



# NEWSLETTER

## SOUTH LAKE SIMCOE NATURALISTS

SLSN is an incorporated not-for-profit Member of Ontario Nature.

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([www.slsnc.ca](http://www.slsnc.ca))

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Research Partner with The Zephyr Society of Lake Simcoe ([www.zephyrsociety.ca](http://www.zephyrsociety.ca))

Member: Rescue Lake Simcoe Coalition

Member: Ontario Greenbelt Alliance

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**Note: Please renew your membership to receive future Newsletters**

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## Meetings and Outings

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**Meetings:** All Meetings start at 7:30 p.m. at the York Region Police Building Meeting Room (Baseline Road between McCowan and Civic Centre Road) unless noted otherwise. No July or August Meetings. Members events (insurance compliance).

York Regional Police (YRP), 3 District Community Meeting Room 3527 Baseline Road, Georgina.



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**NOTE: Consistent with YRP recent procedures in place regarding evening use of their Community Meeting Room (CMR), attendees of SLSN meetings must be current members of SLSN in good standing, and may be asked to provide further information, as requested.**

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***Tuesday, March 13 Hurricanes:*** How are they formed and what is their impact on our lives with Bill and Doris Major, exploring personal experiences of recent hurricane Irma in Cuba. They have planned a power point presentation, and briefly include definitions; categories; naming; seasons; anatomy of a hurricane; impact on nature and on humans; role of human activity; influence of climate change; and predicting hurricanes. They will have pictures to illustrate as we go, and will show pics – and videos! – of their experience with Irma.

***Tuesday, April 10 Ontario's Greenbelt:*** The Greenbelt in Ontario has been a leading land use planning tool that, after a number years in existence has recently completed a review. SLSN members will interrogate its form, extent and function. In recent months the province has engaged Ontarians in an exercise at growing the Greenbelt. Club members research, presentation and conversation meeting.

**Outings:** All regular outings – Note: **Paid-up members may participate (for insurance compliance).**

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**2018 Spring**

***Saturday April 28: Spring Birding and Nature Study:*** The annual Spring Birding trip along Lake Simcoe will concentrate on waterfowl and shorebirds, this year to the east. Rare migrants can sometimes turn up unexpectedly so be prepared. Later in the day we may do some hiking and general nature study in one of our local natural areas. Meet at 8:00 a.m. at the Tim Horton's in Sutton on Dalton Road. Dress for the weather. Bring binoculars etc.

**Members, please consider writing and submitting an article to the Talon Newsletter. Submit to one of the Executive members.**

Phone Paul 905-722-8021 or Norma 905-476-4747 for further information about meetings and naturalist outings.

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## York Region Forest News

York Region's **Parking Lot design** contactor will be undertaking work in the **Drysdale Tract** shortly. The operation is expected to last *two months*. For the safety of the public and workers please keep clear of the operation.

Also, Region's **2018 Timber Harvest** contactor will be undertaking work in the **Hollidge, Scout, Robinson, Davis Drive, and Porritt Tract** next week. The operation is expected to last one months.

Contact Colin.macdonald@york.ca or 905-830-4444 x75258 for further information.

**Controlled Burn:** The Regional Municipality of York's Natural Heritage and Forestry Services Branch is planning a controlled burn of tallgrass prairie/oak savanna habitat located within the **Bendor & Graves Tract** of the York Regional Forest early spring 2018. Please visit [www.york.ca/yrf](http://www.york.ca/yrf) for more information.

As of March 1, 2018 we have officially entered the Burn Window (March 1<sup>st</sup> – April 30<sup>th</sup>, 2018). Staff and the burn consultant will be monitoring the weather and site conditions. Very precise wind and moisture conditions are required in order to proceed with ignition.

For more information contact Dayna at [dayna.laxton@york.ca](mailto:dayna.laxton@york.ca) ext. 73119 or Kevin Reese ([kevin.reese@york.ca](mailto:kevin.reese@york.ca)) Program Manager, Forest Conservation ext. 76033.

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## Environmental Issue that affects us all

### Plastic Use and Starbucks

Source: Sum OF Us Petition - 2018-03-08

According to “Sum of Us each minute the equivalent of a garbage truck full of plastic ends up in the ocean, and Starbucks coffee cups, straws, and plastic cutlery are a huge part of the problem.

That’s why **in just two weeks they will be taking a campaign to Starbucks’ AGM. They are asking people to help make sure they can deliver a huge petition** and speak to Starbucks with the clout of having hundreds of thousands of people across the world on side?

According to their research the world's oceans are full of plastic and 4 billion plastic-lined Starbucks cups end up in the garbage every year. These are nearly impossible to recycle because of their plastic lining.

In 2008, Starbucks boldly told the world it would serve a 100% recyclable paper cup and increase reusable cup usage to 25% by 2015. To date, it hasn’t kept either of these promises.

They suggest Starbucks is part of the problem: **tell the coffee giant to switch to 100% recyclable cups! The world's oceans are full of plastic and 4 billion plastic-lined Starbucks cups end up in the garbage every year. They note that Starbucks is part of the problem: and are asking people tell the coffee giant to switch to 100% recyclable cups!**

By 2050, the world’s oceans are projected to have more plastic in them than fish, and yet still Starbucks continues to serve billions of plastic-lined single-use coffee cups. These are nearly impossible to recycle because of their plastic lining. And, the sheer amount of plastic trash created by Starbucks is out of control according to Sum of Us, and is ending up in waterways and other fragile ecosystems.

In 2008, Starbucks boldly told the world it would serve a 100% recyclable paper cup and increase reusable cup usage to 25% by 2015. To date, it hasn’t kept either of these promises. **It is suggested it is time for Starbucks to live up to its promises to give us a 100% recyclable cup, not be part of the global plastic problem.** Sum of Us is asking people to **sign their petition telling Starbucks to cut down on the sheer amount of plastic trash it creates.**

The Sum of Us campaign is being run in partnership with the Break Free From Plastics Coalition, Stand.earth, Greenpeace USA, Clean Water Action, UpStream, Story of Stuff, 5 Gyres, Texas Campaign for the Environment, PPC, Care2, and Coworker.org. For more information, and to see the petition google “Sum of Us – Starbucks Petition”.

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## Forest Conservation

### Ontario Tree Seed Facility Feared to be Closing

# Letter from Forests Ontario

February 23, 2018 – distributed to member organizations from Ontario Nature.

An open letter to all concerned conservation interests regarding the future of native tree seed in southern Ontario.

In August of 2017 the Ministry of Natural Resources and Forestry announced its intention to close the Ontario Tree Seed Plant (OTSP) located in Angus Ontario, with the closure slated for September 2018.

Shortly after the government's announcement, a group of concerned clients of the OTSP came together to assess the impacts the closure of the seed plant will have on their programs and aspirations. A fruitful dialogue with Ministry staff was initiated to search for ways to mitigate those impacts.

Part of the Ministry's rationale for closing the OTSP, was that it is aging and operated at a level far below its original capacity, ultimately making it inefficient from a cost and operational perspective. Regardless, the OTSP and the seed that it has produced form the foundation on which most ecological restoration efforts across southern Ontario are based on. Simply put, it takes a seed to grow a tree and many genetically appropriate seeds to replace a forest. Ontario will need billions of genetically appropriate seeds in the coming decades as we grapple with challenges such as climate change adaptation, biodiversity loss, restoring Species at Risk habitat and controlling invasive species through restoration.

Many of you participated in a letter writing campaign to ask the government to reconsider its decision to close the OTSP and for that we thank you sincerely. Despite our campaign, plans to shutter the facility are proceeding, and this letter provides you with an update on our efforts to date and our plans to ensure all the activities offered by the OTSP will be replaced.

Ontario Tree Seed Coalition (OTSC) This loosely knit group includes Forests Ontario, Forest Gene Conservation Association, the five southern Crown Land Sustainable Forest Licence Holders, and several growers who provide Ontario source-identified nursery stock (Somerville Seedlings and Ferguson Tree Nursery). This coalition and its membership is not exclusive, however with so many things

to accomplish and challenges to tackle in such a short time frame, this initial group has focused on moving forward. Discussions and negotiations with the provincial government have been led by Forest Ontario (FO) and the Forest Gene Conservation Association (FGCA) and their members and partners. Both organizations are broad based, well-networked organizations committed to forest health and well-being, and collaboration with similarly focused organizations.

**Progress to Date** The first task was to understand what should be included in a fully functional seed management system. It is safe to say that with the OTSP being a fixture on the landscape since 1923 many of these functions “just seemed to happen.” While organizations like FO and FGCA and native seedling nurseries were active in many operational aspects of seed management, the OTSP was the hub and facilitator of all of these activities. As such the OTSP was largely taken for granted and was not well recognized for its essential role in the whole ecosystem restoration cycle. To replace what has existed at the OTSP for decades, we have identified that the following six discrete processes are required for the sustainability of a future seed system:

1. Seed demand forecasting - Determine number of seed of each seed source and species required by conservation and restoration agencies. Nurseries typically require three years to produce a seedling. For example, to produce tree seedlings for 2021 planting, we need to collect or have seed in storage by 2018.
2. Seed crop forecasting - Monitoring what crops are developing for over 120 species across Ontario. We need to be in a position to organize collection activities at the exact time crops ripen wherever they occur.
3. Seed collection - Coordinate a seed collector network to facilitate collectors' essential role in providing high quality seed that is source identified, appropriately handle thousands of bags of cones and trays of fruit each year until they can be sown or further processed and stored.
4. Seed extraction & processing – Extract seeds from cones and fruit, sort, clean and dry down to appropriate moisture content for storage, etc.

5. Seed storage - Long-term frozen (up to 20 years) storage of orthodox seed in airtight containers, regular seed quality monitoring and testing for viability (germination % and vigour).

6. Seed source tracking - Maintain chain of custody (seed source identification) throughout the seed collection, extraction and processing, and storage processes to ensure seed of known origin is available to produce nursery stock appropriate for planting sites across Ontario.

In other provinces like British Columbia, the management of native seed has been deemed “mission critical” however Ontario has taken a different direction and is getting out of the business of seed management. OTSC members have therefore created a work plan addressing all issues that will result from the closure of the seed plant and reduced government involvement in seed operations. Major items within the work plan that are in progress or complete include: A. The acquisition of tree seed from the Ontario Tree Seed Plant inventory (to be utilized in Ontario-based programs), B. A draft discussion paper that outlines the complexities of native seed management.

Ongoing work plan efforts include: A. Identifying and securing high quality long-term storage for the current seed inventory, B. Developing a business plan that includes and proposes a mechanism for all of the steps listed above, C. Working with government to secure adequate, stable, long-term funding to ensure that we continue to have a system in place that will provide source identified and native seed for restoration programs into the future.

Many organizations including Conservation Authorities and Municipalities are the ultimate end users of a seed management system. Your support is critical to the success of what we are trying to accomplish. There are several ways in which you and other concerned agencies and organizations can assist at this time: ● Advocate strongly for provincial support for a native seed management system that is long term, stable and sustainable in nature, ● Provide input into plans and documents produced by the OTSC when requested, ● Contribute to the development of our Seed Collection Area Network (SCAN) by identifying stands of good seed production potential in your areas of jurisdiction, ● Continue to support ecological restoration and reforestation projects in your jurisdictions

using seed sources that are adapted to your local conditions, and advocate strongly for more support for them at every opportunity.

If southern Ontario is to approach the minimum accepted level of ecological sustainability of 30% natural cover on the landscape we will require the naturalization of 600,000 ha which will take approximately 2 billion new trees. Clearly there is both need and demand for seed in Ontario.

Sincerely,

Rob Keen & Barb Boysen CEO, Forests Ontario.  
General Manager, Forest Gene Conservation Association

**Note: Ontario Nature (Eco Spark, Storm Coalition, Earthroots) previously sent a letter to November 20, 2017, that was featured in a previous SLSN Newsletter.**

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## Climate Change Science News

### New study: Sea level rise accelerating

Eleanor Imster *in* EARTH | February 16, 2018

Global sea level rise has been accelerating in recent decades, rather than increasing steadily, according to a new study based on 25 years of NASA and European satellite data.

A new study says that global sea level rise is accelerating incrementally over time, rather than increasing at a steady rate, as previously thought. The study, published February 12, 2018, in the journal *Proceedings of the National Academy of Sciences*, is based on 25 years of NASA and European satellite data.

The researchers say that this acceleration – driven mainly by increased melting in Greenland and Antarctica – has the potential to double the total sea level rise projected by 2100, when compared to projections that assume a constant rate of sea level rise.

If the rate of ocean rise continues to change at this pace, the researchers suggest, sea level will rise 26 inches (65 centimeters) by 2100. That's enough to cause significant problems for coastal cities.

Steve Nerem, the study's lead author, is a professor of Aerospace Engineering Sciences at the University of Colorado Boulder, a fellow at Colorado's Cooperative Institute for Research in Environmental Sciences (CIRES), and a member of NASA's Sea Level Change team. Nerem said in a statement:

This is almost certainly a conservative estimate. Our extrapolation assumes that sea level continues to change in the future as it has over the last 25 years. Given the large changes we are seeing in the ice sheets today, that's not likely.

Rising concentrations of greenhouse gases in Earth's atmosphere increase the temperature of air and water, which causes sea level to rise in two ways. First, warmer water expands, and this "thermal expansion" of the ocean has contributed about half of the 2.8 inches (7 centimeters) of global mean sea level rise we've seen over the last 25 years, Nerem said. Second, melting land ice flows into the ocean, also increasing sea level across the globe.

These increases were measured using measurements since 1992 from multiple satellite, managed by multiple agencies in both the U.S. and Europe. According to the data, the rate of sea level rise in the satellite era has risen from about 0.1 inch (2.5 millimeters) per year in the 1990s to about 0.13 inches (3.4 millimeters) per year today.

Even with a 25-year data record, detecting acceleration is challenging. Episodes like volcanic eruptions can create variability: the eruption of Mount Pinatubo in 1991 decreased global mean sea level, for example. Global sea level can also fluctuate due to climate patterns such as El Niños and La Niñas, which influence ocean temperature and global precipitation patterns. For the study, the researchers used climate models to account for the volcanic effects and other datasets to determine the El Niño/La Niña effects.

Bottom line: According to a new study based on 25 years of NASA and European satellite data, global sea level rise has been accelerating in recent decades, rather than increasing steadily.

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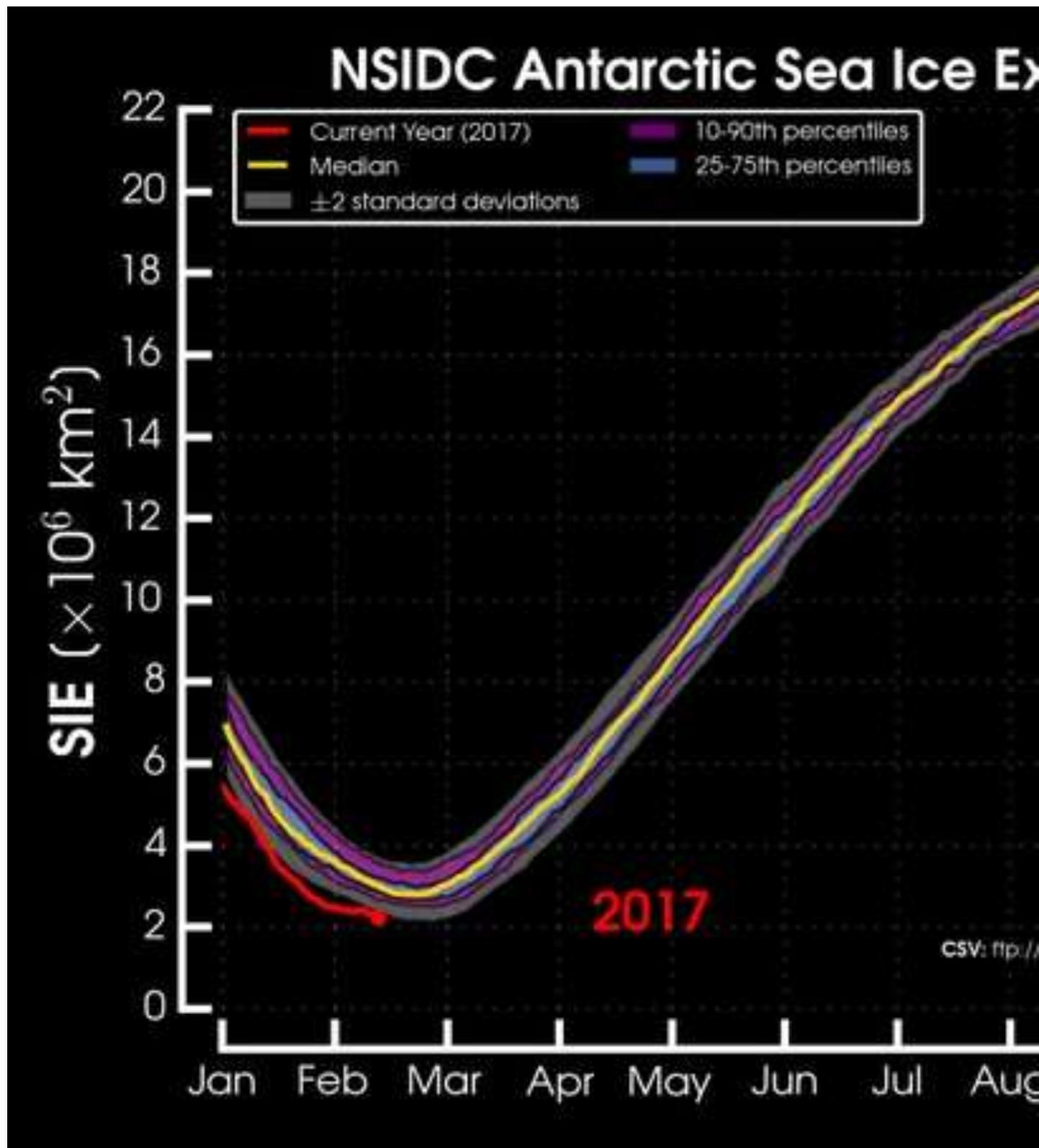
## Sea Ice Nears Record Lows at both Poles

Climate Reality Information, February 14, 2017 | 11:38 AM

Sea ice at both poles has been expected to decline as the planet heats up from the buildup of greenhouse gases in the atmosphere.

Arctic temperatures have finally started to cool off after yet another winter heat wave stunted sea ice growth over the weekend. The repeated bouts of warm weather this season have stunned even seasoned polar researchers, and could push the Arctic to a record low winter peak for the third year in a row.

Meanwhile, Antarctic sea ice set an all-time record low on Monday in a dramatic reversal from the record highs of recent years.



Sea ice at both poles has been expected to decline as the planet heats up from the buildup of greenhouse gases in the atmosphere. That trend is clear in the Arctic, where summer sea ice now covers

half the area it did in the early 1970s. Sea ice levels in Antarctica are much more variable, though, and scientists are still unraveling the processes that affect it from year to year.

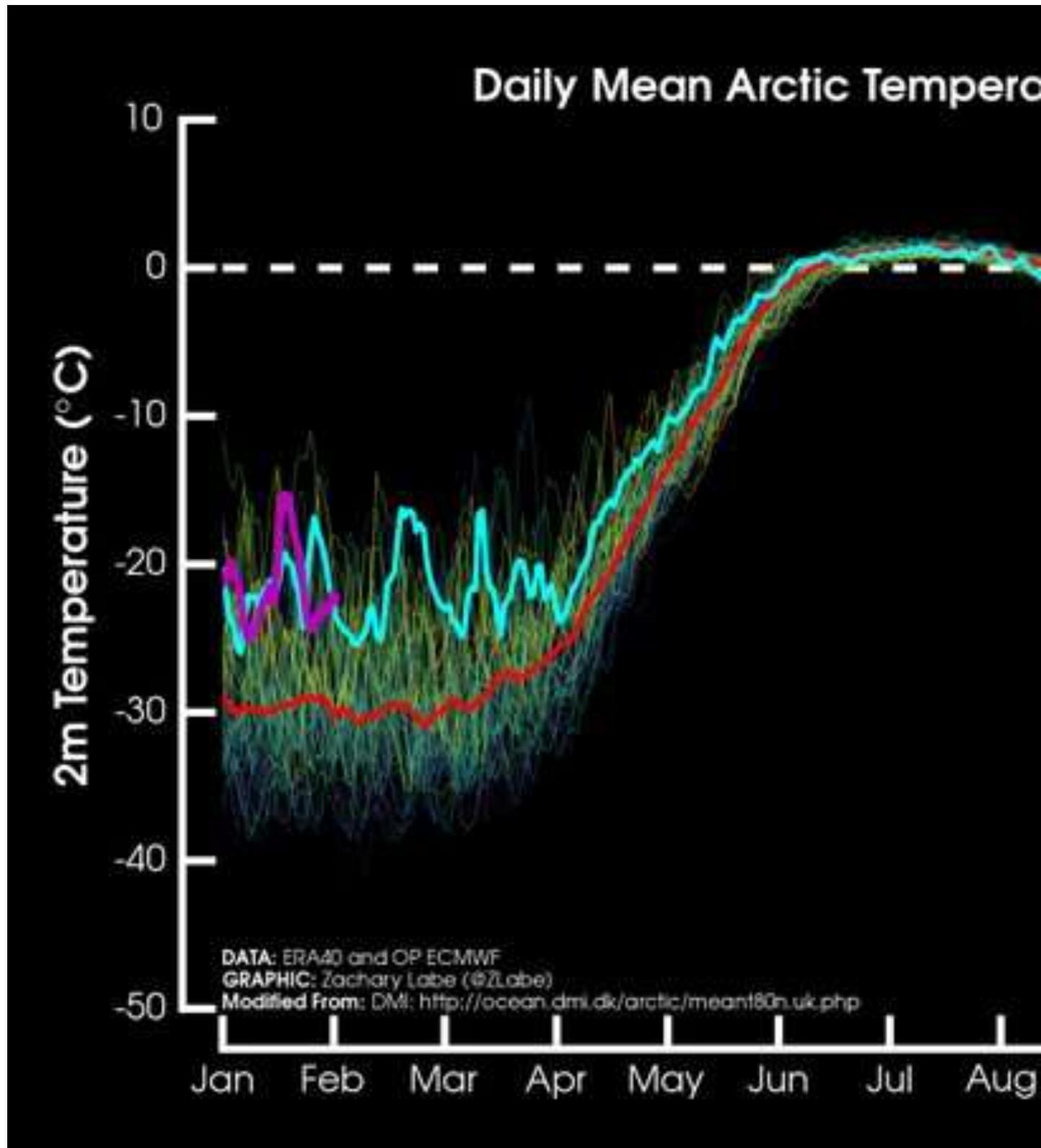
The large decline in Arctic sea ice allows the polar ocean to absorb more of the sun's incoming rays, exacerbating warming in the region. The loss of sea ice also means more of the Arctic coast is battered by storm waves, increasing erosion and driving some native communities to move. The opening of the Arctic has also led to more shipping and commercial activity in an already fragile region.

#### **'UNUSUAL WINTER'**

Temperatures in the Arctic have repeatedly spiked since the beginning of the freezing season last fall. The influx of warmth is caused by storms moving up from the Atlantic Ocean dragging warm air with them.

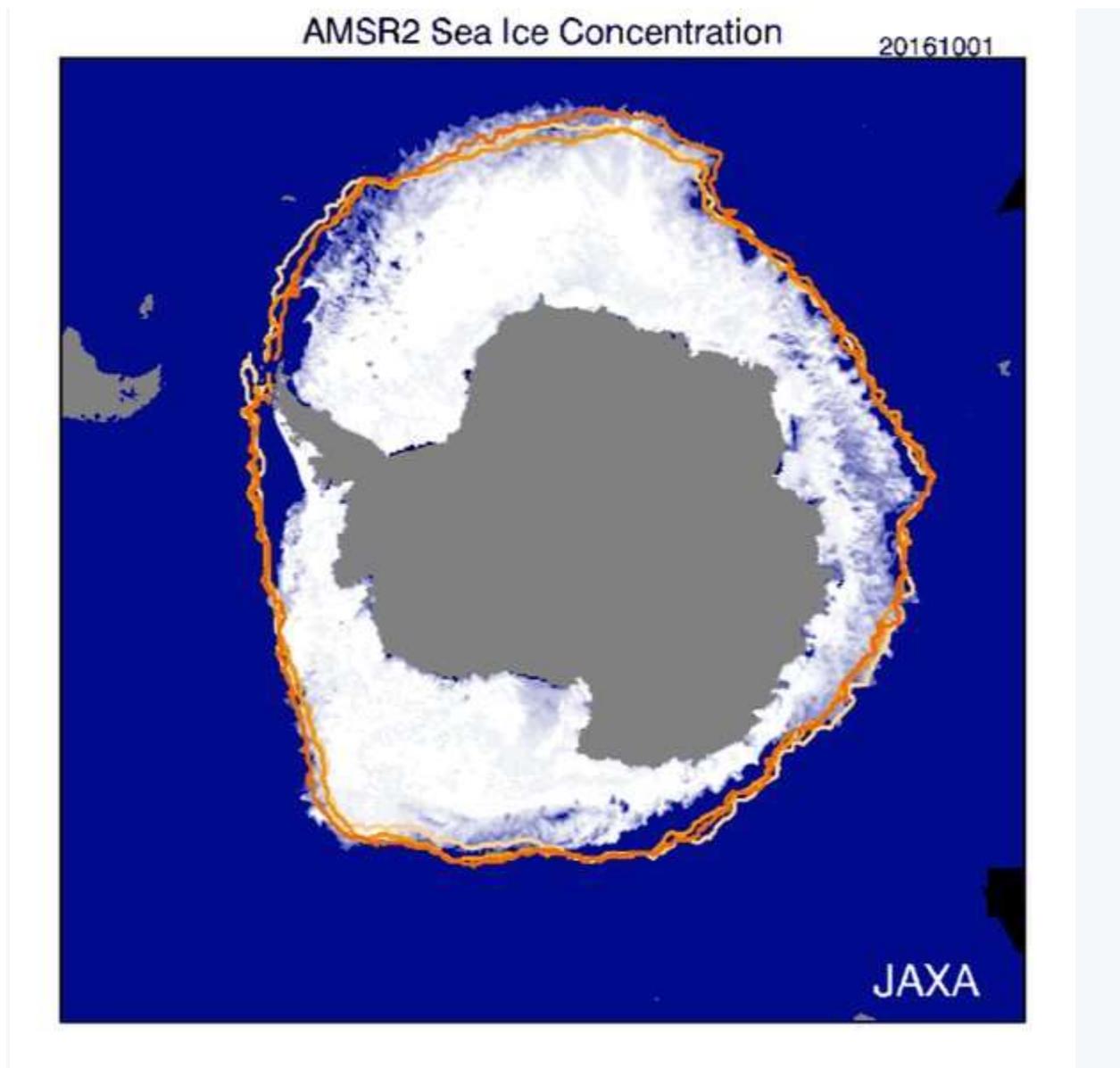
"This has been a most unusual winter," Julienne Stroeve, of the National Snow and Ice Data Center, which tracks sea ice levels, said in an email.

*Air temperature 2 meters above the surface for the Arctic north of 80 degrees latitude for 2017 (pink), compared to 2016 (teal), and the long-term average (red).*



For several of the past few years, the sea ice that fringed Antarctic reached record highs. That growth of sea ice could have potentially been caused by the influx of freshwater as glaciers on land melted, or

from changes in the winds that whip around the continent (changes that could be linked to warming or the loss of ozone high in the atmosphere).



### **So long, last North American ice sheet**

By Eleanor Imster in EARTH | [March 26, 2017](#)

The last remnant of a once-enormous ice sheet will be gone in about 300 years, according to a new



Barnes ice cap. Image via University of Colorado.

The Barnes Ice cap, the last remaining piece of the Laurentide Ice Sheet that once blanketed Canada and much of the northern United States, is doomed to disappear in the next several centuries. That's according to a new study published online on March 20, 2017 in the peer-reviewed journal *Geophysical Research Letters*.

The Barnes Ice Cap is a Delaware-sized feature on Baffin Island in the Canadian Arctic. It's still 1,640 feet (500 meters) thick, but, scientists say, it's melting at a rapid pace. Its impending disappearance, they say, is driven by increased greenhouse gases in Earth's atmosphere that have elevated Arctic temperatures.

The new study predicts this ice cap will be gone in about 300 years under business-as-usual greenhouse gas emissions.



Geologist Gifford Miller at Barnes Ice Cap. Image via University of Colorado.

The scientists studied isotopes created by cosmic rays that were trapped in rocks around the ice cap. They concluded that in the past 2.5 million years, the ice cap has been as small as it is now only three times at most. That's compelling evidence, according to these researchers, that the current level of warming is rare.

Adrien Gilbert is a glaciologist at Simon Fraser University in British Columbia in Canada and lead author of the study. Gilbert said in a statement:

*"This is the disappearance of a feature from the last glacial age, which would have probably survived without anthropogenic greenhouse gas emissions".*

Study co-author Gifford Miller of CU Boulder said that although the melting of the Barnes Ice Cap will likely have negligible effects on sea-level rise, its end could herald the eventual dissolution of the larger ice sheets like Greenland and Antarctica. Miller said:

*"I think the disappearance of the Barnes Ice Cap would be just a scientific curiosity if it were not so unusual. One implication derived from our results is that significant parts of the southern Greenland Ice Sheet also may be at risk of melting as the Arctic continues to warm".*

And elevated sea rise created by a melting Greenland would automatically cause the Antarctic Ice Sheet, whose dimensions are controlled by sea level, to also shrink in size, Miller said.



Aerial view of Barnes Ice Cap. Image via University of Colorado/Boulder.

The Barnes Ice Cap is part of the Laurentide Ice Sheet that has covered millions of square miles of North America episodically since the start of Quaternary Period roughly 2.5 million years ago. The ice sheet grew and shrank over time as Earth went through various climate cycles, and the ice was a mile thick at present-day Chicago about 20,000 years ago. It started receding substantially around 14,000 years ago when Earth slipped out of its last ice age.

The ice cap stabilized about 2,000 years ago until the effects of the recent warming caught up with it.



Location of Barnes Ice Cap, last remnant of the Laurentide Ice Sheet that once blanketed much of North America, via Wikipedia.

The new study estimates when the ice cap would disappear under different greenhouse gas emissions scenarios. The researchers project that under all future emission scenarios the ice cap will be gone within 200 to 500 years. For a moderate emissions scenario that assumes Earth's greenhouse gas emissions will peak around the year 2040, they project the ice cap to be gone in 300 years. Miller said:

*"The geological data is pretty clear that the Barnes Ice Cap almost never disappears in the interglacial times. The fact that it's disappearing now says we're really outside of what we've experienced in 2.5-million-year interval. We are entering a new climate state".*

Bottom line: The Barnes Ice cap, the last remnant of the Laurentide Ice Sheet, will be gone in about 300 years, according to a new study.

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# Birding News

## Why You Should Start Searching for Rusty Blackbirds? – National Audubon Society

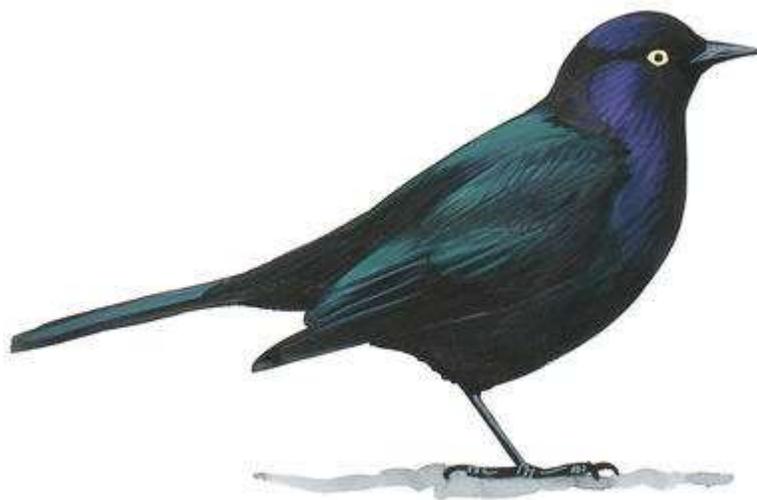
Jason Ward, February 16, 2018

**A little rusty in your bird ID?** That's great—at least if you're reporting a Rusty Blackbird sighting. We know this beautiful warm-toned blackbird is in decline. But our picture of how much it's struggling, and why, is still incomplete. Bird lovers hold the key to solving these mysteries.

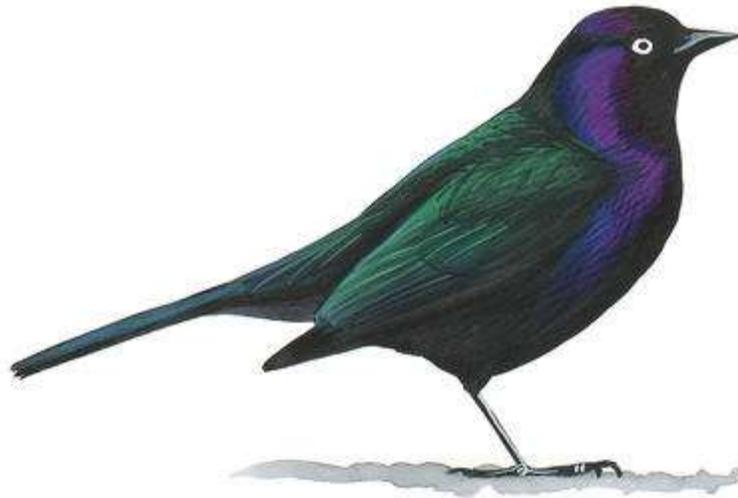
So brush up on how to tell a Rusty from a Brewer's. Your observations could provide crucial data and help guide conservation efforts to save these chestnut-tinged birds.

In sun, the male Rusty Blackbird looks browner than usual. But its namesake song remains the same. Photo: Gerrit Vyn/Minden Pictures.

*Aside from helping to boost your blackbird appreciation, spotting this declining species can also aid in conservation efforts.*



**Rusty Blackbird**  
*Euphagus carolinus*



Brewer's Blackbird

*Euphagus cyanocephalus*



Common Grackle

*Quiscalus quiscula*

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## International Wildlife Conservation

Source: SumOfUs 2018-02

The *only* place on Earth where orangutans, elephants, rhinos, and tigers live together is being illegally ripped to shreds to make way for **Palm Oil** - the cheap fat used in everything from snack foods to shampoo.

Corporations wanting to make a quick buck have bulldozed a whopping 22,000 hectares of rainforest -- the size of over 40,000 football fields -- in just two years.

UNESCO has listed this fragile place -- the Leuser ecosystem on the island of Sumatra, Indonesia, as a world heritage site in danger.

**SumOfUs has been fighting to defend these forests for years.** Some of the largest purchasers of conflict palm oil are snack food companies. They have demonstrated that by aggressively targeting brands they can find alternatives to conflict palm oil and cut off demand once and for all.

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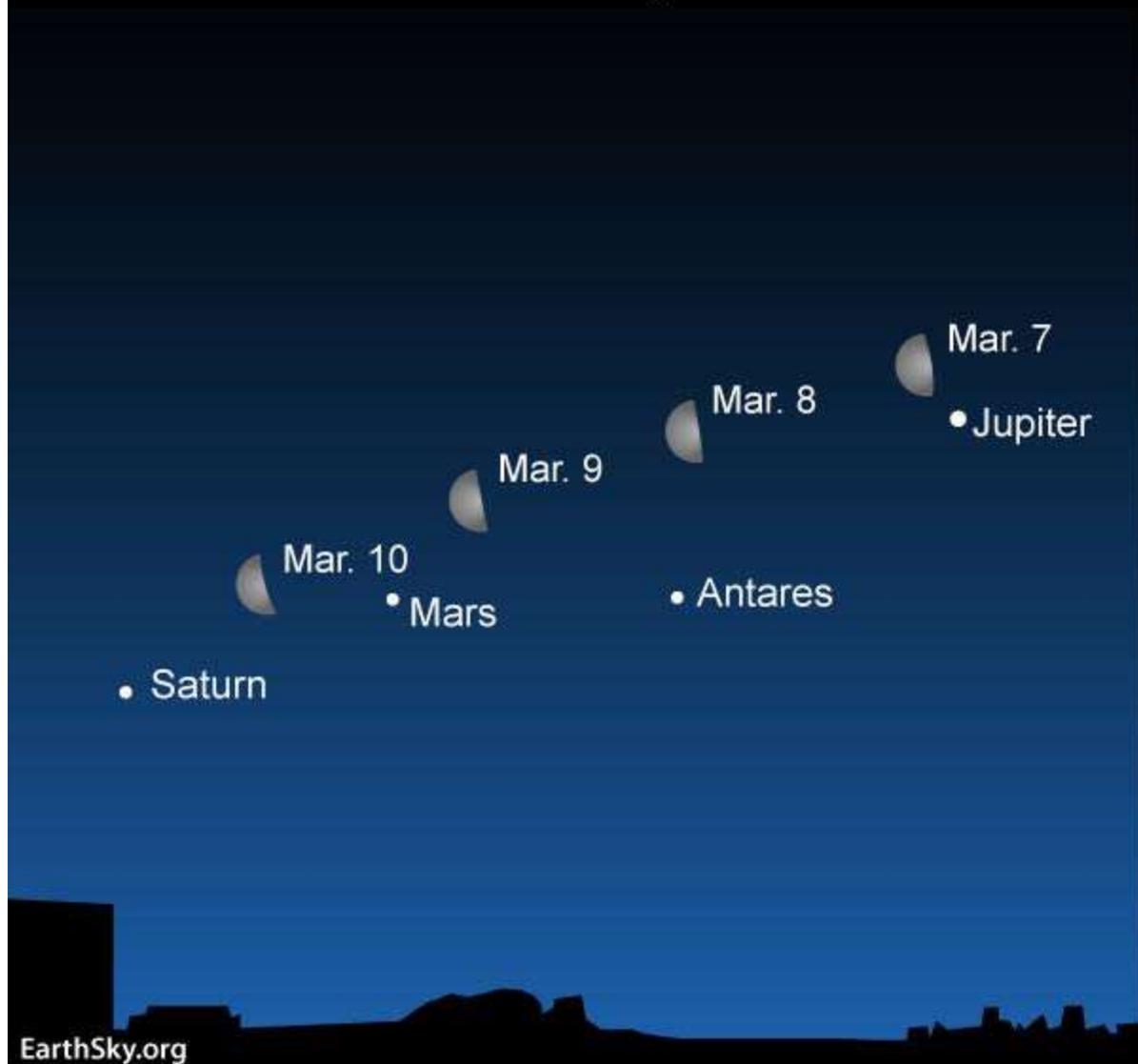
## Naturalist Astronomy

### March guide to the bright planets

Bruce McClure *and* Deborah Byrd *in* ASTRONOMY ESSENTIALS | March 1, 2018

In March 2018, you can see all 5 bright planets. Look west after sunset for Mercury and Venus. Mars, Jupiter and Saturn are up before dawn.

## Southeast to South, Before Dawn



Coming soon! Get up before dawn for a great view of the moon and the morning planets!

Follow the links below to learn more about the planets in March 2018:

[Mercury and Venus](#)

[Jupiter](#)

[Mars and Saturn](#)

## West, 40 Minutes After Sunset



In early March, Venus and Mercury are a little more than 1 degree apart – about the width of your little finger at arm’s length. Venus is brighter. These 2 planets will fit inside a typical binocular field of  $5^\circ$  for the first three weeks of March 2018.

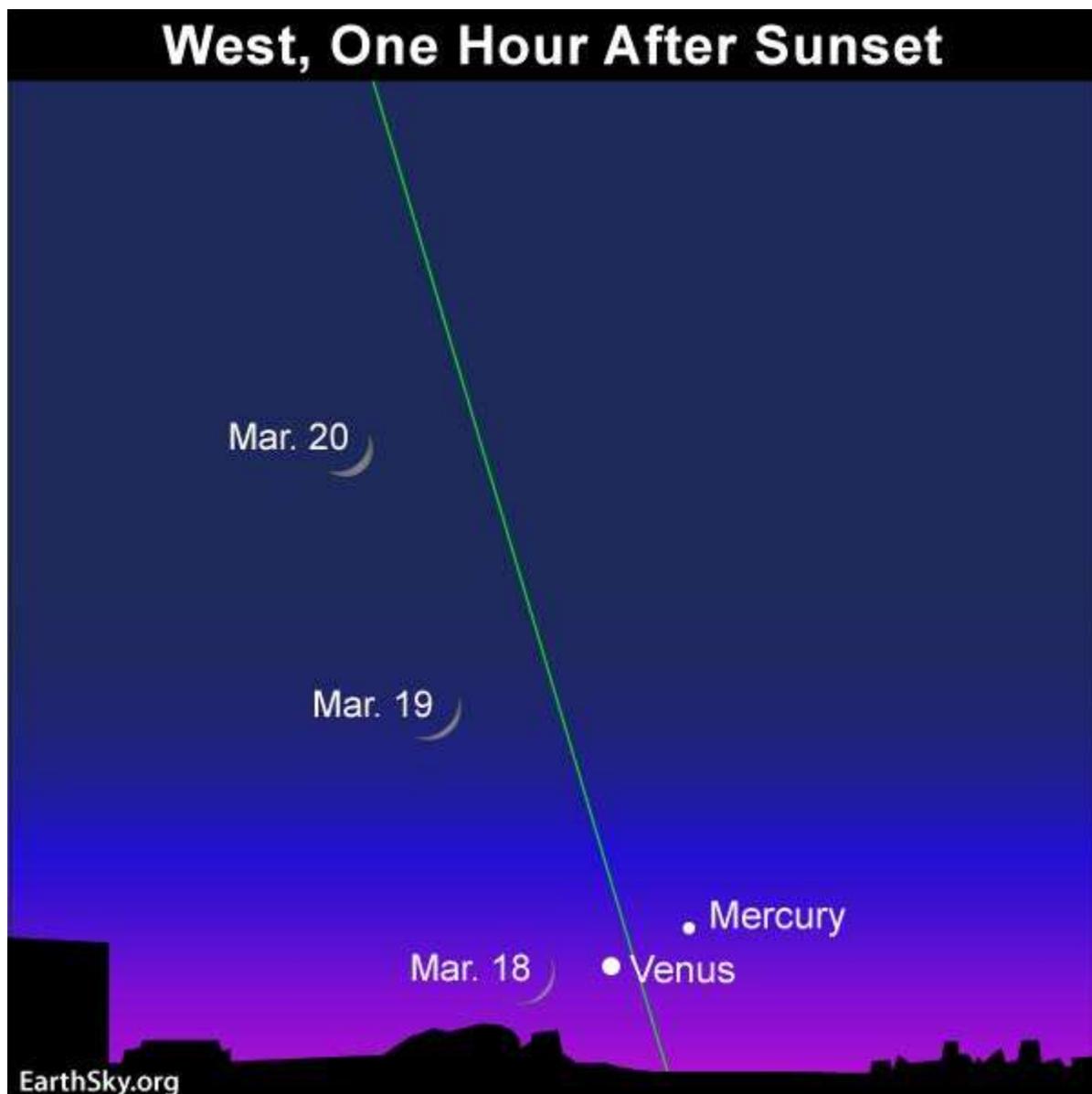
**Mercury and Venus.** March is a wonderful time to see both of these worlds, especially from the northern half of Earth. In early March, they are very low in the west shortly after the sun goes down. We’ve been receiving photos of Venus after sunset since mid-February, and Venus can act as your guide to Mercury, because it’s about 12 times brighter, in early March.

Venus and Mercury are only a little more than one degree apart on March 2 to March 5; one degree is about the width of your little finger at arm’s length. From temperate latitudes in the Southern Hemisphere, unfortunately, Venus and Mercury set almost immediately after the sun in early March and are much tougher to see. Read more about how to spot Venus and Mercury after sunset in early March.

As seen from the whole Earth, the situation improves as the month passes, and both worlds get higher in the sky. They'll remain close enough together on the sky's dome to fit inside a typical binocular field (about 5 degrees) for the first three weeks of March, 2018. If you spot Venus, but not Mercury, aim binoculars at Venus to see both worlds.

Mid-March will be a grand time to see Venus and Mercury, especially from the Northern Hemisphere. Mercury's greatest eastern elongation – its greatest apparent distance from the sun on our sky's dome – comes on March 15. This is Mercury's best evening apparition of the year for the Northern Hemisphere.

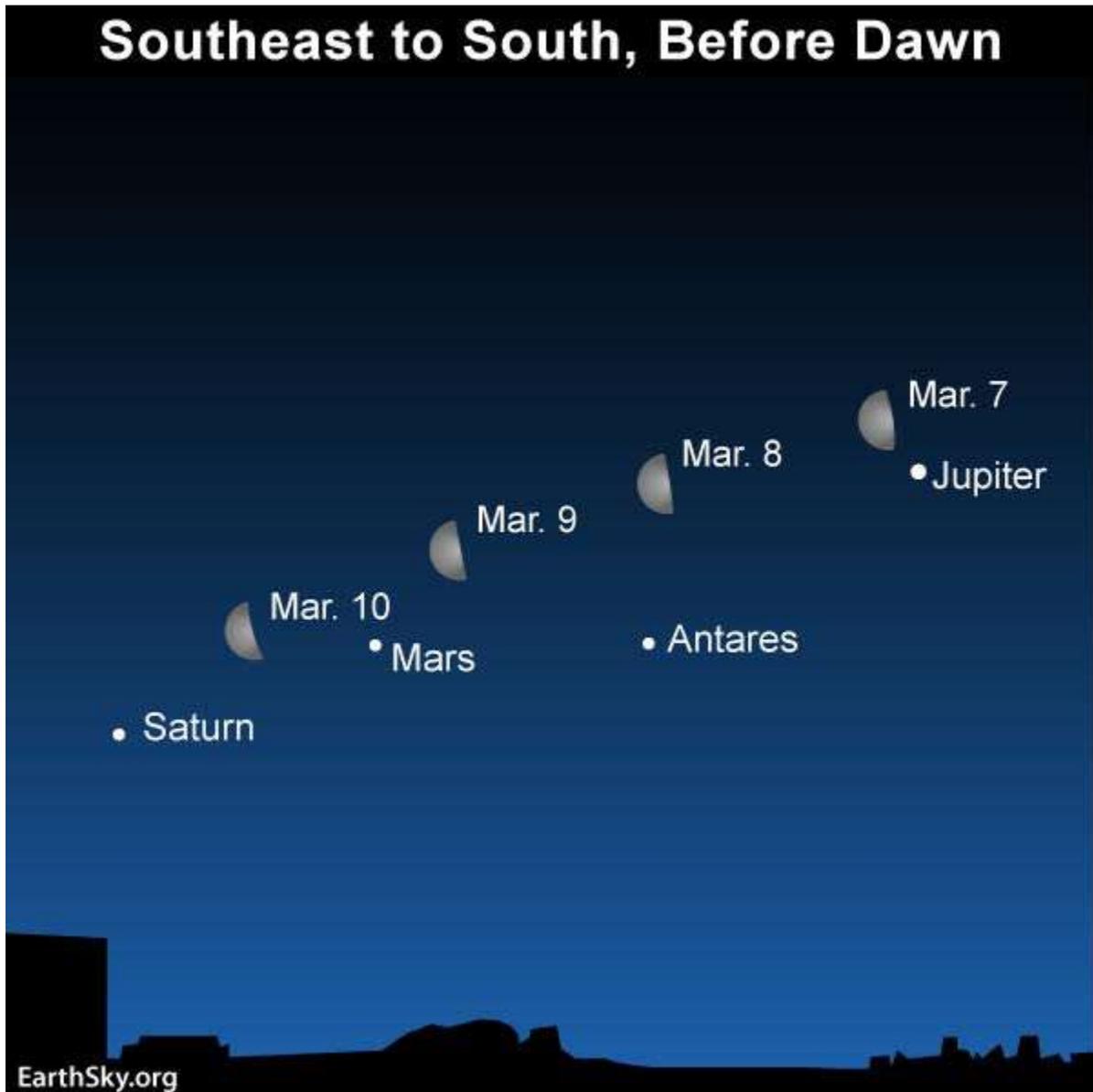
From the Southern Hemisphere, both Venus and Mercury are harder to catch. Think of it in terms of their setting times. At mid-northern latitudes, given an unobstructed western horizon, Venus and Mercury stay out for about 75 minutes after the sun (though Mercury stays out a little while after Venus sets) in mid-March. At the equator (0 degrees latitude), Mercury and Venus set about an hour after sundown. At temperate latitudes in the Southern Hemisphere, they set some 45 minutes (or less) after sunset.



On March 18, 19 and 20, the young moon sweeps past Venus and Mercury in the west after sunset. Venus and Mercury have a second, wider conjunction on March 18. At this time, Mercury reaches its stationary point – the point on our sky’s dome when it stops moving away from the sun, and starts dropping toward it again – while Venus overtakes it in our sky.

At this same time – on March 18 – the young moon will join Venus and Mercury at evening dusk and nightfall. Don’t miss them on these evenings!

After mid-March 2018, Mercury will quickly sink downward, closer to the setting sun. Meanwhile, Venus will climb upward, away from the sunset. Venus will remain a fixture of the evening sky until October 2018. Mercury will pass between the Earth and sun, transitioning out of the evening sky and into the morning sky, on April 1, 2018.



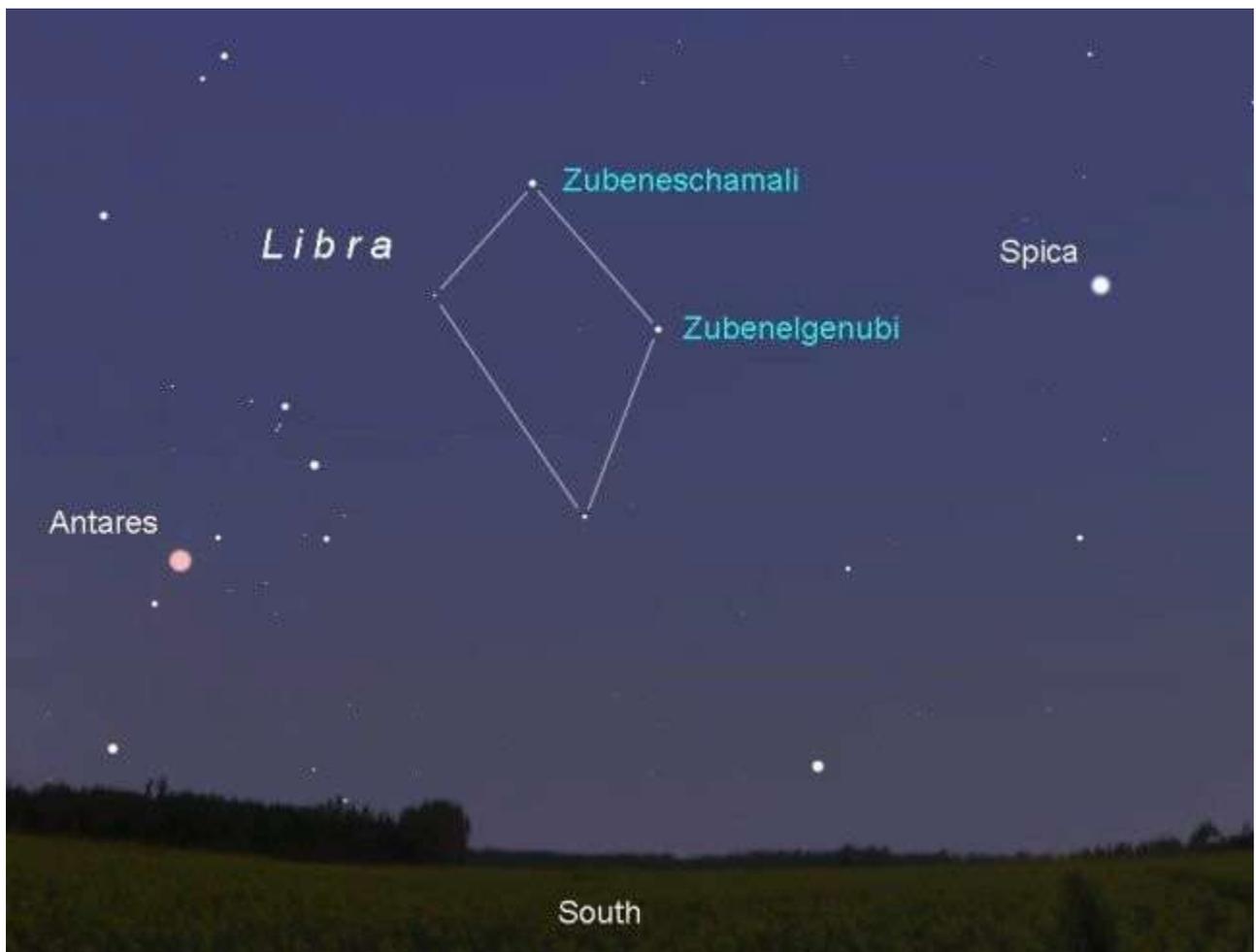
On the mornings of March 7, 8, 9 and 10, watch the moon sweep past the morning planets!

**Jupiter.** It'll be hard to miss Jupiter in March, as it's the brightest celestial object to light up the sky, from when it rises (around midnight in early March, as seen from northerly latitudes) until dawn, when it's high in the sky. The planet Venus always appears brighter than Jupiter, but Venus is now a fixture of the evening sky and will remain so until October 2018. By late March, Jupiter is rising earlier, bursting onto the evening scene prior to its early May opposition. Look for it ascending in the east in late evening.

This month, Jupiter shines in front of the constellation Libra the Scales. Look for Libra's brightest star near Jupiter, Zubenelgenubi and Zubeneschamali (both star names are pronounced with the same ring to them as Obi-Wan Kenobi, of Star Wars). If you aim binoculars at Zubenelgenubi, you'll see it as two stars. Zubeneschamali, meanwhile, is said to appear green in color, although, astronomers say, stars can't look green.

Jupiter (and the constellation Libra) will be well-placed for evening viewing in another month or so. Around its May 9, 2018, opposition – when Earth flies between Jupiter and the sun, gaining a lap on the planet for this year – Jupiter will be rising in the east as the sun sets in the west, out all night, from dusk until dawn.

Look for the moon near Jupiter, especially around the mornings of March 7 and 8.



Facing south around dawn in mid-March. These are the stars you'll find behind Jupiter, and near Mars and Saturn. Notice Libra, a faint, diamond-shaped pattern of stars. Jupiter is in Libra in March. Maps created with Stellarium by AstroBob.

**Mars and Saturn.** These two worlds – so nearly alike in brightness in early March 2018 – both rise in the east in the wee hours in March. Both are visible before dawn. A good time to look for both worlds is around March 7, 8, 9 and 10, when the moon is sweeping past the morning planets (see chart above).

Mars passes from Scorpius into Sagittarius on March 11, and Saturn will already be in Sagittarius when Mars gets there. Mars spends the rest of March gradually closing the gap between itself and the ringed planet. By March 31, Mars and Saturn will be only 1.5 degrees apart. Around then, at mid-northern latitudes, Mars and Saturn rise around one and one-half hours after midnight. Meanwhile, in late March as seen from temperate latitudes in the Southern Hemisphere, these two worlds will be climbing over the southeast horizon about one hour *before* the midnight hour.

Mars will finally catch up with Saturn in early April, to stage a close conjunction on April 2, 2018.

By late March, Mars' brightness will have changed dramatically, too. Earth is now sweeping up behind Mars, getting ready to pass between it and the sun in July. By late March, Mars will beam some three times brighter than the nearby red star Antares in Scorpius, and twice as bright as Saturn.

Afterwards, for some months, Mars will continue to brighten. In July, it'll be closer to Earth and brighter in our sky than it's been since 2003.

Exactly one year after Mars's superior conjunction on July 27, 2017, Mars will swing to opposition on July 27, 2018. Remember Mars' historically close opposition of August 28, 2003? That year, it was closer and brighter than it had been in some 60,000 years. This July's opposition will be the best since then.

In fact, in July 2018, Mars will become the fourth-brightest object in the sky, after the sun, moon and planet Venus.

It's not often that Mars outshines Jupiter, normally the fourth-brightest object. But it will in 2018.

So try to catch Mars in March 2018! Then watch for it to rise earlier – and get much, much brighter – in the months ahead.

## OPPOSITIONS OF MARS, 2010–2022

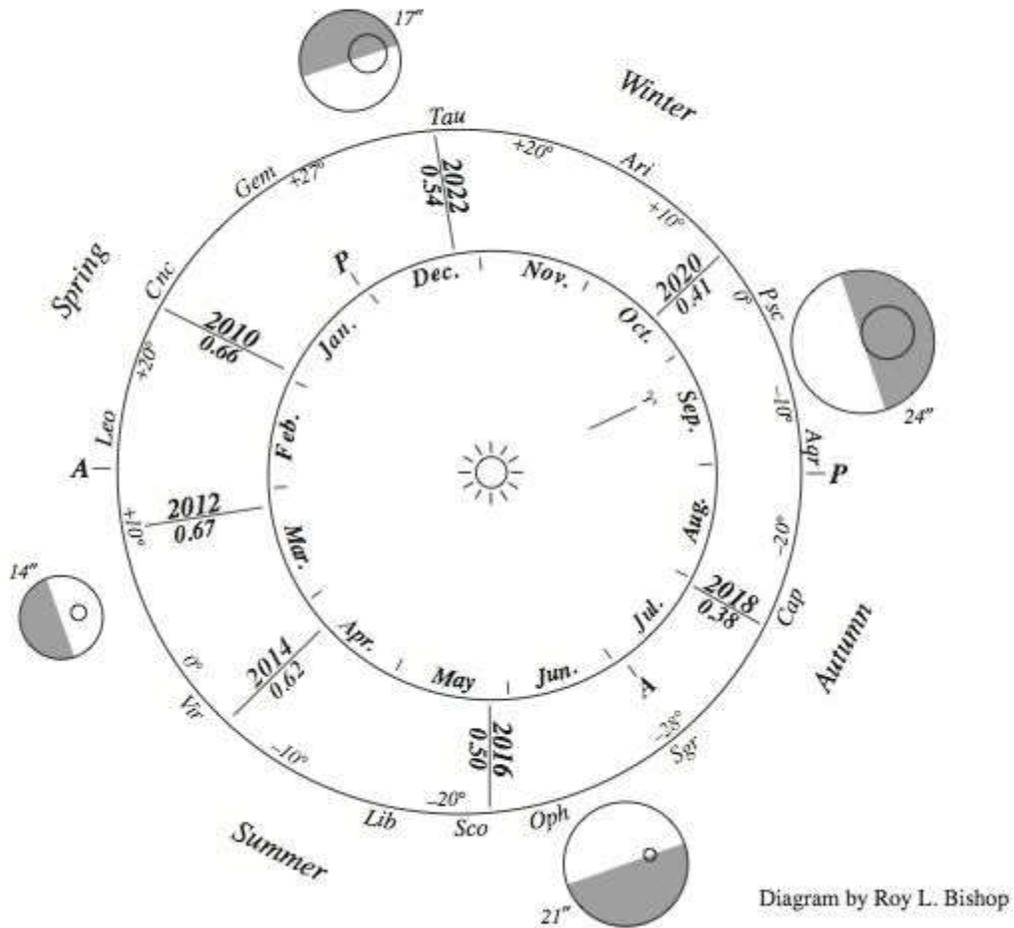


Diagram by Roy L. Bishop. Copyright Royal Astronomical Society of Canada.