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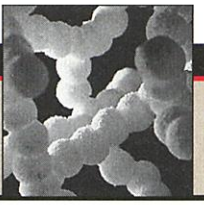
New suspect in frog declines



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A paradoxical membrane

CONSERVATION SCIENCE

Caribou Study Fuels Debate on Drilling in Arctic Refuge

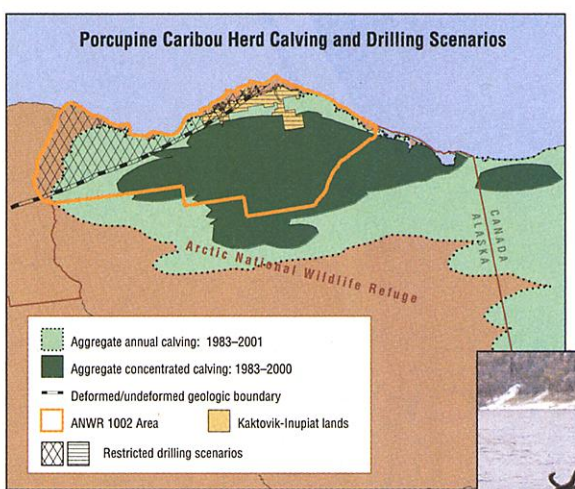
One week, experts say that oil drilling will harm caribou in the Arctic National Wildlife Refuge (ANWR). The next week, they say it won't. That is how the press and some lawmakers have portrayed a recent federal study and hastily done addendum by Department of the Interior (DOI) biologists that came out on the eve of a Senate vote on drilling. The apparent turnabout is the latest example of how Interior Secretary Gail Norton is manipulating science to promote the Bush Administration's views, drilling opponents say. But the scientists involved tell a more complicated story.

The analysis that triggered this furor is quite limited, says ecologist Brad Griffith of DOI's U.S. Geological Survey (USGS), who is its author. Griffith explains that a superior asked him to prepare an addendum to a major report on Alaskan wildlife focusing on one issue: how drilling in a scaled-back area might affect caribou. And he modeled just one behavior: calving. But everyone pounced on those details. Some caribou experts outside USGS, for example, say that DOI has erroneously concluded on the basis only of this calving study that drilling would be safe for caribou. "Other authors think [this] is an inappropriate use of the model," says Ken Whitten, a retired Alaska state biologist who contributed to the original report. Griffith believes that his addendum is relevant—but only if drilling is actually limited to the scaled-back area.

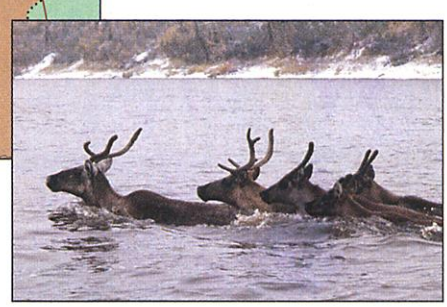
The notion that caribou won't be harmed may prove pivotal in Congress. The Senate was expected to block drilling earlier this week and, together with the House, which passed a bill last summer allowing it, will now work out a compromise. The House bill says drilling can proceed only if there is "no significant adverse effect" on wildlife.

The USGS report sent to Norton 29 March, which reviews published papers and includes new peer-reviewed studies, says drilling could adversely affect a number of species such as polar bears and musk oxen, but it notes that many of these impacts could be reduced. However, the report raises serious concerns about the 123,000-strong Porcupine caribou herd, whose June calving ground in most years overlaps the 600,000 hectares in the north of the refuge, the so-called 1002 area, where drilling was originally proposed.

To prepare for this report, Griffith began working 6 years ago on a model to assess how oil development would affect calf survival. The model uses 17 years of radio-tracking data on where females calve in the 1002 area. It also incorporates data on how many calves survive in a given year, which depends on how much good forage the mothers had available and the abundance of predators. Using these data, Griffith developed an equation that predicts calf survival if the concentrated calving area were nudged in one direction by oil development.



Disputed territory. One proposal would restrict drilling in the Arctic refuges 1002 area to the northwest quadrant. Caribou generally don't calve there but do use the area to seek relief from insects.



A Modest Drop in a Big Bucket

Geologists and resource economists are understandably loath to weigh in on the calving habits of caribou (see main text), but they have their opinions about the oil that may lie below the contested 1002 area of the Arctic National Wildlife Refuge (ANWR). In all likelihood, there's a good bit there, geologists say. However, add the economists, even if it were drilled, it would do little to improve the nation's energy security.

Geologists at the U.S. Geological Survey have estimated that the 1002 area of ANWR most likely holds 7.7 billion barrels of recoverable oil. But estimating as-yet-undiscovered oil is rife with uncertainty. Only one exploratory well has been drilled, so geologists fall back on wells outside the area, surface geology, and especially seismic probing of the subsurface. Folding in all the uncertainties, they estimate there's a 5% chance that area 1002 holds 11.8 billion barrels and a 95% chance that there are at least 4.2 billion barrels.

Whatever the actual amount of ANWR oil, say economists, it wouldn't insulate the United States from a volatile world oil market. In February, analysts at the Department of Energy's Energy Information Administration reported that in 2020, when production would be starting to decline if development were authorized this year, ANWR's estimated 7.7 billion barrels would reduce U.S. dependence on foreign oil from 62% to 60%.

"The energy security argument for drilling in ANWR is at best weak," writes economist Michael Toman of the Washington, D.C., think tank Resources for the Future. Among a number of economic limitations, he says, the Organization of Petroleum Exporting Countries (OPEC) has the upper hand in the long term given its huge deposits of cheaply extractable oil. Whatever the fate of ANWR oil, he says, more efficiently using the oil we do consume is key.

–RICHARD A. KERR

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