The calendar was created with the leadership and willingness to donate photos. The phenology data for this calendar was provided by a special thank you to Nina Leopold Bradley. Thank you to the following individuals who contributed time and expertise to this project: Regina Hirsch; The Xerxes Foundation; Aldo Leopold Foundation; UW-Madison College of Agricultural and Life Sciences Center for Integrated Environmental Education; Consumer Protection: Ursula Petersen; Wisconsin Department of Agriculture, Trade, and Consumer Protection; and Jennifer Hopwood.

This Web site allows online viewing of soil survey maps and also supports the adoption of additional conservation activities, including wildlife practices. Conservation Stewardship Program (CStP) – CStP is a voluntary conservation program that provides financial incentives to agricultural producers on agricultural lands to address soil, water, and air quality. This new application greatly enhances access to information on soils which can be helpful for wildlife and forestry planning.

Environmental Quality Incentive Program (EQIP) – EQIP provides technical and financial assistance to agricultural producers for conservation practices that protect soil, water, and air quality, and improve wildlife habitat. For more information about these and other NRCS conservation programs, visit http://learningstore.uwex.edu.

For more information on the Partners for Fish and Wildlife Program, visit www.fws.gov.

The National Wildlife Refuge System, managed by the U.S. Fish and Wildlife Service, is the only system of federal lands dedicated entirely to wildlife. The Refuge System consists of 545 refuges, covering 97 million acres. These protected lands provide habitat for more than 200 species of fish and nearly 500 other animal species. PRIs with the U.S. Fish and Wildlife Service.

Landowner assistance available with the U.S. Fish and Wildlife Service (USFWS) includes the following programs:

**Wetlands Reserve Program (WRP)** – WRP is a voluntary program to help private landowners restore wetlands previously altered for agricultural use. The program provides one-time easement payments and/or annual rental payments for wetlands restored. In addition, WRP offers technical assistance, financial incentives for installing and maintaining wetland restoration practices, and marketing assistance. For more information about the WRP, contact your local USFWS office.

**Grasslands Reserve Program (GRP)** – The GRP helps restore and protect grassland while maintaining the area as grazing land. The GRP offers eligible producers financial assistance for wetland habitat restoration on lands that have been owned for seven years and can be restored to wetland conditions. Landowners may restore wetlands with permanent or 30-year easements, 30-year easements or 10-year contracts. One-time easement payments are based on the lesser of: 1) an appraisal based on fair market value 2) the geographic rate based on the cost of wetland restoration. For more information about the GRP, contact your local USFWS office.

**Easement Assistance Program (EAP)** – EAP is a program that provides financial assistance to landowners who wish to conserve permanent or 30-year easements to wetland restoration. Landowners may receive up to 75% of the restoration costs; 10-year contracts pay for 75% of the restoration only. Permanent or 30-year easements are recorded with the property deed. Private access is allowed. Easement assistance covers landowner assistance through easements based on payments similar to WRP minus the grazing value. Easement assistance for wetland habitat restoration on lands that have been owned for seven years and can be restored to wetland conditions. Landowners may restore wetlands with permanent or 30-year easements, 30-year easements or 10-year contracts. One-time easement payments are based on the lesser of: 1) an appraisal based on fair market value 2) the geographic rate based on the cost of wetland restoration. For more information about the EAP, contact your local USFWS office.

**Pollution Abatement and Mitigation Program (PAMP)** – PAMP is a voluntary program that provides financial assistance to landowners who wish to conserve permanent or 30-year easements to wetland restoration. Landowners may receive up to 75% of the restoration costs; 10-year contracts pay for 75% of the restoration only. Permanent or 30-year easements are recorded with the property deed. Private access is allowed. Easement assistance covers landowner assistance through easements based on payments similar to WRP minus the grazing value. Easement assistance for wetland habitat restoration on lands that have been owned for seven years and can be restored to wetland conditions. Landowners may restore wetlands with permanent or 30-year easements, 30-year easements or 10-year contracts. One-time easement payments are based on the lesser of: 1) an appraisal based on fair market value 2) the geographic rate based on the cost of wetland restoration. For more information about the EAP, contact your local USFWS office.

**Continuous Conservation Reserve Program (CRP)** – Continuous CRP is an ongoing non-competitive sign up which includes practices such as grass buffers, windbreaks, waterways, wildlife habitat enhancements, and soil and water conservation practices. Projects are selected based on the area available for enrollment, including national or state priority areas. Continuous CRP provides 15-year contracts that include annual rental payments and cost-sharing payments for eligible practices. For more information about CRP, contact your local USFWS office.

**Conservation Reserve Enhancement Program (CREP)** – CREP assist landowners or operators who set aside cropland (or pasture that is adjacent to streams) with annual rental payments throughout the contract period. CREP provides cost-sharing payments for practices installed on eligible land, including wetland restoration, grassy buffer strips, riparian vegetative buffer strips, and wildlife habitat enhancements. For more information about CREP, contact your local USFWS office.

For more information about the USFWS and the National Wildlife Refuge System, visit www.fws.gov.

**For more information about these and other USFWS programs, contact your local USFWS office.**

**Supporting organizations:**

- Cooperative Extension
- For more information about the USFWS and the National Wildlife Refuge System, visit www.fws.gov.
Phenology is the study of periodic life-cycle events in nature that are influenced by climate and seasonal change: wildlife emerging from hibernation, birds nesting or migrating, flowers blooming. For many of us, phenological events characterize the changing seasons as much as fall color or the first snowfall. As Aldo Leopold wrote, “One swallow does not make a summer, but one skein of geese, cleaving the munk of a March thaw, is the spring.”

Leopold, regarded by many as the father of wildlife ecology, monitored and recorded phenological events in Sauk County, Wisconsin beginning in 1936. Leopold and his family recorded these events in and around the landscape of the Leopold Shack and Farm, the place that inspired his famous book, A Sand County Almanac. The dates in this calendar are based on Leopold’s data as well as data gathered more recently by his daughter, Nina Leopold Bradley, and other natural resource professionals around the state.

One of the most amazing parts of observing the natural world is beginning to understand and appreciate its great complexity. All species relate in some way to the other members of the ecological community that surround them. The interrelationships between plants and their pollinators are just one of these intricate interactions. If you have a garden, you probably observe bees and butterflies visiting your flowers on a daily basis during the spring and summer. While they may seem unremarkable, these insects are critical to one of the most important and complex processes in ensuring continued ecosystem functioning — pollination.

Unlike animals who can move around to find a suitable mate, plants are rooted in place. In order to produce the seeds that will form the next generation, plants need help to carry pollen from one individual to another so that fertilization can occur. Help may take many forms. Some plants simply release their pollen to the wind, trusting that some of it will find its intended mate. Others use a more direct approach: attracting a pollinator. Flower size, color, and fragrance all contribute to attracting pollinators. Some pollinators, like hummingbirds, transfer pollen from flower to flower as a result of feeding on the nectar the plants provide. Others, like bees, one of the most common pollinators, actively gather pollen as a protein source in their diets. They have specialized compartments on their bodies for carrying pollen, but in the act of gathering it, the pollen grains also stick to their wings and bodies and are transferred between flowers. Either way, these animals are the key to pollination.

Some pollinators are generalists, visiting many types of plants, and some specialize, forming relationships with one particular group of species. For example, Squash bees only visit the flowers of plants in the squash family. And because squash plants depend exclusively on these bees, their presence is critical to the production of cucumber and squash fruits.

The complex and specialized relationships of plants and pollinators have taken millions of years to evolve and are necessary for the continued existence of about 70 percent of the world’s plants, including almost two-thirds of the world’s food crops. But today, many pollinator species, especially bees, are in decline around the world. Insecticides used on agricultural pests can also kill invertebrate pollinators and are believed to be at least partially responsible for the decline. In addition, honeybees around the world are suffering Colony Collapse Disorder, the causes of which are still unknown. You can help to support pollinator populations locally by making your yard a haven for them, planting a wide variety of native plants with flowers of different shapes and colors. In an essay called simply “Conservation,” Aldo Leopold voiced an appreciation for preserving all the parts of the system, large and small. He wrote, “The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little is known about it. The last word in ignorance is the man who says of an animal or plant: ‘What good is it?’ If the land mechanism as a whole is good, then every part is good, whether we understand it or not.”

Many of the phenological dates in this calendar represent the first blooms of flowering plants. Each of these flowers has its own method of pollination, and many rely on animal pollinators to help them recombine their genes to produce the next generation. As flowers come into bloom in your yard, watch them closely — you may be able to observe some of the subtle relationships between plants and pollinators. This year, take a minute to not only smell the flowers but look for the animals visiting them. In these seemingly small interactions lie a vital biological function on which much of life as we know it today ultimately depends.

“The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little is known about it. The last word in ignorance is the man who says of an animal or plant: ‘What good is it?’ If the land mechanism as a whole is good, then every part is good, whether we understand it or not.”

Aldo Leopold

It has exclusive rights to A Sand County Almanac and other writings and photographs, is owner and caretaker of Leopold’s Shack and family farm, and serves as a clearinghouse for information regarding Aldo Leopold’s life and work. For more information contact ALF at PO Box 77, Baraboo, WI, 53913, 608-355-0279, or on the web at www.aldoleopold.org

A note on dates: The phenology of reptiles and amphibians is highly dependent upon immediate conditions for reproduction. Wood frogs, for example, first emerge when night temperatures are over 50 degrees Fahrenheit. Therefore amphibian phenology is highly variable as well as difficult to research. Also, few people record any phenological data about reptiles and amphibians, other than they call occurrence. This is mainly due to the tiny larval stages, secretive lifestyle, and the relative unpopularity of these animals in comparison to more visible species.

Cover photo: Pipevine swallowtail butterfly, M.J. Hatfield
Photos this page: Pied-billed grebes, Jeffrey J. Strobel; Leopold photo, courtesy of the Aldo Leopold Foundation

The Aldo Leopold Foundation (ALF) was founded in 1982 by the children of Aldo Leopold to promote harmony between people and the land and foster Leopold’s vision of the Land Ethic. ALF is the definitive interpreter and advocate for Leopold’s legacy.

The dates in this calendar correspond to data collected primarily in southern Wisconsin. To apply these dates to a different area, apply Hopkins Law, which states that the phenological events vary at the rate of 1 day for each 15 minutes of latitude, 1.25 days for each degree of longitude, and 1 day for each 100 feet of altitude. This means there is an approximate 22-day difference between Wisconsin’s southern border with Illinois and the northern border with Michigan. There is also an approximate 10-day difference between the east and west portions of the state, due to Lake Michigan’s cooling effect.

Hopkins Law

To keep every cog and wheel is the first precaution of intelligent tinkering.

Aldo Leopold
Eastern Tiger Swallowtail
Papilio glaucus

This gorgeous yellow-gold butterfly with black “tiger” stripes has a wing span of 3 to 5 inches. It is found near open woodlands and in most habitats including gardens in the central and eastern U.S. The adult male is yellow and black with red and blue spots on the inner margins of the back wing area. The female is similar to the male except that she has a blue area at the back of the wings. Both sexes have a dark bar broken into small spots on the under wing.

The Eastern swallowtail larvae are one-generation per year. The female lays her eggs on a host plant near food sources for the adults. The young larvae, also called caterpillars, are brown and white, mimicking bird droppings to escape predators. Caterpillars feed on the leaves of their host plant and if disturbed extend two red horns that look like a snake’s tongue. Before pupating the caterpillar turns dark brown. The pupa hibernates in a safe place to emerge the following spring.

Eastern swallowtail caterpillars feed on many species of plants including the parsley family. Some of the other host plants are birch, ash, poplar, cherry, boxwood, and mountain ash. The adults eat nectar from a great variety of flowers and pollinate them in the process. Nectar plants include milkweed, butterfly weed, various thistle species, coreopsis, blazing star, and phlox. Eastern Swallowtails are also attracted to flower and butterfly gardens.

January 2011

Eastern tiger swallowtail
(3/20/2011)

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<th>Sunday</th>
<th>Monday</th>
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<th>Wednesday</th>
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<th>Saturday</th>
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<tbody>
<tr>
<td>See photos: female Cardinal, Jack Bartholmai; below: White-tailed deer in deep snow, Jeffrey S. Stambaugh</td>
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<td>New Year’s Day</td>
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<td>Sunrise 7:29 AM, Sunset 4:37 PM</td>
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<td>Burn brush piles when there is over 3 inches of snow on the ground</td>
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<td>3</td>
<td>Female elk move to south-facing slopes for winter</td>
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<td>The Earth is closest to the Sun (Perihelion)</td>
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<td>5</td>
<td>Black bear cubs being born in dens</td>
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<td>11</td>
<td>Adele Leopold’s Birthday (1887)</td>
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<td>17</td>
<td>Black-capped chickadees begin spring courtship song</td>
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<tr>
<td>18</td>
<td>Martin Luther King Jr. Day</td>
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<td>23</td>
<td>Full (Wolf) Moon</td>
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<tr>
<td>24</td>
<td>Wolf fox begin mating</td>
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<td>25</td>
<td>Wolves begin mating</td>
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<td>31</td>
<td>Great horned owls begin courtship activities</td>
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<td>33</td>
<td>Beaver begin mating</td>
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<td>36</td>
<td>Canada lynx begin mating</td>
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<td>39</td>
<td>Fox and Gray squirrels begin mating</td>
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Eastern tiger swallowtail
(3/20/2011)
February 2011

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   6  7  8  9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

1  2  3  4  5
   6  7  8  9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Bumble Bees
*Bombus* spp.

With their large, fuzzy bodies, Bumble bees are a particularly noticeable and likeable group of bees. Whereas the majority of bees in Wisconsin lead solitary lives in which each female constructs and provision her own nest, bumble bees form social colonies. Colonies are founded in the spring by a queen, who will establish a nest under a clump of bunch-grass or in an old rodent burrow by secreting wax to form honey pots for temporary storage of nectar and pollen cells. The queen sits on her clump of eggs to keep them warm, similar to birds incubating their eggs. Once she’s established a colony, her daughters work cooperatively to raise offspring and find food, and the colony grows in size throughout the spring and summer. In the fall, a new queen will be reared, and the rest of the colony will die off when winter arrives. Bumble bees visit a wide variety of flowers, and carry their collected pollen moistened with nectar packed in a concave space on three hind legs.

Bumble bees are extremely important pollinators of agricultural crops and wildflowers. Experts at buzz pollination, a technique used by native bees to vibrate the pollen out of paracidal anthers, Bumble bees pollinate plants like tomatoes, cranberries, and blueberries. Also, as some of the largest and strongest bees around, Bumble bees are the only pollinators able to pry open the closed petals of bottle gentian (*Gentiana andrewsii*). Wisconsin is home to about 18 species of Bumble bees.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>1/26</td>
<td>Writers' Day</td>
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<tr>
<td>1/27</td>
<td>Presidents' Day</td>
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<td>1/28</td>
<td>Valentine’s Day</td>
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<tr>
<td>1/29</td>
<td>Groundhog Day</td>
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<tr>
<td>1/30</td>
<td>Full (Snow) Moon</td>
</tr>
</tbody>
</table>

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**February Events**

- Valentine’s Day
- Groundhog Day
- Full (Snow) Moon

---

**February Holidays**

- Presidents’ Day
- Valentine’s Day

---

**February Weather**

- Winter conditions prevail
- Freezing temperatures
- Snowfall possible

---

**February Wildlife**

- Coyotes begin mating
- Horned larks begin migrating north
- Northern cardinals begin spring songs
- Great horned owls begin nesting
- Bobcats begin mating
- Canada geese spring arrival
- Mink begin mating

---

**February Plants**

- Many White-tailed deer sheds antlers
- Frost begins to melt
- Spring growth begins

---

**February Animals**

- Bumble Bees
- Bumble bees are the only pollinators able to pry open the closed petals of bottle gentian (*Gentiana andrewsii*).

---

**February Activities**

- Write prescribed burn plans
- Erect and clean out Wood duck and Bluebird boxes
- Erect American kestrel boxes

---

**February Observations**

- Bobcats begin mating
- Horned larks begin migrating north
- Northern cardinals begin spring songs
- Great horned owls begin nesting
- Bobcats begin mating
- Canada geese spring arrival
- Mink begin mating

---

**February Predictions**

- Winter conditions prevail
- Freezing temperatures
- Snowfall possible

---

**February Highlights**

- Valentine’s Day
- Groundhog Day
- Full (Snow) Moon

---

**February Resources**

- Wisconsin Department of Natural Resources
- Wisconsin Birding Guidelines
- Wisconsin Wildlife Magazine

---

**February Resources**

- Wisconsin Department of Natural Resources
- Wisconsin Birding Guidelines
- Wisconsin Wildlife Magazine

---
Mason Bees  
*family Megachilidae*

Mason bees (*genus Osmia*) are true masons, building their nests in hollow stems or in the ground and partitioning each egg chamber with mud. The female bee builds the nest and supplies food for the young. Interestingly, female bees can determine the sex of each egg she lays. Mason bee lays female eggs in the back of the stem (or channel), and male eggs at the front, then plug the entrance with mud. Male bees are smaller than females and mature faster, being at the front ensures that they will emerge first. Also, males are opportunists and wait near the entrances of other nests to mate with emerging females. Once a female is fertilized she begins looking for a nest and collects pollen and nectar to create a pollen ball on which to lay her eggs. Eggs hatch during summer and larvae feed on the pollen ball. When all the pollen is consumed, a larva spins a cocoon around itself and hibernates until the following spring.

Many species of Mason bees are the first to emerge in early spring and are key pollinators of early spring flowers, tree fruits (apples and cherries), and blueberries. Many people establish nest boxes to attract Mason bees to their gardens and farms because they improve pollination for their fruit crops. Mason bees are also used as either an alternate to or a supplement with the European honey bees for managed pollination on a variety of crops.

### Mason Bee 
*Eric Mader*

---

**Mason Bees**

<table>
<thead>
<tr>
<th><strong>March 2011</strong></th>
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<tbody>
<tr>
<td><strong>Sunday</strong></td>
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</table>

- **1st** Sunday, 6:14 AM  
  Server: 4:46 PM
- **11th** Sunday, 6:34 AM  
  Server: 4:46 PM
- **21st** Sunday, 6:14 AM  
  Server: 4:46 PM

---

**Daylight Saving Time**

**International Earth Day**

**Erect bat boxes**

**Canada Goose arrival** **(A. Leopold data 1936-47)**

**Sunrise 6:34 AM**  
**Sunset 5:46 PM**

---

**Erect bat boxes**

- **Sunday, April 3**
  - Sandhill cranes arrival begins
  - Snow goose eggs begin hatching

- **Monday, April 4**
  - Eagles and Cranes arrive
  - Mallards begin laying
  - Lynx kits being born

- **Tuesday, April 5**
  - Canada Goose arrival
  - Red-winged Blackbird spring arrival
  - Eastern Bluebird spring arrival

- **Wednesday, April 6**
  - Red-winged Blackbird spring arrival
  - Eastern Meadowlark arrival
  - St. Patrick’s Day

- **Thursday, April 7**
  - Red-winged Blackbird arrival
  - Canada Goose arrival
  - Wolf pups being born

- **Friday, April 8**
  - Eastern Phoebe spring arrival
  - Skunk cabbage begins blooming

- **Saturday, April 9**
  - American Robin spring arrival
  - Ring-necked pheasants begin crowing

---

**Hermit thrush spring arrival**  
**Chorus frogs and Spring peepers begin calling now through first week in April**

**Mallards begin to arrive; Lynx kits being born**

**Common garter snakes coming out of hibernation**

**Canada Goose**  
**Wolf pups being born**

---

**Killdeer spring arrival**

**Skunk cabbage begins blooming**

---

**Great Blue Heron and Fox sparrows spring arrival**

**Mason Bee family Megachilidae**

Mason bees (genus *Osmia*) are true masons, building their nests in hollow stems or in the ground and partitioning each egg chamber with mud. The female bee builds the nest and supplies food for the young. Interestingly, female bees can determine the sex of each egg she lays. Mason bees lay female eggs in the back of the stem (or channel), and male eggs at the front, then plug the entrance with mud. Male bees are smaller than females and mature faster, being at the front ensures that they will emerge first. Also, males are opportunists and wait near the entrances of other nests to mate with emerging females. Once a female is fertilized she begins looking for a nest and collects pollen and nectar to create a pollen ball on which to lay her eggs. Eggs hatch during summer and larvae feed on the pollen ball. When all the pollen is consumed, a larva spins a cocoon around itself and hibernates until the following spring.

Many species of Mason bees are the first to emerge in early spring and are key pollinators of early spring flowers, tree fruits (apples and cherries), and blueberries. Many people establish nest boxes to attract Mason bees to their gardens and farms because they improve pollination for their fruit crops. Mason bees are also used as either an alternate to or a supplement with the European honey bees for managed pollination on a variety of crops.

**Mason bee**

**Eric Mader**
### Mining Bee

**family Andreridae**

Andreridae is one of largest family of bees in Wisconsin with more than 76 species. These bees range in size from 8 to 17 mm with the males being smaller and more slender than the females. Species of this family range in color from brown or black to red, metallic blue, or green. The key distinguishing features of this family are smoky-colored wings and females with “facial foramen,” a broad, velvety area between the compound eyes and antenna. Most species also have a well-developed pollen basket, on the sides of the thorax. This family of bees is better known as “mining bees.” As their name suggests they “mine” holes in the ground for their nests. A females digs holes 2 to 3 inches deep, excavating the soil and leaving a pile on the surface, resembling an ant nest. She then digs a side tunnel that ends in a chamber (there are about 8 chambers per burrow). Each chamber is then filled with a small ball of pollen and nectar. Although the females nest in close proximity to one another they are solitary bees, and each female digs her own nest chamber. Females prefer to build their nests in areas of sparse vegetation such as old meadows, dry meadows, and sandy paths. Many species are active in March and April when they collect pollen and nectar from early spring-blooming flowers.

As with all native bees, mining bees prefer flowers that are violet, blue, yellow, purple, or white. To keep native bees plentiful and well fed throughout the season, gardens and large plantings should have at least 3 different species of flowers blooming from early spring through fall.

#### Photographic Notes
- Spruce grouse – Ryan Brady – pbase.com/rbrady
- Eastern wild turkey – Jeffrey J. Strobel
- Sigurd Olson’s Birthday (1899)
- John Muir’s Birthday (1838)
- John Audubon’s Birthday (1785)
- Easter Sunday
- Tax Day
- Earth Day

#### Events
- Big brown bat spring arrival
- Tree swallow arrival
- Painted turtles emerging
- Trees susceptible to Oak wilt
- Easter Sunday
- Tax Day
- Earth Day
- Tundra swan arrival
- Ruffed grouse begin drumming
- Peak spring duck migration
- Bald eagles begin nesting
- Eastern phoebe arrival
- Tree swallow arrival
- Yellow-bellied sapsucker spring arrival
- Pasque flower blooms
- Coyote pups and Mink kits
- Golden-crowned kinglet
- Cowbird spring arrival
- Check bluebird boxes throughout nesting season
- Black bears leave dens
- Pickerel frogs begin calling
- Upland sandpipers sighted
- Upland sandpipers
- Dutchman’s breeches blooms
- Eastern cottontail rabbits are born
- Hen Mallards begin nesting
- White-tailed deer bucks growing antlers
- Prairie smoke blooms
- Hog-nosed snakes emerging
- Marsh marigold blooms
- Little brown bat spring arrival
- Barn swallows return
- Yellow-bellied sapsucker spring arrival
- Duck blooms
- Whooping cranes begin laying eggs
- American toads begin to sing
- European toad blooms
- Dipper blooms
- Bobolink spring arrival
- Arbor Day
- Godwings hatch

#### Full (Pink) Moon
- Easter Sunday
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### May 2011

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<tr>
<td><strong>March Monarch Moths</strong>&lt;br&gt;(A. Leopold data 1936-47)</td>
<td>Whip-poor-will spring arrival&lt;br&gt;Large trillium blooms</td>
<td>Weather spring migration begins&lt;br&gt;Cathartic spring arrival&lt;br&gt;Blue-winged teal arrival&lt;br&gt;Bright leaf violet blooms</td>
<td><strong>Eastern-grass frog and Cope’s gray tree frog begin calling&lt;br&gt;(1st week of May)</strong></td>
<td><strong>Wood thrush and Scarlet tanager spring arrival</strong></td>
<td><strong>Indigo bunting spring arrival</strong></td>
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<td>Wild prairie bluebonnets&lt;br&gt;Ruby-throated hummingbird spring arrival&lt;br&gt;<strong>Mother's Day</strong></td>
<td>Eastern wood pewee spring arrival&lt;br&gt;Coltsfoot blooms</td>
<td><strong>Shooting star blooms</strong></td>
<td><strong>Wild geranium blooms</strong></td>
<td><strong>Young eagles hatching</strong></td>
<td><strong>Eastern wood pewee spring arrival</strong></td>
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<tr>
<td>Wild lupine blooms&lt;br&gt;Beaver kits being born&lt;br&gt;<strong>Veeries begin singing</strong></td>
<td>Sandhill crane chicks hatch</td>
<td>Jack-in-the-pulpit blooms&lt;br&gt;Look for Wood mushrooms&lt;br&gt;<strong>3rd Full (Flower) Moon</strong>&lt;br&gt;<strong>Mace Vaughan</strong></td>
<td>Put out grape jelly and orange halves for Orioles</td>
<td><strong>Common loons begin nesting</strong></td>
<td><strong>Common night hawk spring arrival</strong></td>
<td><strong>Lilacs blooming</strong></td>
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<td><strong>White-tailed deer fawns are born now into June</strong></td>
<td><strong>First flight of Karner blue butterfly adults emerge</strong></td>
<td><strong>Pink Prairie phlox bloom</strong>&lt;br&gt;Wild parsnip blooming</td>
<td><strong>American woodcock young hatching</strong></td>
<td><strong>Aurora bloom</strong>&lt;br&gt;<strong>Genesee gift and Blanchard's cricket frogs begin calling at the end of May</strong></td>
<td><strong>White-crowned sparrows, robins and chipping sparrows can now be heard singing</strong></td>
<td><strong>First flight of Karner blue butterflies begin emerging</strong></td>
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<tr>
<td>Wild iris blooms&lt;br&gt;Beaver kits being born</td>
<td>Fledged grouse chicks hatching</td>
<td><strong>Memorial Day</strong></td>
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**Sweat Bees**<br>family Halictidae

Have you ever been licked by a bee? If you have been so lucky, you have been visited by a sweat bee. Many species of sweat bees seek out human perspiration for a salty treat. Wisconsin has more than 390 species of native bees, 95% of which are Sweat bees. These bees are small to medium sized, and usually appear brown or black, though several species are bright metallic green or brassy yellow. Sweat bees mainly build their nests in0 pliable soil by digging a vertical channel with a series of horizontal brood chambers. They line their brood chambers with a waterproof body secretion that resembles varnish. Sweat bee females provide each brood chamber with a nutritious pollen ball for her young to feed on once they hatch. For some sweat bee species, the young emerge the following year as adults in early spring, while other species emerge later in the summer.

Similar to Bumble bees, Sweat bees use buzz pollination to open flowers to extract pollen. Interestingly, wild blueberry bushes are more effectively pollinated by buzz pollination and Sweat bees are known to pollinate them. Sweat bees can feed on sunflowers, asters, monarda, and pickled weed, as well as blueberry, alfalfa, watermelon, apple, and raspberry

Both the Wisconsin DNR and UW-Green Bay researchers (Amy Wolf and colleagues) have found that remnant prairies and barrens have many remnant populations of native bees, especially Sweat bees of the genus *Lasioglossum*. It is important for bee conservation to preserve these remnant prairies and barrens.

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**Sweat bee**<br>Mike Vaughan

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**Notes:**
- **Sweat Bees**
- **Bee Conservation**
- **Remnant Prairie Conservation**
- **Buzz Pollination**
- **Pollination Importance**
- **Species Identification**
- **Conservation Efforts**

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**Sources:**
- Wisconsin DNR
- UW-Green Bay
- Amy Wolf and colleagues

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**Photos:**
- Great egret, Jeffrey J. Strobel
- Sandhill crane on nest, Elizabeth Arnold
Karner Blue Butterfly

*Lycanthes melissa samuelis*

This tiny butterfly is barely 1 inch long and frequents fairly open settings near pastures, fields and open woods in central and northwest Wisconsin. Males are all blue above while females are brownish blue with orange dots on the rear wing edges. Both sexes have white underwings with orange dots outlining the rear wings. With wings folded, the under-wing pattern distinguishes the Karner blue from other small blue butterflies.

The Karner blue produces two generations per year. Overwintering eggs hatch into larvae, then pupate, and adult butterflies emerge at the end of May. These adults mate and lay eggs to start the next generation, which emerges in July and early August.

Wild lupine is a necessary food plant of the Karner blue larva and is found on sandy soils. Adult butterflies remain in the proximity of wild lupine for egg deposition but not nectar from many other plant species and pollinate them. Their preferred nectar species are yellow or white flowers, such as Horsemint, Butterflyweed, and Leafoak. Karner blues also sip at mud, animal droppings and human perspiration—presumably for sodium or other minerals.

The Karner blue butterfly is on the federal endangered list. Wisconsin happens to have the most plentiful population, probably because of the state’s remaining natural character. Many private and public partners are working together to ensure that the butterfly is protected and has plenty of habitat.

*Karner blue butterfly 1 year*
**Hummingbird Moth**  
*family Sphingidae*

Have you ever done a double-take thinking you saw a hummingbird and then were surprised to see that it was actually a moth? The remarkable Hummingbird moths fly and hover like hummingbirds, suspended in the air in front of flowers while they unfold their extra-long tongues to sip the flower’s nectar. Interestingly, they even emit an audible ‘hum’ like a hummingbird.

Hummingbird moths are robust. They open the tips of their tails into a fan which helps them keep upright as they hover. Similar to most moths they have a very long tongue which they keep rolled up under their chins. These specialized tongues are able to reach the nectar of long-stemmed flowers, inaccessible to other nectar loving pollinators. Some adult Hummingbird moths emerge in early spring when bluebells are in bloom, but they are most active in summer feeding on bee balm (*Monarda*), phlox, honeysuckle, blackberry, red clover, vetches, highbush blueberry, hawthorn, and black-eyed susans. The larvae are more finicky about the plants they feed on which include several species of honeysuckle, dogbane, hawthorn, cherries, and plums.

Females lay tiny eggs, usually on the underside of leaves of the larva’s food plant. Larvae (caterpillars) are usually green and have a hump at the rear. When the caterpillar is fully grown it spins a cocoon among leaf litter and pupates. Pupae spend the winter in the cocoon and emerge as adults the following spring.

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### July 2011

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<tr>
<td>1</td>
<td>Sunrise: 5:22 AM</td>
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<td>Begin pulling Spotted knapweed</td>
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<td>Sunset: 8:41 PM</td>
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<td>Round-headed bush clover blooms</td>
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<td>Wild bergamot blooms</td>
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<td>Queen of the prairie and Mountain mint blooms</td>
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<td>White prairie clover and Whorled milkweed blooms</td>
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<td>6</td>
<td>Purple coneflower blooms</td>
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<td>Prairie rose blooms and Wild bergamot blooms</td>
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<td>Canada goldfinch and Cup plant blooms</td>
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<td>Prairie dock blooms</td>
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<td>Purple loosestrife and Cup plant blooms</td>
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<td>Common spiderwort seed collection</td>
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<td>Evening primrose blooms</td>
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<td>2nd flight of Karner blue butterfly begins</td>
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<td>Mexican sunflower blooms</td>
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<td>Turkey cap fly blooms</td>
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<td></td>
<td>Painted turtles begin to gather</td>
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<td>Joe-pye weed blooms</td>
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<td>Purple prairie clover and Queen of the prairie blooms</td>
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<td>Yellow coneflower blooms</td>
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<td>Spotted towhee seed collection</td>
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<td>Rough blazing star blooms</td>
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<td>Deer antler growth nearing peak size</td>
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**August 2011**

**Squash Bee**

*genus* *Pepo* *nopsis* and *Xenoglossa*

Many of our native Wisconsin bees are pollen specialists — bees that have evolved very specific and dependent relationships with certain kinds of plants and are only found in close proximity to those plants. Squash bees (bees in the genera *Pepo* *nopsis* and *Xenoglossa*) are one such group of specialist bees, and depend on pollen from plants in the genus *Cucurbita*, which includes squash, pumpkins, zucchinis and gourds. Squash bees and *Cucurbita* evolved together, and several Squash bee species expanded their range with the domestication and spread of *Cucurbita*. Today squash bees can be found many places *Cucurbita* are grown in the U.S., and Wisconsin is at the northern edge of their range.

Squash bees are solitary ground-nesting bees, and often dig their nests near squash plants. Tillage can destroy their nests, so farmers growing squash should consider alternatives in order to promote these efficient pollinators. Peek inside a squash flower this summer and you will likely find a squash bee peering back!

Squash bees are fast-flying, large, fuzzy, friendly bees that time their emergence and flight season in late summer with the height of bloom period of *Cucurbita*. These bees begin working squash flowers as soon as they open in the pre-dawn hours, long before honey bees or even many other native bees are active. Because squash flowers are ephemeral and last only a few hours before wilting, the early rising, hard-working Squash bees are important pollinators.

Squash bee

*Jennifer Hopwood*

*photo: young Racoon, Jim Bartholmai; below: Katydid, Alanna Kosholleck; Fritillary, Jeannine Richards*
### September 2011

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<tr>
<td><img src="image1" alt="Leafcutter Bee" /></td>
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**Leafcutter Bee**

*family Megachilidae*

Leafcutter bees are part of the family Megachilidae, a family of bees with long tongues that are used to reach nectar hidden deep within flowers such as blazing stars (*Liatris*) and alfalfa. *Megachilidae* are unusual among bees because the females transport pollen using long hairs on the underside of their abdomen. Female leafcutter bees also have large, wide heads and strong jaws. They use these jaws as scissors to slice into petals and leaves, carving out circular pieces they’ll use to line their nests.

These bees are sometimes quite selective about the types of leaves they will use, searching out stiff leaves that are smooth on one side. Cutting out different shapes and sizes as needed, leafcutter bees fit the leaf fragments into a cup-shaped cell, capping the edges together. They then fill the bottom with a mix of pollen and nectar, lay her egg on the food, and will seal off the cell with additional leaf fragments. Leafcutter bees will nest in a variety of existing cavities, including beetle-hole tunnels, hollow plant stems, cracks in rocks, and crevices in man-made structures. A few species will nest in the ground, and some species will nest readily in artificial nest boxes.

Leafcutter bees all lead solitary lives, with each female building her own nest. Leafcutter bees emerge in summer, and some species have two or more generations each growing season. An introduced species, the alfalfa leafcutter bee (*Megachile rotundata*), is actively managed for pollination of some crops.
**Soldier Beetles**

*family Cantharidae*

Beetles may have been among the first insects to visit early flowers. Then as now, they were attracted by strong scents and readily eat nectar, pollen, and will also chew on all flowers parts. For these reasons they are considered to be “hopping” pollinators, but they are important pollinators. Encouraging soldier beetles in gardens or agricultural fields has multiple benefits, as these beetles serve as both predators and pollinators.

Soldier beetles are soft-bodied beetles, with long, nearly rectangular bodies. They are named Soldier beetles because their black or brown bodies with bright red, orange or yellow colorations are reminiscent of military uniforms. These beetles look somewhat similar to fireflies, but do not have light-producing organs. Female beetles deposit their eggs in the soil, and larvae overwinter in leaf litter.

Soldier beetles are both carnivores and semi-vegetarians. As larvae they are predatory but as adults also eat pollen and nectar. Larvae consume aphids, caterpillars, and eggs of other herbivorous pests. Adult Soldier beetles are commonly seen on flowers, where they munch on pollen and nectar as well as other insects. Chauliognathus pensylvanicus (pictured) is particularly common in Wisconsin on yellow flowers in autumn, and contributes to the pollination of goldenrod.

**October 2011**

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- **Little brown bat departure**
- **Dusk-eyed junco fall arrival**
- **Columbus Day**
- **Full (Hunters) Moon**
- **Frogs begin to burrow into mud**
- **Last Eastern phoebe sighting**
- **Sky blue aster and Little bluestem seed collection**
- **Soldier beetle**

**Beetles**

**soldiers**

**family Cantharidae**

Beetles may have been among the first insects to visit early flowers. Then as now, they were attracted by strong scents and readily eat nectar, pollen, and will also chew on all flowers parts. For these reasons they are considered to be “hopping” pollinators, but they are important pollinators. Encouraging soldier beetles in gardens or agricultural fields has multiple benefits, as these beetles serve as both predators and pollinators.

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**Soldier beetles**

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Beetles may have been among the first insects to visit early flowers. Then as now, they were attracted by strong scents and readily eat nectar, pollen, and will also chew on all flowers parts. For these reasons they are considered to be “hopping” pollinators, but they are important pollinators. Encouraging soldier beetles in gardens or agricultural fields has multiple benefits, as these beetles serve as both predators and pollinators.

Soldier beetles are soft-bodied beetles, with long, nearly rectangular bodies. They are named Soldier beetles because their black or brown bodies with bright red, orange or yellow colorations are reminiscent of military uniforms. These beetles look somewhat similar to fireflies, but do not have light-producing organs. Female beetles deposit their eggs in the soil, and larvae overwinter in leaf litter.

Soldier beetles are both carnivores and semi-vegetarians. As larvae they are predatory but as adults also eat pollen and nectar. Larvae consume aphids, caterpillars, and eggs of other herbivorous pests. Adult Soldier beetles are commonly seen on flowers, where they munch on pollen and nectar as well as other insects. Chauliognathus pensylvanicus (pictured) is particularly common in Wisconsin on yellow flowers in autumn, and contributes to the pollination of goldenrod.
**Flower Flies**

*family Syrphidae*

Like bees, flies are frequent visitors to flowers. Some species mimic the coloration of bees or wasps in an attempt to confuse predators. Flower flies in particular are often mistaken for bees. Several features distinguish a bee from a flower fly. Flies have two wosps while bees have four, and flower flies have short, stout antennae while bees have long, threadlike antennae. Additionally, flies have no pollen-carrying structures.

Although flower flies are generally less efficient at transporting pollen than bees, their sheer abundance on flowers makes them important pollinators. In northern regions or mountainous areas where flowering periods are short, temperatures are colder, and conditions are less favorable for bees, flies can be particularly important pollinators.

Unlike bees, Flower flies do not construct nests or provide for their offspring. Instead, they lay their eggs on or close to a supply of food, which varies among species. Many species of Flower flies lay their eggs on plants, and these develop into larvae that are voracious predators of other insects such as aphids. Other species lay their eggs in debris or rotting logs, which their larvae will later consume. Flower flies are highly beneficial in agricultural ecosystems, because as larvae they are predators or decomposers, and as adults they are pollinators.

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### November 2011

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<th>Sunday</th>
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<td><strong>Veteran’s Day</strong></td>
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<td><strong>Thanksgiving Day</strong></td>
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- **November 2011**

- **Daylight Saving Time Ends**
- **Peak Mallard and Scaup Fall Migration**
- **Election Day**
- **Full (Beaver) Moon**
- **Veteran’s Day**
- **Thanksgiving Day**
### Cuckoo Bees

**subfamily Nomadinae**

Roughly 20% of all bee species in North America neither build a nest nor gather food for their offspring. Instead, they rely on the work of other bees. These nest parasites, or Cuckoo bees, lay their eggs in the nests of other bee species.

Cuckoo bees locate their hosts via smell, and enter the nest when the host bee female is not present. In some species the Cuckoo female will kill the host egg and replace it with an egg of her own. However, most species of Cuckoo bees simply lay eggs in host cells, often hiding the egg in the cell wall. The larvae of these Cuckoo bees often develop quicker than their host’s larvae, and are equipped with sharp mandibles. As soon as a Cuckoo bee larva hatches, it quickly dispatches the host bee’s eggs or larva, and then feeds on the food intended for the host larva.

Cuckoo bees are found in several bee families. While they vary greatly in color, shape, and size, all Cuckoo bees have several features in common. Females all lack pollen-carrying structures (scopa), and all have a thick cuticle to help them withstand attack from their hosts. Cuckoo bees also have reduced hairiness, giving them a more wasp-like appearance. Although they transport less pollen than other bees because they do not actively collect it, Cuckoo bees are a part of any healthy plant-pollinator web.

Cuckoo bees are a significant part of the bee population, and their role in pollination is crucial to the health of many plant species.

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#### December 2011

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<tbody>
<tr>
<td><strong>1</strong></td>
<td>Sunrise: 7:09 AM</td>
<td>Sunset: 4:24 PM</td>
<td>Freeze line reaches the Wisconsin/Illinois border</td>
<td>White-tailed deer feeding on buckwheat</td>
<td><strong>2</strong></td>
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<td><strong>4</strong></td>
<td>Look for hoover prints and tail tracks in the snow</td>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
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<td><strong>10</strong></td>
<td><strong>11</strong></td>
<td><strong>12</strong></td>
<td>Christmas Bird Count</td>
<td>Dec. 14-Jan.5</td>
<td><strong>13</strong></td>
<td><strong>14</strong></td>
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<td><strong>15</strong></td>
<td><strong>16</strong></td>
<td><strong>17</strong></td>
<td>Look for mink slides along creeks and waterways</td>
<td><strong>18</strong></td>
<td><strong>19</strong></td>
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<td><strong>21</strong></td>
<td><strong>22</strong></td>
<td><strong>23</strong></td>
<td>Winter Solstice: First day of Winter</td>
<td>Look for snow flies (springtails) on the snow near dead vegetation</td>
<td><strong>24</strong></td>
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<td><strong>26</strong></td>
<td><strong>27</strong></td>
<td><strong>28</strong></td>
<td>Endangered Species Act passed (1973)</td>
<td>White-tailed deer tracks begin to snow</td>
<td><strong>30</strong></td>
<td><strong>31</strong></td>
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**Cuckoo bee**

**M. J. Hatfield**

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*Photos: Cedar Waxwing, Jack Bartholmai; below: White-tailed deer, Jeffrey J. Strobel*
Landowner assistance available with the U.S. Fish and Wildlife Service (USFWS)

The Partners for Fish and Wildlife Program assists private landowners in restoring wetlands, grasslands, oak savannas, pine and oak barrens, streams, and endangered species habitat. Financial and/or technical assistance is offered to private landowners through voluntary cooperative agreements. Under these cooperative agreements, landowners agree to maintain the restored lands for the life of the agreement (10-year minimum). Landowners also retain full control of their land.

For more information on the Partners for Fish and Wildlife Program, visit www.fws.gov/partners

The National Wildlife Refuge System, managed by the U.S. Fish and Wildlife Service, is the only system of federal lands dedicated entirely to wildlife. The Refuge System consists of 556 refuges, covering 97 million acres. These protected lands provide habitat for more than 200 species of fish and nearly 500 other animal species. Among the hundreds of wild species that call wildlife refuges home are 250 threatened or endangered plants and animals. More than 39 million people visit the wildlife refuges each year.

For more information about the U.S. Fish and Wildlife Service and the National Refuge System, visit www.fws.gov