

# Earthworms

and our

**‘New’ Soils**

***Subtitle:***

***Earthworms***

***the ‘Eagles’ of the Soil***

by

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# **EARTHWORMS**

## **1. History**

## **2. 2012 Blackstrap Farm Field Investigation Literature**

## **3. Farmer Survey via GRAINEWS**

## **4. Conclusions**

## **5. Future Research – What We Need to Know**

# 1. HISTORY

**Glaciation – Earthworms wiped clean**

- not native to Can Prairies
- **neither is white man, wheat , canola, pulses**

**~1900 Settlers arrive , summerfallow ‘discovered’**

**1920 - ~ 1990s- soil surveys , millions of holes dug in farm fields NO EARTHWORMS - unless old farm garden site**

**Soil Science 101 UofS – Earthworms = Lumbricus terrestris but not here  
Soil science profs Paul and Hutcheon wanted them OUT of their gardens**

**~1970s Anhydrous Ammonia appears ; critics said it will wreck the land and kill all the earthworms . What Earthworms said we**

**~ 1985 Farmers sick of dirt in the air – devise seeders for 0 Till**



# 2012 Blackstrap Farm : Field Investigation

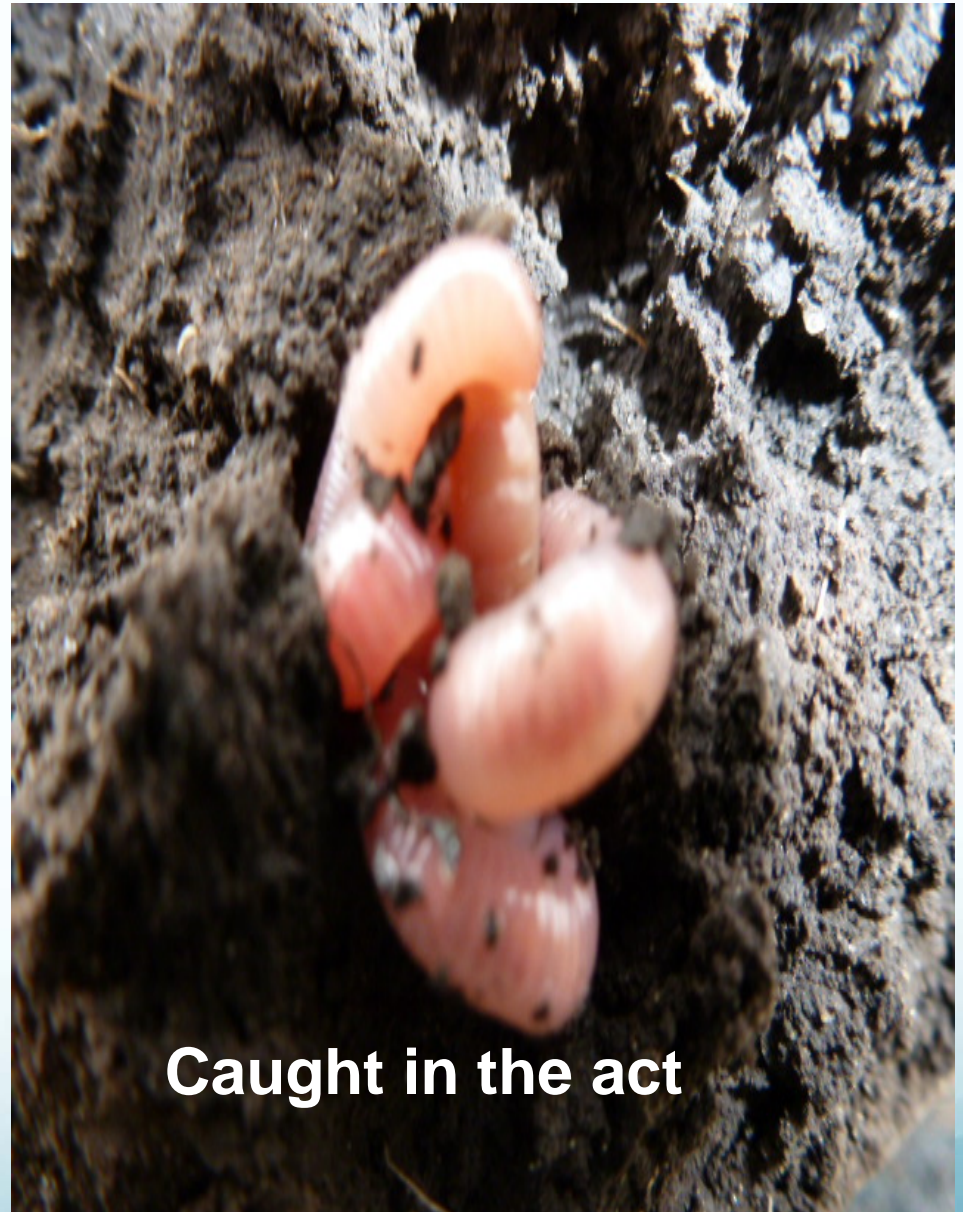


Tiling spade - best tool – between wheat rows





**Light is Orange  
Hot to Trot**



**Caught in the act**





LITERATURE- **HUGE**

# Biology and Ecology of Earthworms

**3rd Edition , 1996 70 PAGE Bibliography**

Third edition

**C.A. Edwards**

1925-

Ohio State University, Columbus, Ohio, USA

and

**P.J. Bohlen**

Institute of Ecosystem Studies, Millbrook, New York, USA

Every 4 years – Very Large World Congress

THE FORMATION  
OF  
VEGETABLE MOULD,  
THROUGH THE  
ACTION OF WORMS,  
WITH  
*OBSERVATIONS ON THEIR HABITS.*

By CHARLES DARWIN, LL.D., F.R.S.

**1881**

WITH ILLUSTRATIONS

Credit : Sina Adl told me about this book

LONDON:  
JOHN MURRAY, ALBEMARLE STREET.  
1881.





**1.5 inches new topsoil  
in 15 years**

# Earthworm Facts From Literature

**Healthy Earthworms = Healthy soil**

**Three Main Types :** Surface Feeders ( Epigeic)  
Deep Drillers ( Anecic)  
Topsoil Dwellers ( Endogeic)= Ours – I think

**Bears Hibernate – Earthworms Aestivate (go down and curl up)**

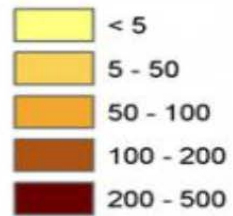
**Hermaphrodites – Produce cocoons – life cycle months to years?**

**Very significant in nutrient cycling – can greatly enhance N mineralization reports as high as 90 kg N/ha/yr, Biol Fert Soils (1996) 23: 57-63 Netherlands**

**Jill Clapperton – was Lethbridge now Montana Soil Biol. Biochem. 29, 631-633, 1997 Higher Nos. in 0Till**

**Extension Bulletin by Jill -LOST- said Flax and Canola favorite food**

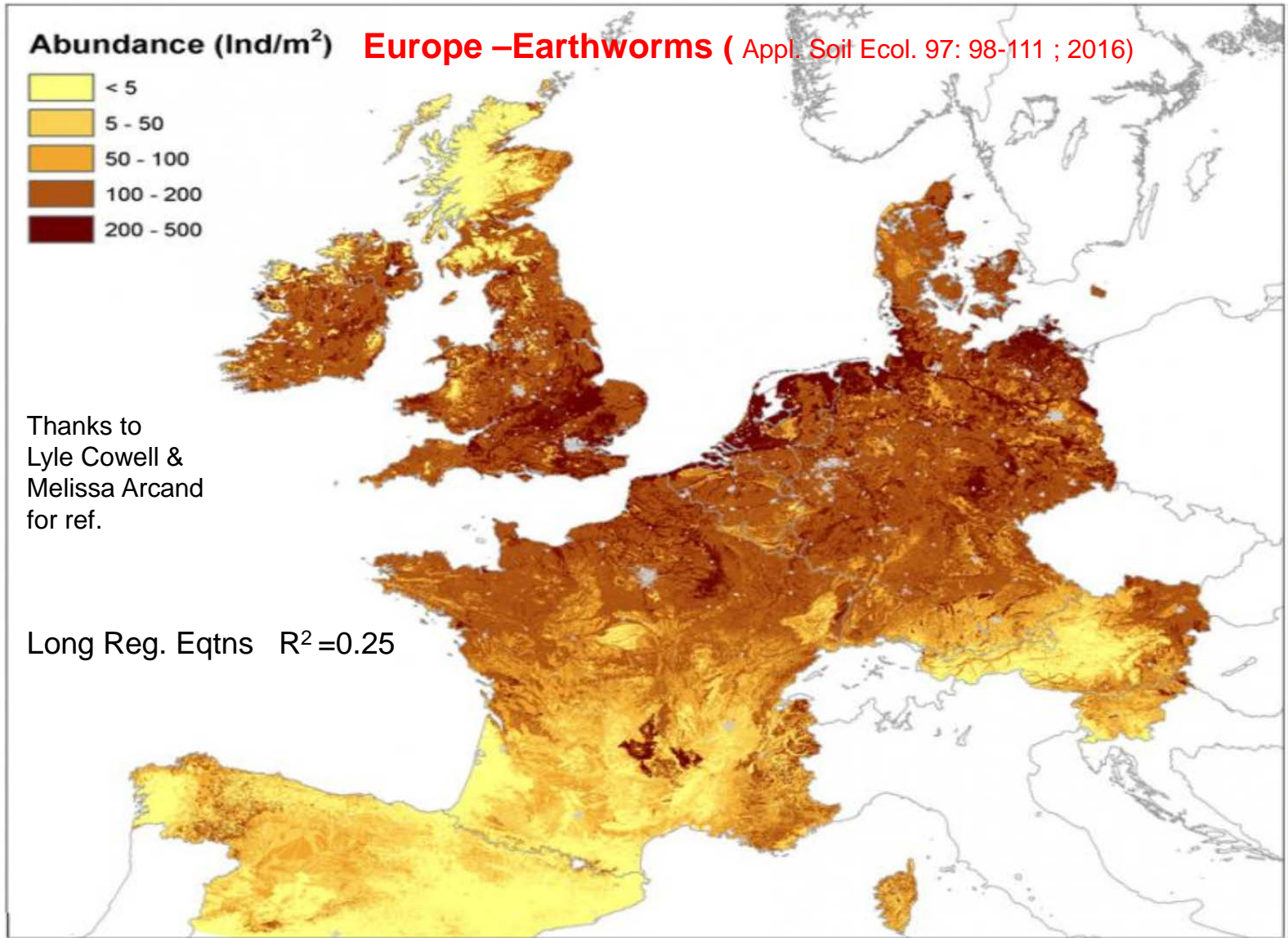
**Abundance (Ind/m<sup>2</sup>)**



**Europe –Earthworms ( Appl. Soil Ecol. 97: 98-111 ; 2016)**

Thanks to  
Lyle Cowell &  
Melissa Arcand  
for ref.

Long Reg. Eqtns  $R^2=0.25$





# EARTHWORM SURVEY

**Please** - clip and mail this survey to

**Les Henry** at 143 Tucker Cres, Saskatoon, SK, S7H 3H7;

or - clip and fax this survey to **Leeann Minogue** at 204-944-5416;

or - send the information by email to

leeann.minogue@fbcpublishing.com.

1. Province \_\_\_\_\_

Nearest Town \_\_\_\_\_

Legal Location of Home quarter \_\_\_\_\_

2. When Checking seed depth I see worms

Never \_\_\_\_\_ Seldom \_\_\_\_\_

Often \_\_\_\_\_ Always \_\_\_\_\_

3. Number of years Continuous Crop, Zero/Min Till \_\_\_\_\_

4. Crop Rotation \_\_\_\_\_

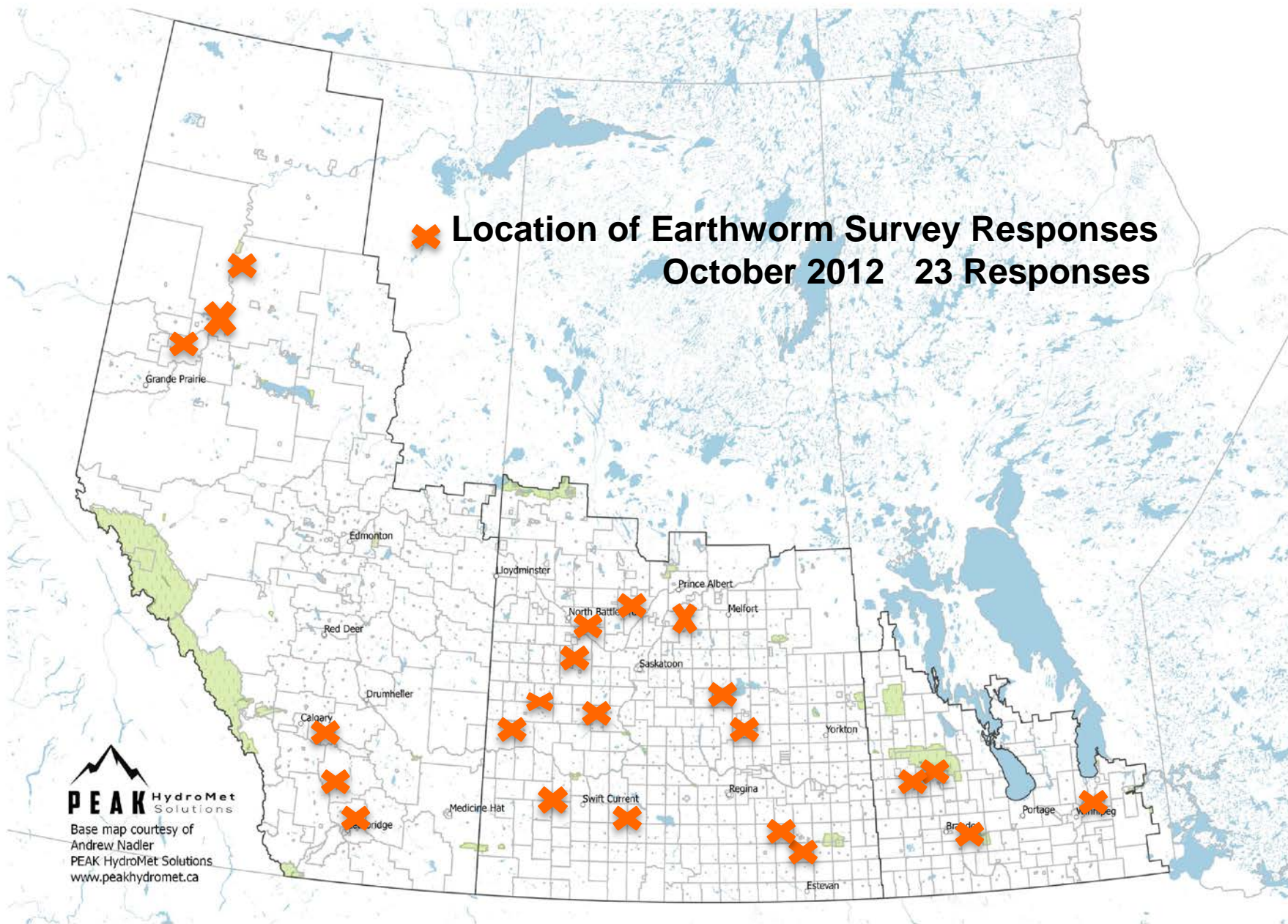
5. Other Observations? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**✕ Location of Earthworm Survey Responses  
October 2012 23 Responses**



Base map courtesy of  
Andrew Nadler  
PEAK HydroMet Solutions  
[www.peakhydromet.ca](http://www.peakhydromet.ca)



## **FACTS FROM GRAINEWS SURVEY**

**Earthworms are an important part of the 6<sup>th</sup> Soil Forming Factor ( Agric)**

**Zerotill is the key – all but one report few to none before and lots now ( even GROSS amounts ).**

**Flax is like ice cream to earthworms and also canola ( Erni Hall – Wynyard and Frank Russell- Lethbridge)**

**Gardeners absolutely HATE them – Spiritwood, Kindersley, Peace River – make soil hard and like Swiss Cheese**



## **FUTURE - WHAT DO WE NEED TO KNOW**

- 1. Who they are – sampling and ID survey**
- 2. What are they doing for us**
- 3. Is there such a thing as too many – frequent question in survey**
- 4. How do we make sure they stick around**

**Soil Biology is now getting the attention it deserves:  
NOW leave the microbe DNA papers for a while and  
study**

## **THE EAGLES OF OUR SOILS**

# THE END

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