



# The Woodland Observer

## Nipissing Naturalists Club

### March 2015

Enjoy Nature!



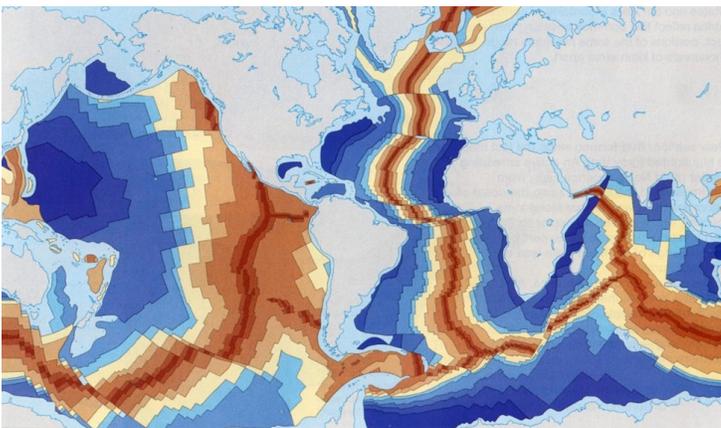
President: Fred Pinto — fredpinto1@gmail.com — 705-476-9006

## The Geological Significance of Nipissing

*A follow-up to the presentation by Larry Dyke*

By: April Phelps

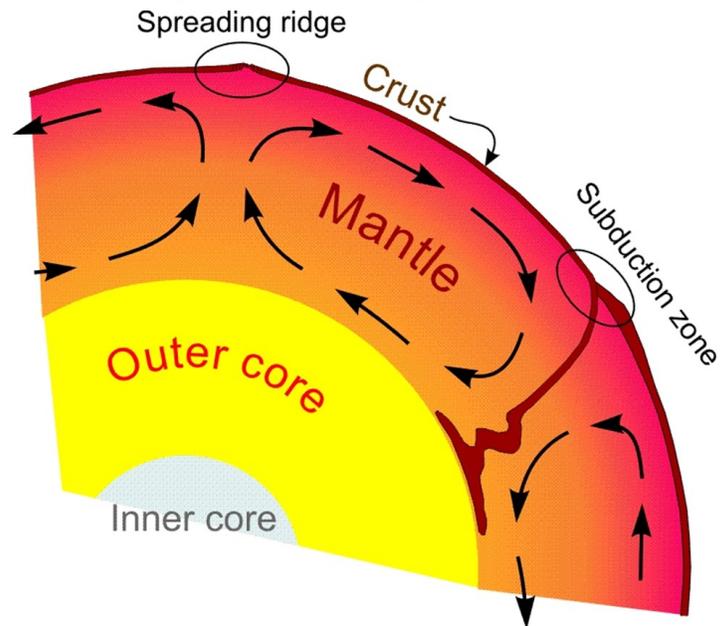
...continued from February 2015



Aggregate knowledge allows people to look at a map (such as the one above) and know what it is, but how does it fit? And what does it mean? These were questions we had until about the mid-20<sup>th</sup> century when the US Navy happened to be measuring the magnetic field of the earth. Scientists took this data and plotted it, which turned out to show patterns of reversal.

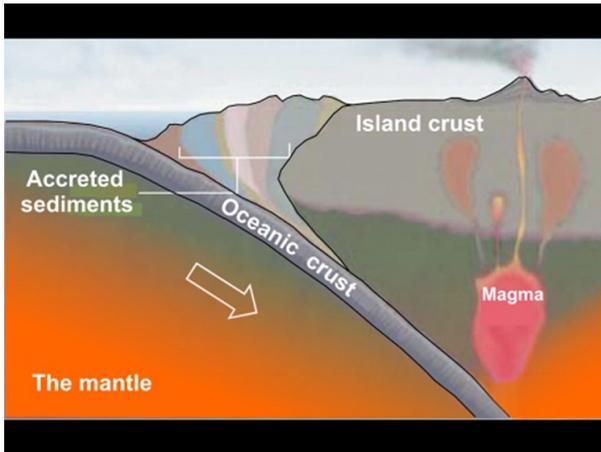
Oceanic crust and continental crust are shown to be very different – continental crust tends to be 50-60km deep, whereas oceanic crust tends to be 5-6km deep and composed of completely different material. When looking at the symmetric features of the crust, geophysicists figured that there must be movement in the sea bottom. To support this assumption, core samples were taken and the rocks were found to be symmetrical in age as well. The rocks were at their youngest in the middle of the ocean, and progressed in age as they moved away from the mid-ocean. Our ability to date rocks was formed from this discovery. Another event around this time was discovered evidence of moving continents.

The types of dating techniques vary depending on what age we are looking for. Radio-carbon dating is typically used with archaeology and isn't very good for dating anything extremely old. Potassium-Argon dating technique will work with Feldspar, because if the argon is crystal then we can analyse this and date the rock. It depends on the half-life of the decay, but it can be good for dating rocks back to around 200 million years. Uranium-Lead dating technique will work when dating back billions of years.



We already knew that the earth was layered, but geophysicists wanted to measure just how thick those layers are. With seismic waves, we discovered the mantle was not liquid, but that it was fluid. The outer core is liquid, the inner core is thought to be solid and made of pure iron. The mantle is about 2,000km thick, and the motion of the crust is due to the convection of the mantle. The source of the symmetry as noted above was discovered to be at spreading ridges and heavily

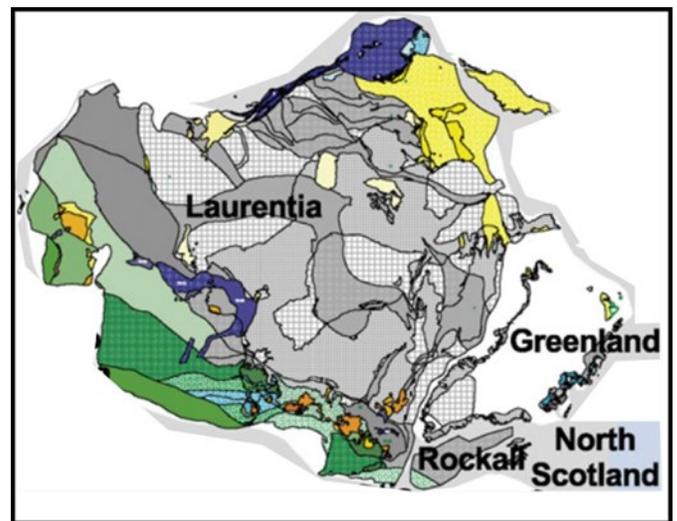
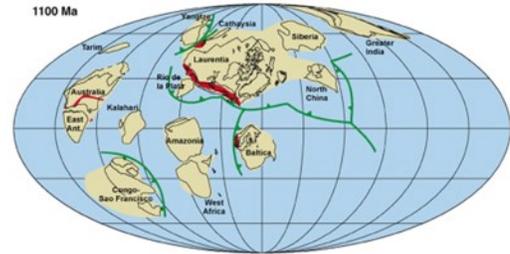
volcanic areas. So if there is formation of new crust at the spreading ridges, the old crust has to go somewhere. This area where old crust gets forced down under the continental crust (because the oceanic crust is much softer than continental crust), is called a subduction zone. Essentially Earth's crust formation and subduction is one big recycling activity.



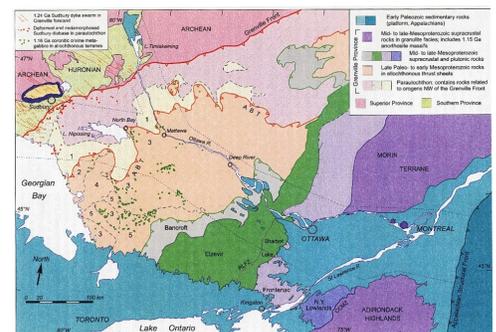
The subduction zone forms magma under the crust because the crust heats up quickly and forms volcanoes as a result. The outer core never flows up through the crust because it's thought to be much heavier than the mantle. In Newfoundland, the mantle is actually exposed. We know that the subduction zone has a ramp-like formation because seismologists mapped out earthquakes along these subduction zones. In each earthquake location it was shown to be the strongest closest to the subduction location and the surface of the crust (as well as where the crust is the most brittle), and became weaker as the seismologist moved further away.



Along the coast of BC, there are a whole string of volcanoes (such as Mt. St. Helens) that present a hazard in Vancouver. The continental crust is constantly elevating and has been for the last 60-70 million years; it's what formed the Rockies in the first place.



It took a long time to produce the history for this area. Things that help us to clarify the history are mapping (for finding detail), seismic waves (for hidden structures), and 3D surface mapping (for places we can't get to). At 1,100 million years ago, Laurentia had all sorts of pieces added on to it. From 1,100 to 900 million years ago, pieces continued to be added on to Laurentia, putting together the Canadian Shield and forming Rodinia.



...to be continued in April's newsletter

# Calendar of Events

## Next General Meeting

Tuesday, March 10, 2015  
Cassellholme Auditorium @ 7:00 pm

## Previous Meeting Review

I'd like to give a big thank you to last month's wonderful speaker, Sonje Bols, who graciously filled in last-minute due to a cancellation. Here's a reminder of what she spoke about last meeting. Look out for a more in depth follow-up summary of her presentation in the April 2015 edition of the newsletter!

**Date:** February 10, 2015

**Speaker:** Sonje Bols

**Topic:** What mysterious disease was killing North America's Moose? What makes Algonquin's Wolves so different? The answers and more were discovered in Algonquin Park. Sonje explored research in Algonquin Park and discussed some quirky researchers of the past.



**Monthly Bird Bash — Saturday & Sunday**  
Spend some time observing our local birds and report on how many species of birds you see. Contact Dick Tafel for details [rtafel@sympatico.ca](mailto:rtafel@sympatico.ca) or 705 472-7907.

**Birdwing Meeting**  
Fourth Tuesday of each month at 6:30 pm  
Bird watching topics will be discussed. Meet at the library (auditorium). Contact Dick Tafel at 705 472-7907 or email [rtafel@sympatico.ca](mailto:rtafel@sympatico.ca)

## Upcoming Speakers/Events

**Date:** March 10, 2015

**Speaker:** Joseph Boivin, Nipissing University

**Topic:** Asleep at the switch: how seed dormancy helps some plants to survive

Find out what evolutionarily benefits some plants obtain by producing seed. Some of these seed producing plants have seed that goes dormant. How does seed dormancy occur and what benefit does it confer on a plant? Our relationship with seeds, agriculture's green revolution, and the use of genetic engineering will be presented, raising questions about how best to grow crops and feed over 7 billion people today and possibly 9 billion people in the next 40 years.

**Date:** April 14, 2015

**Speaker:** Peter Nosko

**Topic:** Moose and Balsam Fir in Gros-morne National Park

**Date:** May12, 2015

**Speaker:** Lesley Lovett-Doust

**Topic:** Endangered Species—  
Endangered Spaces: The ecology of the Eastern Prickly Pear Cactus, an Endangered Species in Canada



## Nature that Nurtures People

By: Fred Pinto

We are oblivious to where our food, clothing, medicine, etc comes from. So we have started a series of short articles on where our commonplace products come from.

The most abundant bird species (estimated population of 24 billion) in the world is the domestic chicken. This bird originated in the Indian subcontinent from the red jungle fowl and has been possibly crossed with the related grey jungle fowl. The bird was originally bred for cock fights and later for meat and egg production. Through the ages the bird was spread through Asia, Europe and Africa and today is found in every country of the world except Antarctica where they are found as frozen chicken fingers!



The photo shows domestic roosters (these birds look very much like the wild red jungle fowl) being trained for illegal cockfights in Vietnam. While the law prohibits this activity change will only come when the people perceive a benefit to changing their behaviour – something that we need to recognize when trying to protect the environment.

Wild populations of the red and grey jungle fowl are still found in India, Nepal and countries of SE Asia. I got to see the wild red jungle fowl in Vietnam in Cat Tien National Park and the grey jungle fowl in Nepal in Chitwan National Park. These birds were crowing and scratching in the dense understory of the for-

est so I was not able to photograph them. Nepal has been really successful in eliminating poaching (example: the only country in the world with no poaching of the (one horned Asian) rhino or Bengal tiger in 2013) and reducing encroachment of unsustainable exploitation in their protected areas. This has been done not by criminalizing the local people as many western groups want governments to do but by getting governments to work with their citizens to develop alternative livelihoods and devolving the benefits of tourism to local people. Today the citizens of Nepal get direct benefits from protecting their biodiversity. Their citizens are directly involved (as volunteers) in the management of uses in the protected area and the surrounding buffer zones. Could we in Ontario learn from Nepal?

### Answers to “Match the Country with its National Bird” game from February:

A. Kiwi	New Zealand
B. Andean condor	Ecuador, Colombia, Chile, Bolivia
C. Hoopoe	Israel
D. Gryfalcon	Iceland
E. Eurasian wren	UK
F. Emu	Australia
G. Dodo bird	Mauritius
H. Andean cock-of-the-rock	Peru
I. Harpy eagle	Panama
J. African fish eagle	Namibia, South Sudan, Zambia, Zimbabwe
K. Goldcrest	Luxembourg
L. Gallic rooster	France
M. Blue crane	South Africa
N. Golden eagle	Afghanistan, Germany, Mexico
O. Peacock	India
P. Himalayan monal	Nepal
Q. Goldcrest	Luxembourg
R. American Flamingo	Bahamas