

BIODIVERSITY

Performance Overview

- Paid a creative sentence of \$3 million related to 2008 waterfowl incident; significant improvements made to deterrent system
- 460 waterfowl died on Syncrude site as a result of regional freezing rain storm in October 2010; other oil sands operators also affected
- Initiated three-year study with Keyano College to investigate activity of large terrestrial mammals on our site
- Commenced songbird research through the Institute for Bird Populations Monitoring Avian Productivity and Survivorship (MAPS) program

Our Commitment

Syncrude's commitment to environmental stewardship encompasses specific programs aimed at ensuring our operations do not have a long-term, permanent impact on local ecosystems and, upon project completion, to re-establish a diversity of wildlife and fish habitats similar to those that existed prior to disturbance of the area.

Our Adherence to Mining Association Standards

As a member of the Mining Association of Canada, we adhere to the principles outlined in the [Towards Sustainable Mining](#) initiative. This includes a protocol on biodiversity conservation which Syncrude assisted to develop. As stated in the protocol, we recognize that "access to land and a company's social license depend upon responsible social, environmental and economic practices and that there is a strong business case for supporting biodiversity conservation. MAC members believe that mining, conducted in consultation with communities of interest, can co-exist with biodiversity conservation."

Biodiversity Planning and Reporting

Syncrude operations must adhere to environmental regulations, including the Alberta [Environmental Protection and Enhancement Act](#), and [Alberta Wildlife Act](#). As well, every 10 years, Syncrude must obtain operating approval by submitting a detailed plan outlining how the organization will steward to government requirements regarding environmental protection, reclamation and mine closure. Compliance reporting and amendments are submitted midway through the reporting period.

Our plan includes an overview on biodiversity establishment and monitoring. It outlines how we incorporate biodiversity into the various aspects of reclamation, including landscape formation, soil placement, vegetation, fish and wildlife.

Many of our practices lead to enhanced opportunities for biodiversity in the reclaimed landscape. For example, we place coarse woody debris in selected areas to provide cover for small mammals and nesting birds. Landforms are also designed with physical/topographical diversity to accommodate both terrestrial and wetland habitats.

Our reclamation specialists contribute to ongoing improvements in biodiversity planning and monitoring in the region through a specialized task group of the CEMA Reclamation Working Group.

Regional Involvement and Biodiversity Initiatives

Several programs and research initiatives have been established in northeastern Alberta to assess and monitor the cumulative environmental effects of industrial development at a regional scale. This work is undertaken by government and stakeholders such as Aboriginal communities, industry, environmental advocacy groups, and health organizations. Syncrude funds and/or provides staff expertise to the following:

[Alberta Biodiversity Monitoring Institute \(ABMI\)](#) – measures and reports on the health of ecosystems in the province. Operating at arm's length from government, industry and environmental groups, it provides peer-reviewed data that will be used to improve resource management through the provincial government's Land-use Framework.

In 2010, the ABMI launched the Ecological Monitoring Committee for the Lower Athabasca region to oversee customized monitoring programs for rare species. This includes marsh birds, amphibians, owls, caribou and numerous plants. Among the collaborators are Alberta Innovates - Technology Futures, the University of Alberta, Royal Alberta Museum, Alberta Conservation Association and Environment Canada.

The Canadian Oil Sands Network for Research and Development

(CONRAD) – supports a broad range of research projects in environmental and reclamation science through its Environmental and Reclamation Research Group (ERRG). Research focuses on a variety of disciplines, from wildlife biology to hydrogeology and toxicology. Grants are typically used to fund university and research organizations aimed at improving existing practices.

Cumulative Environmental Management Association (CEMA) –

established to assess cumulative environmental effects from industrial development and provide recommendations to regulators on how to best manage these issues. It is governed by 44 members representing all levels of government, industry, regulatory bodies, environmental advocacy groups, Aboriginal communities, academic institutions and the local health authority. Since its inception, the association has delivered over 10 major management frameworks on ozone, acid deposition, trace metals, nitrogen, ecosystems and water. The association includes a reclamation working group and traditional environmental knowledge advisory committee through which Aboriginal stakeholders share biodiversity perspectives.

Regional Aquatics Monitoring Program (RAMP) – an environmental monitoring program established in 1997 to assess the health of rivers and lakes in the oil sands region. RAMP collects and analyzes data from aquatic environments to better understand the oil sands area, and to identify and address the potential impacts of development.

Wood Buffalo Environmental Association (WBEA) – a multi-stakeholder environmental monitoring program that operates similar to, and works jointly with, RAMP. WBEA monitors and reports on air quality in the region and the effects of air quality changes and deposition on terrestrial resources. The association operates 15 ambient and 20 passive air-monitoring stations throughout the region.

These regional initiatives, research projects and biodiversity monitoring programs all use multi-stakeholder and interdisciplinary strategies to monitor the environment and provide recommendations to government for environmental sustainability. The objectives of each of these regional programs include understanding the natural condition of wildlife habitat, reclaiming wildlife habitat, and maintaining biodiversity in the region.

Wildlife Movement and Corridors

We do not view our active mining operations suitable for wildlife. We discourage wildlife movement through the area and do not have any crossing structures or corridors on our developed leases. Wildlife presence is also discouraged in active areas to decrease interactions with staff.

As well, in constructing access roads and right-of-ways, we follow existing linear corridors to the greatest extent practical in order to reduce vegetation clearing and habitat fragmentation.

Our operations are not located within the range of Alberta's woodland caribou herds or the proposed protection zones of the draft [Recovery Strategy for the Woodland Caribou, Boreal Population](#). As such, we do not participate in multi-stakeholder groups formed to research and monitor this issue. However, we do keep informed of policy development at the provincial and federal levels regarding any potential impact on our business or land closure requirements.

In 2009, Syncrude, in partnership with the CONRAD Environmental and Reclamation Research Group, commenced a research program into wildlife habitat effectiveness and connectivity in the Athabasca river valley. The program finished Phase 1 and found no current evidence of wildlife corridors within the river valley. The program has moved into Phase 2 and has expanded to include wolves.

There will be no habitat barriers on our reclaimed lands at mine closure.



As part of a CONRAD study on the health of moose populations, cameras with motion sensors were located throughout the oil sands region, capturing numerous photographs of moose with calves. Credit: University of Alberta

Wildlife Protection

Syncrude operates within a large tract of wilderness in northern Alberta's boreal forest and employs a number of strategies to deter wildlife from our sites. These include our waterfowl protection plan, and restrictions on the handling of food and food waste.

We are required by law to report sightings and wildlife incidents occurring on our site to regulators. We are also responsible for reporting those that occur off our site on adjacent highways and roads, such as collisions with vehicles. These are included in our overall number of incidents. In situations where distressed wildlife is found, the animal is assessed and appropriate action is taken under the guidance of Alberta Sustainable Resource Development officials.

Regular reminders are communicated to employees and contractors outlining the danger of feeding wildlife and improper disposal of refuse. Other measures used to deter wildlife include regular garbage pick-up and scare cannons. In addition, in 2010, we reached an agreement with the regional municipality to start transporting non-hazardous waste to the municipal landfill. This has reduced the number of seagulls and predators, such as bears, wolves and coyotes, attracted to this area.

In terms of non-avian wildlife mortality incidents, including those related to natural causes, there were 16 in 2010 and 12 in 2011.

Waterfowl and Bird Protection

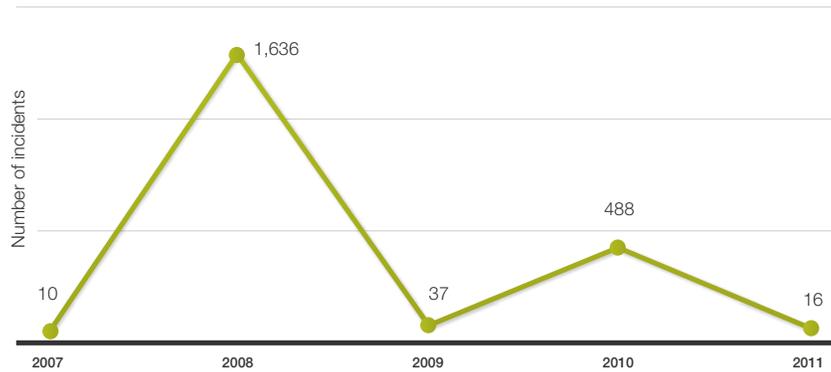
Measures are in place to protect local birds and deter migrating waterfowl from our site. For example, no vegetation is cleared during the migratory songbird nesting and rearing season unless survey and field checking indicate an absence of nesting activity.

We also follow a number of procedures to deter waterfowl and other birds from coming in contact with bitumen on our process ponds and tailings areas. Propane-fired cannons and effigies are placed in the water and on the shoreline of ponds. Monitoring occurs on a full-time basis throughout the migration period and, if necessary, pyrotechnic flare guns, airhorns and boat movement are also used. Radar monitoring systems, similar to those used at airports, are also in place which automatically activate our deterrent system when birds are detected in the area.

In 2011, we continued to improve the program through the deployment of floating and shore-based modules equipped with falcon effigies and sound effects, propane cannons and strobe lights. As well, we tested Hyperspike acoustic devices capable of projecting precise, directional sound towards areas of bird activity detected by radar. Field studies are underway regarding the effectiveness of laser deterrents.

Significant progress is also being made in the development and implementation of technologies to accelerate tailings ponds reclamation. See the [Tailings Management](#) chapter for more detail.

Avian Incident Tracking



Includes all bird and waterfowl mortalities related to oiling. Incidents are reported to the Alberta Government Sustainable Resource Development department.



Falcon Effigy

Update on 2008 and 2010 Waterfowl Incidents

In 2008, over 1,600 birds landed on a settling basin during spring migration and died after becoming coated in bitumen. In 2010, Syncrude was convicted on environmental charges and agreed to a creative sentencing which resulted in the payment of \$3 million, of which more than \$2 million now supports three environmental initiatives:

- [University of Alberta Research on Avian Protection Project \(RAPP\)](#) to study migratory bird populations in the region and the effectiveness of bird-deterrent technologies;
- [an Alberta Conservation Association habitat conservation project](#) in the Cooking Lake Moraine area; and
- development of wildlife management courses at [Keyano College](#).

Syncrude has always accepted responsibility for this incident and, as outlined above, we have taken considerable measures to prevent a similar occurrence. However, despite these efforts, another incident did occur in October 2010 when a freezing rain storm made it difficult for birds to fly. Birds landed and were sighted on oil sands operations throughout the region, including Syncrude. Birds appeared exhausted and were easily approachable. Regulators were contacted immediately.

Our deterrent system was fully operational at the time and additional staff and resources deployed. Sadly, 460 waterfowl were lost. A full investigation into the incident was completed by Syncrude and the Alberta government. At the time of this report's preparation, we await the results of the government investigation.

Both of these incidents were deeply disappointing. We hope further learnings can be achieved through RAPP and the funding provided by our creative sentence.

Wildlife Monitoring

There are a number of initiatives underway to monitor wildlife throughout the oil sands region, including Syncrude reclamation areas. For example, we continue to support the [Alberta Biodiversity Monitoring Institute](#) and the projects developed through the Ecological Monitoring Committee for the Lower Athabasca Planning Region. As well, through CEMA's Wildlife Task Group, we participate in the Early Successional Wildlife Monitoring Program on Reclaimed Plots in the Oil Sands program.

In addition, during consultations on a permit change to our sand storage facility, we were asked by our Aboriginal stakeholders to investigate the presence of large terrestrial mammals on the site and compare it with surrounding areas. In response, we initiated a project with Keyano College to study the area over a three-year period, ending in 2012.

Further research began in 2011 with the [Institute for Bird Populations' Monitoring Avian Productivity and Survivorship \(MAPS\)](#) program. This program monitors numbers, habitat development, bird reproduction and survivorship in reclaimed areas and compares it with natural habitats. Preliminary results indicate a healthy presence of songbirds in our reclaimed areas. Studies will continue in 2012.

We also monitor the wildlife that has returned to our reclaimed land to ensure restoration practices are creating attractive habitat for species to return. Regulators require this data as part of the government certification process.



Songbirds like warblers frequent Syncrude's reclaimed oil sand mine sites. Syncrude has engaged the Institute for Bird Populations' Monitoring Avian Productivity and Survivorship (MAPS) program to help examine their migration patterns through the region.

Parks and Protected Areas

Syncrude's operations are not located on, or adjacent to, any protected area, park or nature reserve. There are however a number of [protected parks and areas](#) throughout the boreal forest of northeastern Alberta, including [Wood Buffalo National Park](#) – the largest national park in the country and a UNESCO World Heritage site – located approximately 200 kilometres north.