

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

A banner year planned for the Nipissing Naturalists

A Summary of the Board of Directors Annual Strategic Planning Meeting

The Board of Directors met to develop a plan and budget for activities this year. We continue to have a shortfall in our revenue compared to our planned expenses by about \$500. We will use our reserves to cover this shortfall while we try and increase membership and other sources of revenue. We decided to not recommend an increase in membership fees even though membership fees have not increased for about 20 years.

We will try and increase revenue by:

- 1. Asking visitors for a donation when they attend a meeting or outing.
- 2. Seeking sponsorship with a marketing company in the use of images from the club photo contest.
- 3. Inviting donations for refreshments after our meetinas.
- Increasing membership by holding fun and exciting events through the year and using all forms of advertising to inform members and non-members of these activities.

Here briefly is what is planned:

- 1. A full slate of unique outings throughout the year. Various directors have been charged to develop the suggestions into a specific outing. For example, we will try and visit a local winery (did you know we had one?), hold a nature film festival, visit a local tree nursery and important bird areas.
- 2. Have interesting and informative speakers for our monthly meetings. For example, have a speaker on ethno-botany and another on alternative energy.
- 3. Cooperate with other community groups involved in nature so that you know of their events.
 4. Host the 2nd Louise de Kiriline Lawrence Nature
- festival on Saturday August 15th 2015.
- 5. Work to recognize Louise de Kiriline Lawrence, possibly with a provincial heritage plaque at Pimisi Bay.
- 6. Work with the Friends of Laurier Woods who are celebrating their 25th anniversary to hold walks in the Laurier Woods Conservation Area. Each walk will cover a different topic related to nature and local history.

7. Develop practical solutions that enhance the ecological value of sites used for other human purposes. Last year we grew milkweed and planted some on the old waste disposal site. Similarly this year we will try and work with a utility and Nipissing University to enhance habitat for pollinators, including Monarch butterflies, and swallows.



Come to the meeting on April 14th to find out more about what is planned. Also like the Nipissing Naturalists on Face Book to get updates on details of the club activities.

To start it off right, here's a list of our monthly outings in Laurier Woods Conservation Area:

Date	Торіс
May 2	Birds
June 6	Glaciation
July 4	Aquatic insects
August 1	wild edibles and wild- crafting
September 5	Seedless plants
October 3	Geology
November 7	Investigating tracks and signs
December 5	History of Laurier Woods

The Geological Significance of Nipissing

A follow-up to the presentation by Larry Dyke

By: April Phelps

...continued from February & March 2015



The above red lines with "teeth" on them are considered structure zones. They were basically different parts of ancient terrain of various ages, each being pieced together over the course of 30 -40 million years.









North Bay to Kingston were three different pieces of terrain that were being pieced together during this time.

The BC coast was the same; the rock melted and intruded into pre-existing crust. These are the main places for mineral deposits. The Purdy Mine was an example of Silica melt, which gave way to the introduction of smaller amounts of deposits of minerals like Gold and Silver. How these form is by the segregation that occurs during cooling. Essentially the rocks have much lower melting points and therefore create lots of water and steam that vary in temperature from 600-700 degrees Celsius. This volatile environment is mobile, but it's also very concentrated. When the rock cools, it cracks and gives way for mineral intrusion, it dries, and the cycle continues.

Pegmatite (above Purdy Mine) is a rock with very large crystal sizes. At the Royal Ontario Museum, an eight foot crystal can be observed that was obtained from the mine. During World War Two, this mine gave up over 2,000,000lbs of Mica for Electronics in warfare.

...Continued on page 5

Enjoy Nature !

Calendar of Events

Next General Meeting Tuesday, April 14, 2015 Cassellholme Auditorium @ 7:00 pm

Previous Meeting Review

Lets give a big thank you to last month's speaker, Joe Boivin, whose intriguing presentation on **"Asleep at the switch: how seed dormancy helps some plants to survive"** included an edible peanut dissection! A summary of his presentation can be found on page 4 of this newsletter and a downloadable version of his powerpoint presentation can be accessed on the Nipissing Naturalists home page at this link:

http://www.nipnats.com/



Science Fair 2015: Results

Thank you to April Phelps and Steve Mitchell for another successful judging of the yearly Science Fair. The winner of the Nipissing Naturalists Club Science Fair Award this year was Payton Hack, who has been studying the colour preferences of birds.

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 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



Upcoming Speakers/Events

Date: April 14, 2015

Speaker: Peter Nosko

Topic: Moose and Balsam Fir in Grosmorne 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



Seed Dormancy: An Edible Dissection

By: James Hallworth and Corinne Arthur

First of all I'd like to extend a huge thank you to Joe Boivin, a professor at Nipissing University, for his captivating presentation at our March 10th meeting about "Seed Dormancy: Life in Suspended Animation". He took a talk from a course he taught at Nipissing called 'Introduction to Cross Disciplinary Analysis' and revamped it into a wonderful presentation for us. Not only did he provide us with a fantastic overview of what a seed actually is, how they become dormant, how they get released from dormancy and their use in agriculture and the "new" green revolution, but he even brought an "edible dissection" for us to enjoy during the presentation. He provided us with shelled peanuts so that we could dissect them to see their seed parts, including cotyledons and radicles. While we nibbled on the snacks, he went on to describe the intricacies of seed dormancy and their uses to our societv.

What is a seed? Here is one definition - "An adaptation of some terrestrial plants consisting of an embryo packaged along with a store of food within a protective coat" (Reece et al. 2011).

A seed consists of 3 components - the embryo, food store and protective coat. These components can further be split into the radicle, hypocotyl, epicotyl, cotyledons and seed coat. Seed dormancy can be defined in terms of how environmental factors control germination. There are two types of seed dormancy – primary dormancy that is acquired before the seed leaves the maternal plant, and secondary dormancy which is acquired after the seed has been released from the plant. The evolutionary importance of dormancy is that this ensures that germination only happens when survival is optimized.

Seed selection in agriculture is designed to improve their usefulness to us (e.g. yield) and increase the conditions in which the seed successfully germinates. The Green Revolution in agriculture between 1950s – 1990s was the development and distribution of high yielding crop varieties such as rice and wheat. This led to an increase in population health and calorie intake worldwide, especially in developing countries. However this had several negative impacts – soil degradation due to intensive farming practices, aquifer depletion due to the high demand for irrigation, chemical pollution due to unregulated usage of pesticides/ herbicides and loss of endemic crop species biodiversity.

The 'New' Green Revolution focuses on the use of Genetically Modified Organisms (GMOs) or Genetically Modified Crops using Biotechnology. This could lead to being able to plant crops in poor quality crop land; reduce pesticide/herbicide reliance, and increase yield and nutritional quality. These GMOs can have traits such as built-in pesticide production, resistance to herbicides and genes that sterilize the plant. Here are some examples to go with these traits. The toxin gene from *Bacillus thuringiensis* was used in corn, potato and cotton plants to deter insects from eating them. The agricultural company Monsanto developed genes that when placed in soybean, imparted resistance to the herbicide Glyphosate. To stop viable seed and distribution, modified seeds can be treated with an antibiotic or hormonal chemical, so the plants that grow from them produce a toxin that kills embryos late in seed embryogenesis. These seeds would still be edible, but would contain no embryos.

However Biotechnology is not without its pitfalls, including the possibility of insect pest and weed resistance, invasiveness of new crops, gene transfer to wild plant species, and socio-economic impacts.

25th Anniversary of Friends of Laurier Woods

The Friends of Laurier Woods, formed by the Nipissing Naturalist Club to help protect land that now forms the largest park in the city, is celebrating its 25th anniversary this year. Everyone is welcome to join in the start of the celebration – the Friends of Laurier Woods Annual General Meeting. The event will be held on Thursday April 30th starting at 6.00p.m. at the 406 Wing, located at 406 First Avenue West. The speakers for the event are Stefan and Anne Board, Owners of Board's Honey Farm, who will share their passion & knowledge of the honeybee and their yield of all-natural, tasty, healthy and unique products. Tickets need to be purchased before te event so that the chefs have a head count. Contact: Theresa Haist 705 -492-9735 or Judy Fraser 705-472-6565 for your tickets.



High value wetlands in Laurier Woods protect the homeowners in the city from flooding and provides homes to many wildlife species including the uncommon Blandings turtle (above)







600 million years ago, Rodina breaks apart. The Canadian Shield becomes a triple junction; meaning that there are three upwellings coming up together causing the triple junction at the centre. The red lines are the faults that spread from Ottawa to North Bay through where the Mattawa River is today. What actually happened is that the triple junction failed – the attempt to try and pull the crystal apart stopped before it broke, and the land broke further to the east instead. All of the escarpment to the north of North Bay is one of these faults; a relic of 600 million years ago, and has probably been active since that time. The thick black columns found in the rock cuts of the area were actually feeders for volcanoes. In 2010, a magnitude 5 earthquake near Ottawa

was caused from one of these faults. There is a triple junction happening in Africa at this time and is called the Afar Triangle. 250 million years ago, all of this came together



again and we're still in the process of drifting away once more. For this area, we're seeing things that were happening at the end of the Canadian Shield formation. Historically, there were good sized mountain ranges here. Carbonates were found near Ottawa, suggesting that there used to be tropical oceans here. We still have the occasional strong earthquake here; in 1560, there was a magnitude 8 earthquake in Montreal, so we are not 100% free of the hazards that are being experienced along the ocean coasts.

Question and Answer Period:

1. Are we above sea level?

Yes. About 200 metres above sea level

2. Are there still active faults here?

Yes there are mapped faults here. One or more do give rise to earthquakes, though we are not sure why. We think that the force during continents breaking apart provides just enough stress to do things to weaker areas. (fault lines) 3. What direction are the faults in?

The maximum force goes in an east to west location.

4. So will we become one continent again? Oh yes, eventually we will run in to Asia... in about 300 million years. The Himalayas began travelling north about 50 million years ago and are still travelling in that direction. Previous to 100 million years ago, we are still hazy on the details of where things were.

5. Did the Canadian Shield Mountains rival those of the Himalayas?

I can't see why not. We had the same force as India does, so if we were moving as fast as India, it probably did the same thing. We have the same type of sediments as well here that the Athabasca Basin does.

6. The rock intrusion in Powassan – are those volcanic dykes?

Intrusive activity cutting though the existing rock – likely black – would be the dykes that you see, however the surface expression of the volcano would be long gone by now. Still, volcanic rock would have intruded into the sedimentary layer horizontally. 7. What about pre-Cambrian?

The Cambrian period started about 570 million years ago based on fossil evidence; everything for the shield happened before that time - so much older than intelligent life. Pre-Cambrian goes from 600 million years ago to 4.5 billion years ago. Breaking that time period down into separate terms doesn't mean much unless we're trying to date something. The rest of Canada hadn't even started by the time the voungest Canadian Shield rocks were formed and there are many shields all over the world called various things. They're what make up the oldest parts of the Earth's crust. Oceanic rock is very simple and thin. The shields have been added to so much over time that they are very complicated and significantly thicker. The suture zones from here to Sudbury, as well as the 2 to 3 from here to Kingston are still here; altogether forming about 4 billion years of complexity.