

Appendix C

Updated Oct 13, 2016

Embro Dam Area Fish and Benthic Records

Contents

Fish diversity upstream of Embro Pond	1
Fish diversity downstream of Embro Pond	1
Embro Dam area fish sampling (2015)	2
Embro Dam area fish sampling (2009 – 2014)	6
Embro Dam area benthic water quality sampling summary	13
Embro Dam area benthic sampling data (2003 – 2015).....	14

Fish diversity upstream of Embro Pond

Species	Status - Global	Can	Ont.	Thames	Thames Distribution	Times Sampled
Blacknose Dace	G5		S5	Abundant	widespread	8
Brook Stickleback	G5		S5	Abundant	widespread	20
Brook Trout (coldwater)	G5T		S5	Uncommon	localized	32
Creek Chub	G5		S5	Abundant	widespread	1
Fathead Minnow	G5		S5	Abundant	widespread	13
Johnny Darter	G5		S5	Abundant	widespread	2
Northern Redbelly Dace	G5		S5	Abundant	locally common	4
White Sucker	G5		S5	Abundant	widespread	21

Fish diversity downstream of Embro Pond

Species	Status - Global	Can	Ont.	Thames	Thames Distribution	Times Sampled
Blacknose Dace	G5		S5	Abundant	widespread	9
Bluegill	G5		S5	Common	localized	1
Bluntnose Minnow	G5		S5	Abundant	widespread	4
Brook Stickleback	G5		S5	Abundant	widespread	3
Brook Trout (coldwater)	G5T		S5	Uncommon	localized	10
Central Stoneroller	G5		S4	Abundant	widespread	5
Common Shiner	G5		S5	Abundant	widespread	8
Creek Chub	G5		S5	Abundant	widespread	8
Fantail Darter	G5		S4	Abundant	widespread	2
Fathead Minnow	G5		S5	Abundant	widespread	6
Golden Shiner	G5		S5	Common	localized	1
Greenside Darter	G5		S4	Abundant	widespread	1
Hornyhead Chub	G5		S4	Abundant	widespread	3
Johnny Darter	G5		S5	Abundant	widespread	6
Northern Hog Sucker	G5		S4	Abundant	widespread	1
Northern Redbelly Dace	G5		S5	Abundant	locally common	6
Rock Bass	G5		S5	Abundant	widespread	1
Rosyface Shiner	G5		S4	Abundant	widespread	2
Smallmouth Bass	G5		S5	Abundant	widespread	2
Striped Shiner	G5		S4	Abundant	widespread	1
White Sucker	G5		S5	Abundant	widespread	9

Embro Dam area fish sampling (2015)

Species (Common Name)	COSEWIC	SARA	ESA 2007	SRank	Abundance	Distribution
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Youngsville Drain						
East of 35th Line 2 km North of Road 84		UTM x: 505741	UTM y: 4781834	Source: UTRCA	Site Code MU24	Sample Date 10/9/2015
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon localized

Youngsville Drain

Youngsville Drain						
East of 35th Line 1.2 km North of Road 84		UTM x: 506031	UTM y: 4781231	Source: UTRCA	Site Code MU41	Sample Date 5/7/2015
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon localized
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant widespread

Embro Pond

Embro Pond						
Embro CA, Rd 84		UTM x: 506858	UTM y: 4779995	Source: UTRCA	Site Code MU25	Sample Date 4/15/2015
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant widespread

Youngsville Drain

Youngsville Drain						
Rd 84, Embro C.A., downstream of pond		UTM x: 506879	UTM y: 4779791	Source: UTRCA	Site Code MU40	Sample Date 4/15/2015
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant widespread

Youngsville Drain						
Rd 84, Embro C.A., downstream of pond		UTM x: 506879	UTM y: 4779791	Source: UTRCA	Site Code MU40	Sample Date 7/8/2015
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundance	Distribution
Rd 84, Embro C.A., downstream of pond		UTM x: 506879	UTM y: 4779791	Source: UTRCA	Site Code MU40	Sample Date 10/19/2015	
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluntnose Minnow	<i>Pimephales notatus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fantail Darter	<i>Etheostoma flabellare</i>				S4	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Golden Shiner	<i>Notemigonus crysoleucas</i>				S5	Common	localized
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Embro Dam area fish sampling (2015)

Species (Common Name) COSEWIC SARA ESA 2007 SRank Abundance Distribution

Youngsville Drain		UTM x:	UTM y:	Source:	Site Code	Sample Date
East of 35th Line 2 km North of Road 84		505741	4781834	UTRCA	MU24	10/9/2015

Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized

Youngsville Drain

Youngsville Drain		UTM x:	UTM y:	Source:	Site Code	Sample Date
East of 35th Line 1.2 km North of Road 84		506031	4781231	UTRCA	MU41	5/7/2015

Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Embro Pond

Embro Pond		UTM x:	UTM y:	Source:	Site Code	Sample Date
Embro CA, Rd 84		506858	4779995	UTRCA	MU25	4/15/2015

Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Youngsville Drain

Youngsville Drain		UTM x:	UTM y:	Source:	Site Code	Sample Date
Rd 84, Embro C.A., downstream of pond		506879	4779791	UTRCA	MU40	4/15/2015

Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Youngsville Drain		UTM x:	UTM y:	Source:	Site Code	Sample Date
Rd 84, Embro C.A., downstream of pond		506879	4779791	UTRCA	MU40	7/8/2015

Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundance	Distribution
Rd 84, Embro C.A., downstream of pond		UTM x: 506879	UTM y: 4779791	Source: UTRCA	Site Code MU40	Sample Date 10/19/2015	
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluntnose Minnow	<i>Pimephales notatus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fantail Darter	<i>Etheostoma flabellare</i>				S4	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Golden Shiner	<i>Notemigonus crysoleucas</i>				S5	Common	localized
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Embro Dam area fish sampling (2009 – 2014)

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
<u>Youngsville Drain</u>							
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/21/2003
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/23/2010
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/27/2012
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/30/2012
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/18/2013
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/20/2013
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/27/2013
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	11/29/2013
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	12/5/2013
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834		MU24	12/9/2013
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834	4781834	MU24	11/12/2014
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834	4781834	MU24	11/17/2014
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834	4781834	MU24	11/26/2014
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834	4781834	MU24	12/2/2014
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 2 km North of Road 84			UTM x: 505741	UTM y: 4781834	4781834	MU24	12/5/2014
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
<u>Youngsville Drain</u>							
East of 35th Line 1.4 km North of Road 84			UTM x: 505996	UTM y: 4781291	4781291	MU41	9/3/2009
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84			UTM x: 505996	UTM y: 4781291	4781291	MU41	11/18/2010
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84			UTM x: 505996	UTM y: 4781291	4781291	MU41	11/22/2013
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84			UTM x: 505996	UTM y: 4781291	4781291	MU41	12/2/2013
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84		UTM x: 505996		UTM y: 4781291		MU41	10/27/2014
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84		UTM x: 505996		UTM y: 4781291		MU41	11/3/2014
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84		UTM x: 505996		UTM y: 4781291		MU41	11/13/2014
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
East of 35th Line 1.4 km North of Road 84		UTM x: 505996		UTM y: 4781291		MU41	12/5/2014
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
East of 35th Line 1.4 km North of Road 84		UTM x: 505996		UTM y: 4781291		MU41	12/12/2014
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
<u>Youngsville Drain</u>							
Road 84		UTM x: 506759		UTM y: 4780111		837-UT	11/1/1999
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
Road 84		UTM x: 506759		UTM y: 4780111		837-UT	11/12/2010
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Road 84		UTM x: 506759		UTM y: 4780111		837-UT	11/21/2013
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
Road 84		UTM x: 506759		UTM y: 4780111		837-UT	11/25/2013
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Road 84		UTM x: 506759		UTM y: 4780111		837-UT	11/26/2014
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
<u>Youngsville Drain</u>							
Rd 84, Embro C.A., downstream of pond		UTM x: 506879		UTM y: 4779791		MU40	9/3/2009
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluntnose Minnow	<i>Pimephales notatus</i>				S5	Abundant	widespread
Brook Stickleback	<i>Culaea inconstans</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant	widespread
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Greenside Darter	<i>Etheostoma blennioides</i>				S4	Abundant	widespread
Hornyhead Chub	<i>Nocomis biguttatus</i>				S4	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Northern Hog Sucker	<i>Hypentelium nigricans</i>				S4	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
Rd 84, Embro C.A., downstream of pond		UTM x: 506879		UTM y: 4779791		MU40	9/2/2010
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluegill	<i>Lepomis macrochirus</i>				S5	Common	localized
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant	widespread
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
Striped Shiner	<i>Luxilus chrysocephalus</i>				S4	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
Rd 84, Embro C.A., downstream of pond		UTM x:	506879	UTM y:	4779791	MU40	11/12/2010
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Rd 84, Embro C.A., downstream of pond		UTM x:	506879	UTM y:	4779791	MU40	7/15/2011
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Hornyhead Chub	<i>Nocomis biguttatus</i>				S4	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
Rd 84, Embro C.A., downstream of pond		UTM x:	506879	UTM y:	4779791	MU40	8/28/2012
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluntnose Minnow	<i>Pimephales notatus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fantail Darter	<i>Etheostoma flabellare</i>				S4	Abundant	widespread
Hornyhead Chub	<i>Nocomis biguttatus</i>				S4	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
Rosyface Shiner	<i>Notropis rubellus</i>				S4	Abundant	widespread
Smallmouth Bass	<i>Micropterus dolomieu</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
Rd 84, Embro C.A., downstream of pond		UTM x:	506879	UTM y:	4779791	MU40	10/18/2012
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Bluntnose Minnow	<i>Pimephales notatus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant	widespread
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Rock Bass	<i>Ambloplites rupestris</i>				S5	Abundant	widespread
Rosyface Shiner	<i>Notropis rubellus</i>				S4	Abundant	widespread
Smallmouth Bass	<i>Micropterus dolomieu</i>				S5	Abundant	widespread
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread
Rd 84, Embro C.A., downstream of pond		UTM x:	506879	UTM y:	4779791	MU40	6/25/2014
Blacknose Dace	<i>Rhinichthys atratulus</i>				S5	Abundant	widespread
Brook Trout	<i>Salvelinus fontinalis</i>				S5	Uncommon	localized
Central Stoneroller	<i>Campostoma anomalum</i>				S4	Abundant	widespread
Common Shiner	<i>Luxilus cornutus</i>				S5	Abundant	widespread
Creek Chub	<i>Semotilus atromaculatus</i>				S5	Abundant	widespread

Species (Common Name)	Scientific Name	COSEWIC	SARA	ESA 2007	SRank	Abundanc	Distribution
Fathead Minnow	<i>Pimephales promelas</i>				S5	Abundant	widespread
Johnny Darter	<i>Etheostoma nigrum</i>				S5	Abundant	widespread
Northern Redbelly Dace	<i>Phoxinus eos</i>				S5	Abundant	locally common
White Sucker	<i>Catostomus commersoni</i>				S5	Abundant	widespread

Global Rank (GRANK): Global ranks are assigned by a consensus of the network of natural heritage programs (conservation data centres), scientific experts, and The Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety. The most important factors considered in assigning global (and provincial) ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

G1 Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because some factor(s) making it especially vulnerable to extinction.

G2 Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.

G3 Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.

G4 Common; usually more than 100 occurrences; usually not susceptible to immediate threats.

G5 Very common; demonstrably secure under present conditions.

COSEWIC Status: The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses species for their consideration for legal protection and recovery (or management) under the Species at Risk Act (SARA).

Extinct: A wildlife species that no longer exists.

Extirpated: A wildlife species no longer existing in the wild in Canada, but exists elsewhere.

Endangered: A wildlife species facing imminent extirpation or extinction.

Threatened: A wildlife species likely to become endangered if limiting factors are not reversed.

Special Concern: A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Not at Risk: A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Data Deficient: A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

References: http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1 https://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm?styp=speciesindex=1cosid=common=scientific=population=taxid=3locid=0desid=0schid=0desid2=0
http://www.cosewic.gc.ca/eng/sct0/rpt/rpt_csar_e.pdf http://www.cosewic.gc.ca/eng/sct5/index_e.cfm (current to September 2009)

Provincial Rank (SRANK): Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre 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. The NHIC welcomes information which will assist in assigning accurate provincial ranks.

S1 Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.

S2 Very rare in Ontario; usually between 5 and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.

S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.

S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.

S5 Very common and demonstrably secure in Ontario.

S? Unranked, or, if following a ranking, rank uncertain (e.g. S3?). S? species are thought to be rare in Ontario, but there is insufficient information available to assign a more accurate rank.

SE Exotic; not believed to be a native component of Ontario's flora

Embro Dam area benthic water quality sampling summary

DATE FBI QUALITY

Youngsville Drain upstream of dam Accessed from 35th Line 1.2 km north of Rd 84

Site code: MU24 UTM X Coordinate: 506031 UTM Y Coordinate: 4781231

11/21/2003 6.11 Fairly Poor

Youngsville Drain upstream of dam Oxford Road 84 North of Embro CA

Site code: MU26 UTM X Coordinate: 506776 UTM Y Coordinate: 4780094

7/9/2008 6.04 Fairly Poor

5/5/2015 5.82 Fairly Poor

9/23/2015 6.06 Fairly Poor

Youngsville Drain downstream of dam Embro C.A., below dam

Site code: MU40 UTM X Coordinate: 506879 UTM Y Coordinate: 4779791

9/29/2010 5.81 Fairly Poor

5/5/2015 5.84 Fairly Poor

9/23/2015 6.37 Fairly Poor

Embro Dam area benthic sampling data (2003 – 2015)

Taxonomic Name Common Name Life Stage # in Subsample Biotic Index

Youngsville Drain upstream of pond

Accessed from 35th Line 1.2 km north of Rd 84

Site code: MU24 UTM X: 506031 UTM Y: 4781231

Sampled - 11/21/2003

REP: 1

<i>Acariformes</i>	Water Mite	A	8	6
<i>Asellidae</i>	Sow Bug	A	51	8
<i>Baetidae</i>	Small Mayfly	N	14	6
<i>Chironomidae</i>	Midge	L	21	6
<i>Dytiscidae</i>	Predacious Diving Beetle	L	1	5
<i>Elmidae</i>	Riffle Beetle	L	1	5
<i>Hydroptilidae</i>	Micro-caddisfly	L	1	6
<i>Limnephilidae</i>	Northern Caddisfly	L	5	4
<i>Nematoda</i>	Thread Worm	A	1	5
<i>Oligochaeta</i>	Aquatic Worm	A	11	8
<i>Physidae</i>	Pouch Snail	A	1	8
<i>Pisidiidae</i>	Fingemail Clam	A	1	6
<i>Simuliidae</i>	Black Fly	L	85	5
<i>Tipulidae</i>	Crane Fly	L	3	4
<i>Turbellaria</i>	Flatworm	A	1	6
	Stream Health	Fairly Poor	Family Biotic Index	6.11

Youngsville Drain upstream of pond

Oxford Road 84 North of Embro CA

Site code: MU26 UTM X: 506776 UTM Y: 4780094

Sampled - 7/9/2008

REP: 1

<i>Acariformes</i>	Water Mite	A	4	6
<i>Baetidae</i>	Small Mayfly	N	1	6
<i>Ceratopogonidae</i>	Biting Midge	L	4	6
<i>Chironomidae</i>	Midge	L	276	6
<i>Corixidae</i>	Water Boatmen	A	18	5
<i>Dytiscidae</i>	Predacious Diving Beetle	L	2	5
<i>Elmidae</i>	Riffle Beetle	L	1	5
<i>Halplidae</i>	Crawling Water Beetle	L	2	5
<i>Leptoceridae</i>	Long-horned Caddisfly	L	1	4
<i>Nematoda</i>	Thread Worm	A	3	5
<i>Oligochaeta</i>	Aquatic Worm	A	22	8
<i>Pisidiidae</i>	Fingemail Clam	A	2	6
<i>Simuliidae</i>	Black Fly	L	1	5
	Stream Health	Fairly Poor	Family Biotic Index	6.04

Sampled - 5/5/2015

REP: 1

<i>Acariformes</i>	Water Mite	A	26	6
<i>Asellidae</i>	Sow Bug	A	11	8
<i>Baetidae</i>	Small Mayfly	N	9	6
<i>Ceratopogonidae</i>	Biting Midge	L	1	6
<i>Chironomidae</i>	Midge	P	19	6
<i>Chironomidae</i>	Midge	L	160	6
<i>Dytiscidae</i>	Predacious Diving Beetle	L	1	5
<i>Elmidae</i>	Riffle Beetle	A	4	5
<i>Elmidae</i>	Riffle Beetle	L	20	5
<i>Empididae</i>	Dance Fly	L	9	6

<i>Glossiphoniidae</i>	Leech	A	1	8
<i>Hydropsychidae</i>	Net-spinning Caddisfly	L	9	5
<i>Hydroptilidae</i>	Micro-caddisfly	L	1	6

Taxonomic Name	Common Name	Life Stage	# in Subsample	Biotic Index
<i>Lepidostomatidae</i>	<i>Lepidostomatid</i> Caddisfly	L	7	1
<i>Limnephilidae</i>	Northern Caddisfly	L	2	4
<i>Oligochaeta</i>	Aquatic Worm	A	13	8
<i>Perlidae</i>	Stonefly	N	9	3
<i>Simuliidae</i>	Black Fly	L	5	5
Stream Health		Fairly Poor	Family Biotic Index	5.82

Sampled - 9/23/2015

REP: 1

<i>Acariformes</i>	Water Mite	A	21	6
<i>Asellidae</i>	Sow Bug	A	18	8
<i>Baetidae</i>	Small Mayfly	N	20	6
<i>Ceratopogonidae</i>	Biting Midge	L	1	6
<i>Chironomidae</i>	Midge	L	226	6
<i>Chironomidae</i>	Midge	P	16	6
<i>Elmidae</i>	Riffle Beetle	L	5	5
<i>Hydropsychidae</i>	Net-spinning Caddisfly	L	9	5
<i>Hydroptilidae</i>	Micro-caddisfly	L	1	6
<i>Hydroptilidae</i>	Micro-caddisfly	P	3	6
<i>Nematoda</i>	Thread Worm	A	1	5
<i>Oligochaeta</i>	Aquatic Worm	A	5	8
<i>Pisidiidae</i>	Fingemail Clam	A	2	6
<i>Simuliidae</i>	Black Fly	L	5	5
<i>Tipulidae</i>	Crane Fly	L	3	4
Stream Health		Fairly Poor	Family Biotic Index	6.06

Youngsville Drain downstream of dam

Embros C.A., below dam

Site code: MU40

UTM X: 506879

UTM Y: 4779791

Sampled - 9/29/2010

REP: 1

<i>Acariformes</i>	Water Mite	A	7	6
<i>Asellidae</i>	Sow Bug	A	15	8
<i>Baetidae</i>	Small Mayfly	N	2	6
<i>Chironomidae</i>	Midge	P	15	6
<i>Chironomidae</i>	Midge	L	76	6
<i>Elmidae</i>	Riffle Beetle	A	4	5
<i>Elmidae</i>	Riffle Beetle	L	23	5
<i>Empididae</i>	Dance Fly	L	7	6
<i>Gammaridae</i>	Sideswimmer	A	13	6
<i>Hydropsychidae</i>	Net-spinning Caddisfly	L	44	5
<i>Oligochaeta</i>	Aquatic Worm	A	10	8
<i>Pisidiidae</i>	Fingemail Clam	A	16	6
<i>Simuliidae</i>	Black Fly	L	16	5
<i>Tipulidae</i>	Crane Fly	L	9	4
<i>Turbellaria</i>	Flatworm	A	39	6
Stream Health		Fairly Poor	Family Biotic Index	5.81

Sampled - 5/5/2015

REP: 1

<i>Acariformes</i>	Water Mite	A	3	6
<i>Asellidae</i>	Sow Bug	A	11	8
<i>Baetidae</i>	Small Mayfly	N	1	6
<i>Chironomidae</i>	Midge	L	81	6

<i>Chironomidae</i>	Midge	P	8	6
<i>Elmidae</i>	Riffle Beetle	L	40	5
<i>Elmidae</i>	Riffle Beetle	A	9	5
<i>Empididae</i>	Dance Fly	L	1	6

Taxonomic Name	Common Name	Life Stage	# in Subsample	Biotic Index
<i>Gammaridae</i>	Sideswimmer	A	110	6
<i>Hydropsychidae</i>	Net-spinning Caddisfly	L	24	5
<i>Oligochaeta</i>	Aquatic Worm	A	11	8
<i>Philopotamidae</i>	Finger-net Caddisfly	L	1	4
<i>Pisidiidae</i>	Fingernail Clam	A	4	6
<i>Planorbidae</i>	Orb Snail	A	1	6
<i>Simuliidae</i>	Black Fly	P	1	5
<i>Simuliidae</i>	Black Fly	L	4	5
<i>Tipulidae</i>	Crane Fly	L	5	4
<i>Turbellaria</i>	Flatworm	A	6	6
<i>Uenoidae</i>	Caddisfly	L	2	3
	Stream Health	Fairly Poor	Family Biotic Index	5.84

Sampled - 9/23/2015

REP: 1

<i>Acariformes</i>	Water Mite	A	5	6
<i>Asellidae</i>	Sow Bug	A	39	8
<i>Baetidae</i>	Small Mayfly	N	4	6
<i>Chironomidae</i>	Midge	L	57	6
<i>Chironomidae</i>	Midge	P	8	6
<i>Crangonyctidae</i>	Sideswimmer	A	4	6
<i>Elmidae</i>	Riffle Beetle	A	5	5
<i>Elmidae</i>	Riffle Beetle	L	35	5
<i>Gammaridae</i>	Sideswimmer	A	14	6
<i>Hydropsychidae</i>	Net-spinning Caddisfly	L	11	5
<i>Oligochaeta</i>	Aquatic Worm	A	67	8
<i>Philopotamidae</i>	Finger-net Caddisfly	L	8	4
<i>Pisidiidae</i>	Fingernail Clam	A	3	6
<i>Simuliidae</i>	Black Fly	L	4	5
<i>Tipulidae</i>	Crane Fly	L	10	4
<i>Turbellaria</i>	Flatworm	A	53	6
	Stream Health	Fairly Poor	Family Biotic Index	6.37

Benthic Samples were obtained using a Rapid Bioassessment Protocol developed by the United States Environmental Protection Agency and modified by Dr. Robert Bailey of the University of Western Ontario Zoology Department. A representative section of stream is selected, incorporating a riffle if present, and sampled by moving upstream along a diagonal transect, dislodging and capturing invertebrates with a .5 mm mesh "D"- frame net. Samples are preserved in the field and analyzed in the lab to randomly select a 100 bug subsample which is identified to the Family taxonomic level.

The biotic index is a value assigned to benthic invertebrate taxa indicating their pollution sensitivity and tolerance on a scale from 0 to 10. Lower numbers indicate pollution sensitivity and high numbers tolerance. A value of -1 indicates that no biotic index value has been assigned to these taxa.

The Family Biotic Index is the weighted average of the biotic index and number of bugs in each taxa in the sample. The water quality ranges for the FBI values are as follows: < 4.25 = Excellent; 4.25 - 5.00 = Good; 5.00 - 5.75 = Fair; 5.75 - 6.50 = Fairly Poor; 6.50 - 7.25 = Poor; and > 7.25 = Very Poor.

Report prepared - Monday, November 09, 2015

