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# Newsletter/Bulletin

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# CSEB Newsletter / Bulletin SCBE

VOLUME 63, NUMBER 4, 2006

CSEB Website <http://www.cseb-scbe.org>

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Date of Issue - **January 2007**

*Cover Photo:* An American Marten trail being examined by Karen Brown, of Golder Associates during winter track survey, in the Fort McMurray area of Alberta.

*Submitted by* Julia Burger, Golder Associates

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**CSEB NEWSLETTER 2006**

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The Canadian Society of Environmental Biologists Newsletter is a quarterly publication. The Newsletter keeps members informed of the Society's activities and updates members on the current affairs and advances in the field of environmental biology. This publication draws together the widely diverse group of Canadian environmental biologists through a national exchange of ideas. Members are invited to contribute papers, photos or announcements that are of a national biological and environmental interest. Letters to the editor are welcome. This is a volunteer non-profit organization and we rely on your participation to make the newsletter a productive forum for ideas and discussion.

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**LE BULLETIN de la SCBE 2006**

Vol. 63, Numbre 4 L'Hiver 2006

Le Bulletin de la SCBE est une publication trimestriel de la Société Canadienne des Biologistes de l'Environnement. Le Bulletin informe les membres des activité de la Société sur événements courant ainsi que les progrès qui font en sciences de l'environnement. Par un échange d'idées au niveau national, cette publication intéresse un groupe très diversifié d'environnementalistes Canadien. Les membres sont invités a contribuer des articles, photos (noir et blanc) ou des messages qui sont d'intérêt nationale en sciences biologiques et environnementales. Les lettres à l'éditeur sont bienvenues.

**Tout la correspondance d'affaires, y compris les abonnements, les changements d'adresse, les exemplaires retournés et les formulaires:** CSEB National Office, P.O.Box 962, Station F, Toronto, ON, M4Y 2N9. **Les lettres à l'éditeur:** Gary Ash, Editor, courriel: [gash@golder.com](mailto:gash@golder.com)

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**The Canadian Society of Environmental Biologists****CSEB OBJECTIVES**

The Canadian Society of Environmental Biologists (CSEB) is a national non-profit organization. Its primary objectives are:

- to further the conservation of Canadian natural resources.
- to ensure the prudent management of these resources so as to minimize environmental effects.
- to maintain high professional standards in education, research and management related to natural resources and the environment.

**OBJECTIFS de la SOCIÉTÉ**

La Société Canadienne des Biologistes de l'Environnement (SCBE) est une organisation nationale sans but lucratif. Ses objectifs premiers sont:

- de conserve les ressources naturelles candiennes.
- d'assurer l'aménagement rationnel de ces ressources tout en minimisant les effets sur l'environnement.
- de maintenir des normes professionnels élevés en enseignement, recherche, et aménagement en relation avec la notion de durabilité des ressources naturelles et de l'environnement, et cela pour le bénéfice de la communauté.

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## NATIONAL

## President's Report

## President's Message

CSEB wrapped up 2006 with our AGM on Tuesday, December 5, 2006. Ten people attended the call, with most regions represented. A PowerPoint presentation was made available prior to the call and members can still access the presentation in PDF and PPT formats on the website in the meetings section. Of particular interest, Gary Ash, long time CSEB member and current Membership Secretary and acting Newsletter Editor, was confirmed as an honorary member. Congratulations, and thanks for all your hard work, Gary!

We are already looking towards organizing our 2007 conference and AGM. We are hoping to have the conference in Atlantic Canada, likely in Halifax. Anne Wilson, the Regional Director for the Territories, has already made encouraging contacts with respect to the possibility of holding our conference together with the Aquatic Toxicity Workshop in Halifax. We'll keep you posted as more information becomes available. If you are interested in helping out at the conference (organizing, promoting) please let me know, we would definitely appreciate the help.

In 2007, the CSEB has moved to online renewal of memberships and several members have already used the new system. I encourage you to visit the website and renew your membership using PayPal.

Happy New Year and I wish you all the best in 2007!

Shawn Martin, President (2006-2007)  
Canadian Society of Environmental Biologists.



"Let's get this straight: either you talk, or we send you to the surface in a polystyrene overcoat."

## Minutes of the 2006 Annual General Meeting

Conference Call, December 5, 2006

## Meeting called to order by the President at 12:00 EST

Shawn Martin welcomed everyone to the meeting. The attendees introduced themselves.

Attending were:

Shawn Martin, President

Pat Ryan, Past President

Brian Free, 1st VP

Jackie Spry, Secretary/Treasurer

Joseph Hnatiuk, SK Director (Regrets: Jeff Hovedebo, SK Director)

Jim Armstrong, BC

Anne Wilson, Territories Director

Gary Ash, Membership Chair; Acting Newsletter Editor

Robert Stedwill, SK

The minutes of the 2005 AGM held in Edmonton, AB were read. The date of the Toronto meeting was corrected to 2004. A motion to accept as corrected was made by J. Hnatiuk; Seconded by A. Wilson. Motion carried.

## Financial Report:

Jackie Spry presented the 2006 financial report for the first three quarters of 2006, which was approved at the Board of Directors meeting. Brian Free will follow up on the 2005 conference proceeds. Chapter rebates are given to any chapter that holds one meeting/year and sends minutes of the meeting to the CSEB President. Rebates are \$10/member for Regular or Associate members and \$5 per student member.

A motion was made to reinvest the GIC maturing in January 2007 (P. Ryan/J. Hnatiuk). This was carried. The yearend financial report will be circulated in January 2007. It was moved by B. Free that the financial report be accepted; Seconded by J. Hnatiuk Motion Carried. Jackie Spry also presented the budget for 2007, which was corrected to reflect chapter rebates (\$500).

This will still leave a balanced budget for the new year. A motion was made by R. Stedwill to accept the budget as corrected; Seconded by J. Hnatiuk. Motion carried.

## Membership Report:

Gary Ash presented the membership report. There has been a slight increase in membership this year, with a total of 231 members to October 31. Renewals and new members can sign up online in 2007 (<http://www.cseb-scbe.org>.)

Competition from other professional groups is affecting membership. It was decided a few years ago that a professional designation from CSEB was not something the

organisation wanted. It was decided that another membership drive was not needed, but the chapters should try to be more active, which will encourage new members to join and old members to renew. A motion was made by J. Spry to accept the membership report: Seconded by R. Stedwill. Motion carried.

### Newsletter Report:

Gary Ash presented the newsletter report. He reported that Sean Sharpe has resigned after seven years as editor. Information is needed for the next newsletter and Gary encouraged everyone to submit articles. The spring issue will be put together by Tom Northcote (longtime BC member) and will deal with limnology. A motion was made by J. Armstrong to accept his report; Seconded by A. Wilson. Motion carried.

### Regional Reports:

**Atlantic-** Presented by Pat Ryan: No meetings were held in the region.

**Saskatchewan-** Presented by Robert Stedwill: This chapter is active and is working on oil sands issues as they affect SK. Would like to see a DVD made to help promote CSEB. There may be members who might be able to assist with this. Robert Stedwill reviewed the recent activities, including their AGM held in Regina. He introduced the idea of preparing position papers, particularly on the effects of the oilsands projects.

Conferences can also be used as a forum for this type of discussion. It was decided to try and incorporate this issue into the 2007 conference.

**Territories-** Presented by Anne Wilson: Anne reported that she will be contacting old members and different groups in the Territories to increase activity. Would also like a promo DVD. Gary Ash to send list of Territories members.

**Alberta-** Presented by Brian Free: The Alberta Chapter has not been active over the past year. Brian, Gary and Sheri Dalton will complete the 2005 conference finances, and forward the profits of the conference to the CSEB National Office.

No other regional reports were available. A motion was made by R. Stedwill to accept the regional reports; Seconded by J. Spry. Motion carried.

### 2006 and 2007 Conferences:

The 2006 conference was cancelled due to lack of organisation. The 2007 conference is tentatively scheduled for early October in Halifax, N.S. There is a possibility of linking with the Aquatic Toxicity Conference scheduled for Sept 30 – Oct. 3, 2007. The theme would be related to water issues and would include the oilsands.

### Website Update:

Shawn Martin described the website updates that he has undertaken. Directors can now be contacted directly through the website with CSEB email addresses. Shawn has designed a new website which has improved communication with the membership.

### Honorary Members:

A motion was made by B. Free to accept the nomination of Gary Ash as an Honorary Life member; Seconded by J. Spry.

The motion was carried (with one abstention). A motion was also made by J. Armstrong to re-affirm previous honorary members.; Seconded by J. Spry. This was carried. Their names will be published in the newsletter as requested by P. Ryan.

### Other:

The meeting Powerpoint presentation will continue to be available on the web and the minutes will be published in the next newsletter.

### Next Board Meeting:

The next board meeting will be a conference call on February 5, 2007 (12 noon EST)

A motion for meeting adjournment was made by J. Spry at 14:25; Seconded by A. Wilson. Meeting adjourned.

## Atlantic News

The Atlantic Region of CSEB has offered to organize the next annual conference and general meeting. We're presently setting up a conference organizing committee and are looking for:

- 1) Volunteers in the four Atlantic provinces to help organize and run the conference
- 2) Ideas for the conference theme. This would be a 'mainland' conference but help from our Newfoundland members is welcome—we'll get you next time

The conference will tentatively be held in Fredericton, Moncton, or Nova Scotia (for variety, we'd like to have a venue other than Halifax, where our successful 2002 conference was held).

We've considered, however, piggybacking on the Aquatic Toxicity Workshop to be held in Halifax this fall and which a number of our members from across the country will be attending, but that remains to be decided.

One theme we've come up with is "Habitat. Its Importance and Challenges for Biologists" but we're open to any good topic which has relevance to our membership.

Please email or phone Pat Stewart, Atlantic Regional Director, at (902) 798-4022 or [enviroco@ns.sympatico.ca](mailto:enviroco@ns.sympatico.ca).

*Cheers*

Patrick



## Saskatchewan News

### Chapter News

Submitted by: Joseph Hnatiuk, National CSEB Board member

The CSEB, SK Chapter has had one executive meeting since our October, 2006 AGM. At that meeting it was decided that the majority of our efforts for the coming year will be to monitor the developments regarding the oil sands developments in both Alberta and Saskatchewan. In that regard we will be looking at getting whatever technical information together in the event that we will have an opportunity to get involved in public forums or technical submissions.

The uranium dialogue has been put on hold since there are many other groups currently gathering information. We intend to monitor these developments closely.

### Other Saskatchewan News

#### Hunters and Anglers Contribute to the Economy

Of the \$1.4 billion spent annually by tourists in Saskatchewan, approximately \$307 million is spent by people engaged in hunting or fishing activities, including money spent on outfitting services. Hunters and anglers who live in Saskatchewan spent \$176 million of that, or about \$100 every time they went hunting or fishing.

"Saskatchewan is blessed with a healthy environment and bountiful natural resources that make life better for Saskatchewan families by creating jobs and economic growth," Environment Minister John Nilson said. "Much of the spending from hunting and fishing supports our rural and northern communities and businesses, such as restaurants, hotels and gas stations."

People spent the most money on angling. In 2005, approximately 120,000 Saskatchewan residents over the age of 16 bought a fishing licence. Another 21,000 Canadians and 19,000 people from out of the country came to Saskatchewan to fish. All together they spent a total of \$200 million. The province's commercial fishery was worth another \$5 million. In 2005, 70,000 hunters, 49,000 of whom were Saskatchewan residents, spent \$107 million.

"In addition to the substantial contribution to the province's economy, hunting and fishing have deep social and cultural importance in Saskatchewan," Nilson said. "It is important to ensure that these activities take place in a way that will allow them to continue to benefit everyone in Saskatchewan and help build a better future right here for our young people."

The review, commissioned by Saskatchewan Environment, is the most extensive study to date of hunting and fishing expenditures in the province. It will form one piece of a body of environmental, social and economic knowledge that will be used to help make decisions about conservation and resource use. The review is available at [www.se.gov.sk.ca/fishwild/](http://www.se.gov.sk.ca/fishwild/). For More Information, contact: Art Jones, Environment - Regina  
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### Positive Piping Plover Count

Submitted by Art Jones, Sask. Environment  
November 6, 2006

Last June 159 people, armed with binoculars and notebooks, spent nearly two weeks checking the shorelines of 294 Saskatchewan waterbodies. They were taking part in the 2006 International Breeding Piping Plover Census. The census occurs every five years, with the last one taking place in 2001. The piping plover was listed as an endangered species in 1985.

The June 2006 census produced some good news for the piping plover population in Saskatchewan. "We were pleased with the results of the census," says Paule Hjertaas, Saskatchewan Coordinator, International Piping Plover Census.

"We found 1435 piping plovers. This is the highest number since the survey began in 1991.

Saskatchewan is home to 30 per cent of the 4700 piping plovers that live in the prairies and Great Plains, so knowing the Saskatchewan population is critical to the international effort to protect this endangered species. Our goal is to have a stable population of close to 2300 birds in Canada. The number of birds we found this year may indicate that our conservation efforts are working."

The piping plover is a small, lakeshore bird that resembles the common killdeer but has one neckband instead of two. The migratory plovers arrive in Saskatchewan in April or May from their coastal wintering grounds in the southern United States and Mexico. The males scrape a shallow nest-site in the sand or gravel above the normal high-water mark of saline lakes and on the sandy shores of larger prairie lakes. They usually lay four eggs. Both adults care for the eggs and the young, though the young are able to find their own food within hours of hatching.

"The most important factors affecting the piping plover are the loss of habitat due to human use of beaches and the disturbance of their nesting sites, especially those next to agriculture fields" says Frances Bennett, Saskatchewan Environment zoologist. "People who find plovers nesting on the shore of saline ponds on their land can help the birds by reducing the amount of time spent operating large equipment and walking around the areas. Cattle and horses can trample nests and disturb plover habitat, so it is also helpful if producers can control their access. Dogs and cats prey on the eggs and young, as do gulls and raccoons that can be attracted to beach areas by the things people leave behind, such as food and garbage. Piping plovers have a relatively short breeding season, from late May until early June, so if we can limit our activities in their nesting areas we can help their numbers increase."

Changes in water levels due to recreational or building activities, dams, seasonal high water and storms also threaten nesting sites. In 2005, rising water on Lake Diefenbaker led to an emergency rescue of plover eggs from the shoreline. "We were able to release 110 young back into the wild on Chaplin Lake," says Corie White, Watershed Ecologist, Saskatchewan Watershed Authority. "Each bird was banded with a unique colour combination that allows us to identify it if it was seen again. The June census showed that 18 of the young that we released returned.



## Turkey Vultures; Saskatchewan's Airborne "Cleaner-Uppers"

Submitted by Art Jones, Sask. Environment  
August 2, 2006

They are among the ugliest and dirtiest birds you can ever encounter! If you get too close to one of these it may drool or even vomit on you or, if frightened enough, it will hiss, making a sound like a steam engine. The adults have an amazing sense of smell that helps them find food. And, they stink! Not surprising since, for them, a gourmet meal is anything that has been dead for a couple of days, including skunks.

They are turkey vultures and they are among the largest birds found in Canada. Their wingspan is close to two metres and they can weigh as much as two kilograms. They are brownish black, and fly with large outstretched wings. Their naked, red heads are also visible in flight. "They are darned ugly but once you get to know them they are fascinating," says Dr. Stuart Houston, an authority on the birds of central North America.

Dr. Houston has been studying turkey vultures for years and is part of Saskatchewan's turkey vulture nestling wing-tagging program, the only one in North America. Leg bands are not used because the bird's droppings can collect on them and eventually build up to a point where the leg will become damaged. Wing-tags are large green tags with a big white letter and two large white numbers on each tag. Someone using a pair of binoculars can read them on the wing of a flying turkey vulture. Fourteen young birds were tagged in 2003, 30 in 2004 and 43 in 2005.

"The number of turkey vultures in Saskatchewan has been increasing over the past few years, partly the result of the changing prairie agricultural landscape," says Houston. "Turkey vultures normally lay one or two eggs on the ground under dense bush, in hollow logs or in potholes and caves in cliffs or along the banks of lakes and rivers. But in recent years they have moved into a new nesting habitat, deserted, windowless houses, barns and granaries in rural areas. This has extended their range north into Saskatchewan's parkland areas."

Turkey vultures are very cautious and secretive at nest sites. They will find a nest location that is away from people and often surrounded by trees. They will also examine the area very carefully before returning to the nest each day. In the morning turkey vultures will perch to sun themselves with their wings extended and wait for the air to warm so they can soar on the rising thermal air currents. The birds can fly for long periods without flapping their wings and if they cannot find a thermal air current they will create lift by "rocking" their wings back and forth. All the time they are soaring they are searching for the smell of decay that will lead them to food. "They have also found an easily available food supply in the animals that have been killed by vehicles," says Frances Bennett, Saskatchewan Environment zoologist.

"Turkey vultures, like other scavengers, play an important role in keeping our environment healthy and clean. They willingly consume a wide range of carrion including deer, birds, and other dead animals, making them great "cleaner-uppers".

Turkey vultures also have important adaptations for feeding on dead animals: their "iron-clad" stomachs can kill most types of harmful bacteria found in decaying foods and because dead animals can be very messy, they do not have feathers on their heads." This is a valuable adaptation for avoiding a "bad feather day".

Turkey vultures are migratory, spending their winters as far south as Colombia and Venezuela. Every fall over one million of these birds fly over Xalapa, a city in the Mexican state of Veracruz. One turkey vulture, tagged west of Leoville, Saskatchewan, wintered in Costa Rica, another one, tagged near Nora, Saskatchewan, was spotted in Maracaibo, Venezuela!

"We begin tagging young turkey vultures in early August," says Dr. Houston. "We rely on local people to inform us where turkey vultures are nesting in the province. Once we find a nest, we tag the young birds before they can fly away!"

I encourage people to check every deserted farm building for vulture nests, but please wait to do so until after July 1, when the young have hatched and parents are unlikely to desert them. Be extremely careful, as some buildings are not safe to enter. If you determine that a building is safe, look in the basement, attic and clothes-closets, smell for rotting food and listen for a loud "steam-engine" hiss. Some of the owners of these buildings are actually encouraging the vultures to stay on by making enough repairs to keep the buildings standing for a long time to come."

Dr. Houston says if you spot a turkey vulture nest or see a bird with a wing-tag, jot down the location, date and number of the tag and call **306-244-0742 before 9 p.m.** or email the information to [houstons@duke.usask.ca](mailto:houstons@duke.usask.ca)



## Alberta News

### Alberta Gets New Premier and New Ministers

*Edmonton...* New Alberta Premier Ed Stelmach has announced his Cabinet team with a pledge that ministers will listen to, and meet, Albertans' priorities. "I expect each Cabinet member to be out from behind their desks, listening to what is truly important for their ministries," said Stelmach. "Our goal is to do what is right for our province and for all Albertans."

Premier Stelmach's cabinet is reduced in size from 24 to 18 ministers, reflecting what he heard from Albertans during his leadership campaign. "The people of this province told me they wanted more effective government, not more of it," he said.

The two Ministers most relevant to CSEB are Rob Renner (Medicine Hat), who is Minister of Environment as well as Deputy Government House Leader, and Ted Morton (Foothills-Rocky View), Minister of Sustainable Resource Development.

### Cold Enough For Ya?

*Submitted By LisaMaria Rusnac Howie,  
Newsletter Contributor*

### Alberta may be too cold for people, but not for mountain pine beetles

*Edmonton...* The frigid temperatures being recorded across Alberta aren't enough to kill mountain pine beetles according to a provincial forest official. "The current cold spell might, at best, have a marginal impact on mountain pine beetle populations," said Dan Lux, the provincial mountain pine beetle coordinator with Alberta Sustainable Resource Development. "For the weather to have a significant impact, we need -40°C, not including the wind chill, for about 10 days in a row."

Mountain pine beetles produce a natural anti-freeze to protect them from the cold weather. The recent heavy snowfall is also helping the beetles keep warm. Snow at the base of a tree acts as an insulator. It protects that part of the tree as well as the beetles that are overwintering there.

Alberta has had record-breaking low temperatures in the past week, including -41°C with the wind chill in Edmonton and Calgary. The mountain pine beetle-infested area has had five straight days of -25°C or colder, including a one-day low of -46°C.

### Mountain pine beetle numbers climbing in Alberta

*Edmonton...* An unprecedented massive flight of mountain pine beetles into northwestern Alberta late last July has resulted in a significantly higher number of mountain pine beetle-infested trees. The most recent estimate suggests the number of infested trees in the province is between 800,000 and 1.5 million. "We are stepping up

our actions to include harvesting infested and susceptible stands of pine trees, in addition to the cutting and burning we have been doing," said David Coutts, Minister of Sustainable Resource Development. "We will continue to work proactively with all stakeholders to do what is best for Alberta's forests."

The government has a Mountain Pine Beetle Action Plan which describes the methods to be used at different levels of infestation in different areas. Until now, infestations had been relatively low and have been located primarily in parks, protected areas and on private lands. To control the mountain pine beetle population in those locations, the government used selective cutting and burning of individual infested trees. Much of this new infestation – located primarily north of Jasper National Park to Peace River, between the B.C. border and Fox Creek – is found on land used by forest companies to harvest timber. On those lands, forest companies will harvest infested pine stands.

They have also been asked to change their harvesting plans so they can focus on areas that are susceptible to these beetles. This is the first time that mountain pine beetles have been found in these areas. Smaller infestations have been detected in and around the mountain passes in southern Alberta, with no significant increase in numbers.

The government will continue to selectively cut and burn individual infested trees where appropriate. Infested trees found on private or municipal land will continue to be treated by municipalities with assistance from the province. Current estimates are based on survey results in a representative sample area that are then applied to the larger known infested area. Surveys will continue.

### Mountain Pine Beetle Facts (November 9, 2006)

#### The Threat

- Mountain pine beetle-infested trees have been recently detected in the Grande Prairie, Peace River, Berwyn, Fairview and Fox Creek areas
- Beetles have never been this far north in Alberta or this far east from the B.C. border
- Between 2002 and 2004, there was an average of 1,000 infested trees per year in Alberta
- In 2005 there were 19,000 infested trees
- The most recent estimate for 2006 is between 800,000 and 1.5 million infested trees, primarily in a large area north of Jasper National Park to Peace River, between the B.C. border and Fox Creek
- 1.5 million trees represents enough lumber to build 9500 houses that are 1700 square feet in size or enough pulp to produce 16.6 million one-pound books
- The estimate is based on an extrapolation of preliminary data from surveys, which are not yet completed. The numbers will change based on additional



survey results

- All pine species are susceptible to mountain pine beetle. These beetles prefer pine trees between 80 and 120 years old
- In southern Alberta, the number of infested trees has remained relatively stable. Our most recent estimate suggests there are about 3,500 infested trees along the eastern slopes, concentrated primarily near the mountain passes. We will use cutting and burning to control those populations
- Although alarming, the wave of infestation in Alberta is still minimal compared to infestation in B.C. Currently in B.C., there are 8.7 million hectares of infested pine forests, and the beetle population is not expected to peak for two more years. (One hectare is roughly the equivalent of two football fields.)

### Strategies

- Our Action Plan describes the appropriate strategies at different levels of infestation
- Government is continuing to proactively survey pine stands. We are not waiting for the trees to turn red to find infested trees. Trees that turn red in late June signal that the tree is dead or dying
- There are currently several hundred people – permanent, wage and contract employees – working on this for Sustainable Resource Development

### Beetle Strategy

- Level 1 response is cutting and burning individual infested trees and is used wherever possible
- Level 2 response is harvesting stands with infested trees. Level 2 is used when trees are found in the working forest (as opposed to parks and protected areas) and are accessible to companies to harvest

### Pine Strategy

- Reducing the risk means reducing the amount of susceptible stands across the landscape through harvesting and/or prescribed burns
- Experts say that long-term management should focus on pine trees, not the mountain pine beetle
- Industry has been asked to change their plans to focus on harvesting their most vulnerable stands now
- Some forest companies are already working on their pine-focused harvesting plans

### Annual Allowable Cut

- Alberta Sustainable Resource Development has not approved any increases in forest companies' annual allowable cuts at this time
- However, in accordance with our Pine Strategy, forestry

companies are submitting new pine-focused harvesting plans, so the annual allowable cuts may change over the next few months. All short-term increases in annual allowable cuts will, at some point, be followed by reductions, in order to maintain sustainable forest management in the province

### MPB Budget

- In 2005/06, we spent \$10 million in our control programs (including Spread Control Program in B.C.)
- We're budgeting a little more than \$22 million in 2006/07

### Working With Partners

- We're working closely with all our partners (including the B.C. government, federal government, industry, First Nations, environmental groups, municipalities and researchers) to fight the spread of the mountain pine beetle
- There is a grant program in place to support municipalities to complete mountain pine beetle survey and control work on private lands
- Last winter we assisted three municipalities in the south. (M.D.s of Bighorn and Crowsnest Pass, and the Town of Canmore)
- Mountain Pine Beetle Advisory Committee: Last spring, the minister appointed a board

### Frequently Asked Questions

The mountain pine beetle is a small, black beetle about the size of a grain of rice. Over the past few years, mountain pine beetles have been expanding east into Alberta from British Columbia.

#### What type of trees may be attacked?

- Mountain pine beetles attack and kill pine trees, usually mature ones aged 80 to 120 years old. All species of pine including lodgepole, jack pine, Scots pine and ponderosa pine are vulnerable. They do not attack aspen, spruce or fir trees. Pine can be distinguished from other trees by their long needles attached to branches in groups of two to five

#### When do beetles attack trees and how long do they stay in trees?

- Beetles fly in search of new trees in July and August. Once a beetle has found a suitable tree, it will live in that tree for the remainder of its life and lay eggs. The new generation of beetles will not emerge from the tree for at least one year

#### If a tree is attacked, will it die?

- Unfortunately, yes. Trees successfully attacked by mountain pine beetles usually die within one year

**How can you tell if a tree has been attacked?**

- Look for creamy globs that look like crystallized honey, called pitch tubes, and sawdust at the base of the tree and in the bark's crevices

**What should Albertans do if they see infested trees?**

- If you suspect a tree has been attacked by mountain pine beetle, call the beetle hotline at **310-BUGS (2847)**. An expert will follow up

**Are beetles a threat to public health?**

- No. The mountain pine beetle is harmless to people

**What about pine Christmas trees?**

- People do not have to worry about pine Christmas trees being infested as they are too small. If in doubt, call **310-BUGS (2847)**

**Where can I get more information or view the Mountain Pine Beetle Action Plan?**

- Visit Alberta's Sustainable Resource Development web site at [www.srd.gov.ab.ca/forests/health/mpb.html](http://www.srd.gov.ab.ca/forests/health/mpb.html)

**Media enquiries may be directed to:**

**Michel Proulx**  
Communications  
Alberta Sustainable Resource Development  
(780) 415-9547 or 233-9764  
[Michel.Proulx@gov.ab.ca](mailto:Michel.Proulx@gov.ab.ca)

## Territories News

Submitted by Anne Wilson, Territories Director

As I write these notes, it is the winter equinox, when we reach the shortest day – or longest night – of the year. This is a non-issue for many of the northern communities, where the sun does not reappear until sometime in February. In Yellowknife we enjoy almost 5 hours of daylight today, payback for the almost continuous light in June!

**Industrial Activity**

There continues to be a high level of activity in the NWT and Nunavut, with ongoing development in the mining sector.

Two Nunavut gold mines are proceeding to the regulatory phase for permitting (Cumberland Resources' Meadowbank Property and Miramar's Doris North Project) while the Wolfden High Lake project has been submitted to the Nunavut Impact Review Board for environmental assessment.

In the NWT, projects undergoing environmental assessment include a gold mine, uranium exploration in the Thelon River

watershed, oil and gas geophysical work, and bulk sampling of a lead-zinc deposit. The diamond mines are all in the regulatory phase, and continue to do extensive monitoring on a wide range of environmental parameters, as well as submitting numerous reports on operational aspects of environmental management – there is no shortage of reading material!

Geoscience Forums were held in both Whitehorse and Yellowknife this November, with strong attendance at both venues.

The Mackenzie Gas Project hearings are proceeding, and run until March. The successful court challenge from the northern Alberta Dene Tha' First Nation may affect the hearing schedule for those sections of the project that may touch on their traditional areas.

**Municipal**

The Canada-wide Strategy for the Management of Municipal Wastewater Effluent is in the consultation stage, with the first meetings held in Yellowknife Nov. 24<sup>th</sup>, 2006, timed to coincide with the Northern Territories Water and Waste Association annual meeting. There was good participation, and much discussion on what was needed to get ready in the North to implement the strategy. Information is available on the website [http://www.ccme.ca/assets/pdf/mwwe\\_consultation\\_pkg\\_e.pdf](http://www.ccme.ca/assets/pdf/mwwe_consultation_pkg_e.pdf).

It is expected that there will be a large effort over the next five years to first compile available information on northern systems, then identify and conduct needed research on ways to improve treatment.

The other part of the approach will involve risk analysis for various sizes of systems and types of receiving environments. Last July Environment Canada initiated a pilot project on two Yellowknife-area sewage lagoons to assess whether effluent quality can be improved through circulation and/or aeration of the lagoon.



*Edzo Cell - Jul 28 2006*

Lagoon systems rely on settling and retention while natural degradation processes work, and by mixing and aerating the lagoons, these processes can be enhanced, and open water maintained during the winter. Initial results from the first

few months of operation show variable results for BOD<sub>5</sub>, fecal coliforms and ammonia, and a notable reduction in odor has been observed. It will be interesting to see what the winter numbers look like.



Rae Mill - Jul 18 2006

## Wildlife

Caribou are in the news currently, with concerns raised following release of the latest census numbers. The latest survey of the breeding females on the Bathurst caribou herd calving grounds shows the herd continued to decline at about five percent per year over the past decade.

In 1986 the calving ground survey estimated 203,000 breeding females and a herd size of approximately 472,000. A 2003 survey showed these numbers had fallen to approximately 80,800 breeding females and a total herd size of 186,000.

June 2006 aerial surveys conducted by the Department of Environment and Natural Resources (GNWT) shows this decline has continued. This survey estimated 55,600 breeding females and a herd size of 128,000. The harvest rights of aboriginal harvesters are set in the land claims agreements, and take precedence. Harvest reductions target resident hunters and outfitters first, and a proposed 70% reduction in caribou tags for the industry puts the livelihood of barren ground caribou outfitters at risk.

The Northwest Territories (NWT) Caribou Summit will be held in Inuvik on January 23-25, 2007. Representatives from the NWT, Nunavut, Yukon, as well as, northern Alberta and Saskatchewan are being invited to attend the workshop. Representatives from wildlife management boards and communities are also being invited to attend. More information is available through the GNWT web site at <http://www.enr.gov.nt.ca>.

I'll close these notes with very best wishes to all for a happy, safe and interesting New Year!



## Conferences / Meetings

### *Understanding and Enabling Adaptive Management in Natural Resource Management, Victoria, B.C.* February 12, 2007

The Forest Practices Branch is pleased to announce a 1-day workshop with the following objectives: Clarify what adaptive management (AM) is (and what it isn't); Learn when AM is most useful and when it may not be appropriate; Understand the basic process and key elements of AM; Discover common enabling and inhibiting factors Convey some examples (Who is doing AM?; Where?; Why?; and How?);

Share first-hand experiences from selected AM practitioners; Explore opportunities for participants to apply AM in their work. Contact: Kandy Schroder, Selkirk Management Services, (250) 367-0136 or [kschroder@selkirk-management.com](mailto:kschroder@selkirk-management.com).

### *Understanding and Enabling Adaptive Management in Natural Resource Management, Kamloops, B.C.* February 14, 2007

The Forest Practices Branch is pleased to announce a 1-day workshop with the following objectives: Clarify what adaptive management (AM) is (and what it isn't); Learn when AM is most useful and when it may not be appropriate; Understand the basic process and key elements of AM; Discover common enabling and inhibiting factors Convey some examples (Who is doing AM?; Where?; Why?; and How?); Share first-hand experiences from selected AM practitioners; Explore opportunities for participants to apply AM in their work. Contact: Kandy Schroder, Selkirk Management Services, (250) 367-0136 or [kschroder@selkirk-management.com](mailto:kschroder@selkirk-management.com).

### *Complex Stands Research and Management Conference, Smithers, B.C.* February 19-20, 2007

This two-day conference will focus on ecology and management of complex stands. Presentations will include approaches to complex stand management, stand dynamics and succession of complex stands, ecology and regeneration of mountain pine beetle attacked stands, growth prediction in complex structured stands, and more. Check [www.bvcentre.ca](http://www.bvcentre.ca) for information.

### *Society for Northwestern Vertebrate Biology (SNVB)*

February 21-24, 2007

Annual Meeting-Preparing for the Unpredictable: Conservation Needs in the 21st Century. Victoria, BC. For more information, visit: <http://www.snwvb.org/victoria-meeting1.html>

### *The Alberta Chapter of the Wildlife Society 2007 Conference*

March 18 – 21st, 2007

The Radisson Hotel and Conference Center  
Canmore, Alberta, Canada

Call For Papers and Posters:

Send abstract submittal form by Feb. 15, 2007 to:

**Anne Hubbs**

Alberta Fish and Wildlife Division  
4901-50<sup>th</sup> St., Athabasca, Alberta, Canada. T9S 1E2

Email: [Anne.Hubbs@gov.ab.ca](mailto:Anne.Hubbs@gov.ab.ca)

Phone: 780-675-8164; Fax: 780-675-4710.

Further information and registration forms can be downloaded from the website: [www.albertadirectory.com/actws](http://www.albertadirectory.com/actws)

### *"Solutions to Ecological Issues in the Oil Sands"* *Calgary, Alberta*

18, 19 April, 2007

2007 ASPB Conference & General Meeting



## Recent Publications

(Selected by Pat Stewart)

***Biogeography. An Ecological and Evolutionary Approach***  
C Barry Cox and Peter Moore (2005)

The latest edition of this highly successful and popular textbook has been completely revised and updated to include the latest developments in biogeography. It offers excellent insight into the multi-disciplinary nature of biogeography, providing the student with a sound historical base, up-to-date factual content and a clear explanation of current controversies.

Reviews: "May I congratulate [Cox and Moore] in once again, making a subject that requires of the student a certain breadth of experience and a willingness to embrace many disciplines, attractive appealing and accessible...this publication will continue to be the authoritative and highly acclaimed text for students of biogeography" Dr Malcolm Greenwood, Loughborough University, UK. Blackwell Publishing. Paperback, \$79.95 (Can)

***Animal Responses to Global Change in the North (Ecological Bulletin 47)***

A Hofgaard, JP Ball, K Danell and TV Callaghan (1999)

In general, the impacts of Global Change on animals has received less attention than the corresponding impacts on plants, vegetation and ecosystem functioning. This volume includes presentations and conclusions from the ARTERI workshop "Europe's cold regions: scenarios for animal responses to global change", held in Abisko, Sweden, in April 1998. The volume also includes presentations describing animal interactions between the cold areas of Europe and other parts of Europe and circumpolar north. Blackwell Publishing, Paperback, \$86.95 (Can).

***Ecology of Insects. Concepts and Applications***

Martin Speight (University of Oxford), Mark Hunter (University of Michigan) and Allan Watt (Centre for Ecology and Hydrology, Banchory Research Station) (2007)

Fully revised and updated to include new topical study areas, the second edition of the successful text *The Ecology of Insects* provides a balanced treatment of the theory and practice of pure and applied insect ecology. The book includes new topical areas of insect ecology and provides greater coverage of physiological, genetic, molecular, and ecosystem aspects of insect ecology. Concepts treated include the foundations of evolutionary ecology and population dynamics in ecosystem science as they are applied to topics such as climate change, conservation and biodiversity, epidemiology and pest management. The book has been fully updated and revised throughout; this new edition refers to primary literature and real world examples. Paperback. Blackwell Publishing, \$86.95 (Can.).

***Economics in Nature. Social Dilemmas, Mate Choice and Biological Markets***

Edited by Ronald Noë, Jan A. R. A. M. Van Hooff, and Peter Hammerstein (2006)

Studies of sexual selection, interspecific mutualism, and intraspecific cooperation show that individuals exchange commodities to their mutual benefit. The exchange values of commodities are a source

of conflict, and behavioral mechanisms such as partner choice and contest between competitors determines the composition of trading pairs or groups. These "biological markets" can be examined to gain a better understanding of the underlying principles of evolutionary ecology. In this volume, scientists from different disciplines combine insights from economics, evolutionary biology, and the social sciences to look at comparative aspects of economic behavior in humans and other animals.

Reviews: "This book is a candid portrait of current knowledge about trade among all kinds of organisms." Michael Mesterton-Gibbons, *Quarterly Review of Biology*. "There are some excellent chapters and an intriguing cast of interdisciplinary contributors... this is a good book..." Monique Borgerhoff Mulder, *American Journal of Human Biology*. Cambridge University Press, Paperback \$43.00 (Can).

***Phylogeny and Conservation***

Andrew Purvis, John L. Gittleman (2005)

And Thomas Brooks. Phylogeny is a potentially powerful tool for conserving biodiversity. This book explores how it can be used to tackle questions of great practical importance and urgency for conservation. Using case studies from many different taxa and regions of the world, the volume evaluates how useful phylogeny is in understanding the processes that have generated today's diversity and the processes that now threaten it. The urgency with which conservation decisions have to be made as well as the need for the best possible decisions make this volume of great value to researchers, practitioners and policy-makers.

Review: "This book should be examined by all concerned with conserving biodiversity." *Ecology*, Ross H. Crozier. Cambridge University Press, Paperback, \$120.00

***Biological Diversity and Function in Soils***

Richard Bardgett, Michael Usher, and David Hopkins (2006)

Although soil provides physical support for plants and contributes to a variety of important environmental functions, many questions about the ecological significance of its biological diversity, and how ecosystem function is affected, have never been asked. Recent technical developments, as well as new experimental and modelling approaches, have led to a renaissance in soil biodiversity research. The key areas are reflected in this new volume, which brings together many leading contributions on the role and importance of soil biota.

Reviews: "A foundation for the new generation.... The editors are to be commended on their effort.... The writing style throughout is comfortably readable.... The chapters remain focused on topics and they are concise and up-to-date.... The index reflects an effort that was well worth the time.... [It] should be accessible to most ecologists and graduate students." (*Ecology*, Sina M. Adl, Dalhousie University). "This is an important contribution to soil science. [It] has much to offer the beginning student as well as the specialist." (*Northeastern Naturalist*). "All important aspects of modern soil ecology are embraced, ranging from the molecular to the ecosystem level, from microbes to invertebrates and to plants. It offers a clear, often brilliant demonstration that the knowledge of soil biodiversity is the key for the sustainable management of terrestrial ecosystems." - J.-F. Ponge, *European Journal of Soil Science*. Cambridge University Press. Paperback, \$130.00 (Can).

## Play About Rachel Carson Inspires Sense of Wonder

### Review of the Play, A Sense of Wonder

May 2006

*Submitted by: Patrick Stewart, CSEB Atlantic Director*

A Sense of Wonder is a phenomenon in North America, but most of you may not have heard about it, in part because it's a one-woman show and there is only one woman, Kaiulani Lee, who 'can truly be' Rachel Carson on stage. Lee is a successful American actress (not Hawaiian as I at first guessed because of her intriguing given name) who wrote the play on the urgings of Carson's publisher. She's been performing A Sense of Wonder for a decade and is booked solid for another two years at least, largely in support of conservation organizations [my exposure was through a three-performance tour of Nova Scotia (Wolfville, Antigonish, Halifax) sponsored by the Nova Scotia Nature Trust].

Rachel Carson is best known today for her most famous book *Silent Spring*, which made her one of the figureheads of the modern environmental movement. In it, she described the state of growing awareness in the scientific community of the time, of the effects of man-made contaminants such as DDT on natural ecosystems. While the book is recommended reading for upcoming environmental scientists of all kinds, Carson's own interesting life and the story of her commitment to Nature usually isn't promoted.

Her earlier books, in which she popularized the study of the ocean and its coastal ecosystems—*Under the Sea Wind* (1941), *The Sea Around Us* (1950), and *At the Edge of the Sea* (1955)—all became best-sellers. *The Sea Around Us* won a US National Book award and was excerpted in all the major US magazines of the time. As a result, her voice was already widely accepted and known in North America, when she published *Silent Spring* in 1962.

All of these books still are powerful introductions to marine biology and oceanography and are 'must-reads' for anyone aspiring to marine biology, having a centering role much like Aldo Leopold's *Sand County Almanac* has for terrestrial biologists.



For those of us who didn't get beyond Carson's 'bios' from her various books, Kaiulani Lee's play as well as an introduction to the play presented by the Nature Trust, and a question period at the end, fills many of the gaps. The play is set in two long scenes late in Carson's Life, one as *Silent Spring* was going to press, and then shortly after publication, a few months later.

The first is set in Carson's summer home, a small seaside cottage in Maine. A simple stage setting with a wing-back chair and a few props, including the cardboard boxes she is packing with books and memorabilia, at the end of a summer stay there, which she feels may be her last. While occupied with her packing, and keeping track of her 11-year-old nephew who is exploring outside, and whom we never see, she reflects on her life, and how she came to this point. We learn that she had hoped to be a writer and hadn't much thought of biology as an option (in fact in those days it wasn't, in particular because jobs were few and it was uncommon for women to fill them) before discovering that biology could fulfill the love of Nature she had acquired growing up. After studying biology at the Pennsylvania College for Women, and graduate studies at Johns Hopkins University and at the Marine Biology Laboratory at Woods Hole, Massachusetts, she came to work for the US Fish and Wildlife Service on the eastern seaboard. Her skills as a writer were rekindled when she was asked to produce a popular presentation on some technical subject, leading eventually to production of *Under the Sea Wind* (Carson later became Chief Editor for the Fish and Wildlife Service).

We're shown a woman with an incredible sense of duty and obligation to the world, and to her family, and the play shows how Carson (who never married) took responsibility for her mother, using the stable income from her job with USFWS to support the family. Later, and quite late in Carson's life, when her sister died, she took responsibility for her young nephew as well. In an interesting sidelight, she willed that her publisher Paul Brooks, unbeknownst to him, to take on the guardianship of the boy, who was still a teenager when she died from cancer in 1964. He willingly did.

While her earlier books were labours of love, *Silent Spring* was a book she didn't want to write, particularly near the end of a life she knew would be cut short by cancer. She tried to interest other writers in the project, and only forged ahead when all of them declined. Nonetheless, she felt the book had to be written. In a quotation from a speech she gave around the time of the publication of *Silent Spring*, she states that... "I myself am convinced that there has never been a greater need than there is today for the reporter and interpreter of the natural world. Mankind has...sought to insulate himself, in his cities of steel and concrete, from the realities of earth and water and the growing seed. The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for the destruction of our race." (*Silent Spring* wasn't the only book where she talked of humanity's assault on Nature. In *Edge of the Sea*, Carson also takes jibes at human activities, such as the pervasive infilling of coastal marshes on the US coast to make communities and ports). Lee is Carson on stage, being about the same age, though a bit younger, and she looks to be similar in stature, a woman of moderate height and slim in build. She's plainly dressed in a long cardigan and dark wool trousers, and always the immaculate white cotton shirt of the period. She 'comes across' as softspoken and unassuming, though perfectly audible in the theatre, at a conversational level.

The storm of controversy arising from the publication of *Silent Spring* emerges in the second scene, in Carson's office in Maryland, again a sparsely set stage. The vitriolic and caustic slanders of her abilities and work, particularly from the chemical industry lobby which we, who work in environmental biology, all expect these days, emerged in force.



*Rachel Carson*

Particularly, her capabilities were called into question because of her gender, in what was typical of a society that still had too great an undercurrent of sexism. Carson (Lee) passes them off, although she acknowledges the criticism was hurtful. Her consolation was the belief in the soundness of the information, and the ultimate truth of her thesis, which has endured.

The title, *A Sense of Wonder*, comes from a magazine article by that name written by Carson, and the following statement..."If I had influence with the good fairy who presides over children, I should ask that her gift to each child be a sense of wonder that would last a lifetime."

The play enriched my life, both by reminding me of Carson's books, all of which I had read, but of her exemplary love of and commitment to Nature. Her writing style has been described as poetic, but I'd almost call it storybook, a simple telling of a simple tale which conveys great understanding. We're also given the context of the books, and a perspective of the people behind their publication, showing once again that important things don't occur by magic or by individuals acting in isolation. For example her last publisher, Paul Brooks, gave her immense support in going forward with *Silent Spring* and Brooks (who has since passed away and to whom the play is dedicated) also encouraged and helped Kaiulani Lee go forward with the Play's development.

If you hear *A Sense of Wonder* is playing in your area, you definitely should go and see it. It most likely will be supporting some important environmental cause, but it will also charge up your optimism and strength to fight your own environmental battles and keep your own love of Nature alive.

## Cows, Pigs and Sheep

### Environment's Greatest Threats?

December 17, 2006

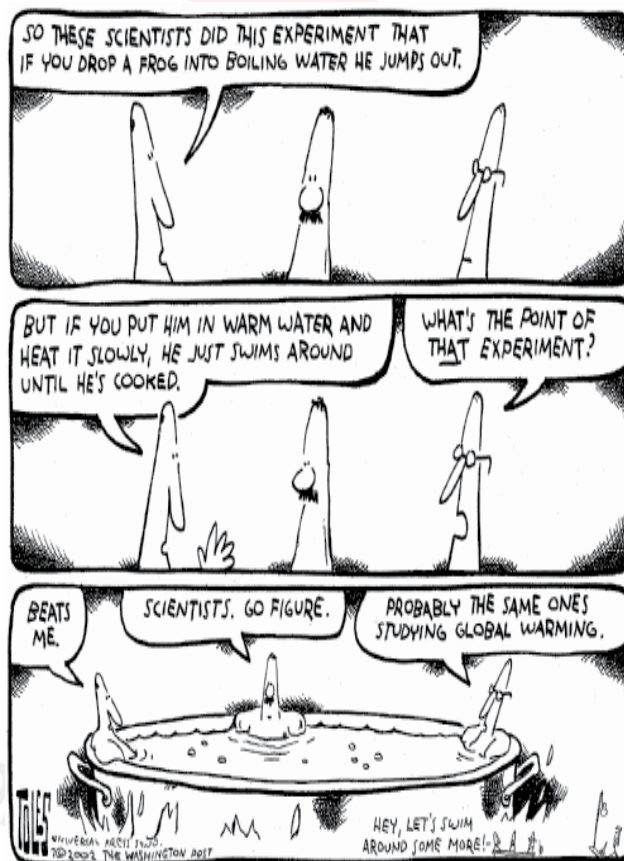
Cows, pigs, sheep and poultry have been awarded the dubious honour of being among the world's greatest environmental threats, according to the UN Food and Agriculture Organization (FAO).

The report, entitled *Livestock's long shadow*, says the livestock industry is degrading land, contributing to the greenhouse effect, polluting water resources, and destroying biodiversity.

In summary, the sector is "one of the top two or three most significant contributors to the most serious environmental problems at every scale". The authors say the demand for meat is expected to more than double by 2050 and therefore the environmental impact of production must be halved in order to avoid worsening the harmful impacts of the industry.

Full story at: [http://environment.newscientist.com/article.ns?id=dn10786&feedId=online-news\\_rss20](http://environment.newscientist.com/article.ns?id=dn10786&feedId=online-news_rss20)

(source: FORREX Conservation Biology Extension Listserv)



7.31.02



# Bed Bugs

Submitted by: Robin Leech, P.Biol.  
 Alberta Society of Professional Biologists Executive Director  
 December 13, 2006

## World-Wide Problem With Bed Bugs

During the past few years, the bed bug (Family Cimicidae, *Cimex lectularius*) has become a world-wide problem, even here in Canada, and even in the northern parts of Canada.

Bed bugs are not fussy. They do not care how clean your domicile is, and they do not care about how wealthy you are. They are infesting hotels around the world, and in Canada have become a serious problem in apartments, condos, and even private residences. Bed bugs are about 4-5 mm long, flat, wingless, and are a mahogany color. They are active at night, and they live in your clothing, in the seams of mattresses, and in the frames of wooden beds. They emit a pungent, acrid smell which, once you smell it, you will never forget it.

When you travel, ask the hotel/motel managers if they have had a bed bug problem. Check your luggage for any signs of them. In the hotel/motel room(s), look around the cracks in the walls and ceiling. If there is a crack, and if there are small, black specks about 10 mm either side of the crack, the place has bed bugs. They keep their own living quarters clean, but they come out to poop. The specks you see are bed bug poop.

If you can, check the wooden bed frame and the mattresses. Pull off the bottom sheet in order to check the mattress. If you notice any small blood stains on the sheets or mattress, or any bite marks on your body, you have bed bugs. Take appropriate steps to get rid of them AS SOON AS YOU FIND THEM. Do not delay, or "do it later".

Even a fumigation process may not kill all of them. If you have traveled, and you are suspicious that there might be bed bugs in your baggage, leave the baggage outside in the cold for a couple of days before unpacking. Vacuum your residence, and wash sheets weekly in hot water. If you find bed bugs in the mattress, put it outside in the cold (obviously, under cover, such as in a shed!)



Bed bugs are about 14 inch long and their color range from dark red to almost black (courtesy of Dr. Mike Potter, University of Kentucky)

## Here are a few safety measures to consider:

1. If you return home from a Christmas/New Year's visit, and notice bite marks, see your doctor immediately. Tell him/her of your bed bug suspicion.
2. Do not purchase, or bring in any used/secondhand mattresses. Purchase new mattresses only.
3. Check all used/secondhand couches, chairs, etc., for signs of bed bugs. If any are found, then store the furniture outside in cold weather for a few days.
4. Check any guests/visitors to your place, especially their luggage.

There are a number of websites on Google. Type in: Cimicidae, bed bugs. The Harvard Univ. advice is as good as any.

Here are a few websites that have more information:

<http://www.uky.edu/Ag/Entomology/entfacts/struct/ef636.htm>

<http://www.mayoclinic.com/health/bedbugs/DS00663>

<http://www.pestcontrolcanada.com/INSECTS/bedbugs.htm>

## Moving?

Any change in address should be sent to CSEB,  
 P.O. Box 962 Station F, Toronto ON M4Y 2N9 or  
 e-mail: Gary Ash at [gash@golder.com](mailto:gash@golder.com)

## Arctic Sea Ice “Faces Rapid Melt”

Jonathan Amos  
*BBC News*  
December 12, 2006

The Arctic may be close to a tipping point that sees all-year-round ice disappear very rapidly in the next few decades, US scientists have warned. The latest data presented at the American Geophysical Union Fall Meeting suggests the ice is no longer showing a robust recovery from the summer melt.

Last month, the sea that was frozen, covered an area that was two million sq km less than the historical average.

“That’s an area the size of Alaska,” said leading ice expert Mark Serreze. “We’re no longer recovering well in autumn anymore. The ice pack may now be starting to get preconditioned, perhaps to show very rapid losses in the near future,” the University of Colorado researcher added.

The sea ice reached its minimum extent this year on September 14, making 2006 the fourth lowest on record in 29 years of satellite record-keeping and just shy of the all time minimum of 2005.

Dr Serreze’s concern was underlined by new computer modelling which concludes that the Arctic may be free of all summer ice by as early as 2040. The new study, by a team of scientists from the National Center for Atmospheric Research (NCAR), the University of Washington, and McGill University, found that the ice system could be weakened to such a degree by global warming that it soon accelerates its own decline.

“As the ice retreats, the ocean transports more heat to the Arctic and the open water absorbs more sunlight, further accelerating the rate of warming and leading to the loss of more ice,” explained Dr.

Marika Holland. “This is a positive feedback loop with dramatic implications for the entire Arctic region.”

Eventually, she said, the system would be “kicked over the edge”, probably not even by a dramatic event but by one year slightly warmer than normal. Very rapid retreat would then follow.

In one of the model’s simulations, the September ice was seen to shrink from about 5.9 million sq km (2.3 million sq miles) to 1.9 million sq km (770,000 square miles) in just a 10-year period. By 2040, only a small amount of perennial sea ice remained along the north coasts of Greenland and Canada, while most of the Arctic basin was ice-free in September. “We don’t think that state has existed for hundreds of thousands of years; this is a dramatic change to the Arctic climate system,” Dr Holland told the BBC.

Dr. Serreze, who is not a modeller and deals with observational data, feels the tipping point could be very close. “My gut feeling is that it might be around the year 2030 that we really see a rapid decline of that ice. Now could it occur sooner? It might well. Could it occur later? It might well. “It depends on the aspects of natural variability in the system. We have to remember under greenhouse warming, natural variability has always been part of the picture and it always will be part of the picture.”

The average sea ice extent for the entire month of September this year was 5.9 million sq km (2.3 million sq miles). Including 2006, the September rate of sea ice decline is now approximately -8.59% per decade, or 60,421 sq km (23,328 sq miles) per year. At that rate, without the acceleration seen in the new modelling, the Arctic Ocean would have no ice in September by the year 2060.



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