**RESOURCE WARS**

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Published by **Sundaram Tagore Gallery**, New York – Beverly Hills – Hong Kong, 2008

This text booklet was published in the catalog *Subhankar Banerjee: Resource Wars* by Sundaram Tagore Gallery, New York – Beverly Hills – Hong Kong, 2008. Reprinted with permission from the gallery.

*for Nora*

**ARTIST'S STATEMENT**

In late 2000, when I started planning for my Arctic journey, my main motivation was to go to a place untrammeled by tourism or industry, a place untouched by man, pristine wilderness, so called "the last American frontier". After seven years of intense engagement with the Arctic land and animals, its people, and its issues, I think about the Arctic very differently. I no longer see the Arctic as "the last frontier"; instead I see it as the most connected land on Earth. Hundreds of millions of birds migrate from every continent, thousands of miles away, to the Arctic each spring to nest and rear their young, a planetary celebration of epic scale that connect the Arctic perhaps to every land and ocean on the planet. On the other hand, resource wars, climate change, and toxic migration have connected the lives of Northern people and animals to the lives of people in far away lands in a rather tragic manner. My work is an ongoing collaboration with writer Peter Matthiessen. I approach the Arctic simply from the experience of *land-as-home*.

**CARIBOU CROSSING THE UTUKOK RIVER |** Coal and The Caribou **| 2006**

The Utukok River Upland is the core calving area of the Western Arctic caribou herd[10], the largest herd in Alaska with nearly 490,000 animals. The herd ranges over a 140,000 square-miles area and about forty communities, including Inupiat, Yupik and Athabascan, are located within the range of the herd. For these indigenous people, the herd is both a vital link to their cultural heritage and a staple of their diet. Underneath the herd's calving ground lies the largest coal deposit of North America, an estimated four trillion ton of bituminous coal, about ten percent of world's known coal reserves. While coal is heavy and difficult to transport, there has been past proposal and current proposal to develop this area for coal. On July 14, 1958, Edward Teller, the father of the hydrogen bomb, arrived in Alaska to unveil Project Chariot, a plan to carve a new harbor out of the Alaskan coast by detonating six nuclear bombs. Due to the effort of a handful of Inupiat people from Point Hope, and few biologists and conservationists, finally the United States Government was prevented from inflicting a catastrophe worse than Chernobyl[12]. Among other things to lure Alaskan businesses, Teller's team proposed that such a harbor would enable transport of coal from the Western Arctic. On July 30, 2006, Arctic Slope Regional Corporation signed an agreement with BHP Billiton, a Canadian mining company to explore and develop coal outside of the Petroleum Reserve, and exploration started the same year, despite opposition from traditional Inupiat communities. Petroleum and coal are the two key contributors to climate change. In addition, coal burning power plants and oil refineries from around the world are among the key contributors to toxins, that are ending up in the arctic ecology at an alarming scale. These toxic compounds bio-accumulate and bio-magnify in the animals – from polar bears, fish, seals, and whales, to women's breast milk. The Arctic, traditionally thought of as the last great unspoiled territory on Earth, has become home to some of the most contaminated people and animals on the planet, and breast milk of high arctic women in Greenland and northern Canada have become contaminated to the point of being considered hazardous waste[4].

**EXPOSED COFFIN** | Oil and The Caribou | **2006**

Robert Thompson, my Inupiat friend from Kaktovik stated that the permafrost (permanently frozen ground) around the coffin melted away (a climate change phenomenon), thereby exposing the coffin. He speculated that perhaps a grizzly bear broke it open scattering the bones, and perhaps the coffin is nearly one hundred and fifty years old and not of an Inupiat but possibly of a commercial whaler. Climate change increases thawing of permafrost, which releases methane (twenty three times as potent at trapping heat as carbon dioxide) and carbon dioxide, creating an amplifying feedback loop whereby more warming causes additional releases, which would cause more warming, and so on[1]. Additionally vast amounts of methane, in a solid icy form called methane hydrates or clathrates, are trapped in permafrost and at shallow depths in cold ocean sediments. Scientists predict that if the temperature of the permafrost or the seabed rises a few degrees, it could initiate decomposition of these hydrates, releasing methane in the atmosphere. If such releases did occur, scientists worry the climate impacts could be very large. As permafrost thaws, ponds connect with the groundwater system, which could lead to drying of steams, lakes and wetlands that have significant impact both on ecology and native cultures. Permafr`ost thawing also accelerates rates of contaminant transfer. This will increase episodes of high contaminant levels in rivers and lakes that may have toxic effects on aquatic plants and animals and also increase transfer of pollutants to marine areas. Increasing contaminant levels in Arctic lakes will accumulate in fish and other animals, becoming magnified as they are transferred up the food chain.

**BELUGA WHALES WITH CALVES |** Oil and The Whales **| 2006**

Kasegaluk lagoon, along the northern Chukchi Sea coast is one of the most important lagoon systems in the circumpolar Arctic. The lagoon is one hundred twenty-five miles long and there are five major rivers drain into the lagoon creating a unique and rich ecological habitat for a host of species. About three to four thousand Beluga whales come to the lagoon and along its shores each summer. They are also known to calve along the Kasegaluk and the small Oomalik lagoon just south of it. The lagoon and its nearby habitat is important for a host of nesting birds and also critical staging area for birds that come to the lagoon from Teshekpuk lake. United States Government for the past several years has been planning to open up the entire Chukchi Sea and the Beaufort Sea of the Alaskan Arctic to oil and gas development. Several leases have already been sold in the Beaufort Sea and leases will be offered on the entire 33.8 million acres Chukchi Sea Planning Area in spring 2008. Inupiat communities of Barrow, Point Hope, Point Lay, and Wainright depend on marine mammals of the Chukchi Sea, including, Bowhead and Beluga whales, seals, walrus and other marine species. These communities oppose offshore oil and gas development, as they fear such development would seriously impact the whales and their migrations and subsequently the Inupiat culture[11]. Inupiat people of Point Lay depend primarily on Beluga whales for their subsistence food. An estimated ten thousand Bowhead and over sixty thousand Beluga whales migrate through the Chukchi and Beaufort Seas.

**STORM OVER KASEGALUK LAGOON |** Oil and The Whales **| 2006**

With climate change the Inupiat people of the Alaskan Arctic coastal region in recent years have been experiencing more frequent and severe intensity storms than anytime before that they remember. With more open water on the ocean (another climate change phenomenon) combined with severe storms are making their traditional hunting on small boats more dangerous. International scientific community has stated that rising temperatures are altering the Arctic coastline and much larger changes are projected to occur during this century as a result of reduced sea ice, thawing permafrost, and sea-level rise[1]. Thinner, less extensive sea ice creates more open water, allowing stronger wave generation by winds, thus increasing wave-induced erosion along Arctic shores. Sea-level rise and thawing of coastal permafrost exacerbate this problem. The village of Shishmaref, located on an island just off the coast of northern Alaska and inhabited for four thousand years, is now facing the prospect of evacuation.

**HULAHULA-OKPILAK DELTA II & III** | Oil and The Caribou | **2002**

Several hundred million birds migrate to the Arctic each spring for nesting and rearing their young. They travel from every continent, a global celebration of epic scale that connects the Arctic to nearly every land and sea on the planet. The Arctic river deltas, and its surrounding tundra, wetlands, coastal lagoons, barrier islands and near offshore waters provide rich ecological habitat for numerous migratory bird species. The birds use these eco-regions for nesting, molting, staging, and feeding. Major Arctic river deltas usually lie atop potentially vast amount of oil and natural gas reserves. The Lena River delta in Siberia (the most important Arctic river delta), the Mackenzie River delta in Canada (largest delta in Canada), the Canning River and the Hulahula-Okpilak River deltas in the Arctic National Wildlife Refuge of Alaska, are all known to have oil and gas deposits underneath, and they are also known to be premier habitats for migratory birds.

**BRANT AND SNOW GEESE WITH CHICKS |** Oil and The Geese **| 2006**

The Teshekpuk Lake and its surrounding wetlands in the north-central Alaskan Arctic comprise one of the most important wetland complexes and goose molting habitats in the circumpolar North. The Teshekpuk Lake wetlands provide habitat for molting geese from three nations, Mexico, Canada and Siberia; and nesting birds from six continents. As many as 37,000 brant – up to 30% of all Pacific brant – gather each summer to molt north and east of the lake[13]. These brants come from elsewhere on the North Slope of Alaska, the Yukon-Kuskokwim Delta to the south, the western Canadian high Arctic, and Siberia. Numbers of greater white-fronted geese molting at Teshekpuk Lake are increasing and range as high as 35,000. These geese are part of the mid-continental population, wintering in gulf coastal states and Mexico. Thousands of Canada and snow geese also gather to molt in the safety of this unique wetland complex. United States Government has made strong effort in the past few years to open up the entire 1.7 million acres of the Teshekpuk Lake special area to oil and gas development. The Inupiat people of the North Slope who depend on this wetland oppose development in the most sensitive caribou and geese habitats. In recent years, this wetland has become one of the most contested public lands in the United States. In addition to the threat of development, the International scientific community is projecting serious impact on many bird species from climate change, as important breeding and nesting areas are projected to decrease sharply as treeline advances northward, encroaching on the tundra, and because timing of bird arrival in the Arctic might no longer coincide with the availability of their insect food sources. At the same time sea-level rise will erode tundra extent from the north further shrinking important habitat for many species[1].

**CARIBOU SKELETON |** Oil and The Caribou **| 2006**

Nearly a thousand caribou from the Teshekpuk Lake herd came over to the Arctic National Wildlife Refuge, making a two hundred and forty miles journey during the winter of 2006. Robert Thompson, my Inupiat friend from Kaktovik stated that this never happened before, and he speculated that perhaps the tundra froze and the caribou came looking for food. The tundra also froze around Kaktovik resulting in death of several hundred animals that winter. I photographed the skeleton of such an animal the following summer. Arctic is experiencing rain during autumn and winter months, a severe climate change phenomenon. This rain is causing ice crust on the tundra. International scientific community states that ice crust formation resulting from freeze-thaw events, affects most Arctic land animals by encapsulating their food plants in ice, severely limiting forage availability and sometimes killing plants[1]. Caribou/reindeer, musk ox, lemmings are all affected, and dramatic population crashes resulting from ice crusting due to freeze-thaw events have been reported and their frequency appears to have increased over recent decades.

**CARIBOU MIGRATION I |** Oil and The Caribou **| 2002**

The coastal plain of the Arctic National Wildlife Refuge is the core calving area of the Porcupine River caribou herd[10]. It is also the most debated public land in the United States history – whether to open up this land to oil and gas development or to preserve it has been raging in the halls of the United States Congress for over thirty years. This caribou herd has symbolized the Arctic Refuge – both for its ecological and cultural significance. Individual caribou from this herd may travel more than three thousand miles during their yearly movements, making it one of the longest terrestrial migrations of any land animal on the planet. Numerous indigenous communities living within the range of the herd have depended on the caribou for subsistence food. The Gwich'in people of Alaska, and the northern Yukon and Northwest Territories in Canada, live on or near the migratory route of this herd, have relied upon the caribou for many millennia to meet their subsistence as well as cultural and spiritual needs. The Gwich'in are caribou people. They call the calving ground of the caribou "Iizhik Gwats'an Gwandaii Goodlit" (The Sacred Place Where Life Begins). To open up the caribou calving ground to oil and gas development is a human-rights issue for the Gwich'in Nation[2]. In addition to the perceived threat of oil development in their calving ground, this caribou herd has been severely impacted by climate change in recent years. International scientific community has stated that climate change has impacted this herd more than most of the other large caribou herds across the circumpolar Arctic. Their numbers has declined steadily at a 3.5% per year since 1989 from 178,000 animals to a low of 123,000 in 2001[1]. Warmer, wetter autumn resulting in more frequent icing conditions; warmer, wetter winter resulting in deeper and denser snow; and warmer spring resulting in more freeze-thaw days and faster spring melt are among the key negative climate change impacts on the caribou and their habitat. In the photograph pregnant females are migrating over Coleen River on the south side of the Brooks Range Mountain on their way to the coastal plain for calving.

**SHEENJEK RIVER II: A GWICH'IN HOMELAND |** Oil and The Caribou **| 2002**

Framing the Arctic National Wildlife Refuge as "the last American frontier untouched by man" is a myth[5]. The Sheenjek River, one of the three designated "Wild" rivers in the Arctic Refuge, has been immortalized with the biological expedition of 1956 led by legendary biologist Olaus Murie. This expedition later led to the establishment of the Arctic National Wildlife Refuge in 1960. Sarah James, a Gwich'in elder and a leading Native American activist and a dear friend shared with me that "Sheenjek" in Gwich'in means "salmon river", and she shared with me a map (hand drawn) that shows numerous Gwich'in families, including Sarah James' family, lived along this river until they were encouraged to take up village life in Arctic Village as recently as in mid-twentieth century. The conservation movement has obliterated the Gwich'in history of the "salmon river". American land conservation movement from its inception separated "man" from "nature", which has proven to be cruel to the Native American people. The American public was told that areas of the Yellowstone Plateau "have never been trodden by human footsteps"[6]. On the contrary, the Crow, the Shoshone, the Bannock, the Blackfeet, and the Nez Perce – five tribes hunted in these areas. The first National Park was established - the Yellowstone National Park. The United States military was called in to ensure safety for the tourists from the threat of the Native American people. We protected the land from the people of the land. Today the Gwich'in Steering Committee and the conservation organizations are working collaboratively[8] to protect the coastal plain of the Arctic Refuge against oil and gas development. However, the gap between the two conceptions of nature and culture remain vast:

"*I learned by living out in the wilderness*" - Sarah James, 2001[7]

"… *man himself is a visitor who does not remain*" [in a wilderness] - Howard Zahniser, The Wilderness Act, 1964[9]

**BEAR DEN II |** Oil and The Caribou **| 2002**

The Arctic National Wildlife Refuge coastal plain is the only land conservation area in the United States for denning polar bears. Climate change is having significant impact on marine species that critically depend on sea ice, including polar bears, walrus, ringed seals and seabirds. The international scientific community is predicting that if there is a complete loss of summer sea ice cover in the Arctic, polar bears are unlikely to survive as a species[1]. At the same time scientists are predicting such loss of sea ice in the next few decades. Pregnant females go in these temporary dens in October-November, give birth during December-January and nurse their cubs inside the den until March-April at which point they emerge from the dens with usually one or two cubs. At that time, the mothers have not eaten for five to seven months and they critically require good spring ice for seal hunting to feed themselves and to nurse their cubs. United States Government has been pushing hard to open up both the coastal plain of the Arctic Refuge for onshore and the Beaufort and the Chukchi Seas of the Alaskan Arctic for offshore oil and gas development. Such industrial projects will only exacerbate the fate of these bears.

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