



Ilulissat Icefjord in Greenland.

SPOTLIGHT | Ice sheets and global warming

Perils and promise of the Arctic: Ilulissat Icefjord and Natural System of Wrangel Island Reserve

The Arctic has become a vital focus for Unesco's World Heritage Centre. By highlighting World Heritage sites here, the United Nations body can raise awareness of major threats — in particular, global warming. Countries with World Heritage properties in the Arctic include Canada, Denmark (Greenland), Finland, Iceland, Norway, Sweden, Russia and the United States. These nations meet regularly with the World Heritage Centre and environmental groups to confront the issue.

Unesco is committed to working with these countries to preserve this vast region, largely unspoiled, which covers more than 30 million square kilometers (11.6 million square miles). The World Heritage Centre helps foster networking for research and training so that climate change in the Arctic can be properly assessed and managed. These global contacts and the international profile of World Heritage sites are ideal for building both public and political support.

Ilulissat Icefjord, the first World Heritage site in Greenland (which is part of the Kingdom of Denmark), plays a central role in understanding both global warming and glaciology, the study of glaciers. Inscribed on the World Heritage List in 2004, it is the sole remnant of the frozen masses that once en-

veloped the northern hemisphere during the ice ages. Its 1.7 million square kilometers of ice, 3.2 kilometers (1.9 mile) thick, make it the world's second-largest ice sheet, exceeded only by Antarctica's.

Tourists flock to Ilulissat ("icebergs" in Greenlandic) to witness a natural phenomenon called calving, where blocks of ice split suddenly from the glacier. Calving is preceded by a loud cracking sound before ice towers as high as 200 feet (61 meters) crash into the water. It has become a popular attraction, bringing welcome revenue to the area. Ilulissat, with its population of 5,000 (about 60,000 people live in Greenland), is

the nation's tourist capital. But for how long? Ilulissat's glacier is losing up to 15 meters of ice each year, and climate change is the culprit. Says Mechthild Rössler, chief of the World Heritage Centre's Europe and North America section: "The glacier is receding, and visitors can no longer see calving from the existing viewing platform. The issue here is that we cannot allow them to walk or go by boat all over the site. There have been pathways constructed so as not to damage the World Heritage site."

Any rise in the Earth's temperature destroys the habitat of rare wildlife species. This is an important issue for another Arctic site,

the Natural System of Wrangel Island Reserve in Russia. The site, an island ecosystem and marine area northwest of the Bering Strait, lies 500 kilometers above the Arctic Circle. Inscribed on the World Heritage List in 2004, it boasts the greatest level of biodiversity in the high Arctic. Wrangel Island is home to the world's largest population of Pacific walrus, a feeding ground for grey whales migrating from another World Heritage property (El Vizcaino in Mexico) and the northernmost nesting area for 100 types of birds, including endangered species like the Peregrine falcon. The evaluation report on Wrangel Island, written for the World Heritage Centre by its advisory group, the International Union for Conservation of Nature, adds, "It is also the breeding habitat of Asia's only snow goose population, which is slowly making a recovery from catastrophically low levels." A few degrees' change here could alter the distribution of the ice, drastically reshaping its environment and ending its tenure as home for these threatened animals.

Global warming not only jeopardizes tourism and regional fauna, but also endangers nearly all the sites on the World Heritage list. Its consequences could be far-reaching — even, some predict, apocalyptic. Melting ice could have devastating effects on humans, leading to flooding of cities and coastal areas, such as Venice, or the sinking of other island

World Heritage sites like Tubbataha in the Philippines or the Galápagos in Ecuador. Climate change could have an impact on human social and cultural aspects as well, forcing communities to change the way they have traditionally lived and worked. Extreme consequences of climate change, such as the flooding of low-lying areas, could force communities to leave their homes and lands; this could result in the abandonment of humanity's cultural or built heritage, which also falls within the ambit of Unesco's mission.

For scientists attempting to avoid these calamities, World Heritage Arctic sites provide model laboratories for monitoring climate change and any sequels. Ilulissat, for example, has been the object of research for two centuries. Data retrieved from ice cores reveal temperature, rainfall and atmospheric conditions dating back 250,000 years — the age of ice. No other glacier in the northern

hemisphere can provide such a record of ice fjords and their movement. Greenland's ice is much younger than Antarctica's (which is 700,000 years old) and moves more rapidly, making it more sensitive to climate change; thus better suited for study. Though recent research has concentrated on global warming, its implications and universal impact have yet to be fully understood.

Unesco continues to address the knowledge gap, through conferences and workshops that identify the most significant threats to the region's preservation. Adds Rössler: "We work with the different actors here — not only with the States Parties [countries that have adhered to the World Heritage Convention], but also indigenous people and site managers. We encourage them to work together on the monitoring of climate change in the Arctic. We have to help them address these issues as a matter of urgency." J.J.

TURE ANDERSEN

World Heritage in Russia

The Russian Federation signed the World Heritage Convention in 1988 and is now represented on the World Heritage List by 15 cultural and nine natural sites, making it fifth among nations in terms of the number of natural properties inscribed on the prestigious Unesco roster. The following Russian sites have World Natural Heritage status: Natural System of Wrangel Island Reserve (inscribed in 2004), Uvs Nuur Basin (2003), Central Sikhotealin (2001), the Western Caucasus (1999), the Golden Mountains of Altai (1998), the Volcanoes of Kamchatka (1996), Lake Baikal (1996), Virgin Komi Forests (1995) and Putorana Plateau (2010). For more information, visit <http://whc.unesco.org>

J.J.

EXPLORING | The Arctic region

The sound of ice cracking, and other lures of the Arctic

The most surprising thing upon visiting the Ilulissat Icefjord for the first time isn't the cotton-candy blue color of the glacial ice, the seals casually sunning themselves on frozen, floating "daybeds" or even the vast number of bergs that inhabit this west Greenland bay, but rather the sound. One doesn't expect ice to be auditory.

Those who close their eyes and listen to the ice field come away with the knowledge that frozen water can be just as dynamic as any living thing. The Arctic silence is often punctuated by the deep moan of shifting ice, the thud of ice chunks breaking off and tumbling into the bay, and the sharp crackle of crevices cleaving the larger bergs.

Several Unesco World Heritage marine sites are found above the Arctic Circle. Se-

cluded and often inaccessible, these parks preserve some of the last places on the planet with minimal human impact. With its own airfield and daily service on Air Greenland from Nuuk (the Danish territory's capital), Ilulissat Icefjord is one of the easier of these parks to reach.

The waterfront town of Ilulissat is the hub of tourism activities and the jumping-off point for local exploration. Visitors can explore the iceberg by boat, helicopter, dogsled safari and even self-guided hiking along well-marked routes along the fjord's northern shore. Although the helicopter tours operated by World of Greenland are the most expensive option (€361 per person), they are about the only way to see Ilulissat Glacier at the head of the fjord, including time on the ground beside the

massive ice tongue. One can also explore the bay area on public transport — the Disko Line ferries that ply regular routes to settlements around the edge of the bay. With several hotels, a youth hostel and restaurants, Ilulissat town is also where most people base their stay in the region.

Wrangel Island in the Russian Arctic is very different from Ilulissat; only a handful of people visit this World Heritage site each year. Perched off the north coast of Siberia not far from the Bering Strait and Alaska, the isolated landfall boasts the world's highest density of polar bears, as well as reindeer, musk ox, walrus, snow goose and other polar species. The island is so isolated and so far north, it was the last place on earth that woolly mammoths survived, with the last dying out around 1700 BC. Wrangel also plays host to more than 400 plant species, an unusually high number given its harsh climate and rocky, volcanic soil.

Recognizing its natural significance, the old Soviet government designated Wrangel and the adjacent Herald Islands a nature reserve in 1976 — the country's first (and still largest) strictly protected area in the high Arctic. Tourism didn't kick in until after glasnost, when any military or strategic value that Wrangel may have possessed became a moot point.

"This area was totally closed off during Soviet times and has only been accessible pretty recently," says Alex Mudd of Steppes Travel, one of the few outfitters that organize Wrangel trips. "Wrangel is a remote and very little visited part of the Arctic — totally unique, one of the last few remaining truly 'expeditionary' places to voyage to. It's so rarely visited that each expedition greatly adds to our knowledge of the fauna, flora, ice conditions and landing sites. As a concentrated denning site for polar bears, the chances of sightings on Wrangel are high. Forty bears were sighted in three days last summer." Steppes Travel visits the island on an adventure cruise that starts and ends in Nome, Alaska. The mode of travel is a sturdy 48-passenger expedition ship called the Spirit of Enderby.

J.R.Y.

Ascent of Himalayan peak tests climbers and watches

When Stéphane Schaffter led the first climbing expedition up the snowy summits of Mount Antoine LeCoultre, the Himalayan peak named for the founder of Jaeger-LeCoultre, it was to test the Swiss manufacture's watches, and especially the new Master Compressor Extreme LAB II Tribute to Geophysics — and in very extreme conditions.

Referring to the watches, Schaffter says: "Our 20-day mission was especially hard for them, first because of humidity. You wear the watch under clothes, and when you look at it you need to know the time right away. There was no problem with humidity on the inside. Second was the cold. We scaled the summit at night, and the temperature was minus 30-35 degrees [Celsius, or minus 22-31 degrees Fahrenheit]. Here also it worked very well. But most important was the dust. Remember, you are outdoors, in tents,

and not at home! And in the mountains you are not particularly careful about a watch — it's not the most important thing you're thinking about. You're working with a hammer to put pitons in the rock, and this creates shocks, which can be very strong. In all these extremely difficult conditions, the watches gave us no trouble at all. It was incredible that they always kept the right time and worked perfectly."

The watches weren't all that the team took along on their trek. Schaffter carried a small stone, part of the first building at Jaeger-LeCoultre headquarters in Switzerland. He left this memento on the mountaintop in honor of Antoine LeCoultre, and in exchange brought back a pocket-sized fragment of the granite peak. This souvenir now resides in a special place in the Jaeger-LeCoultre headquarters. J.J.



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Visit the Tides of Time Web site for videos, interviews and more information on World Heritage marine sites: whc.unesco.org/tidesoftime/

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