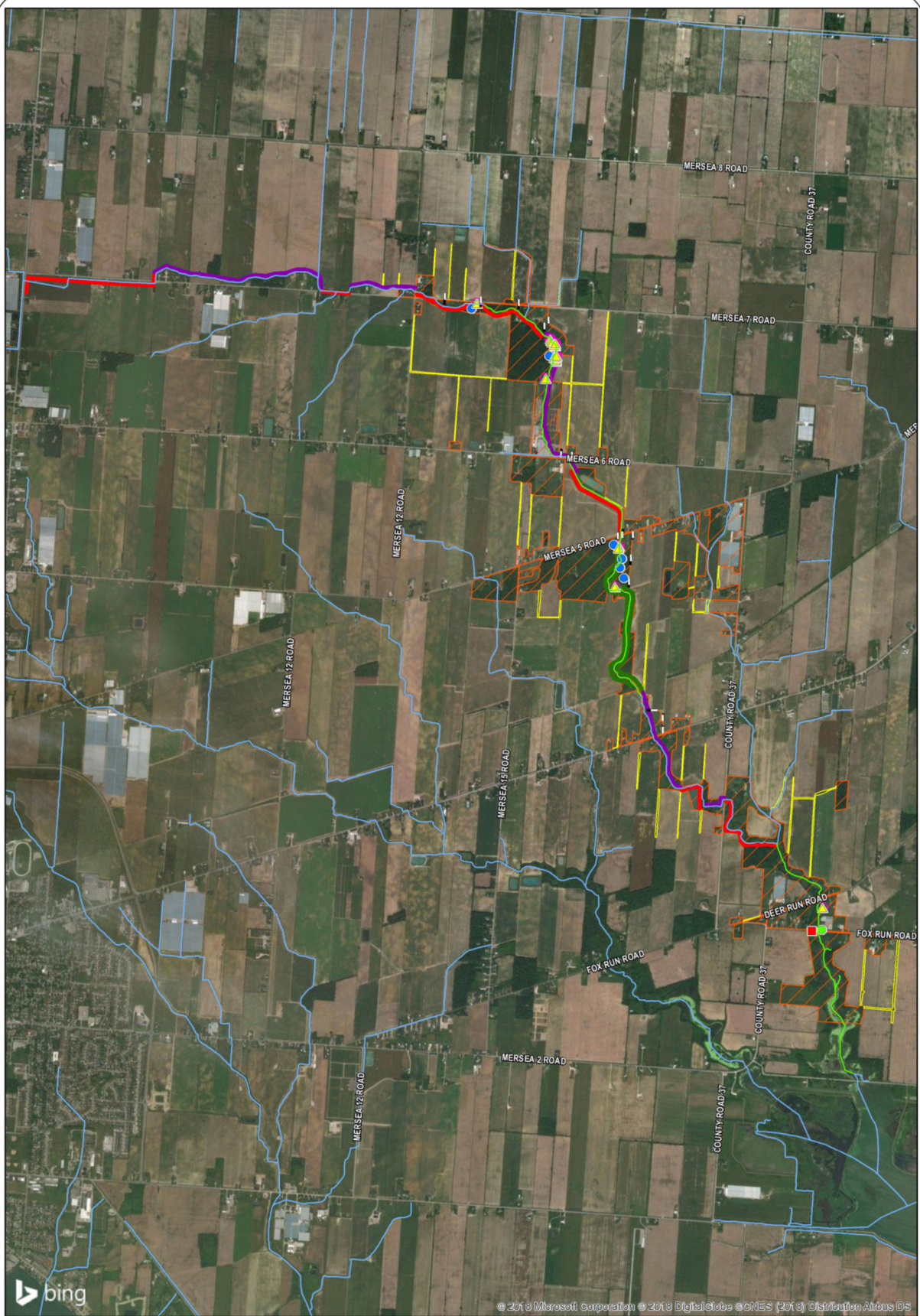
As noted above, Barn Swallow is regulated as ‘Threatened’ under the Ontario *ESA*. Barn Swallow generally builds mud nests on bridges, walls, ledges and barns (Cadman *et al.* 2007). Barn Swallow typically forages in open areas such as agricultural lands, meadows or over water. Barn Swallows were observed foraging east of Fox Run Road where it crosses the Lebo Creek Drain in June 2017 (Figure 2). No Barn Swallow nests were found in culverts or bridge structures present in the study area.

2.2.4 Eastern Wood Pewee

Eastern Wood Pewee is listed as ‘Special Concern’ under the Ontario *ESA* and Federal SARA; however, this species is not a regulated species (Endangered or Threatened) under the Ontario *ESA*. Eastern Wood Pewee is a forest species, typically associated with forest openings, clearing or edges. Eastern Wood Pewee were observed at two different forest during the surveys conducted in 2017, the forest south of Mersea Road 7 and the forest south of Mersea Road 5 along the Lebo Creek Drain.

2.2.5 Bats

There are currently four bat species listed as ‘Endangered’ under the Ontario *ESA*: eastern small-footed myotis; little brown myotis; northern myotis; and, tri-colored bat. The MNRF administers the Ontario *ESA* in the province of Ontario. The *ESA* affords protection for both individuals of these species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for SAR bats, habitat is protected according to the general definition provided in the Ontario *ESA*. Specifically, according to section 2(1), the *Act* protects “an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding”. Forested areas that contain mature trees along the Lebo Creek Drain between Fox Run Road and Mersea Road 7 have the potential to provide habitat to SAR bats.



Eastern Foxsnake Constraint Habitat and SAR Locations



400 200 0 400 Metres

Data Sources: LGL Limited field surveys.



Project: TA8698

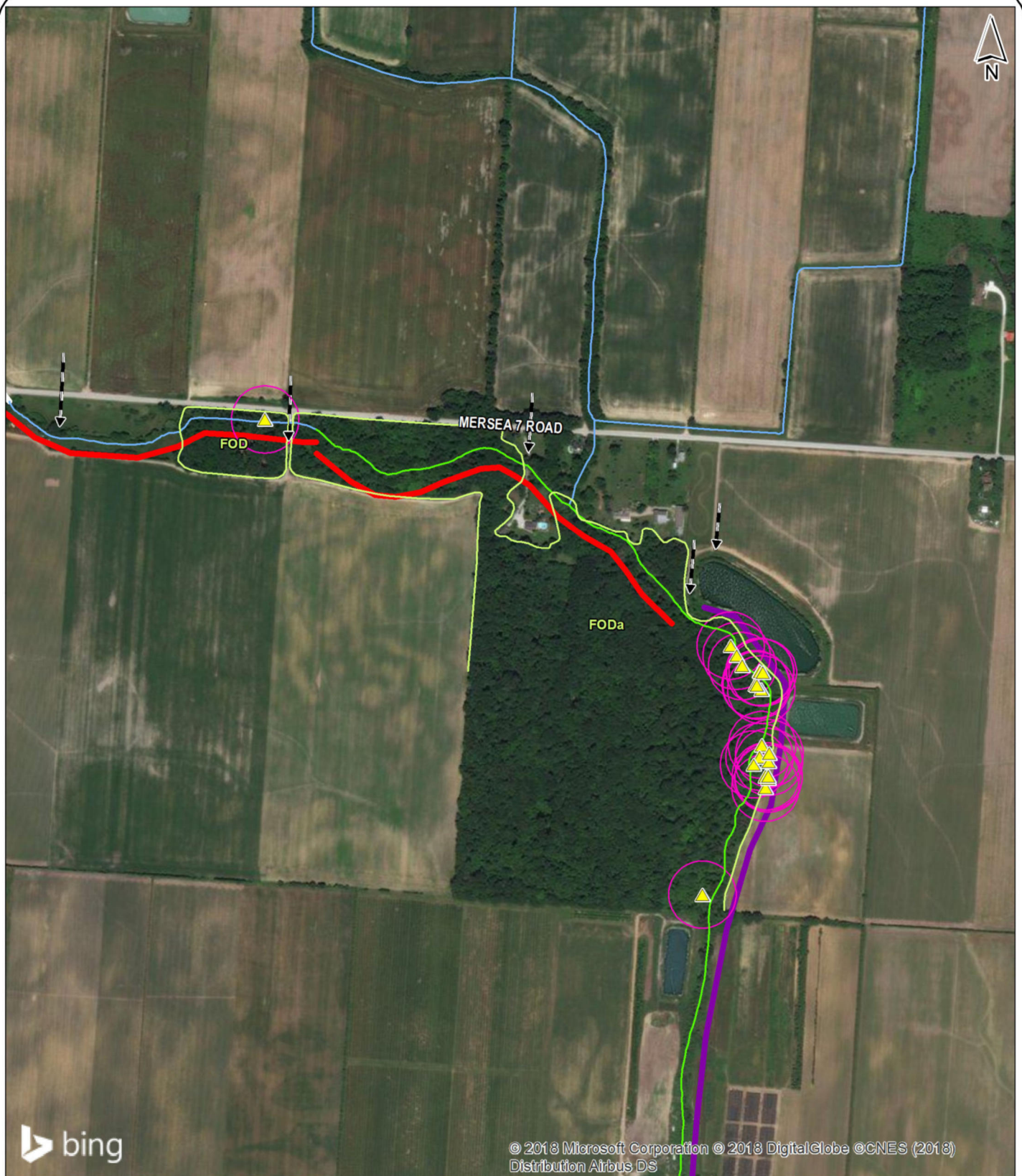
Figure: 2

Date: September, 2018

Prepared By: MWF

Scale: 1 : 35,000

Checked By: TH



NATURAL HERITAGE

- Wetland Not evaluated per OWES
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain).
- Drain (established corridors)

Vegetation Communities

- Vegetation Community Boundary
- Deciduous Forest

Maintenance Corridors

- Access Route
- North and East Side of Drain
- South and West Side of Drain
- Both Sides of Drain

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

100 50 0 100 Metres



Project: TA8698	Figure: 3a
Date: September, 2018	Prepared By: MWF
Scale: 1 : 8000	Checked By: LMC



NATURAL HERITAGE

- Hillman Swamp Wetland Complex (ER 41)
- Provincially Significant Wetland
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain)
- Drain (established corridors)

Vegetation Communities

- Vegetation Community Boundary
- Deciduous Forest

Maintenance Corridors

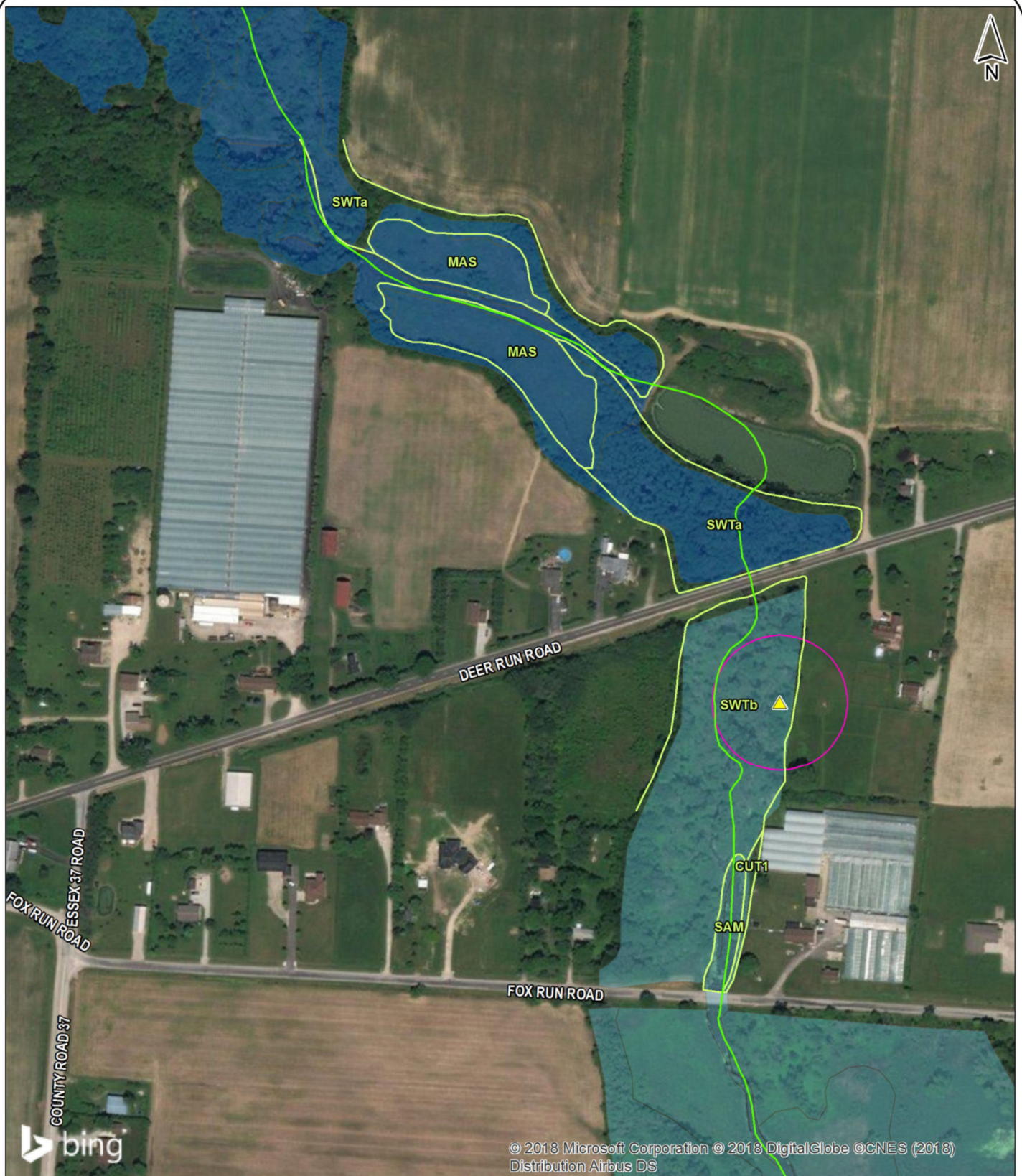
- Access Route
- North and East Side of Drain
- South and West Side of Drain
- Both Sides of Drain

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

100 50 0 100 Metres



Project: TA8698	Figure: 3b
Date: September, 2018	Prepared By: MWF
Scale: 1 : 8000	Checked By: LMC



NATURAL HERITAGE

- Hillman Swamp Wetland Complex (ER 41)
Provincially Significant Wetland
- Hillman Marsh
Provincially Significant Wetland
- Butternut (*Juglans cinerea*)
- Butternut Protection Zone
- Natural (to be classified as Drain)

Vegetation Communities

- Vegetation Community Boundary
- MAS** Shallow Marsh
- SAM** Mixed Shallow Aquatic
- CUT1** Mineral Cultural Thicket Ecosite
- FOD** Deciduous Forest
- SWT** Thicket Swamp

Data Sources: LGL Limited field surveys,
Ministry of Natural Resources and Forestry.

80 40 0 80 Metres



Project: TA8698	Figure: 3c
Date: September, 2018	Prepared By: MWF
Scale: 1 : 4000	Checked By: LMC

Table 1 Species at Risk in the Lebo Creek Drain Watershed Rehabilitation Project Project Area.

Scientific Name	Common Name	Location (s) Observed	ESA	SARA	Last Observed Date	Preferred Habitat*	Potential Habitat in Study Area
<i>Pantherophis gloydi</i>	Eastern Foxsnake	West of Fox Run Road where it crosses the Lebo Creek Drain	END	END	2017	Unforested areas like old fields, and marshes, will also use forests occasionally	The Lebo Creek Drain is habitat for this species, though no hibernacula were identified during 2017 survey, suitable overwintering habitat is likely present.
<i>Hirundo rustica</i>	Barn Swallow	East of Fox Run Road where it crosses the Lebo Creek Drain	THR	-	2017	Open-country and agricultural	Open-country and agricultural habitat types at the locations identified provide habitat suitable to support foraging Barn Swallow. No Barn Swallow nests were found within culverts or bridge structures present in the study area.
<i>Contopus virens</i>	Eastern Wood Pewee	The forest south of Mersea Road 7 and the forest south of Mersea Road 5 along the Lebo Creek Drain	SC	-	2017	Forest species, typically associated with forest openings, clearing or edges	Two forest communities were confirmed as habitat.
<i>Myotis leibii</i> , <i>Myotis lucifugus</i> , <i>Myotis septentrionalis</i> , <i>Perimyotis subflavus</i>	Eastern small-Footed Myotis, Little Brown Myotis, Northern Myotis, Tri-coloured Bat	Not observed	END	-	2017	Forests, roost under loose bark, leaf clumps and in the cavities of trees.	Forest communities within the study area have the potential to function as suitable habitat for the species. Forested areas that contain mature trees along the Lebo Creek Drain between Fox Run Road and Mersea Road 7.
<i>Juglans cinerea</i>	Butternut	Throughout forested area, along the Lebo Creek Drain	END	END	2017	Rich, moist, and well-drained soils often found along streams.	22 individuals were identified along the Lebo Creek Drain

*Preferred habitat is based on a review of secondary sources; however, these species may be found in other habitats.

The following species have been identified as the focus of the Mitigation Plan presented herein:

- Eastern Foxsnake;
- Butternut; and,
- Bats.

Should other SAR species be encountered during construction activities, a Qualified Biologist will determine if they need to be added to the Mitigation Plan.

Other SAR that may be found in the study area including those that have been documented previously as listed below, in addition to new species not identified to date. The species listed below were found in or near the study area since 1985 as listed in the Natural Heritage Information Center (NHIC) website by the OMNRF (Accessed September 2018). All species listed below have Fact Sheets included in Appendix A of the SAR Training Manual (LGL 2018):

- Acadian Flycatcher (*Empidonax vireescens*);
- American Chestnut (*Castanea dentata*);
- Bald Eagle (*Haliaeetus leucocephalus*);
- Barn Swallow (listed above, but not part of mitigation plan as no nests were observed in culverts or structures that could be impacted from proposed improvements);
- Blanding's Turtle (*Emydoidea blandingii*);
- Climbing Prairie Rose (*Rosa setigera*);
- Common Five-lined Skink (*Plestiodon fasciatus pop.1*);
- Common Hoptree (*Ptelea trifoliata*);
- Eastern Flowering Dogwood (*Cornus florida*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Mole (*Scalopus aquaticus*);
- Eastern Wood-peewee (listed above, but not part of mitigation plan as not required under ESA for species listed as Special Concern);
- King Rail (*Rallus elegans*);
- Prothonotary Warbler (*Protonotaria citrea*);
- Northern Map Turtle (*Graptemys geographica*);
- Round-leaved Greenbrier (*Smilax rotundifolia*);
- Scarlet Ammannia (*Ammannia robusta*);
- Shumard Oak (*Quercus shumardii*);

- Snapping Turtle (*Chelydra serpentina*);
- Spotted Turtle (*Clemmys guttata*); and,
- Swamp Rose Mallow (*Rosa setigera*).

3.0 MITIGATION

In order to ensure that project works do not contravene the Ontario *ESA*, a site specific mitigation plan has been created for the project to employ the use of timing windows, exclusionary measures and other means to avoid impacts to SAR. The respective sections below identify a number of measures to minimizing impacts to SAR.

3.1 OVERALL APPROACH

The overall approach to mitigation focuses on strategies intended to avoid impacts to across the entire project area to include the following:

- a) Construction timing – timing windows will be used to minimize or avoid impacts to Eastern Foxsnake, other herpetofauna and bats (no construction or vegetation/tree removals prior to September 1 in order to avoid the most active period for SAR herpetofauna at ground surface and in order to avoid impacts to maternal roosting habitat for bat species;
- b) Field screening of construction area or vehicle access routes prior to any ground clearing or vegetation removals by a Qualified Biologist to delineate sensitive habitat features and outline a plan for avoidance or preservation of habitat features – such as for Eastern Foxsnake (hibernacula, oviposition sites, thermoregulation sites);
- c) Monitoring of the site during the period of construction by a Qualified Inspector and Qualified Biologist;
- d) Installation of exclusion fencing during construction to exclude these areas from wildlife entering the site, such as Eastern Foxsnake;
- e) Avoidance – keep a distance of 50m from all Butternut trees (including the 22 identified and any new individuals identified during the screening); and
- f) SAR training for all individuals working on site (to be provided by the Qualified Biologist).

The mitigation summarized above is described in greater detail in the sections that follow. Should any of these mitigation measures be found to be ineffective in minimizing adverse effects, actions will be taken to increase the effectiveness of the mitigation measures or other reasonable steps will be taken to minimize adverse effects.

In addition, an erosion and sediment control plan will be implemented to prevent sediment laden water or any deleterious substances from entering the Lebo Creek Drain, as per section 23.9 (13) 7 of O. Reg. 242/08 (see Appendix B). Best Management Practices outlined in the Guidance for Maintaining and Repairing Municipal Drains in Ontario manual (Kavanaugh *et al* 2017). Should be followed to ensure aquatic species are also protected. Examples of erosion and sediment control measures include:

- Installation of effective erosion and sediment fencing;
- Maintenance of water flow during construction (pumps, diversion, etc.);

- Employ measures to prevent contamination from fuels or other materials from entering the watercourse;
- Regular monitoring and maintenance of erosion and sediment control measures; and,
- Removal of all measures after construction and stabilize work area.

3.2 CONSTRUCTION TIMING

Timing of construction is the best mitigation tool available to the project to avoid impacts to SAR. Table 2 provides a summary of recommended timing windows in which construction will be prohibited to protect various species. Delaying construction until October 15 is recommended for sites in SAR habitat to greatly reduce the risk to SAR associated with project activities (e.g., SAR snakes will generally be underground and dormant) and shall be considered the preferred mitigation approach. Timing construction to begin in late fall/winter will also mitigate impacts to SAR bats. Wherever feasible, working in the winter when the ground is frozen is ideal as impacts will be minimized. During a cold spell in winter, the drain may freeze and provide an ideal access route to remove log jams. This would minimize impacts to vegetation and the ground in the area. Efforts should be made to do most work under frozen conditions, when ground is completely frozen, and with covered with snow. Construction should also avoid the sensitive period of April 1 to May 31 and September 15 to October 15 which is a sensitive time for snakes while they are staging at overwintering sites. If work in the summer months is required, a field screening will be required to ensure no oviposition sites are disturbed. While timing windows provide guidance, temperature and site conditions must also be factored into risk to SAR when project planning (i.e. Early or warm spring may mean snakes are active prior to April 1).

Vegetation removal should be avoided from April 1 to August 31 in order to protect birds during the breeding season and avoid contravention of the *Migratory Birds Convention Act*. Avoiding tree removals until September 1 will also protect roosting bats (K.Buck, pers. comm., October/November 2018). Vegetation removal can be undertaken with machinery however hand clearing is preferred; disturbance to soils (from machine tracks etc.) should be minimized to the extent possible.

Table 2 Construction Timing Windows.

Species	Restricted Timing Windows
Birds	• No vegetation removals between April 1 to August 31
Bats	• No tree removals (>10cm diameter at breast height (DBH)) between April 1 to September 1 (K.Buck, pers. comm., October/November 2018)
Snakes	• No work from April 1 to May 31, or September 15 to October 15; • No disturbance of oviposition from June 15 to September 15

3.3 FIELD SCREENING FOR SPECIES AT RISK

Field-screening by a Qualified Biologist will occur where construction activities (e.g., vegetation removals, log jam removals, dredging, and vehicle movement) will occur. Prior to on-site construction the Qualified Biologist will field-screen the proposed impact areas to ensure impacts to individual SAR or SAR significant habitat features are identified and avoided. If work is to be completed in the summer months, area should be screened prior to the construction activities take place in order to screen out hibernacula, thermoregulation and oviposition sites. If work is to be completed in the winter months, then a screening should be undertaken prior to snowfall in order to ensure no overwintering habitat or hibernacula are disturbed during construction activities.

3.3.1 Eastern Foxsnake

Eastern Foxsnake are a large snake, with bold dark patches on a yellowish background. The head can vary from brown to red. Juveniles have a similar pattern but often have a grey background colour (OMNR September 2010). It can often be found in the grass, sunning on rocks, swimming in creeks, or climbing in trees (OMNR September 2010). The entire Lebo Creek Drain provides suitable habitat for Eastern Foxsnake. Habitat features including hibernacula, thermoregulation and oviposition sites for this species are expected to be present along the drain. Field screening of impact areas prior to construction should include identification of habitat features such as:

- Hibernacula – these habitat features are underground chambers where the snakes spend the winter, protected from the cold. They can be man-made, such as a well, or building foundation, or natural such as an animal burrow, a tree stump, or a fissure in bedrock.
- Oviposition – these sites include decaying leaf piles, compost or woodchip piles, and rotting logs and stumps (OMNR September 2010).
- Thermoregulation – these sites are highly variable but may include brush piles, rock piles, logs, trail edges, exposed concrete and artificial cover objects such as refuse.

The following shall occur prior to construction where more significant construction related impacts within areas of suitable Foxsnake habitat are expected:

- Field-screening of impact areas prior to installation of exclusion fencing;
- Qualified Biologist/Inspector to review exclusion fencing installation / completed installation to confirm desired function is achieved; and,
- After erection of exclusion fencing - detailed field-screening of impact area (i.e. area inside fence) on a daily basis by Qualified Biologist/Qualified Inspector during active season. This may include the use of coverboards.

Potential hibernacula features identified by the Qualified Biologist should be avoided to the extent possible, given they're underground there is no opportunity for relocation etc. Protection/avoidance of these sites shall be a priority. If hibernacula are not able to be protected they shall be surrounded with barrier fencing (prior to September 1) so that snakes do not occupy them during a year when disturbance or destruction of a feature may occur. Erection of barrier fencing prior to September 1 will ensure hibernacula features are not occupied by snakes during the winter months, allowing works to take place without impacting

overwintering snakes.

Oviposition and thermoregulation sites will be screened for and impacts shall be avoided to the extent possible. If disturbance to the feature is required then it will be temporarily removed, stored on-site and relocated back to its original position and general physical structure after impacts are completed. All attempts shall be made to reposition the structure as it originally existed. No disturbance of oviposition sites shall be permitted from June 15 to September 15. Thermoregulation features may be removed at any time of year, after a field-screening by the Qualified Biologist to ensure snakes are not present in/on the feature.

Vegetation clearing in areas of suitable Foxsnake habitat may commence following installation of the exclusion fencing and field-screening by the Qualified Biologist. Vegetation maintenance may occur within exclusion fence zones. Suppression of vegetation growth and cover will deter SAR wildlife from entering and using habitats within impact areas. During the site-screening process undertaken by the Qualified Biologist, vegetation maintenance requirements will be determined based on site characteristics and risk of SAR entering the construction area.

3.3.2 Butternut

A total of 22 Butternut were identified along the banks of the Lebo Creek Drain (see Figure 3A-C for locations of these trees). As there is potential for more individuals, it is proposed that a field-screening of impact areas be done prior to any vegetation clearing along Lebo Creek Drain. Butternut trees are medium sized, with bark that is grey and smooth on young trees that gradually gets more rippled with age. They have compound leaves and a green fruit (nut) with a fuzzy husk (MNR 2018). Should any more butternuts be identified, new protection areas of 50m will be implemented around each tree.

3.3.3 Bats

It is not anticipated that field crews will encounter SAR bats in the study area as they are nocturnal species. As they use trees as maternal roosting sites in the late spring/summer months, limiting tree removals to winter months will mitigate impacts to these species. Bat trees include trees over 10cm DBH with cavities, or leaf clumps. A cavity may be a hole, a fissure, or sloughing bark. Efforts will be made to avoid candidate bat trees. A Qualified Biologist is required for field screening prior to intrusive construction activities.

3.4 ERECTION OF TEMPORARY BARRIERS AT ACTIVE CONSTRUCTION SITES AND MONITORING DURING CONSTRUCTION

Herpetofauna exclusion fencing will be erected where more significant habitat impacts (e.g., log jam removals, dredging) occur in SAR habitat. The purpose of temporary herpetofauna exclusion fencing is to exclude herpetofauna, primarily snakes and turtles, from accessing/hibernating within the proposed impact sites (allowing work to be undertaken in these areas during the winter season). Exclusion fencing shall be installed prior to any construction activity, and after the area is screened by a Qualified Biologist. Exclusion fencing should follow the Reptile and Amphibian Exclusion Fencing Guidelines (OMNR 2013).

The temporary exclusion fencing shall remain in position and will be maintained to ensure that there are no openings by which herpetofauna may enter or re-enter the Active Construction Site until construction is complete.

The site specific design (i.e., 'field fit'), materials, and installation methods for temporary exclusion fencing being installed will be reviewed by the Qualified Biologist prior to construction to ensure that the exclusion fencing will meet or exceed herpetofauna exclusion requirements. Details regarding design, materials and installation methodology for the exclusion fencing are provided below (Section 3.4.1 and 3.4.2). Temporary exclusion fencing must be installed at all Active Construction Sites that are within or adjacent to SAR habitat.

The exclusion fencing will be inspected on a daily basis for openings, damage (e.g., tears), debris (on/near fence) and any wildlife within the fenced area, in order to ensure that all barriers are effective and designed to prevent species at risk individuals from entering the Active Construction Sites (see Section 3.4.3).

3.4.1 Barrier Material

Exclusion fencing must be constructed of a material that is smooth (to reduce climbing), strong and free of seams. Given the herpetofauna species present on site, short-term duration of Active Construction and frequent monitoring/inspection by Qualified Biologist; light-duty silt fence is the recommended exclusion fence material. Alternative fabric/synthetic materials may be approved by the Qualified Biologist should they be UV resistant, tear resistant, have the ability to remain strong, and include a smooth surface.

The key factor when considering alternative materials is the potential for wildlife to become entangled or injured. The use of any alternate fencing product must be reviewed and approved by the Qualified Biologist in order to determine their suitability for function and protection provided to wildlife and to eliminate the risk of injury or entanglement.

3.4.2 Barrier Installation

As noted above, exclusion fencing installation is required at Active Construction Sites that are within or adjacent to sensitive SAR habitat. Exclusion fencing will be installed with small openings so that any wildlife which is trapped within the fence has the opportunity to exit the fenced area (see Figure 4). Openings will be placed at intervals of approximately 25m of fence installed. At exclusion fence openings, the barrier must double back on itself at a 15-30 degree angle on the habitat side of the barrier, directing any wildlife travelling along the fence back into suitable habitat and away from the Active Construction Site (see Figure 4). Openings must be designed to prevent re-entry of wildlife into the construction site. Along its entire length, the barrier must be entrenched by a minimum of 10-20cm to exclude wildlife from

burrowing underneath the fencing (OMNR July 2013). Barriers must be at least 85cm in height above ground to prevent wildlife such as snakes from climbing the fence and accessing the Active Construction Site (OMNR July 2013). All fence supports (e.g., stakes) should be driven into the ground at least 25% of their length and extend to the top of the exclusion barrier fence (i.e. 1m above ground). Supports are installed on the construction side of the fence so that wildlife cannot use them to climb over the barrier and access the Active Construction Site. All debris (including rocks, grass, shrubs, etc.) will be removed (through use of hand-tools) within 1m of the barrier to prevent wildlife from using debris to access the construction side of the fence. Barriers must be installed prior to commencement of Active Construction as described above.

All exclusion fencing will be walked daily during the active season (April 1 to October 31 of any year) to check for wildlife within the Active Construction Site side of the fence. Any wildlife encountered will be passively monitored to ensure that it leaves the Active Construction Site. All exclusion fences will also be inspected daily to review the integrity of the fence and search for holes, tears or other deficiencies that may negatively impact its function. All holes or other disrepair must be fixed immediately upon discovery (no longer than 24 hours). Any debris such as sticks or branches that could be used by wildlife to breach the fence should be immediately removed and placed on the ground a minimum of 1m away from the barrier.

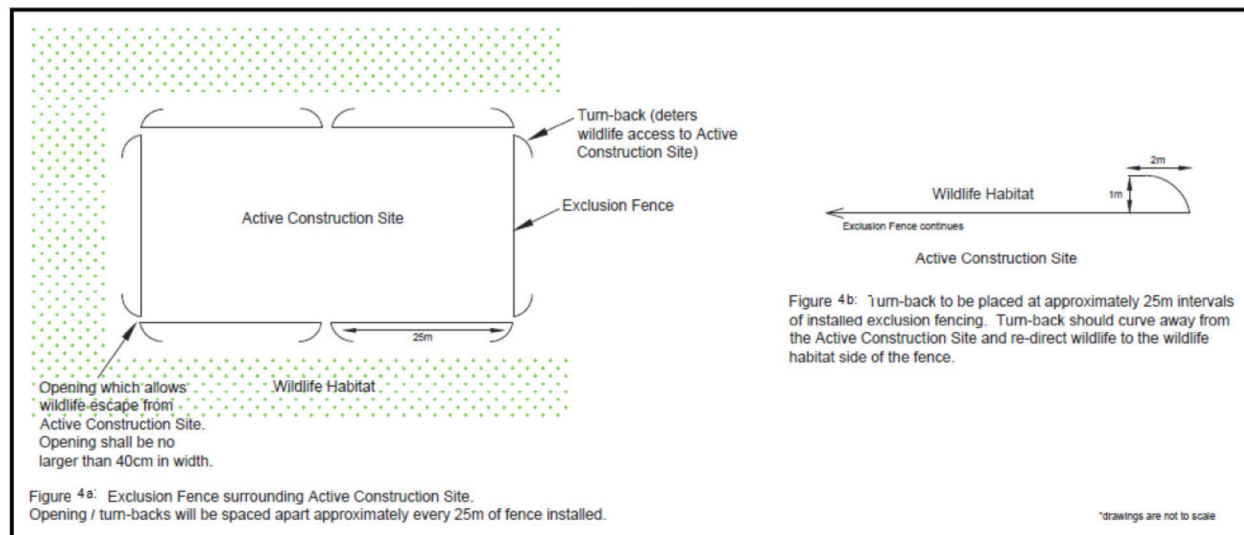


Figure 4 Exclusion Fencing.

3.5 ENCOUNTER OF SPECIES AT RISK WITHIN ACTIVE CONSTRUCTION SITES

The risk of encountering SAR wildlife, although significantly reduced, will remain after field screening efforts have occurred. In the event of a SAR encounter in the Active Construction Site, all construction activity in the immediate vicinity of the encounter which would pose a potential threat must be halted immediately. The Qualified Biologist or Qualified Inspector must be contacted immediately in all instances of encounter with a SAR. The Qualified Biologist or Qualified Inspector will follow up on the encounter to determine what species was observed and re-screen the site as required. Any SAR wildlife encountered will be allowed to naturally disperse from the site. Natural dispersal may be aided by lifting sections of exclusion fencing to allow individuals to exit the Active Construction Site. In the event that SAR wildlife

does not naturally disperse from the Active Construction Site, the individual can be relocated by or in consultation with a Qualified Biologist who has knowledge and/or training in the handling of that particular species. A SAR handling manual is appended in the SAR training manual as Appendix B (OMNR undated).

Should an injured or dead SAR be encountered, the injured animal should be transferred to a holding tub and kept in a cool place outside of sunlight. The Qualified Biologist should be contacted for further advice or instructions. The OMNRF should then be contacted for advice and to arrange for the individual to be retrieved or transferred. Contact numbers are provided in the SAR training manual (LGL October 2018).

3.6 AVOIDANCE OF BUTTERNUTS

A total of 22 individuals were identified during field surveys in 2017. It is possible there may be more individuals along the access corridors and construction areas. It is therefore recommended that the above mentioned screening include looking for other Butternut individuals. The MNRF recommends a Butternut habitat protection zone of 50m protection zone. No construction related activities, including vegetation clearing should occur within 50m of a Butternut tree. Some of the proposed access corridors are in conflict with the butternut trees. It is therefore recommended that any works within 50m of these trees is done without the use of machinery. If removal of log jams is required in the vicinity of one of these trees, it is recommended that the work is done by hand in order to protect the trees.

3.7 SPECIES AT RISK TRAINING

A Species at Risk Training Manual was prepared (LGL 2018b) and is to be used to actively train personnel working within the project area. Training will be provided to all parties responsible for work within the project area that may impact species at risk and it will include training on procedures to follow in the event of an encounter with a species at risk. The objectives of the training are to ensure that all attendees will gain an understanding of the species at risk that might be encountered on site, the Ontario *ESA* (including penalties), project specific mitigation, SAR avoidance protocols, SAR encounter protocols, and specific protocols that will be followed to ensure protection of species at risk. The proponent is committed to training all personnel involved in on-the-ground work within the project area. Species at risk training includes in-person presentation of material and discussion on the following topics:

- The Ontario *ESA* and violation penalties;
- how the Act applies to works within the project area;
- species at risk fact sheets;
- on-site species at risk protocols;
- protocol for encounters with species at risk (including notification); and,
- species at risk protection protocols.

Samples of species at risk fact sheets are provided in Appendix A. Records of all training sessions and attendees will be maintained by the proponent and provided in annual reports.

3.8 VISUAL INSPECTION OF CONSTRUCTION EQUIPMENT

Species at risk wildlife may take up residence in any construction equipment, stockpile/material or debris piles left undisturbed for an extended period of time during the active season (April 1-October 15). There is an increased risk of encountering SAR wildlife in construction material/debris in areas adjacent to known occurrences of SAR and in areas adjacent to suitable SAR habitat. Consequently, all efforts should be made to maintain a well-organized construction zone that employs good housekeeping practices. Equipment operators shall check their equipment at the start of each day, or the commencement of operation. Should a SAR be discovered, the Qualified Biologist will be contacted immediately. The Qualified Biologist will be required to monitor, on a frequent basis (once per week), the contractor's storage, yard and staging areas in order to prevent the storage of materials or equipment that might attract SAR wildlife.

4.0 REPORTING

The registration of the project also requires annual reporting by December 31 (of each year project activities occur). This report must be kept by the proponent for a period of five years, and must be provided to the OMNRF within 14 days upon request. The annual report must include

- A record of the steps taken by the person carrying out the activities for the previous 12 month period to minimize and mitigate the potential impacts of the activity on the species identified in the notice of drainage works form;
- An assessment of the effectiveness of the mitigation measures implemented for the project;
- Details of any observations of species identified in the notice of drainage works (species, location, date, and time); and,
- Record measures taken to restore or enhance SAR habitat if any are taken.

5.0 CONCLUSION

In summary, this mitigation plan fulfills the requirements for an exemption to the Ontario *ESA* (2007) under section 23.9 of O. Reg 242/08 to conduct works under the *Drainage Act* (1990). This mitigation plan was prepared for known SAR in the study area (Eastern Foxsnake and Butternut), as well as SAR anticipated to be in the area (Bats). The Mitigation Plan outlines steps the Municipality of Leamington will take to mitigate impacts to SAR. These include surveys for potential SAR habitat or individuals prior to any works as well as prescribed timing windows for construction activities. This plan will be updated at a minimum of every five years, or when species in the study area are newly uplisted or delisted. Annual reporting will be completed by December 31st of each year that construction activities take place to detail the previous twelve months of work. Annual reports will be kept on file for a period of five years.

6.0 REFERENCES

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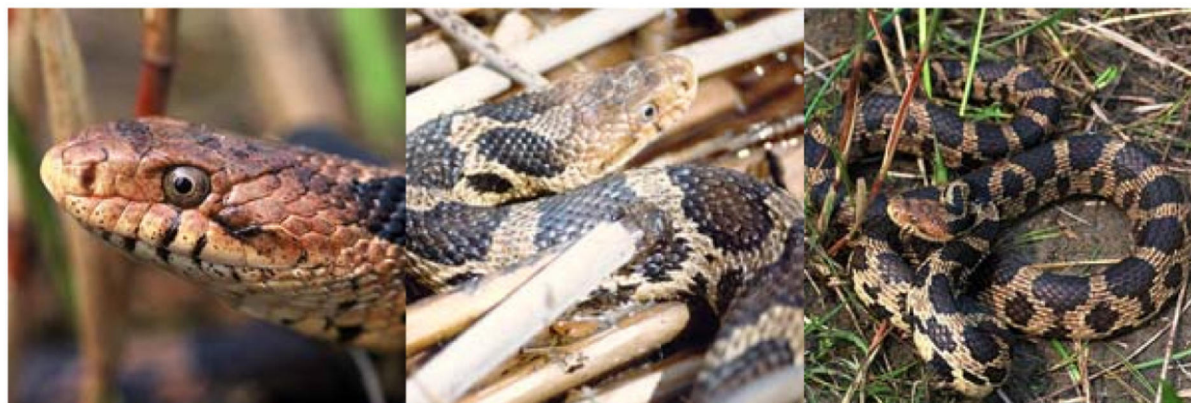
Appendix A

Sample Species at Risk Fact Sheet



Eastern foxsnake

Scientific name: *Pantherophis gloydi*



Cover photos credit: Scott Gillingwater (all photos)

Status

Endangered (Carolinian population)

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Threatened (Georgian Bay population)

“Threatened” means the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.

Date added to the Species at Risk in Ontario List

September 10, 2009

What it looks like

The Eastern Foxsnake is one of Ontario’s largest snakes, reaching over 1.7 metres in length. This beautiful snake usually has a shiny, rusty orange head and a golden to light brown body with dark blotches. The belly is light yellow and black.

Where it lives

Eastern Foxsnakes in the Carolinian population are usually found in old fields, marshes, along hedgerows, drainage canals and shorelines. Females lay their eggs in rotting logs, manure or compost piles, which naturally incubate the eggs until they hatch.

Individuals from the Georgian Bay population are usually found within 150 metres of the shore in rocky habitats spotted with trees and shrubs.

During the winter, Eastern Foxsnakes hibernate in groups in deep cracks in the bedrock and in some man-made structures.

Where it's been found in Ontario

The Eastern Foxsnake is only found in Ontario, Michigan and Ohio. Ontario contains 70 per cent of their range in two distinct populations: the Carolinian population in southwestern Ontario and the eastern Georgian Bay population.

What threatens it

The greatest threats to the Eastern Foxsnake are habitat loss and fragmentation (when habitat is broken into smaller segments) due to shoreline development and draining wetlands. Sadly, some snakes are also hit by cars and deliberately killed by humans. Illegal collecting can also harm populations of this snake.

Action we are taking

Endangered Species and their habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary \(https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy-executive-summary\)](https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy-executive-summary) (September 10, 2010)

Read the [recovery strategy \(https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy\)](https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy) (September 10, 2010)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement \(https://www.ontario.ca/page/eastern-foxsnake-government-response-statement\)](https://www.ontario.ca/page/eastern-foxsnake-government-response-statement) (June 15, 2011)

Five-Year Review of Progress

A five-year review reports on progress made toward protecting and recovering a species, within five years of publishing a species' government response statement.

Read the [report \(https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2016\)](https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2016) on progress towards the protection and recovery of 27 species at risk, including Eastern Foxsnake (2016)

Habitat protection

A habitat regulation defines a species' habitat and many describe features (e.g., a creek, cliff, or beach), geographic boundaries or other unique characteristics.

Read the [habitat summary for the Carolinian population \(https://www.ontario.ca/page/eastern-foxsnake-carolinian-population-habitat-protection-summary\)](https://www.ontario.ca/page/eastern-foxsnake-carolinian-population-habitat-protection-summary) (July 1, 2012)

Read the [habitat summary for the Georgian Bay population \(https://www.ontario.ca/page/eastern-foxsnake-georgian-bay-population-habitat-protection-summary\)](https://www.ontario.ca/page/eastern-foxsnake-georgian-bay-population-habitat-protection-summary) (July 1, 2012)

What you can do

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find Eastern foxsnake on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Visit the Toronto Zoo Adopt-a-Pond website to learn more about Ontario's rare snakes, their habitat and related conservation initiatives:
[www.torontozoo.com/Adoptapond \(http://www.torontozoo.com/Adoptapond\)](http://www.torontozoo.com/Adoptapond).
- Register with the Herpetofaunal Atlas program to receive e-mail newsletters, event notifications, and other important updates about the Herpetofaunal Atlas project as it develops. Visit their website to see how you can participate and learn more about Ontario's reptiles and amphibians:
www.ontarionature.org/herpetofaunal_atlas.html
(http://www.ontarionature.org/herpetofaunal_atlas.html).

- You can help improve Eastern Foxsnake habitat by keeping your property as natural as possible. Leave brush piles and logs to decay where they lie.
- Never buy snakes that have been caught in the wild, and never buy a native species of any kind that's being sold as a pet.
- Every year, snakes all over the province must cross busy roads. Watch for snakes on the road, especially between May and October.
- Appreciate snakes and don't harm them. Keep the danger of snakes in perspective: All of Ontario's snakes are non-venomous, except for the very rare and shy Massasauga Rattlesnake.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667)

Quick facts

- If frightened, the harmless Eastern Foxsnake will mimic a rattlesnake by vibrating the tip of its tail in leaf litter to produce a buzzing noise. Don't be fooled. The Massasauga has a real 'rattle' at the end of its tail, a darker background body colour (brown-grey), and a short thick body compared to the long and slender foxsnake.
- The Eastern Foxsnake is a constrictor and suffocates prey such as larger rodents with the coils of its body. They also eat baby birds, eggs and frogs.
- Eastern Foxsnakes are excellent swimmers! You can distinguish the Eastern Foxsnake from a watersnake at a distance because the Foxsnake swims on the surface of the water, floating like a pool noodle, while a watersnake swims with only its head above the surface.

Updated: June 28, 2018

Published: July 17, 2014

Related

[How species at risk are protected](#)

[Species at risk in Ontario List](#)

[How to comment on protecting species at risk](#)

[How to get an Endangered Species Act permit or authorization](#)

[Conserving biodiversity \(https://www.ontario.ca/page/conserving-biodiversity\)](https://www.ontario.ca/page/conserving-biodiversity)

Appendix B

Ontario Regulation 242/08 Section 23.9 and 24.3

Endangered Species Act, 2007

ONTARIO REGULATION 242/08

GENERAL

Consolidation Period: From July 1, 2018 to the [e-Laws currency date](#).

Last amendment: 219/18.

Legislative History: 411/09, 436/09, 437/09, 197/11 (as am. by 178/14 and 387/15), 293/11 (as am. by 325/13), 294/11, 65/12, 122/12, 176/13 (as am. by 219/18), 323/13, 179/14, 232/14, 308/16, 218/18, 219/18.

This is the English version of a bilingual regulation.

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INTERPRETATION

Application

0.1 This Regulation applies to all species on the Species at Risk in Ontario List, as that list read on June 2, 2017. O. Reg. 176/13, s. 1; O. Reg. 179/14, s. 1; O. Reg. 308/16, s. 1; O. Reg. 218/18, s. 1.

Definitions

1. (1) In this Regulation,

“ecoregion” means an ecoregion identified in the document entitled “The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions” that is published by the Ministry of Natural Resources, dated 2009 and available to the public at the Ministry’s district offices, at the Ministry’s corporate library in Peterborough and on the Ministry’s website; (“écorégion”)

“game wildlife” has the same meaning as in the *Fish and Wildlife Conservation Act, 1997*; (“gibier sauvage”)

“land classification system for southern Ontario” means the land classification system set out in the document entitled *Ecological Land Classification for Southern Ontario: First Approximation and its Application*, dated September, 1998 and published by the Ontario Ministry of Natural Resources; (“système de classification écologique des terres du Sud de l’Ontario”)

“Registry” means the registry known as the Ministry of Natural Resources Registry available on the Ministry website; (“Registre”)

“specially protected wildlife” has the same meaning as in the *Fish and Wildlife Conservation Act, 1997*; (“animal sauvage spécialement protégé”)

“watercourse segment” means a section of the watercourse that,

- (a) consists of relatively similar hydrography and surficial geology which is not separated by in-stream barriers that would prevent fish movement, and

- (b) is delineated in accordance with the document entitled “Protocol for Applications Used in the Aquatic Landscape Inventory Software Application for Delineating, Characterizing and Classifying Valley Segments within the Great Lakes Basin”, dated September 2002, that is published by the Ontario Ministry of Natural Resources and available on a website of the Government of Ontario; (“tronçon de cours d’eau”)

“wildlife custodian” has the same meaning as in section 44 of the *Fish and Wildlife Conservation Act, 1997*. (“gardien d’animaux sauvages”) O. Reg. 242/08, s. 1; O. Reg. 176/13, s. 2; O. Reg. 323/13, s. 1; O. Reg. 232/14, s. 1.

(2) A reference in this Regulation to a geographic area is a reference to a geographic area named and described in Schedule 1 or 2 to Ontario Regulation 180/03 (Division of Ontario into Geographic Areas) made under the *Territorial Division Act, 2002*. O. Reg. 122/12, s. 1.

Drainage works

23.9 (1) This section applies to a person who carries out one of the following activities in a drainage works or ditch that is the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species:

1. Improving or maintaining drainage works, if an agreement for the improvement or maintenance was filed under subsection 2 (2) of the *Drainage Act*.
2. Improving, maintaining or repairing drainage works, if a report that applies to the drainage works was adopted under subsection 45 (1) of the *Drainage Act* or under subsection 3 (15) of that Act, as that subsection read on October 24, 2010.
3. Maintaining a ditch constructed under *The Ditches and Watercourses Act*, being chapter 109 of the Revised Statutes of Ontario, 1960, in accordance with subsection 3 (18) of the *Drainage Act*. O. Reg. 176/13, s. 14.

(2) This section does not apply with respect to a species identified in Columns 3 and 4 of the Table to this subsection by its common and scientific names, and belonging to the species grouping referred to in Column 2 of the Table opposite the identified species, except in the circumstances described in subsection (3).

TABLE
EXCLUDED SPECIES

Column 1 Item	Column 2 Species Grouping	Column 3 Common Name	Column 4 Scientific Name
1.	Vascular plants	Cherry Birch	<i>Betula lenta</i>
2.	Vascular plants	False Hop Sedge	<i>Carex lupuliformis</i>
3.	Vascular plants	False Rue-anemone	<i>Enemion biternatum</i>
4.	Vascular plants	Heart-leaved Plantain	<i>Plantago cordata</i>
5.	Vascular plants	Scarlet Ammannia	<i>Ammannia robusta</i>
6.	Vascular Plants	Lowland Toothcup	<i>Rotala ramosior</i>
7.	Insects	Bogbean Buckmoth	<i>Hemileuca sp</i>
8.	Fishes	Pugnose Minnow	<i>Opsopoeodus emiliae</i>
8.1	Fishes	Spotted Gar	<i>Lepisosteus oculatus</i>
9.	Amphibians	Small-mouthed Salamander	<i>Ambystoma texanum</i>
9.1	Amphibians	Unisexual Ambystoma (Small-mouthed Salamander dependent population)	<i>Ambystoma laterale — texanum</i>
10.	Mammals	Gray Fox	<i>Urocyon cinereoargenteus</i>

O. Reg. 179/14, s. 4 (1); O. Reg. 218/18, s. 7.

(3) This section applies with respect to a species referred to in the Table to subsection (2) if a person is carrying out an activity described in subsection (1) in an area that is the habitat of, or used by, the species and,

- (a) before June 30, 2010, the person had entered into an agreement with the Minister under subsection 23 (2);
- (b) the agreement applied specifically to the species and with respect to an activity described in subsection (1); and
- (c) the person submits a notice of drainage works form to the Minister in accordance with paragraph 1 of subsection (6) and complies with the other conditions set out in subsection (6). O. Reg. 176/13, s. 14; O. Reg. 179/14, s. 4 (2).

(4) Clause 9 (1) (a) and subsection 10 (1) of the Act do not apply to a person who, while carrying out an activity described in subsection (1), kills, harms, harasses, captures or takes a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species, or damages or destroys the habitat of such a species, if the person satisfies all of the conditions set out in subsection (6). O. Reg. 176/13, s. 14.

(5) Subclauses 9 (1) (b) (i) and (ii) of the Act do not apply to the possession or transport of a member of a species if,

- (a) pursuant to subsection (4), clause 9 (1) (a) of the Act did not apply with respect to the member of the species; or

- (b) the possession or transport of the member of the species is necessary in order to satisfy the conditions set out in subsection (6). O. Reg. 176/13, s. 14.
- (6) The following are the conditions that a person who carries on an activity described in subsection (1) must satisfy for the purposes of subsection (4):
1. Before doing anything, in the course of carrying out an activity described in subsection (1), that is prohibited under clause 9 (1) (a) or subsection 10 (1) of the Act, the person must,
 - i. submit a notice of drainage works form available on the Registry to the Minister through the Registry, thereby giving the Minister notice that,
 - A. the person is responsible for the improvement, maintenance or repair of the drainage works or ditch, and
 - B. as part of the improvement, maintenance or repair of the drainage works or ditch, an activity described in subsection (1) will be carried out at various times in the future in the drainage works or ditch that will likely affect one or more species listed on the Species at Risk in Ontario List as endangered or threatened species, and
 - ii. subject to subsection (10), prepare in accordance with subsection (11) a mitigation plan that,
 - A. meets the requirements of subsection (12), and
 - B. applies to all activities described in subsection (1) that will be carried out in the future in the drainage works or ditch with respect to the species listed on the Species at Risk in Ontario List as endangered or threatened species that are identified in the notice of drainage works form.
 2. The person must ensure that the notice of drainage works form includes,
 - i. the location of the drainage works or ditch, and
 - ii. the name of every species listed on the Species at Risk in Ontario List as endangered or threatened species that will be affected by the activity.
 3. The person must follow the requirements of subsections (7) and (8) with respect to the completion of the notice of drainage works form, the keeping of records relating to the notice of drainage works form and the updating of the information on the Registry.
 4. Whenever carrying out an activity described in subsection (1) in the drainage works or ditch identified in the notice of drainage works form, the person must,
 - i. comply with the requirements of the mitigation plan,
 - ii. take reasonable steps to minimize adverse effects of the activity on the species identified in the notice of drainage works form, including the steps described in subsection (13).
 5. After the mitigation plan is prepared, the person must,
 - i. retain a copy of the mitigation plan for as long as the person continues to be responsible for the improvement, maintenance and repair of the drainage works or ditch,
 - ii. provide a copy of the mitigation plan to the Ministry within 14 days of receiving a request for it, and
 - iii. ensure that the mitigation plan is updated in accordance with subsections (11) and (12) at least once every five years to include information obtained from observing the effects of the activity on the species.
 6. For as long as the person continues to be responsible for the improvement, maintenance and repair of the drainage works or ditch, the person must,
 - i. on or before December 31 of each year, prepare an annual report in accordance with subsection (14) on the effects that any activity described in subsection (1) that was carried out in the course of that year has had on the species identified in the notice of drainage works form,
 - ii. retain a copy of the annual report for at least five years after it is prepared, and
 - iii. provide a copy of the annual report to the Ministry within 14 days of receiving a request for it. O. Reg. 176/13, s. 14.
- (7) Before submitting a notice of drainage works form to the Minister, a person who proposes to carry out an activity described in subsection (1) must ensure that,
- (a) all mandatory information requested on the form, including the person's contact information, has been provided; and
 - (b) the information provided on the form is complete and accurate. O. Reg. 176/13, s. 14.
- (8) After submitting a notice of drainage works form to the Minister, a person must,

- (a) promptly upon obtaining from the Ministry confirmation that a notice of drainage works form submitted through the Registry has been received by the Minister, make a record of the confirmation;
 - (b) for as long as the person continues to be responsible for the improvement, maintenance and repair of the drainage works or ditch,
 - (i) keep the record of the confirmation, and
 - (ii) make the record of the confirmation available to the Ministry upon receiving a request for it; and
 - (c) if there is a change in the contact information of the person who submitted the notice of drainage works form, update the information on the Registry within 10 business days of the change. O. Reg. 176/13, s. 14.
- (9) A person who provides incomplete, false or misleading information on a notice of drainage works form or when updating information on the Registry shall be deemed to have not submitted the notice of drainage works form. O. Reg. 176/13, s. 14.
- (10) A person who carries out an activity described in subsection (1) is not required to complete the preparation of a mitigation plan until the following dates if the following circumstances apply:
- 1. If the mitigation plan relates to a species that was added to the Species at Risk in Ontario List as an endangered or threatened species for the first time on or after January 24, 2013, but no later than the date specified in section 0.1, the third anniversary of the day the species was so added.
 - 2. If the mitigation plan relates to a species that first appears in the drainage works or ditch after the person begins being responsible for the improvement, maintenance and repair of the drainage works or ditch, three years after the date the species first appears in the drainage works or ditch. O. Reg. 176/13, s. 14; O. Reg. 179/14, s. 4 (3)
- (11) A mitigation plan must be prepared and updated by one or more persons with expertise in relation to every species that is the subject of the plan, using the best available information on steps that may help minimize or avoid adverse effects on the species, which includes consideration of information obtained from the Ministry, aboriginal traditional knowledge and community knowledge if it is reasonably available. O. Reg. 176/13, s. 14.
- (12) A mitigation plan prepared with respect to an activity identified in a notice of drainage works form submitted to the Minister under subparagraph 1 i of subsection (6) must include the following information:
- 1. The name and contact information of the person who is carrying out the activity.
 - 2. A description of the area within the drainage works or ditch that will be affected by the activity and that is used by, or is the habitat of, a member of a species identified in the notice of drainage works form.
 - 3. Details of how the person will carry out the steps described in subsection (13) that are required to minimize the adverse effects of the activity on a species identified in the notice of drainage works form, including the dates during the year when the species is likely to be carrying out a life process related to hibernation or reproduction, including rearing, and when the person must take reasonable steps to minimize or avoid killing, harming or harassing members of the species.
 - 4. A description of any steps the person will take to minimize the adverse effects of the activity on a species identified in the notice of drainage works form, in addition to the steps described in subsection (13), including a description of any measures to restore or enhance the habitat of the species that is affected by the activity. O. Reg. 176/13, s. 14.
- (13) The following are the steps that a person must take to minimize the adverse effects of an activity described in the notice of drainage works form submitted to the Minister under subparagraph 1 i of subsection (6) on a species identified in the form:
- 1. The person must take reasonable steps to minimize or avoid the killing, harming or harassing of members of the species during a time of year when the species is likely to be carrying out a life process related to hibernation, overwintering, or reproduction, including rearing.
 - 2. If the person encounters an animal that is a member of a species while carrying out the activity, the person must cease carrying out the activity in the area of the encounter and provide the animal with a reasonable amount of time to leave the area before continuing with the activity.
 - 3. If, after providing an animal with a reasonable amount of time in accordance with paragraph 2 the animal does not leave the area, the person must take measures to relocate the animal to a nearby location that is suitable and safe for the animal.
 - 4. The relocation of an animal in accordance with paragraph 3 must be undertaken by or in consultation with a person knowledgeable about, or having training in, the handling of the species.
 - 5. The person must take reasonable steps to exclude members of the species from an area in the drainage works or ditch in which the activity is being carried out or is likely to be carried out, such as installing temporary fencing to prevent members of the species from accessing the area.

6. If the species is a turtle species, the person must not reduce the level of the water in an area of a drainage works or ditch where a member of the turtle species is likely to be hibernating.
 7. The person must take reasonable steps to control erosion and sediment, and to stabilize water banks in any area affected by the activity if,
 - i. the area is the habitat of the species, or
 - ii. a member of the species is likely to be present in the area.
 8. If the person discovers that the steps described in paragraphs 1 to 7 or in the mitigation plan have not been effective in minimizing the adverse effects of an activity described in subsection (1) on the species, the person shall,
 - i. take such actions as are necessary to increase the effectiveness of those steps, or
 - ii. take such other reasonable steps as may be necessary to minimize the adverse effects of an activity described in subsection (1) on the species. O. Reg. 176/13, s. 14.
- (14) An annual report required under paragraph 6 of subsection (6) must include,
- (a) a record of the steps taken by the person when carrying out an activity described in subsection (1) in the previous 12 months, to minimize adverse effects of the activity on a species identified in the notice of drainage works form submitted under subparagraph 1 i of subsection (6);
 - (b) an assessment of the effectiveness of the steps referred to in clause (a); and
 - (c) details of any observations of a species identified in the notice of drainage works form submitted under subparagraph 1 i of subsection (6) in the course of carrying out the activity in the previous 12 months, including,
 - (i) the name of the species,
 - (ii) the location of the observation, and
 - (iii) the date and time of the observation. O. Reg. 176/13, s. 14.
- (15) This section does not apply to a person carrying on an activity described in subsection (1) who has entered into an agreement with the Minister with respect to that activity under subsection 23 (2) until the earlier of,
- (a) the day the person gives notice to the Minister under paragraph 1 of subsection (6); and
 - (b) July 1, 2015. O. Reg. 176/13, s. 14.
- (16) If a person described in subsection (15) plans to give notice to the Minister under paragraph 1 of subsection (6) of the activity referred to in subsection (15), the mitigation plan that is required to be prepared with respect to the activity under subparagraph 1 ii of subsection (6) must be prepared by the person before the notice of drainage works form is submitted to the Minister under subparagraph 1 i of subsection (6), and not within three years after the notice of drainage works form is given as would otherwise be the case. O. Reg. 176/13, s. 14.

HABITAT

Eastern flowering dogwood habitat

- 24.2** (1) For the purpose of clause (a) of the definition of “habitat” in subsection 2 (1) of the Act, the areas described in subsection (2) that are located in the following municipalities are prescribed as the habitat of eastern flowering dogwood:
1. The cities of Brantford, Hamilton, London and Windsor.
 2. The counties of Brant, Elgin, Essex, Haldimand, Lambton, Middlesex, Oxford and Norfolk.
 3. The Municipality of Chatham-Kent.
 4. The regional municipalities of Halton and Niagara. O. Reg. 293/11, s. 4.
- (2) Subsection (1) applies to the following areas:
1. A terrestrial area within 20 metres of the stem of an eastern flowering dogwood.
 2. An area populated by a vegetation type referred to in the land classification system for southern Ontario if,
 - i. the vegetation type occurs naturally in Ontario, and
 - ii. eastern flowering dogwood also exists in the area. O. Reg. 293/11, s. 4; O. Reg. 323/13, s. 10.
- (3) In paragraph 1 of subsection (2),

“terrestrial area” means an area where,

- (a) the water table is rarely or briefly above the substrate surface, and
- (b) hydric soils have not developed. O. Reg. 293/11, s. 4.

(4) The document referred to in paragraph 2 of subsection (2) is available at the Ministry of Natural Resources District offices and the Ministry of Natural Resources corporate library in Peterborough, Ontario. O. Reg. 293/11, s. 4.

Eastern Foxsnake (Carolinian population) habitat

24.3 (1) For the purpose of clause (a) of the definition of “habitat” in subsection 2 (1) of the Act, the areas described in subsection (2) that are located in the following geographic areas and parts of geographic areas are prescribed as the habitat of eastern foxsnake (Carolinian population):

- 1. The geographic areas of Chatham-Kent, Essex, Haldimand, Lambton and Norfolk.
- 2. The parts of the geographic area of Elgin composed of the lower-tier municipalities of Bayham and West Elgin. O. Reg. 122/12, s. 4.

(2) Subsection (1) applies to the following areas:

- 1. An eastern foxsnake (Carolinian population) hibernaculum.
- 2. The area within 100 metres of the area described in paragraph 1.
- 3. A naturally occurring eastern foxsnake (Carolinian population) egg laying site that is being used, or has been used at any time in the previous three years, by an eastern foxsnake (Carolinian population).
- 4. An eastern foxsnake (Carolinian population) egg laying site, other than a naturally occurring egg laying site, being used by an eastern foxsnake (Carolinian population) from the time it is used until the following November 30.
- 5. A naturally occurring eastern foxsnake (Carolinian population) shedding or basking site that is being used, or has been used at any time in the previous three years, by two or more eastern foxsnakes (Carolinian population).
- 6. An eastern foxsnake (Carolinian population) shedding or basking site, other than a naturally occurring shedding or basking site, that is being used by two or more eastern foxsnakes (Carolinian population) from the time it is used until the following November 30.
- 7. The area within 30 metres of an area described in paragraph 3, 4, 5 or 6.
- 8. Any part of a prairie, savannah, hedge row, shoreline, marsh, old field, forest, sand dune or similar area that is being used by an eastern foxsnake (Carolinian population) or on which an eastern foxsnake (Carolinian population) directly depends to carry on its life processes.
- 9. An area that provides suitable foraging, thermoregulation, or hibernation conditions for eastern foxsnake (Carolinian population) that is within 1,500 metres of any area described in paragraph 8.
- 10. An area that provides suitable conditions for an eastern foxsnake (Carolinian population) to move between areas described in paragraphs 1 through 9. O. Reg. 122/12, s. 4.

(3) Subsection (1) does not apply to an area that is part of a lake or river below the historical low water mark. O. Reg. 122/12, s. 4.

Appendix C

SAR Training Manual

LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT MITIGATION PLAN

SPECIES AT RISK TRAINING MANUAL



prepared for

Municipality of Leamington

by



environmental research associates

**NOVEMBER 2018
LGL PROJECT TA8698**

LEBO CREEK DRAIN WATERSHED REHABILITATION PROJECT

SPECIES AT RISK TRAINING MANUAL

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Appendix A: Species at Risk Fact Sheets

Appendix B: Species at Risk Handling Manual

GLOSSARY

Construction: Alteration, land clearing, earth moving, grading, excavating, grading, digging, and any work or undertaking in connection with the project.

Cavity Tree: any living, dying or dead tree of any species that exhibits cavities, cracks and/or loose bark.

Exclusion fence: A barrier which excludes specified organisms from entering or exiting a particular area.

Habitat: The area or environment in which an organism or community of organisms lives. Habitat encompasses air, water, food, shelter, and space required for survival.

Suitable Habitat: A feature or area that, through evaluation or field observation, has been determined to be consistent with confirmed features or areas.

Qualified Biologist: For the purposes of this document, implementation of mitigation measures is dependent upon a Qualified Biologist overseeing such activities. The following is a list of qualifications and experience necessary to perform such a task: **knowledge of the *Endangered Species Act*, knowledge of Ontario species at risk flora and fauna, relevant experience conducting herpetofauna monitoring and/or site-screening exercises, relevant experience with SAR mitigation and monitoring on construction sites, experience identifying Ontario bats and bat roosts and experience conducting environmental inspections on construction sites.**

1.0 INTRODUCTION

The purpose of the *Endangered Species Act (ESA)* is to prevent wildlife species in Ontario from disappearing, to provide for the recovery of species that are extirpated (no longer exist in the wild in Ontario), endangered, or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened.

The Lebo Creek Drain Constraints Analysis report (LGL March 2018) confirmed several SAR in the study area, and also identified others as having potential to be in the study area. The report was then presented to the Municipality of Leamington staff as well as Ontario Ministry of natural Resources and Forestry (OMNRF) staff at a meeting on July 5, 2018. The discussion at the meeting included determining the path to move forward and navigate the Ontario *ESA* (2007). It was determined that as sections of Lebo Creek Drain is either classified as a drain, or will be classified as a drain according to the Drainage Act, that the project qualifies for an exemption under Ontario Regulation 242/08 section 23.9 (1) (*ESA* 2007). In order to comply with the exemption regulation a Mitigation Plan (LGL November 2018) was prepared to mitigate any potential impacts to SAR. The Lebo Creek Drain Watershed Rehabilitation Project Mitigation Plan was prepared to provide detailed information for species at risk confirmed to be present (or potentially present) within the Project Area and to detail site specific mitigation to ensure that works associated with the project do not contravene the Ontario *ESA*.

In addition to the mitigation plan, LGL has prepared this SAR Training Manual in order to provide information and training on:

- the *Endangered Species Act* and violation penalties;
- how the Act applies to works within the Project Area;
- species at risk fact sheets;
- on-site species at risk protocols; and,
- protocol for encounters with species at risk .

1.1 PURPOSE

The Lebo Creek Drain Watershed Rehabilitation Project Risk Training Manual has been prepared to provide the information relevant to species at risk confirmed to be present (or potentially present) within the Project Area and to detail the site specific mitigation aimed to ensure that project works do not contravene the Ontario *ESA* (2007). This document acts as a training reference and should be available on the work site at all times during project activity. All project works shall be carried out with the prescriptions and mitigation described in this document. A glossary of terms used in the manual is provided above.

2.0 ENDANGERED SPECIES ACT

2.1 ENDANGERED SPECIES ACT

The Ontario *Endangered Species Act, 2007* (ESA 2007) came into force on June 30th 2008. The Act provides species protection (s.9) and habitat protection (s.10) to those species listed as extirpated, endangered and threatened on the Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08, issued under the Ontario *ESA* 2007.

The Ontario *ESA* is a law of General Application, which is to say, it is binding on everyone (e.g. individuals, corporations, businesses, government) and applies on public and private lands.

Pursuant to Section 9 (1) of the *Endangered Species Act* states that no person shall;

...*”kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered, or threatened species”...*

Pursuant to Section 10(1) of the *Endangered Species Act*, no person shall damage or destroy the habitat of;

...*”(a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species”...*

Ontario Regulation 242/08, section 23.9 (1) (ESA 2007) states that an exemption applies if the project involves

“Improving or maintaining drainage works, if an agreement for the improvement or maintenance was filed under subsection 2 (2) of the Drainage Act.”

2.2 WHAT IS THE GOAL OF THE ENDANGERED SPECIES ACT?

The goal of the Ontario *ESA* 2007 is to prevent endangered or threatened wildlife from becoming extinct or lost from the wild, and to help in the recovery of these species. The Act is also intended to manage species of special concern and to prevent them from becoming endangered or threatened.

2.3 LISTING CATEGORIES

There are two different listing categories under Ontario *ESA* (2007). These categories include:

- **Endangered:** refers to a wildlife species that is facing imminent extirpation or extinction.
- **Threatened:** refers to a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

2.4 BASIC PROHIBITIONS

Under Section 40(1) of the Act, “A person convicted of an offence under this Act is liable,

- (a) in the case of a first offence under this Act,
 - (i) to a fine of not more than **\$1,000,000**, in the case of a corporation, or
 - (ii) to a fine of not more than **\$250,000** or to imprisonment for a term of not more than one year, or to both, in the case of any other person; and
- (b) in the case of a second or subsequent offence under this Act,
 - (i) to a fine of not more than **\$2,000,000**, in the case of a corporation, or
 - (ii) to a fine of not more than **\$500,000** or to imprisonment for a term of not more than one year, or to both, in the case of any other person. 2007, c. 6, s. 40 (1).”

A copy of the *Endangered Species Act*, 2007 shall be kept on site and made available upon request.

3.0 SPECIES AT RISK

3.1 SPECIES AT RISK IDENTIFIED WITHIN THE STUDY AREA

The Municipality of Leamington is committed to adhering to the requirements of the Ontario *ESA* and to meeting the conditions of the Exemption Regulation (O.reg 242/08). An important part of the mitigation plan (LGL November 2018) is the educational component for those working on site, or with the potential to encounter SAR in the Study Area. All staff working onsite shall be familiar with this training manual and the mitigation plan. They are all responsible for ensuring the requirements of the Ontario *ESA* are met.

The following species have been identified in the study area:

- Eastern Foxsnake (*Pantherophis gloydi*);
- Butternuts (*Juglans cinerea*);
- Barn Swallow (*Hirundo rustica*); and
- Eastern Wood Pewee (*Contopus virens*).

Species with high potential for being found in the study area are:

- Eastern small-Footed Myotis (*Myotis leibii*);
- Little Brown Myotis (*Myotis lucifugus*);
- Northern M Myotis (*Myotis septentrionalis*); and
- Tri-coloured Bat (*Permimyotis subflavus*).

Other species with some potential for being in the study area include:

- Acadian Flycatcher (*Empidonax virens*);

- American Chestnut (*Castanea dentata*);
- Bald Eagle (*Haliaeetus leucocephalus*);
- Barn Swallow (listed above, but not part of mitigation plan as no nests were observed in culverts or structures that could be impacted from proposed improvements);
- Blanding's Turtle (*Emydoidea blandingii*);
- Climbing Prairie Rose (*Rosa setigera*);
- Common Five-lined Skink (*Plestiodon fasciatus pop.1*);
- Common Hoptree (*Ptelea trifoliata*);
- Eastern Flowering Dogwood (*Cornus florida*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Mole (*Scalopus aquaticus*);
- Eastern Wood-peewee (listed above, but not part of mitigation plan as not required under ESA for species listed as Special Concern);
- King Rail (*Rallus elegans*);
- Prothonotary Warbler (*Protonotaria citrea*);
- Northern Map Turtle (*Graptemys geographica*);
- Round-leaved Greenbrier (*Smilax rotundifolia*);
- Scarlet Ammannia (*Ammannia robusta*);
- Shumard Oak (*Quercus shumardii*);
- Snapping Turtle (*Chelydra serpentina*);
- Spotted Turtle (*Clemmys guttata*); and,
- Swamp Rose Mallow (*Rosa setigera*).
-

For the purposes of the Mitigation Plan (LGL November 2018), Eastern Foxsnake, Butternut, and the SAR bat species were highlighted as requiring prescribed mitigation. While Barn Swallows are in the study area, it is not anticipated that project activities have a potential to impact this species as no habitat suitable for nesting was found in the study area.

Fact sheets which identify what each of these species look like and where they are potentially found in the area have been prepared in Appendix A from the OMNRF Species at Risk in Ontario List (September 2018).

In order to ensure that project works do not contravene the *ESA*, a site specific mitigation plan has been created for the project to employ the use of timing windows, exclusionary measures and other means to avoid impacts to SAR (LGL November 2018). The respective sections below identify a number of measures to minimizing impacts to SAR.

3.0 MITIGATION MEASURES

In order to ensure that project works do not contravene the Ontario *ESA*, a site specific mitigation plan has been created for the project to employ the use of timing windows, exclusionary measures and other means to avoid impacts to SAR. The respective sections below identify a number of measures to minimizing impacts to SAR.

3.1 OVERALL APPROACH

The overall approach to mitigation focuses on strategies intended to avoid impacts to across the entire project area to include the following:

- a) Construction timing – timing windows will be used to minimize or avoid impacts to Eastern Foxsnake, other herpetofauna and bats (no construction or vegetation/tree removals prior to September 1 in order to avoid the most active period for SAR herpetofauna at ground surface and in order to avoid impacts to maternal roosting habitat for bat species;
- b) Field screening of construction area or vehicle access routes prior to any ground clearing or vegetation removals by a Qualified Biologist to delineate sensitive habitat features and outline a plan for avoidance or preservation of habitat features – such as for Eastern Foxsnake (hibernacula, oviposition sites, thermoregulation sites);
- c) Monitoring of the site during the period of construction by a Qualified Inspector and Qualified Biologist;
- d) Installation of exclusion fencing during construction to exclude these areas from wildlife entering the site, such as Eastern Foxsnake;
- e) Avoidance – keep a distance of 50m from all Butternut trees (including the 22 identified and any new individuals identified during the screening); and
- f) SAR training for all individuals working on site (to be provided by the Qualified Biologist).

The mitigation summarized above is described in greater detail in the sections that follow. Should any of these mitigation measures be found to be ineffective in minimizing adverse effects, actions will be taken to increase the effectiveness of the mitigation measures or other reasonable steps will be taken to minimize adverse effects.

3.2 CONSTRUCTION TIMING

Timing of construction is the best mitigation tool available to the project to avoid impacts to SAR. Table 1 provides a summary of recommended timing windows in which construction will be prohibited to protect various species. Delaying construction until October 15 is recommended for sites in SAR habitat to greatly reduce the risk to SAR associated with project activities (e.g., SAR snakes will generally be underground and dormant) and shall be considered the preferred mitigation approach. Timing construction to begin in late fall/winter will also mitigate impacts to SAR bats. Wherever feasible, working in the winter when the ground is frozen is ideal as impacts will be minimized. During a cold spell in winter, the drain may freeze

and provide an ideal access route to remove log jams. This would minimize impacts to vegetation and the ground in the area. Efforts should be made to do most work under frozen conditions, when ground is completely frozen, and with covered with snow. Construction should also avoid the sensitive period of April 1 to May 31 and September 15 to October 15 which is a sensitive time for snakes while they are staging at overwintering sites. If work in the summer months is required, a field screening will be required to ensure no oviposition sites are disturbed. While timing windows provide guidance, temperature and site conditions must also be factored into risk to SAR when project planning (i.e. Early or warm spring may mean snakes are active prior to April 1).

Vegetation removal should be avoided from April 1 to August 31 in order to protect birds during the breeding season and avoid contravention of the *Migratory Birds Convention Act*. Avoiding tree removals until September 1 will also protect roosting bats (K.Buck, pers. comm., October/November 2018). Vegetation removal can be undertaken with machinery however hand clearing is preferred; disturbance to soils (from machine tracks etc.) should be minimized to the extent possible.

Table 1 Construction Timing Windows.

Species	Restricted Timing Windows
Birds	• No vegetation removals between April 1 to August 31
Bats	• No tree removals (>10cm diameter at breast height (DBH)) between April 1 to September 1 (K.Buck, pers. comm., October/November 2018)
Snakes	• No work from April 1 to May 31, or September 15 to October 15; • No disturbance of oviposition from June 15 to September 15

3.3 FIELD SCREENING FOR SPECIES AT RISK

Field-screening by a Qualified Biologist will occur where more intrusive construction activities (e.g., vegetation removals, log jam removals, dredging, and vehicle movement) will occur. Prior to on-site construction the Qualified Biologist will field-screen the proposed impact areas to ensure impacts to individual SAR or SAR significant habitat features are identified and avoided. If work is to be completed in the summer months, area should be screened prior to the construction activities take place in order to screen out hibernacula, thermoregulation and oviposition sites. If work is to be completed in the winter months, then a screening should be undertaken prior to snowfall in order to ensure no overwintering habitat or hibernacula are disturbed during construction activities.

3.3.1 Eastern Foxsnake

Eastern Foxsnake are a large snake, with bold dark patches on a yellowish background. The head can vary from brown to red. Juveniles have a similar pattern but often have a grey background colour (OMNR September 2010). It can often be found in the grass, sunning on rocks, swimming in creeks, or climbing in trees (OMNRF September 2010). The entire Lebo Creek Drain provides suitable habitat for Eastern Foxsnake. Habitat features including hibernacula, thermoregulation and oviposition sites for this species are expected to be present along the drain. Field screening of impact areas prior to construction should include identification of habitat features such as:

- Hibernacula – these habitat features are underground chambers where the snakes spend the winter, protected from the cold. They can be man-made, such as a well, or building foundation, or natural such as an animal burrow, a tree stump, or a fissure in bedrock.
- Oviposition – these sites include decaying leaf piles, compost or woodchip piles, and rotting logs and stumps (OMNR September 2010).
- Thermoregulation – these sites are highly variable but may include brush piles, rock piles, logs, trail edges, exposed concrete and artificial cover objects such as refuse.

The following shall occur prior to construction where more significant construction related impacts within areas of suitable Foxsnake habitat are expected:

- Field-screening of impact areas prior to installation of exclusion fencing;
- Qualified Biologist/Inspector to review exclusion fencing installation / completed installation to confirm desired function is achieved; and,
- After erection of exclusion fencing - detailed field-screening of impact area (i.e. area inside fence) on a daily basis by Qualified Biologist/Qualified Inspector during active season.

Potential hibernacula features identified by the Qualified Biologist should be avoided to the extent possible, given they're underground there is no opportunity for relocation etc. Protection/avoidance of these sites shall be a priority. If hibernacula are not able to be protected they shall be surrounded with barrier fencing (prior to September 1) so that snakes do not occupy them during a year when disturbance or destruction of a feature may occur. Erection of barrier fencing prior to September 1 will ensure hibernacula features are not occupied by snakes during the winter months, allowing works to take place without impacting overwintering snakes.

Oviposition and thermoregulation sites will be screened for and impacts shall be avoided to the extent possible. If disturbance to the feature is required then it will be temporarily removed, stored on-site and relocated back to its original position and general physical structure after impacts are completed. All attempts shall be made to reposition the structure as it originally existed. No disturbance of oviposition sites shall be permitted from June 15 to September 15. Thermoregulation features may be removed at any time of year, after a field-screening by the Qualified Biologist to ensure snakes are not present in/on the feature.

Vegetation clearing in areas of suitable Foxsnake habitat may commence following installation of the exclusion fencing and field-screening by the Qualified Biologist. Vegetation maintenance may occur within exclusion fence zones. Suppression of vegetation growth and cover will deter SAR wildlife from entering and using habitats within impact areas. During the site-screening process undertaken by the Qualified Biologist, vegetation maintenance requirements will be determined based on site characteristics and risk of SAR entering the construction area.

3.3.2 Butternut

A total of 22 Butternut were identified along the banks of the Lebo Creek Drain. As there is potential for more individuals, it is proposed that a field-screening of impact areas be done prior to any vegetation clearing along Lebo Creek Drain. Butternut trees are medium sized, with bark that is grey and smooth on young trees that gradually gets more rippled with age. They have compound leaves and a green fruit (nut) with a fuzzy husk (MNR 2018). Should any more butternuts be identified, new protection areas of 50m will be implemented around each tree.

3.3.3 Bats

It is not anticipated that field crews will encounter SAR bats in the study area as they are nocturnal species. As they use trees as maternal roosting sites in the late spring/summer months, limiting tree removals to winter months will mitigate impacts to these species. Bat trees include trees over 10cm DBH with cavities, or leaf clumps. A cavity may be a hole, a fissure, or sloughing bark. Efforts will be made to avoid candidate bat.

3.4 ENCOUNTER OF SPECIES AT RISK WITHIN ACTIVE CONSTRUCTION SITES

The risk of encountering SAR wildlife, although significantly reduced, will remain after field screening efforts have occurred. In the event of a SAR encounter in the Active Construction Site, all construction activity in the immediate vicinity of the encounter which would pose a potential threat must be halted immediately. The Qualified Biologist or Qualified Inspector must be contacted immediately in all instances of encounter with a SAR. The Qualified Biologist or Qualified Inspector will follow up on the encounter to determine what species was observed and re-screen the site as required. Any SAR wildlife encountered will be allowed to naturally disperse from the site. Natural dispersal may be aided by lifting sections of exclusion fencing to allow individuals to exit the Active Construction Site. In the event that SAR wildlife does not naturally disperse from the Active Construction Site, the individual can be relocated by or in consultation with a Qualified Biologist who has knowledge and/or training in the handling of that particular species. A SAR handling manual is appended as Appendix B (OMNR undated).

Should an injured or dead SAR be encountered, the injured animal should be transferred to a holding tub and kept in a cool place outside of sunlight. The Qualified Biologist should be contacted for further advice or instructions. The OMNRF should then be contacted for advice and to arrange for the individual to be retrieved or transferred. Contact numbers are provided in the Section 4.0.

3.5 VISUAL INSPECTION OF CONSTRUCTION EQUIPMENT

Species at risk wildlife may take up residence in any construction equipment, stockpile/material or debris piles left undisturbed for an extended period of time during the active season (April 1-October 15). There is an increased risk of encountering SAR wildlife in construction material/debris in areas adjacent to known occurrences of SAR and in areas adjacent to suitable SAR habitat. Consequently, all efforts should be made to maintain a well-organized construction zone that employs good housekeeping practices. Equipment

operators shall check their equipment at the start of each day, or the commencement of operation. Should a SAR be discovered, the Qualified Biologist will be contacted immediately. The Qualified Biologist will be required to monitor, on a frequent basis (once per week), the contractor's storage, yard and staging areas in order to prevent the storage of materials or equipment that might attract SAR wildlife.

4.0 SITE CONTACTS FOR SPECIES AT RISK ENCOUNTERS

As noted above, in the event of an encounter with an injured or dead SAR in the Active Construction Site, all construction activity in the immediate vicinity of the encounter must be halted immediately. Any injured animals should be transferred to a holding tub and kept in a cool place outside of sunlight (see Species at Risk Handling Manual in Appendix B).

The Qualified Biologist must be contacted immediately when injured or dead SAR (or flora or fauna suspected of being a SAR) are encountered. The OMNRF should then be contacted for advice and to arrange for the individual to be retrieved or transferred by a qualified wildlife rehabilitator, such as Erie Wildlife Rescue in Windsor.

The Qualified Biologist and/or Qualified Inspector are available to answer any questions or concerns pertaining to species at risk. Please do not hesitate to contact them.

Important Species at Risk contacts include:

POSITION	NAME	TELEPHONE	EMAIL
Drain Supervisor	Lu-Ann Marentette	1-519-326-5761	lmarentette@leamington.ca
Qualified Biologist	David Smith	647-295-5506	dsmith@lgl.ca
Qualified Biologist	Dana Couture	519-622-3300	dcouture@lgl.com
Ontario Ministry of Natural Resources	Kathleen Buck	519-773-4785	kathleen.buck@ontario.ca

4.0 REFERENCES

- LGL, March 2018. *Lebo Creek Drain Constraints Analysis*. Prepared for N. J. Peralta Engineering and the Municipality of Leamington.
- LGL, August 2021. *Lebo Creek Drain Watershed Rehabilitation Project Mitigation Plan*. Prepared for the Municipality of Leamington.
- Ontario Ministry of Natural Resources and Forestry. September 2010. Eastern Foxsnake (*Patherophis gloydi*) Carolinian and Georgian Bay Population in Ontario – Ontario Recovery Strategy Series.
- Ontario Ministry of Natural Resources and Forestry. Natural Heritage Information Center. Map a Map. Accessed September 2018.
- Ontario Ministry of Natural Resources and Forestry. The Species at Risk in Ontario List. Accessed September 2018.
- Ontario Ministry of Natural Resources and Forestry. Undated. Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders.
- Ontario Ministry of Natural Resources and Forestry. October/November 2018. Personal Communication with Management Biologist Kathleen Buck

Appendix A

Species at Risk Fact Sheets



Eastern foxsnake

Scientific name: *Pantherophis gloydi*



Cover photos credit: Scott Gillingwater (all photos)

Status

Endangered (Carolinian population)

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Threatened (Georgian Bay population)

“Threatened” means the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.

Date added to the Species at Risk in Ontario List

September 10, 2009

What it looks like

The Eastern Foxsnake is one of Ontario’s largest snakes, reaching over 1.7 metres in length. This beautiful snake usually has a shiny, rusty orange head and a golden to light brown body with dark blotches. The belly is light yellow and black.

Where it lives

Eastern Foxsnakes in the Carolinian population are usually found in old fields, marshes, along hedgerows, drainage canals and shorelines. Females lay their eggs in rotting logs, manure or compost piles, which naturally

incubate the eggs until they hatch.

Individuals from the Georgian Bay population are usually found within 150 metres of the shore in rocky habitats spotted with trees and shrubs.

During the winter, Eastern Foxsnakes hibernate in groups in deep cracks in the bedrock and in some man-made structures.

Where it's been found in Ontario

The Eastern Foxsnake is only found in Ontario, Michigan and Ohio. Ontario contains 70 per cent of their range in two distinct populations: the Carolinian population in southwestern Ontario and the eastern Georgian Bay population.

What threatens it

The greatest threats to the Eastern Foxsnake are habitat loss and fragmentation (when habitat is broken into smaller segments) due to shoreline development and draining wetlands. Sadly, some snakes are also hit by cars and deliberately killed by humans. Illegal collecting can also harm populations of this snake.

Action we are taking

Endangered Species and their habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy-executive-summary) (<https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy-executive-summary>) (September 10, 2010)

Read the [recovery strategy](https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy) (<https://www.ontario.ca/page/eastern-foxsnake-recovery-strategy>) (September 10, 2010)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement](https://www.ontario.ca/page/eastern-foxsnake-government-response-statement) (<https://www.ontario.ca/page/eastern-foxsnake-government-response-statement>) (June 15, 2011)

Five-Year Review of Progress

A five-year review reports on progress made toward protecting and recovering a species, within five years of publishing a species' government response statement.

Read the [report](https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2016) (<https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2016>) on progress towards the protection and recovery of 27 species at risk, including Eastern Foxsnake (2016)

Habitat protection

A habitat regulation defines a species' habitat and many describe features (e.g., a creek, cliff, or beach), geographic boundaries or other unique characteristics.

Read the [habitat summary for the Carolinian population](https://www.ontario.ca/page/eastern-foxsnake-carolinian-population-habitat-protection-summary) (<https://www.ontario.ca/page/eastern-foxsnake-carolinian-population-habitat-protection-summary>) (July 1, 2012)

Read the [habitat summary for the Georgian Bay population](https://www.ontario.ca/page/eastern-foxsnake-georgian-bay-population-habitat-protection-summary) (<https://www.ontario.ca/page/eastern-foxsnake-georgian-bay-population-habitat-protection-summary>) (July 1, 2012)

What you can do

Report a sighting

- [Report a sighting](https://www.ontario.ca/page/report-rare-species-animals-and-plants) (<https://www.ontario.ca/page/report-rare-species-animals-and-plants>) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find Eastern foxsnake on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Visit the Toronto Zoo Adopt-a-Pond website to learn more about Ontario's rare snakes, their habitat and related conservation initiatives:
www.torontozoo.com/Adoptapond (<http://www.torontozoo.com/Adoptapond>).
- Register with the Herpetofaunal Atlas program to receive e-mail newsletters, event notifications, and other important updates about the Herpetofaunal Atlas project as it develops. Visit their website to see how you can participate and learn more about Ontario's reptiles and amphibians:
www.ontarionature.org/herpetofaunal_atlas.html (http://www.ontarionature.org/herpetofaunal_atlas.html).
- You can help improve Eastern Foxsnake habitat by keeping your property as natural as possible. Leave brush piles and logs to decay where they lie.
- Never buy snakes that have been caught in the wild, and never buy a native species of any kind that's being sold as a pet.
- Every year, snakes all over the province must cross busy roads. Watch for snakes on the road, especially between May and October.
- Appreciate snakes and don't harm them. Keep the danger of snakes in perspective: All of Ontario's snakes are non-venomous, except for the very rare and shy Massasauga Rattlesnake.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667)

Quick facts

- If frightened, the harmless Eastern Foxsnake will mimic a rattlesnake by vibrating the tip of its tail in leaf litter to produce a buzzing noise. Don't be fooled. The Massasauga has a real 'rattle' at the end of its tail, a darker background body colour (brown-grey), and a short thick body compared to the long and slender foxsnake.
- The Eastern Foxsnake is a constrictor and suffocates prey such as larger rodents with the coils of its body. They also eat baby birds, eggs and frogs.
- Eastern Foxsnakes are excellent swimmers! You can distinguish the Eastern Foxsnake from a watersnake at a distance because the Foxsnake swims on the surface of the water, floating like a pool noodle, while a watersnake swims with only its head above the surface.

Updated: June 28, 2018

Published: July 17, 2014

Related

[How species at risk are protected](#)

[Species at risk in Ontario List](#)

[How to comment on protecting species at risk](#)

[How to get an Endangered Species Act permit or authorization](#)

[Conserving biodiversity \(<https://www.ontario.ca/page/conserving-biodiversity>\)](#)



Butternut (Species at Risk)

Scientific name: *Juglans cinerea*



Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

The Butternut was already assessed as endangered when the *Endangered Species Act* took effect in 2008. A reassessment in November 2017 confirmed this status.

[Read the assessment report PDF \(http://cossaroagency.ca/wp-content/uploads/2018/06/Accessible_COSSARO_Evaluation_Butternut_FINAL_23FEB2018_TWS.pdf\)](http://cossaroagency.ca/wp-content/uploads/2018/06/Accessible_COSSARO_Evaluation_Butternut_FINAL_23FEB2018_TWS.pdf).

What it looks like

Butternut is a medium-sized tree that can reach up to 30 m in height. It belongs to the walnut family and produces edible nuts in the fall. The bark of younger trees is grey and smooth, becoming ridged as it ages.

Butternut is easily recognized by its compound leaves, which are made up of 11 to 17 leaflets (each nine to 15 centimetres long) arranged in a feather-like pattern. The fruit is a large nut that contains a single seed surrounded by a light green, sticky, fuzzy husk.

Where it lives

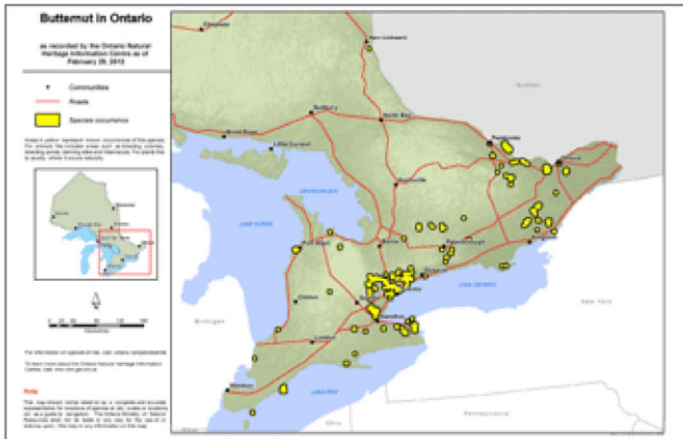
In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams.

It is also found on well-drained gravel sites and rarely on dry rocky soil.

This species does not do well in the shade, and often grows in sunny openings and near forest edges.

Where it's been found in Ontario

Butternut can be found throughout central and eastern North America. In Canada, Butternut occurs in Ontario, Quebec and New Brunswick. In Ontario, this species is found throughout the southwest, north to the Bruce Peninsula, and south of the Canadian Shield.



(http://files.ontario.ca/environment-and-energy/species-at-risk/butternut_map_eng.pdf)

View a Larger version of this map (PDF) (http://files.ontario.ca/environment-and-energy/species-at-risk/butternut_map_eng.pdf)

What threatens it

Butternut Canker is a fungal disease that spreads quickly and can kill a tree within a few years. This fungus has already had a devastating impact on North American Butternut populations.

Surveys in eastern Ontario show that most trees are infected, and perhaps one-third have already been killed.

Some infected butternut trees live for many years. Experts hope this is an indication of resistance to the disease.

Action we are taking

Endangered species and their general habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/butternut-recovery-strategy-executive-summary) (<https://www.ontario.ca/page/butternut-recovery-strategy-executive-summary>) (May 31, 2013)

Read the [recovery strategy](https://www.ontario.ca/page/butternut-recovery-strategy) (<https://www.ontario.ca/page/butternut-recovery-strategy>) (May 31, 2013)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement](https://www.ontario.ca/page/butternut-government-response-statement) (<https://www.ontario.ca/page/butternut-government-response-statement>) (March 14, 2014)

Habitat protection

General Habitat Protection - June 30, 2013

What you can do

Report a sighting

- The Ministry of Natural Resources and Forestry tracks species at risk such as the Butternut. [Report a sighting](https://www.ontario.ca/page/report-rare-species-animals-and-plants) (<https://www.ontario.ca/page/report-rare-species-animals-and-plants>) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.
- The Forest Gene Conservation Association is interested in learning where Butternuts are surviving the Butternut Canker disease. To report Butternut trees or for help getting trees assessed for Butternut Canker or finding seed and seedlings, contact the [Ontario Woodlot Association](http://www.ont-woodlot-assoc.org) (<http://www.ont-woodlot-assoc.org>) or visit the [Forest Gene Conservation Association](http://www.fgca.net) (<http://www.fgca.net>).
- [You can learn how to identify Butternut and the Butternut Canker:](#)

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find Butternut on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Invasive species seriously threaten many of Ontario's species at risk. To learn what you can do to help reduce the threat of invasive species, visit:
www.ontario.ca/invasivespecies (<https://www.ontario.ca/invasivespecies>)
www.invadingspecies.com (<http://www.invadingspecies.com>)
www.ontarioinvasiveplants.ca (<http://www.ontarioinvasiveplants.ca>)
- Contact the Ministry of Natural Resources and Forestry before removing any naturally-occurring (e.g., not planted by humans) Butternut tree of any age on your property, even if it is dead or dying.
- If you are planning to log your woodlot, a certified tree marker can help you select the trees to be removed to ensure the continued health of your forest.
- Consider removing trees that are shading Butternuts in order to help keep them strong and encourage seed production.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- Aboriginal people used Butternut medicinally to treat toothaches, injuries and digestive problems.
- There are about 13,000 Butternut in Ontario. Its scattered presence makes it difficult to do a complete inventory.

Updated: August 6, 2018

Published: July 18, 2014

Related

[How species at risk are protected \(https://www.ontario.ca/page/how-species-risk-are-protected\)](https://www.ontario.ca/page/how-species-risk-are-protected)

[Species at risk in Ontario List \(https://www.ontario.ca/environment-and-energy/species-risk-ontario-list\)](https://www.ontario.ca/environment-and-energy/species-risk-ontario-list)

[How to comment on protecting species at risk \(https://www.ontario.ca/page/how-comment-protecting-species-risk\)](https://www.ontario.ca/page/how-comment-protecting-species-risk)

[How to get an Endangered Species Act permit or authorization \(https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization\)](https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization)

[Conserving biodiversity \(https://www.ontario.ca/page/conserving-biodiversity\)](https://www.ontario.ca/page/conserving-biodiversity)



Eastern flowering dogwood (Species at Risk)

Scientific name: *Cornus florida*



Cover photos credit: Wasyl Bakowsky (left)

Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

February 18, 2009.

What it looks like

Eastern Flowering Dogwood is a small tree that reaches 3-10 metres in height and has oval leaves arranged in pairs along the branch.

The bark of larger trees is brownish-grey and separated into scales, giving it the appearance of alligator skin. Tiny yellow flowers grow in clusters at the ends of small branches and are surrounded by four large, showy white leaves that look like petals.

The berries grow in clusters of two to six. They are smooth and turn bright red in late summer.

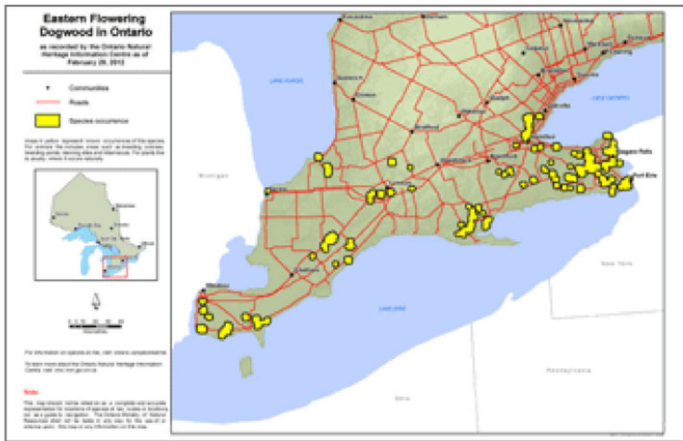
Where it lives

Eastern Flowering Dogwood grows under taller trees in mid-age to mature deciduous or mixed forests.

It most commonly grows on floodplains, slopes, bluffs and in ravines, and is also sometimes found along roadsides and fencerows.

Where it's been found in Ontario

Eastern Flowering Dogwood is a fairly common species in the core of its range in the middle and southern United States. In Canada, it can only be found in southern Ontario in the Carolinian Zone (the small area of Ontario southwest of Toronto to Sarnia down to the shores of Lake Erie).



(http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_eas_flo_dog_map_eng.pdf)

[View a Larger version of this map \(PDF\)](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_eas_flo_dog_map_eng.pdf) (http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_eas_flo_dog_map_eng.pdf)

What threatens it

Dogwood anthracnose fungus is the primary threat to the species. This fungus first attacks the leaves of the tree, then spreads through the twigs and trunk.

Mortality of infected trees usually ranges from 25-75% and has had a devastating impact on Eastern Flowering Dogwood populations.

Habitat loss and fragmentation (when habitat is broken into smaller segments) are also serious threats to the species.

Action we are taking

Endangered Species and their habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/eastern-flowering-dogwood-recovery-strategy-executive-summary) (<https://www.ontario.ca/page/eastern-flowering-dogwood-recovery-strategy-executive-summary>) (February 18, 2010)

Read the [recovery strategy](https://www.ontario.ca/page/eastern-flowering-dogwood-recovery-strategy) (<https://www.ontario.ca/page/eastern-flowering-dogwood-recovery-strategy>) (February 18, 2010)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement \(https://www.ontario.ca/page/eastern-flowering-dogwood-government-response-statement\)](https://www.ontario.ca/page/eastern-flowering-dogwood-government-response-statement) (November 18, 2010)

Five-Year Review of Progress

A five-year review reports on progress made toward protecting and recovering a species, within five years of publishing a species' government response statement.

Read the [report \(https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2015\)](https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2015) on progress towards the protection and recovery of 13 species at risk, including Eastern Flowering Dogwood (2015)

Habitat protection

A habitat regulation defines a species' habitat and many describe features (e.g., a creek, cliff, or beach), geographic boundaries or other unique characteristics.

Read the [regulation \(https://www.ontario.ca/laws/regulation/080242#BK49\)](https://www.ontario.ca/laws/regulation/080242#BK49) (July 1, 2011)

What you can do

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find an eastern flowering dogwood on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Populations of many insects that pollinate plants are declining around the world. For information on how you can easily give insect pollinators a helping hand visit: [www.seeds.ca/proj/poll \(http://www.seeds.ca/proj/poll\)](http://www.seeds.ca/proj/poll).

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- Eastern Flowering Dogwood produces showy flowers in the spring just as the leaves begin to develop. Large, white, petal-like leaves surround the tiny flowers and make them obvious targets for insect pollinators.

- The bright red fruit of this tree is poisonous to humans but can be eaten by over 50 species of birds and small mammals. These animals help distribute Eastern Flowering Dogwood seeds throughout forests.
- Eastern Flowering Dogwood can look similar to the more common Alternate-leaved Dogwood. Don't be fooled! As its name suggests, the Alternate-leaved Dogwood has leaves occurring singly along the branch (an arrangement referred to as 'alternate') whereas Eastern Flowering Dogwood has leaves arranged in pairs ('opposite' leaf arrangement) and also has distinguishing bright red, shiny berries.
- Aboriginal people used Eastern Flowering Dogwood for medicinal purposes and used the wood for carving and making tools. Early settlers also sought after the tree's dense, fine-grained wood.

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Related

[How species at risk are protected \(https://www.ontario.ca/page/how-species-risk-are-protected\)](https://www.ontario.ca/page/how-species-risk-are-protected)

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[Conserving biodiversity \(https://www.ontario.ca/page/conserving-biodiversity\)](https://www.ontario.ca/page/conserving-biodiversity)



Barn swallow

Scientific name: *Hirundo rustica*



Cover photos credit: Mark Peck (all photos)

Status

Threatened

“Threatened” means the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.

Date added to the Species at Risk in Ontario List

January 13, 2012

Read the [Assessment Report \(https://www.ontario.ca/page/barn-swallow-evaluation\)](https://www.ontario.ca/page/barn-swallow-evaluation)

What it looks like

The Barn Swallow is a medium-sized songbird (about 15 to 18 centimetres long). Males have a glossy steel-blue back and upper wings, a rusty-red forehead and throat, a short bill and a broad blue breast band above its tawny underbelly.

The male has long tail feathers which form a distinctive, deep fork and a line of white spots across the outer end of the upper tail.

The female's tail feathers are shorter, the blue of her upper parts and breast band are less glossy, and her underside is paler.

Where it lives

Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges and in culverts.

The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year.

They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces.

Where it's been found in Ontario

The Barn Swallow may be found throughout southern Ontario and can range as far north as Hudson Bay, wherever suitable locations for nests exist.

What threatens it

Barn Swallows have experienced a significant decline since the mid-1980s.

While there have been losses in the number of available nest sites, such as open barns, and in the amount of foraging habitat in open agricultural areas, the causes of the recent population decline are not well understood.

This bird's nests are often destroyed when old buildings in rural areas are demolished or fall down.

In addition, as farms modernize, many old barns that offered easy access are being replaced by large metal sheds with tight-fitting doors and no windows.

Massive pesticide spraying of fields can also reduce the insect population barns swallows need for food.

The number of Barn Swallows in Ontario decreased by 65 percent between 1966 and 2009.

Action we are taking

Threatened Species and their general habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/barn-swallow-recovery-strategy-executive-summary) (<https://www.ontario.ca/page/barn-swallow-recovery-strategy-executive-summary>) (August 13, 2014)

Read the [recovery strategy \(https://www.ontario.ca/page/barn-swallow-recovery-strategy\)](https://www.ontario.ca/page/barn-swallow-recovery-strategy) (August 13, 2014)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement \(https://www.ontario.ca/document/barn-swallow-government-response-statement\)](https://www.ontario.ca/document/barn-swallow-government-response-statement) (May 13, 2015)

Habitat protection

General habitat descriptions are technical, science-based documents that provide greater clarity on the area of habitat protected for a species.

Read the [general habitat description \(https://www.ontario.ca/page/barn-swallow-general-habitat-description\)](https://www.ontario.ca/page/barn-swallow-general-habitat-description) (July 2, 2013)

What you can do

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.
- Bird Studies Canada is working to advance the understanding, appreciation and conservation of wild birds and their habitat in Ontario and elsewhere. For more information on how you can help, visit [www.bsc-eoc.org \(http://www.bsc-eoc.org\)](http://www.bsc-eoc.org).

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find a barn swallow nesting on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- If you have buildings such as a shed or barn on your property where Barn Swallows could nest, you can encourage them by creating an opening or leaving a way for them to enter the building. Ledges may be installed if rough vertical surfaces are not available. It is helpful to provide a source of mud near the building entrance, particularly during dry weather.
- As with all wildlife, don't disturb or harass the birds or nesting sites. Be respectful and observe from a distance.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- Undertaking an activity near or affecting Barn Swallow? Your activity may qualify for streamlined approval and registration. [Learn more \(https://www.ontario.ca/page/alter-structure-habitat-barn-swallow\)](https://www.ontario.ca/page/alter-structure-habitat-barn-swallow).
- According to legend, the Barn Swallow got its forked tail because it stole fire from the gods to bring to people. An angry deity hurled a firebrand at the swallow, singeing away its middle tail feathers.
- Barn Swallows make the long flight to Central and South America each fall, returning to southern Canada – including Ontario – each spring.
- Barn Swallows dart gracefully over fields, barnyards, marshes and open water to hunt for food. They often cruise at high speeds just above the ground or water and make sharp turns, swooping effortlessly to catch flies and other insects. When feeding their young, Barn Swallows fly from before dawn to after sunset, taking only brief rests.
- This species can be beneficial to farmers since they eat large numbers of insects that could otherwise be harmful to crops or farm animals.

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Related

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[Conserving biodiversity \(https://www.ontario.ca/page/conserving-biodiversity\)](https://www.ontario.ca/page/conserving-biodiversity)



Eastern small-footed myotis

Scientific name: *Myotis leibii*

Status

Endangered

"Endangered" means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

June 27, 2014

What it looks like

The eastern small-footed bat (myotis) is about 8 cm long and weighs just 4-5 grams (about the weight of a nickel). Their wing span is 21-25 cm.

This bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown. Males and females are similar in color and size.

This bat's name is fitting – its feet are only 7-8 mm long.

Eastern small-footed bats live about 6-12 years in the wild.

Where it lives

In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees.

These bats often change their roosting locations every day. At night, they hunt for insects to eat, including beetles, mosquitos, moths, and flies.

In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.

Where it's been found in Ontario

The eastern small-footed bat has been found from south of Georgian Bay to Lake Erie and east to the Pembroke area. There are also records from the Bruce Peninsula, the Espanola area, and Lake Superior Provincial Park. Most documented sightings are of bats in their winter hibernation sites.

What threatens it

Eastern small-footed bats are threatened by white nose syndrome, which is caused by a fungus believed to have been inadvertently brought from Europe to North America.

The fungus grows in humid, cold environments, such as the caves and mines where many bats hibernate. The syndrome disrupts the hibernation cycle, so that bats use up body fat supplies before the spring when they can once again find food sources.

It is also thought that the fungus affects the wing membrane, which helps to maintain water balance in bats. Thirst may wake bats from hibernation, which may be why infected animals can be seen flying outside caves and mines during the winter.

In Ontario, bat populations dropped by more than 90% in eight hibernation sites with more than two years' exposure to white nose syndrome. Bats at more than three quarters of Ontario's hibernation sites are at high risk of disappearing due to white nose syndrome. Mass die-offs mean that there are no individuals left to reproduce.

Eastern small-footed bats may be less susceptible to this syndrome than other species, since they tend to hibernate in the cooler, drier part of the cave where the fungus may be less virulent. However, in New York State, population declines of 78% in this species have been attributed to white nose syndrome.

Wind turbines are another threat to this bat. Its magnitude is not known.

Action we are taking

Endangered Species and their general habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/eastern-small-footed-myotis-recovery-strategy#section-7) (<https://www.ontario.ca/page/eastern-small-footed-myotis-recovery-strategy#section-7>) and [full document](https://www.ontario.ca/page/eastern-small-footed-myotis-recovery-strategy) (<https://www.ontario.ca/page/eastern-small-footed-myotis-recovery-strategy>) (June 15, 2017)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement](https://www.ontario.ca/page/eastern-small-footed-myotis-government-response-statement) (<https://www.ontario.ca/page/eastern-small-footed-myotis-government-response-statement>) (February 27, 2018)

What you can do

Report a Sighting

- If you spot an eastern small-footed bat, report your sighting to the [Natural Heritage Information Centre](https://www.ontario.ca/page/natural-heritage-information-centre) (<https://www.ontario.ca/page/natural-heritage-information-centre>). Observations submitted by the public are very important in informing recovery planning, stewardship projects and other conservation initiatives for species at risk in Ontario. Whenever possible, include detailed location information and a photograph with your observation.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Don't enter non-commercial caves and abandoned mines where bats may be present. Avoid visiting caves and abandoned mines where white nose syndrome has been identified.
- Report any unusual bat behaviour or deaths to the Canadian Wildlife Health Cooperative at 1-866-673-4781 or the Natural Resources Information and Support Centre at 1-800-667-1940 .
- Consider building a bat box for your property. Learn more about [how to build one and where to set it up \(http://www.batcon.org/index.php/get-involved/install-a-bat-house.html\)](http://www.batcon.org/index.php/get-involved/install-a-bat-house.html).
- Private land owners have a very important role to play in species recovery. You may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPS-MNR (847-7667).

Quick facts

- The eastern small-footed bat is the smallest bat and one of the rarest bats in eastern North America.
- When they are born, these bats weigh a fifth to a third of their mother's weight.

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Related

[How Ontario protects species at risk \(https://www.ontario.ca/page/how-species-risk-are-protected\)](https://www.ontario.ca/page/how-species-risk-are-protected)

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[Endangered Species: permits and authorizations \(https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization\)](https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization)

[Conserving biodiversity \(https://www.ontario.ca/page/conserving-biodiversity\)](https://www.ontario.ca/page/conserving-biodiversity)



Little brown myotis

Scientific name: *Myotis lucifugus*



Cover photo credit: Ann Froschauer/USEWS

Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

January 24, 2013.

Read the [Assessment Report \(https://www.ontario.ca/page/little-brown-myotis-evaluation\)](https://www.ontario.ca/page/little-brown-myotis-evaluation).

What it looks like

Little brown bats have glossy brown fur and usually weigh between four and 11 grams – about as much as a Canadian loonie or toonie.

They are typically four or five centimetres long, with a wingspan of 22 to 27 centimetres. Little brown bats look similar to northern long-eared bats.

They can be distinguished by the fleshy projection that covers the entrance to the ear. In little brown bats, the projection is long and thin, but rounded at the tip.

Little brown bats eat insects. They feed at night and are most active in the two or three hours after sunset. The female little brown bat usually gives birth to only one young, which is able to fly and obtain its own food when just three weeks old.

Where it lives

Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young.

Bats can squeeze through very tiny spaces (as small as six millimetres across) and this is how they access many roosting areas.

Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing.

Where it's been found in Ontario

The little brown bat is widespread in southern Ontario and found as far north as Moose Factory and Favourable Lake.

Outside Ontario, this bat is found across Canada (except in Nunavut) and most of the United States.

What threatens it

Little brown bats are threatened by a disease known as white nose syndrome, caused by a fungus which is believed to have been inadvertently brought from Europe to North America.

The fungus grows in humid cold environments, such as the caves and mines where little brown bats hibernate.

The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources.

It is also thought that the fungus affects the wing membrane, which helps to maintain water balance in bats. Because of this, thirst may wake bats up from hibernation, which may be why those infected with white nose syndrome can be seen flying outside caves and mines during the winter.

Bats at more than three quarters of Ontario's hibernation sites are at high risk of disappearing due to white nose syndrome. Mass die-offs mean that there are no individuals left to reproduce.

Action we are taking

Endangered Species and their general habitat are automatically protected.

Habitat protection

General Habitat Protection - January 24, 2013

What you can do

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

- Report any unusual bat behaviour or deaths to the Canadian Cooperative Wildlife Health Centre at 1-866-673-4781 or the Natural Resources Information Support Centre at 1-800-667-1940.

Volunteer

Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- private land owners have a very important role to play in species recovery; if you find Little Brown Bat on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats
- don't enter non-commercial caves and abandoned mines where bats may be present; avoid visiting caves and abandoned mines where white nose syndrome has been identified
- consider building a bat box for your property, [learn more about how to build one and where to set it up](http://www.batcon.org/index.php/get-involved/install-a-bat-house.html) (<http://www.batcon.org/index.php/get-involved/install-a-bat-house.html>).

Report illegal activity

Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- little brown bats are one of only two bat species in Ontario that are known to use human structures as summer maternity colony habitat
- bats are the only mammals that can fly; their wings are folds of skin stretched between elongated finger bones, the sides of the body, the hind limbs and the tail
- although they usually live six or seven years, one little brown in Ontario was documented at 31 years old

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Related

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Northern myotis

Scientific name: *Myotis septentrionalis*



Cover photo credit: Ann Froschauer, USEWS

Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

January 24, 2013

Read the [Assessment Report \(https://www.ontario.ca/page/northern-myotis-evaluation\)](https://www.ontario.ca/page/northern-myotis-evaluation)

What it looks like

Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are typically about eight centimetres long, with a wingspan of about 25 centimetres. Northern long-eared bats usually weigh between six and nine grams – a little more than a Canadian loonie or toonie.

As their name suggests, they have long (rounded) ears. Northern long-eared bats look similar to the more common little brown bats. They can be distinguished by the fleshy projection that covers the entrance to the ear, which is long and thin, with a pointed tip.

Female northern long-eared bats usually give birth to one young, which is able to fly and obtain its own food when just a month old.

Where it lives

Northern long-eared bats are associated with boreal forests, choosing to roost under loose bark and in the cavities of trees.

These bats hibernate from October or November to March or April, most often in caves or abandoned mines.

Where it's been found in Ontario

The northern long-eared bat is found throughout forested areas in southern Ontario, to the north shore of Lake Superior and occasionally as far north as Moosonee, and west to Lake Nipigon.

This bat is found in all Canadian provinces as well as the Yukon and Northwest Territories.

What threatens it

Northern long-eared bats are threatened by a disease known as white nose syndrome, caused by a fungus which is believed to have been inadvertently brought from Europe to North America.

The fungus grows in humid cold environments, such as the caves and mines where Northern long-eared bats hibernate. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources.

It is also thought that the fungus affects the wing membrane, which helps to maintain water balance in bats. Because of this, thirst may wake bats up from hibernation, which may be why those infected with white nose syndrome can be seen flying outside caves and mines during the winter.

In Ontario, bat populations dropped by more than 90 per cent in eight hibernation sites with more than two years' exposure to white nose syndrome.

Bats at more than three quarters of Ontario's hibernation sites are at high risk of disappearing due to white nose syndrome. Mass die-offs mean that there are no individuals left to reproduce.

Action we are taking

Endangered Species and their general habitat are automatically protected

Habitat protection

General Habitat Protection - January 24, 2013

What you can do

Report a sighting

- the Ministry of Natural Resources and Forestry tracks species at risk such as the Northern long-eared bat. [Report a sighting](#) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.
- report any unusual bat behaviour or deaths to the Canadian Cooperative Wildlife Health Centre at 1-866-673-4781 or the Natural Resources Information Support Centre at 1-800-667-1940.

Volunteer

Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- private land owners have a very important role to play in species recovery; if you find Northern long-eared bat on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats
- consider building a bat box for your property; learn more about how to build one and where to set it up: www.batcon.org/index.php/get-involved/install-a-bat-house.html (<http://www.batcon.org/index.php/get-involved/install-a-bat-house.html>)
- don't enter non-commercial caves and abandoned mines where bats may be present; avoid visiting caves and abandoned mines where white nose syndrome has been identified

Report illegal activity

Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- one bat can consume hundreds of flying insects each night during the summer; Northern long-eared bats help control populations of potentially harmful insects
- Northern long-eared bats locate food by using echolocation; they send out signals and when the echo of that signal bounces back, they can identify where objects are located
- while most Ontario bats catch their dinner in mid-air, northern long-eared bats have also been observed flying down and picking insects off tree leaves, grasses and the ground

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Related

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Tri-colored Bat

Scientific name: *Perimyotis subflavus*

Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

June 15, 2016

[Read the assessment report \(http://cossaroagency.ca/wp-content/uploads/2017/06/Accessible_COSSARO-evaluation-Tri-colored-Bat.pdf\)](http://cossaroagency.ca/wp-content/uploads/2017/06/Accessible_COSSARO-evaluation-Tri-colored-Bat.pdf) (PDF)

What it looks like

The Tri-colored Bat is a small pale brown bat that weighs about 7 gm (the weight of a two dollar coin) and has a wingspan of 23 cm. The muzzle, ears and forearms are orange-red while the sides of the body and wings are dark brown. The Tri-colored Bat is named for the hairs on its back which are black, yellow and brown. It was formerly called the Eastern Pipistrelle.

Where it lives

During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group.

Where it's been found in Ontario

This bat is found in southern Ontario and as far north as Espanola near Sudbury. Because it is very rare, it has a scattered distribution. It is also found from eastern North America down to Central America.

What threatens it

Tri-colored Bats are threatened by a disease known as white nose syndrome, caused by a fungus which is believed to have been inadvertently brought from Europe to North America.

The fungus grows in humid cold environments, such as the caves and mines where Tri-colored Bats hibernate.

The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources.

It is also thought that the fungus affects the wing membrane, which helps to maintain water balance in bats. Because of this, thirst may wake bats up from hibernation, which may be why those infected with white nose syndrome can be seen flying outside caves and mines during the winter.

Bats at more than three quarters of Ontario's hibernation sites are at high risk of disappearing due to white nose syndrome. Mass die-offs mean that there are no individuals left to reproduce.

Action we are taking

Endangered species and their general habitat are automatically protected.

What you can do

Report a sighting

- The Ministry of Natural Resources and Forestry tracks species at risk such as the Tri-colored Bat. You can use a handy online form to report your sightings to the [Natural Heritage Information Centre \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants). Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. You may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- The Canada-Ontario Farm Stewardship Program is available to farmers registered under the [Canada-Ontario Environmental Farm Plan \(http://www.omafra.gov.on.ca/english/environment/efp/efp.htm\)](http://www.omafra.gov.on.ca/english/environment/efp/efp.htm) to encourage greater protection and conservation of habitat for species at risk.
- Consider building a bat box for your property; [learn more about how to build one and where to set it up \(http://batcon.org/index.php/get-involved/install-a-bat-house.html\)](http://batcon.org/index.php/get-involved/install-a-bat-house.html).
- Don't visit caves when bats may be present. You can accidentally spread the White Nose Syndrome fungus or cause the bats to arouse unnecessarily.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- The Tri-colored Bat usually hibernates in the deepest recesses of a cave where temperatures are more uniform and the walls are the warmest.

- Its day roosts are sometimes in clusters of dead leaves on deciduous trees. As many as 18 individuals may roost together.
- It may make short distance migrations of a few hundred kilometres between their summer roosts and winter hibernacula.

Updated: June 28, 2018

Published: June 15, 2016

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Common hoptree (Species at Risk)

Scientific name: *Ptelea trifoliata*



Cover photo credit: Rob Tervo

Status

Special Concern

“Special concern” means that the species lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.

Date added to the Species at Risk in Ontario List

The Common Hoptree was already assessed as threatened when the *Endangered Species Act* took effect in 2008. It was reassessed as a species of special concern in December 2016.

[Read the assessment report](#)

(https://www.ontario.ca/files.ontario.ca/accessible_final_cossaroevaluation_commonhoptree_june2016.pdf)

What it looks like

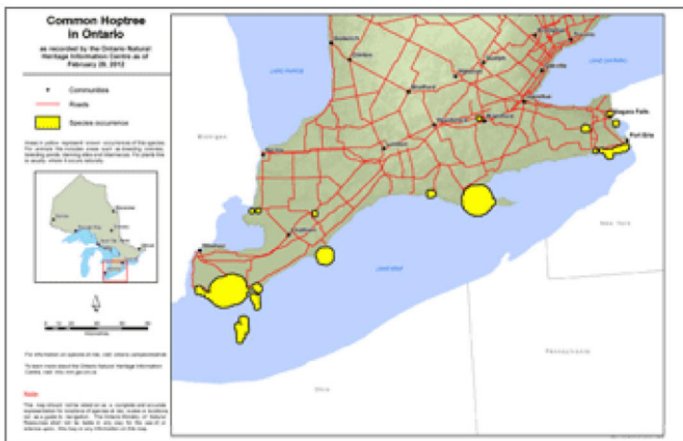
Common Hoptree is a small tree or a large shrub with smooth reddish-brown bark and alternate, three-parted compound leaves. Its cream-coloured, fragrant flowers bloom in early summer. The fruit, which is produced in late summer, is winged and contains one to three seeds.

Where it lives

In Canada, Common Hoptree is found often along shorelines in areas of nutrient poor sandy soils, although it is sometimes found on thin soils overlying limestone. It does best in full sun and is intolerant of shade.

Where it's been found in Ontario

Common Hoptree ranges from the lower Great Lakes south to Texas, and from eastern Pennsylvania to northern Florida. In Canada, Common Hoptree is found only in southwestern Ontario along the Lake Erie and Lake St. Clair shorelines, on Lake Erie islands and near Lake Ontario in the Niagara Region.



(http://files.ontario.ca/environment-and-energy/species-at-risk/common_hoptree_map_eng.pdf)

View a larger version of this map (PDF) (http://files.ontario.ca/environment-and-energy/species-at-risk/common_hoptree_map_eng.pdf)

What threatens it

In Ontario, the greatest threat to Common Hoptree is habitat loss and degradation due to development of the Lake Erie shoreline.

A twig-boring beetle has also caused significant damage to a few Common Hoptree populations in Ontario.

Action we are taking

Special concern species do not receive species or habitat protection, but may be eligible for [grants to help with their protection and recovery](https://www.ontario.ca/page/grants-protecting-species-risk) (<https://www.ontario.ca/page/grants-protecting-species-risk>).

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary](https://www.ontario.ca/page/common-hoptree-recovery-strategy-executive-summary) (<https://www.ontario.ca/page/common-hoptree-recovery-strategy-executive-summary>) (May 31, 2013)

Read the [recovery strategy](https://www.ontario.ca/page/common-hoptree-recovery-strategy) (<https://www.ontario.ca/page/common-hoptree-recovery-strategy>) (May 31, 2013)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_grs_hptr_hkbr_en.pdf) (http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_grs_hptr_hkbr_en.pdf) (March 14, 2014)

Habitat protection

General Habitat Protection - June 30, 2013

What you can do

Report a Sighting

- The Ministry of Natural Resources and Forestry tracks species at risk such as the Common hoptree. You can use a handy online form to report your sightings to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find Common hoptree on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Invasive species seriously threaten many of Ontario's species at risk. To learn what you can do to help reduce the threat of invasive species, visit:
www.ontario.ca/invasivespecies (<https://www.ontario.ca/invasivespecies>)
www.invadingspecies.com (<http://www.invadingspecies.com>)
www.ontarioinvasiveplants.ca (<http://www.ontarioinvasiveplants.ca>)
- Pollinators, such as bees, are in steep decline across the globe and they play a key role in the survival of many of Ontario's rare plants. For information on how you can help scientists monitor pollinator populations in Ontario visit:
www.seeds.ca/proj/poll (<http://www.seeds.ca/proj/poll>).

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

Quick facts

- Common Hoptrees are pollinated by a large variety of insects including bees, flies, and beetles. Common Hoptree is one of two native larval host plants for the rare Giant Swallowtail butterfly.
- Aboriginal people used the Common Hoptree for a variety of purposes including a cure for stomach aches. Poison made from Common Hoptree leaves was applied to the tips of arrows for hunting large game.

Updated: June 28, 2018

Published: July 17, 2014

Related

[How species at risk are protected \(https://www.ontario.ca/page/how-species-risk-are-protected\)](https://www.ontario.ca/page/how-species-risk-are-protected)

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Blanding's Turtle

Scientific name: *Emydoidea blandingii*



Cover photos credit: Brendan Toews (left), Michael Oldham (middle-left), Allen Woodliffe (middle-right) and Larry Watkins (right)

Status

Threatened

“Threatened” means the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.

Date added to the Species at Risk in Ontario List

The Blanding's Turtle was already assessed as threatened when the Endangered Species Act took effect in 2008. A reassessment in May 2017 confirmed this status.

[Read the assessment report PDF \(http://cossaroagency.ca/wp-content/uploads/2018/06/Accessible_COSSAROEvaluation_BlandingsTurtle_FINAL_13MAR2018.pdf\)](http://cossaroagency.ca/wp-content/uploads/2018/06/Accessible_COSSAROEvaluation_BlandingsTurtle_FINAL_13MAR2018.pdf).

The Blanding's Turtle is a medium-sized turtle easily identified by its bright yellow throat and chin. Unlike most Ontario turtles that have wide, flatter shells, the Blanding's Turtle has a domed shell that resembles an army helmet.

Where it lives

Blanding's Turtles hibernate in the mud at the bottom of permanent water bodies from late October until the end of April.

Blanding's Turtles can be found throughout southern, central and eastern Ontario.



[risk/mnr sar bla tur map_eng.pdf](#))

[View a larger version of this map \(PDF\) \(http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_bla_tur_map_eng.pdf\)](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_bla_tur_map_eng.pdf)

The most significant threats to the Blanding's Turtle are loss or fragmenting of habitat, motor vehicles, and raccoons and foxes that prey on eggs.

Illegal collection for the pet trade is also a serious threat. Blanding's Turtles are slow breeders - they don't start to lay eggs until they are in their teens or twenties - so adult deaths of breeding age adults can have major impacts on the species.

Action we are taking

Threatened species and their general habitat are automatically protected

Habitat protection

General habitat descriptions are technical, science-based documents that provide greater clarity on the area of habitat protected for a species.

Read the [general habitat description](https://www.ontario.ca/page/blandings-turtle-general-habitat-description) (<https://www.ontario.ca/page/blandings-turtle-general-habitat-description>) (July 2, 2013)

What you can do

Report a Sighting

- The Ministry of Natural Resources and Forestry tracks species at risk such as the Blanding's Turtle. You can use a handy online form to report your sightings to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find Blanding's Turtle on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- As with many other rare plants and animals, the Blanding's Turtle is at risk due to the loss of wetland habitat. You can help by protecting any wetlands and surrounding natural vegetation on your property.
- Every year, turtles all over the province must cross busy roads to get to their nesting sites. Female Blanding's Turtles sometimes mistake gravel shoulders of roads as good nesting sites! Watch for turtles on the roads, especially between May and October.
- Never buy native species of turtles or any turtles that have been caught in the wild. If you see native species of turtles for sale in a pet store or food market, please contact the Ministry of Natural Resources and Forestry.
- The Ontario Reptile and Amphibian Atlas also collects observations of all Ontario reptiles and amphibians. Submit your observations at: www.ontarionature.org/atlas (<http://www.ontarionature.org/atlas>)
- Visit the Toronto Zoo Adopt-a-Pond website to learn more about Ontario's rare turtles, their habitat and related conservation initiatives (www.torontozoo.com/Adoptapond (<http://www.torontozoo.com/Adoptapond>).

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPS-MNR (847-7667).

Quick facts

- The size of the Great Lakes-St. Lawrence Blanding's Turtle population is impossible to estimate accurately, as only limited data are available.
- It can take a female Blanding's Turtle up to 25 years to mature. This long-lived species can survive in the wild for more than 75 years.
- Unlike other Ontario turtles, the bottom shell is hinged so that some Blanding's Turtles can completely close their shell after pulling in their head and feet.

Updated: August 2, 2018

Published: July 18, 2014

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[How species at risk are protected \(https://www.ontario.ca/page/how-species-risk-are-protected\)](https://www.ontario.ca/page/how-species-risk-are-protected)

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[How to comment on protecting species at risk \(https://www.ontario.ca/page/how-comment-protecting-species-risk\)](https://www.ontario.ca/page/how-comment-protecting-species-risk)

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[Species at risk \(https://www.ontario.ca/speciesatrisk\)](https://www.ontario.ca/speciesatrisk) →

Acadian Flycatcher

Scientific name: *Empidonax virescens*



Cover photo credit: Brian E. Small

Status

Endangered

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Date added to the Species at Risk in Ontario List

The Acadian Flycatcher was assessed as endangered when the *Endangered Species Act* took effect in 2008.

[Assessment Report \(https://www.ontario.ca/page/acadian-flycatcher-evaluation\)](https://www.ontario.ca/page/acadian-flycatcher-evaluation)

What it looks like

The Acadian Flycatcher has an olive-green crown, back and tail with a pale whitish throat and breast.

The most prominent feature of this bird is the bold white ring around the eye, and two whitish horizontal bars on the wing.

The beak is short but wide-based, allowing a big opening for snatching insects out of the air.

The best way to identify the Acadian from similar looking flycatchers is its explosive song, often interpreted as “peet-sah”, with a strong emphasis on the first syllable.

Where it lives

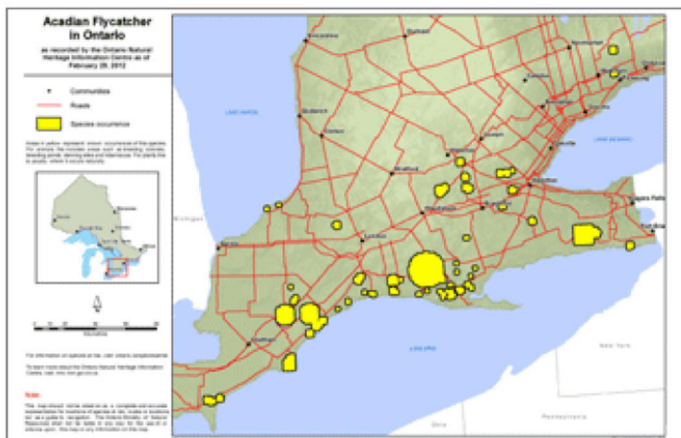
It is typically found in mature, shady forests with ravines, or in forested swamps with lots of maple and beech trees. The nest is placed near the tip of a lower limb on a tree, and is loosely woven, with strands of plant material hanging down.

In Canada, the Acadian Flycatcher nests only in southwestern Ontario, mostly in large forests and forested ravines near the shore of Lake Erie.

Where it's been found in Ontario

In Ontario, the Acadian Flycatcher primarily lives in the warmer climate of southern Ontario's Carolinian forests. It needs large, undisturbed forests, often more than 40 hectares in size.

It has also been known to nest at a few sites in the Greater Toronto Area but this is unusual. The Acadian Flycatcher population in Ontario is very small, with 25 to 75 breeding pairs recorded in 2010.



(http://files.ontario.ca/environment-and-energy/species-at-risk/acadian_flycatcher_map_eng.pdf)

[energy/species-at-risk/acadian_flycatcher_map_eng.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/acadian_flycatcher_map_eng.pdf)

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What threatens it

The main threat to the Acadian Flycatcher is habitat loss and degradation due to clearing of forests for agricultural and urban development.

The larger tracts of mature forest that are closed-canopy with open understorey, preferred by the species, are relatively rare to uncommon in southern Ontario.

Action we are taking

Endangered Species and their general habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

[Read the recovery strategy \(https://www.ontario.ca/page/recovery-strategy-acadian-flycatcher\)](https://www.ontario.ca/page/recovery-strategy-acadian-flycatcher)
(December 14, 2016)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

[Read the government response statement \(https://www.ontario.ca/page/acadian-flycatcher-government-response-statement\)](https://www.ontario.ca/page/acadian-flycatcher-government-response-statement) (September 12, 2017)

Habitat protection

General habitat protection - June 30, 2013

What you can do

Report a sighting

[Report a sighting \(https://www.ontario.ca/form/rare-species-reporting-form\)](https://www.ontario.ca/form/rare-species-reporting-form) of an endangered animal or plant to the [Natural Heritage Information Centre \(https://www.ontario.ca/page/natural-heritage-information-centre\)](https://www.ontario.ca/page/natural-heritage-information-centre). Photographs with specific locations or mapping coordinates are always helpful.

Learn more about [reporting wildlife \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants).

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find an Acadian Flycatcher nesting on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667).

For more on how you can help, visit [Bird Studies Canada \(http://www.bsc-eoc.org/\)](http://www.bsc-eoc.org/).

Quick facts

- The Acadian Flycatcher only spends about four months of the year in Canada. The rest of the time, it is migrating or wintering in the tropical forests of Central America and northern South America.
- The Carolinian forests where this bird lives in Ontario were named by early explorers, who observed that the deciduous forests in southwestern Ontario were similar to more southerly temperate forests found in the Carolinas and elsewhere in the eastern United States.
- Ontario's Carolinian forest supports more than 40 per cent of Canada's species at risk and is one of the most threatened habitats in Canada.

Updated: October 10, 2018

Published: July 18, 2014

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American chestnut

Scientific name: *Castanea dentata*

**Status: Endangered**

“Endangered” means the species lives in the wild in Ontario but is facing imminent extinction or extirpation.

Cover photos credit: Tree: Joseph O'Brien, USDA; Leaf: Natural Resources Canada, Canadian Forest Service; Bark: Vern Wilkins; and Fruit: Melissa Spearing.

Date added to the Species at Risk in Ontario List

The American Chestnut was already assessed as endangered when the *Endangered Species Act* took effect in 2008.

What it looks like

The American Chestnut is a tall deciduous tree that formerly reached about 30 metres in height; however, trees in Ontario are now typically only five to 10 metres tall. The bark is dark grey-brown and cracks with age.

Leaves are mostly hairless, 15 to 30 centimetres long and five to 10 centimetres wide at maturity, with coarsely and sharply serrated edges and a long pointed tip. Chestnut trees have both male and female flowers but cannot self pollinate. The fruit is a spiny bur-like husk enclosing one to five edible nuts. Small mammals and birds distribute, store and bury the nuts.

Where it lives

The American Chestnut prefers dryer upland deciduous forests with sandy, acidic to neutral soils.

In Ontario, it is only found in the Carolinian Zone between Lake Erie and Lake Huron.

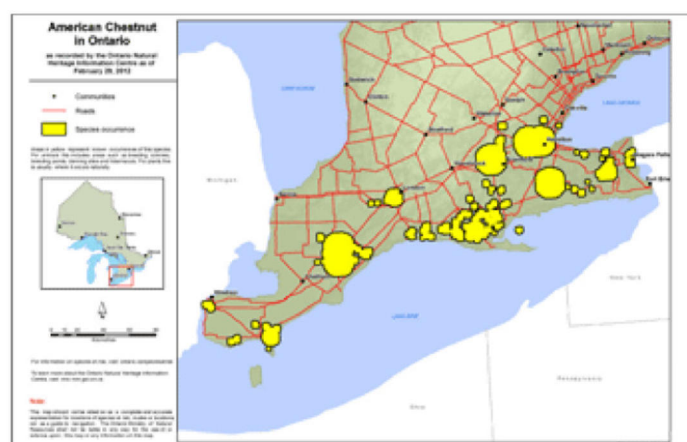
The species grows alongside Red Oak, Black Cherry, Sugar Maple, American Beech and other deciduous tree species.

Where it's been found in Ontario

The American Chestnut has almost disappeared from eastern North America due to an epidemic caused by a fungal disease called the chestnut blight (*Cryphonectria parasitica*).

In Canada, the American Chestnut is restricted primarily to southwestern Ontario.

Based on information available in 2004, it was estimated that there are 120 to 150 mature trees and 1,000 or more small, young trees in the province.



(http://files.ontario.ca/environment-and-energy/species-at-risk/american_chestnut_map_eng.pdf)

View a Larger version of this map (PDF) (http://files.ontario.ca/environment-and-energy/species-at-risk/american_chestnut_map_eng.pdf)

What threatens it

Chestnut blight has had a devastating impact on the American Chestnut. The accidental introduction of this fungus to North America from Asia in the early 1900s killed 99 per cent of American Chestnut trees within about 30 years.

This disease continues to be the overwhelming threat to American Chestnut throughout its range. There is no proven natural resistance to the disease found in the remaining population.

Fortunately, the disease primarily kills the top of the tree, often leaving living root systems. Diseased trees respond by re-sprouting from the base of the dead stumps.

The existing population primarily persists as saplings and trees that grow from these stumps and the odd tree that germinates from viable seeds. Habitat loss due to forest clearing and damage to trees during logging operations are additional threats.

Action we are taking

Endangered Species and their general habitat are automatically protected

Recovery strategy

A recovery strategy advises the ministry on ways to ensure healthy numbers of the species return to Ontario.

Read the [executive summary \(http://files.ontario.ca/environment-and-energy/species-at-risk/stdprod_075590.pdf\)](http://files.ontario.ca/environment-and-energy/species-at-risk/stdprod_075590.pdf) (June 15, 2012)

Read the [recovery strategy \(https://www.ontario.ca/page/american-chestnut-recovery-strategy\)](https://www.ontario.ca/page/american-chestnut-recovery-strategy) (June 15, 2012)

Government response statement

A government response statement outlines the actions the government intends to take or support to help recover the species.

Read the [government response statement \(https://www.ontario.ca/page/american-chestnut-government-response-statement\)](https://www.ontario.ca/page/american-chestnut-government-response-statement) (May 31, 2013)

Five-year review of progress

A five-year review of progress made toward protecting and recovering a species is required no later than five years after the government response statement for that species is published.

[Read the report \(https://www.ontario.ca/document/2018-five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk\)](https://www.ontario.ca/document/2018-five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk) on progress towards the protection and recovery of 17 species at risk, including the American Chestnut (2018).

Habitat protection

General Habitat Protection - June 30, 2013

What you can do

Report a sighting

- [Report a sighting \(https://www.ontario.ca/page/report-rare-species-animals-and-plants\)](https://www.ontario.ca/page/report-rare-species-animals-and-plants) of an endangered animal or plant to the Natural Heritage Information Centre. Photographs with specific locations or mapping coordinates are always helpful.

Volunteer

- Volunteer with your local nature club or provincial park to participate in surveys or stewardship work focused on species at risk.

Be a good steward

- Private land owners have a very important role to play in species recovery. If you find American Chestnut on your land, you may be eligible for stewardship programs that support the protection and recovery of species at risk and their habitats.
- Pollinators, such as bees, are in steep decline across the globe and they play a key role in the survival of many of Ontario's rare plants. For information on how you can help scientists monitor pollinator populations in Ontario visit: www.seeds.ca/proj/poll (<http://www.seeds.ca/proj/poll>).
- Invasive species seriously threaten many of Ontario's species at risk. To learn what you can do to help reduce the threat of invasive species, visit: www.ontario.ca/invasivespecies (<https://www.ontario.ca/invasivespecies>) www.invadingspecies.com (<http://www.invadingspecies.com>) www.ontarioinvasiveplants.ca (<http://www.ontarioinvasiveplants.ca>)
- The Canadian Chestnut Council is a scientific and charitable organization dedicated to the protection and recovery of American Chestnut in southern Ontario. Find out more about this organization at www.canadianchestnutcouncil.org (<http://www.canadianchestnutcouncil.org>) [ca](http://www.canadianchestnutcouncil.ca) (<http://www.canadianchestnutcouncil.ca>)

Report illegal activity

- Report any illegal activity related to plants and wildlife to 1-877-TIPSMNR (8477667)

Quick facts

- When they were abundant, the edible American Chestnuts provided an important source of food for a variety of animals and birds, as well as people.
- Aboriginal people used the American Chestnut for treating numerous ailments (from coughs and dermatitis to heart trouble), as a staple food and beverage, to build shelters, for firewood and as a source of dye. Early settlers soon realized the many important uses of this tree.

- American Chestnut flowers are pollinated by insects. Squirrels scatter and plant the seeds when they bury them.
- Don't confuse the rare American Chestnut with the cultivated chestnuts found in Ontario. These include Spanish Chestnut (*C. sativa*), Chinese Chestnut (*C. mollissima*) and Japanese Chestnut (*C. crenata*). All of them have varying degrees of hairiness on the lower leaf surfaces. Hybrids between these species and American Chestnut are known and difficult to identify.
- Horsechestnut (*Aesculus hippocastanum*), is a very different tree planted in urban areas of southern Ontario. It has five leaves in a semi-circle formation and a spiny fruit containing one large shiny nut.

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