Be part of the solution

On March 31, 2007, the people and businesses of Sydney, Australia, took part in **Earth Hour.** For one hour, they turned off their lights as a way to raise awareness of the dangers of light pollution and global warming. Their collective effort reduced the city`s energy consumption by a whopping 10.2 percent for the hour, which is equivalent to taking about 48,000 cars off the road for an entire year! On March 29, 2008, Canadian cities such as Vancouver, Ottawa, Montreal and Toronto joined other international cities to show their support. This is sure to become an annual event that will undoubtedly expand to all corners of the earth. Get your city or town involved in Earth Hour (see the websites below) and show that you care about our environment.

Here are five simple things you can do to help reduce energy consumption and light pollution:

1. Turn off lights when you leave a room.
2. Use energy-efficient light bulbs such as compact fluorescent ones.
3. Have your parents put sensors on outdoor lights so that they will come on only when someone is around.
4. If you are going to be away from home and want to leave a light on for security reasons, put it on a timer and have it come on for only a short time.
5. Let others know of the dangers of light pollution. Together we can make a difference.

Did you know ...
lighting consumes about one-quarter of all the world's energy?

For more information about light pollution, how it affects our wildlife and what you can do to help, check out these websites:

Ontario Science Centre Star Watch: www.redshiftnow.ca/starwatch/default.aspx

Earth Hour: www.earthhour.org

Fatal Light Awareness Program: www.flap.org

Our four-legged and winged friends are not the only species affected by light pollution. Studies suggest that it also affects people negatively. In urban areas where night may never be truly dark, people often suffer from disrupted sleep patterns and may have weakened immune systems as a result.

Did you know ...
it is estimated that up to $100 million is wasted in Canada each year as a result of light pollution? Think of how that money could be better used than to light up the sky!

Ontario Nature
FEDERATION OF ONTARIO NATURALISTS
201-366 Adelaide St. West, Toronto, ON M5V 1R9, Tel: (416) 444-8419, 1 800 440-2366, Fax: (416) 444-9866
E-mail: info@ontarionature.org
Website: www.ontarionature.org
Copy Editor: Sarah Webber
Reviewer: Jimmy Blackwood
Printing: DTP Inc.

Supplement to ON Nature, Summer 2008

Ontario Nature
FEDERATION OF ONTARIO NATURALISTS

End Light Pollution

It's as easy as the flick of a switch

Everyone is aware of the environmental problems associated with water and air pollution, but few people know of a relatively new type of pollution that threatens birds, mammals and even ourselves: **light pollution**.

Light pollution is light that shines where it is not needed or wanted. It is sometimes referred to as "stray light" and is often emitted from poorly designed, inefficient light fixtures. In many urban areas, light pollution is created from what may be considered unnecessary lighting sources such as billboards and store lights. It can come from interior lights in houses and office towers and from external sources like streetlights and lights in sports fields.

Light pollution is most common in industrialized countries such as those in North America, Europe and parts of Asia.

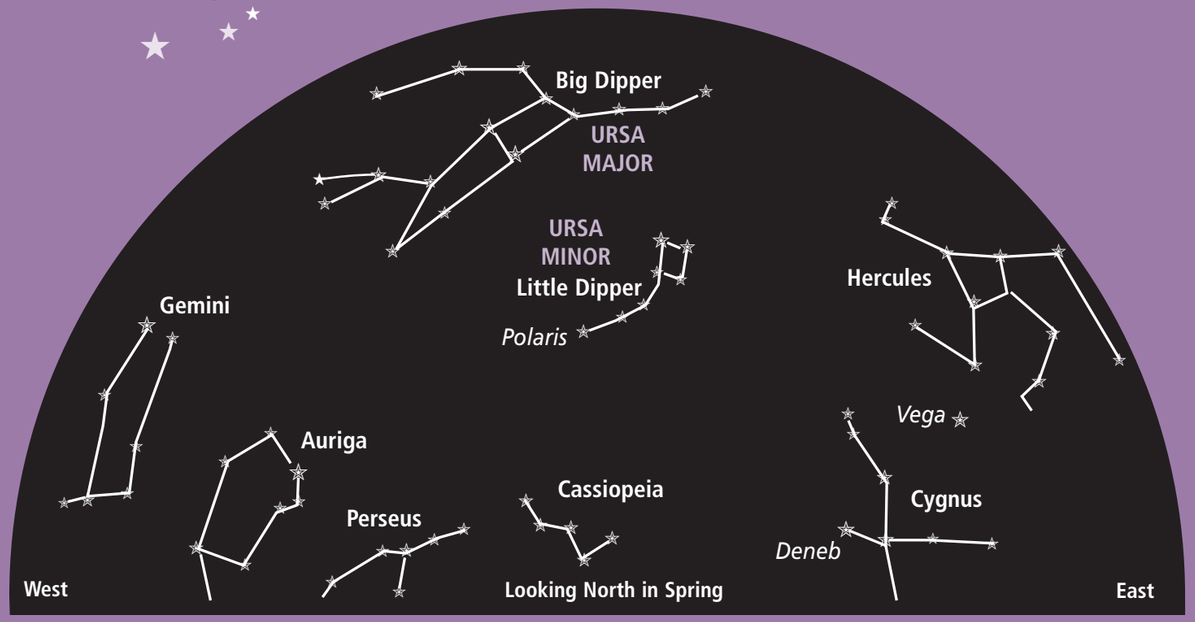
Poorly designed streetlights, porch lights that are left on and any of the hundreds of thousands of lights that illuminate our cities each night all contribute to stray light. This light wastes energy and money and leads to increased greenhouse gas emissions that threaten our climate.

If you live in an urban area, you may have noticed that the sky at night isn't really dark. "Sky glow" refers to the glowing effect that can be seen over many urban areas. The glow results from badly designed streetlights that cause excessive light to be reflected out into space, where it is then scattered by the atmosphere back to the ground. This scattering effect is similar to how a rainbow forms, except the glowing orange sky isn't nearly as pretty as the multicoloured rainbow. Sky glow is particularly bad for astronomers. It reduces the contrast of the stars against the dark sky, making it nearly impossible in cities to see anything but the brightest stars.

Did you know ... nearly 70 percent of the earth`s population (about four and a half billion people) cannot see a completely dark and starry sky because of light pollution? Most of these people live in urban areas.

Star Light Star Bright

A Star Gazing Guide to Common Constellations and Stars



"Star light, star bright, The first star I see tonight, I wish I may, I wish I might, Have the wish I wish tonight." This familiar rhyme is one that children in the future may only read about in books. Stars are becoming increasingly difficult to see due to light pollution. Here are some common constellations that you might be able to see from your backyard..

Cassiopeia: Two of the five stars in the M or W shape of this constellation are among the brightest in the galaxy.

The Big Dipper: This constellation resembles a soup ladle, and the two stars that make up the lip of the bowl can be used to point to Polaris in the Little Dipper.

The Little Dipper: This group of stars is visible from nearly every location in North America. Polaris, the North Star, is the brightest star in this constellation and is almost directly above the North Pole. This star serves as a natural navigation beacon for explorers, adventurers and migrating birds and mammals. The four faintest stars of this constellation are easily dimmed by light pollution, so this constellation is often used to indicate its severity.

Hercules: This constellation, named after the mighty Greek hero, is large but faint.

Cygnus: Cygnus is one of the clearest shapes in the summer sky.

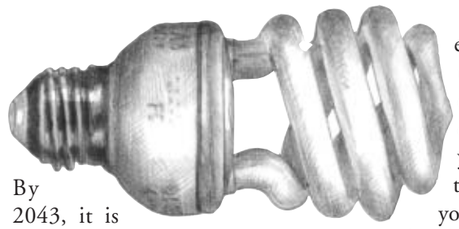
Gemini: The two twin stars of Gemini are easily seen.

If you are an amateur astronomer, you are probably aware of the problems caused by light pollution. Some observatories have strict zoning bylaws preventing light emissions near their telescopes. Backyard stargazers, however, are at the mercy of nearby streetlamps and the neighbours' outdoor lights. If there is a lot of light in your backyard, go with an adult to a nearby park or conservation area where light pollution may be less. When you go out stargazing, cover your flashlight with red tissue paper. Red light will let you see your way through the dark without diminishing your night vision.

On August 14, 2003, much of Ontario and the eastern seaboard of the United States was darkened by a blackout. About 50 million people were without power. **For many people living in some of the largest cities in Canada and the United States, that night was the first time that they were able to see stars from their backyards!**

Lights Out

Each year the world uses about two percent more energy than in the previous year. This means that every 35 years our energy consumption doubles.



By 2043, it is estimated that we will consume nearly twice as much energy as we use today. Conserving energy is now more important than ever! The old-style incandescent lights are energy hogs. Each regular incandescent light bulb contributes about 95 kilograms of carbon to the atmosphere, adding to the greenhouse effect. It is estimated that the energy savings from changing just one 24-watt incandescent bulb to an energy-efficient compact fluorescent bulb would save the equivalent in energy of the gasoline used in driving a small car from one side of the country to the other! So make the switch. Change your light bulbs from incandescent to compact fluorescent and give your wallet and the environment a break. If your parents aren't currently using compact fluorescent bulbs (the curly ones), explain to them that they use one-quarter less energy and last 10 times longer than incandescent bulbs and will save an average of $50 worth of electricity over their lifetime.

Many governments have already banned incandescent light bulbs. Some countries, such as Canada, are planning to phase out these energy-wasting bulbs. You will no longer be able to buy them in Canada after 2012.

We can save energy by using more energy-efficient light bulbs, but a bigger positive impact occurs when we turn off unnecessary lights. Many of the high-rise office towers in large cities like Toronto keep their lights on 24 hours a day, seven days a week. Since these offices do not operate around the clock, there is no need for the lights to remain on continuously.

Did you know … some people wrongly believe that you save money and energy by leaving lights on and that the action of turning them on and off uses more electricity? This is false, so flip the switch!

Millions of migrating birds travel over our major cities each year. Nighttime migrants — birds that use the stars and moon to navigate — often become disoriented by the lights of skyscrapers, and collision with buildings is one of the leading causes of death for migratory birds worldwide.

In Toronto alone, it is estimated that up to 10 million birds die each year as a result of such collisions. Organizations such as the Fatal Light Awareness Program (FLAP) work with the owners of buildings to reduce the number of bird deaths due to this cause. The FLAP program Lights Out Toronto educates people and businesses about the dangers of excessive light pollution. A large victory was achieved when the CN Tower switched from giant, glaring floodlights to the softer light of LEDs, drastically reducing the number of bird collisions.

An agreement has been made not to light up the tower at all during migration season in the spring and autumn.

Changes in the natural day-night light patterns that result from light pollution may negatively affect animal behaviour. Nocturnal animals (those that are most active during the night) such as bats and raccoons and crepuscular animals (animals that are most active at dawn and dusk) such as rabbits and skunks can become disoriented because of excessive light pollution. Nocturnal species such as salamanders wait for the cover of darkness to hunt for food. When light pollution brightens the night, they do not become active as early and some have difficulty finding enough food to survive. Frogs that call to one another at night to attract mates may stop calling as a result of the brightness. If they cannot find a mate, the species may not reproduce.