

Example of the *Users' Notes* supplied with a Story Mat

This document includes all the *Users' Notes* supplied with the Arctic Mat, specifically :

1. A labelled photograph of the mat, allowing particular features to be referenced.
2. *Short Notes*, being a one-page summary for quick reference.
3. *Long Notes*, being a longer description of the features, with references to further information.

All documents are supplied digitally and as a printed version. The labelled photograph and the *Short Notes* are supplied laminated for on-the-fly use with the mat.

Arctic Mat labelled for Notes



Short Notes about The Arctic Mat for The Polar Museum

Jenny Langley March 2017

These notes need to be used with the file 'Arctic Mat labelled' image in this folder.

The darker green background represents boreal forest, whereas the paler olive green is the tundra.

- A. Inuit Art - Large Bear, covered by flap with The Plough and the North Star
- B. Inuit Art – Flying Loon
- C. Jane Franklin signature
- D. Rig to reef project
- E. Caribou
- F. NW Passage with islands and Croker Mountains mirage under a clear water flap
- G. Flap covered in sea ice over radar image of The Erebus on the sea floor
- H. Frobisher's gold – iron pyrites
- I. Archaeological remains of a Viking settlement
- J. Greenland with melt water lakes
- K. Inuit Art – Twilight Owl
- L. Receding glacier
- M. Iceland with the line of fire and archaeological remains of a Viking settlement
- N. Cold water circulating out of the Arctic Ocean
- O. Inuit Art – Mother Walrus and young
- P. Rainbow cloud – atmospheric effect caused by ice crystals
- Q. Beluga whales trapped in a bay by ice and rescued by an ice breaker
- R. Oil derrick
- S. Nuclear submarine crossing the North Pole by going under the ice
- T. Deep pocket for narwhal
- U. Amundsen's Airship, The Norge crossed The North Pole
- V. Novaya Zemlya
- W. Polar Bear den, often found on Svalbard and nearby islands
- X. Algal bloom in the Barents Sea
- Y. Hot water from The Atlantic moves into The Arctic Ocean
- Z. Sun dogs and light pillars beneath a flap inspired by a Moon with arcs and halos
- 1. Generic icy water pocket
- 2. Reindeer and migration routes
- 3. Melting permafrost causes the 'drunken trees' below. Squashed mosquitoes too
- 4. The Aurora Borealis 'dancing ' around The North Pole
- 5. Beaded River, a feature of the permafrost tundra
- 6. Pollution around Norlisk caused by metal smelting
- 7. Lichen
- 8. Generic land pocket

(see next page for detailed notes)

Detailed Notes about The Arctic Mat for The Polar Museum

Jenny Langley March 2017

These notes need to be used with the file 'Arctic Mat labelled' image in this folder.

The darker green background represents boreal forest, whereas the paler olive green is the tundra. The backing of the mat is green, reflecting the Museum's medical kit from historic Polar expeditions. The three lines of sewing around the front edge of the mat reflect the sewing on the Inuit Parka on display in the Museum.

- A. Large Bear, based on Cape Dorset Inuit Art. The flap represents the night sky with the Plough constellation - covered by flap with the Inuit constellation, Tukturjuit, the caribou. In the UK, we call this The Plough, which is part of Ursa Major (The Great Bear). There is also the line connecting the Plough to Polaris or North Star. The flap has been orientated on the mat, so this line from, The Plough to Polaris points towards The North Pole.
- B. Flying Loon, based on Cape Dorset Inuit Art. This image was taken from your set of snap cards of Inuit art – these should fit easily into the pocket. This aquatic bird is the provincial bird of Ontario and is depicted on the Canadian one-dollar coin, which has come to be known affectionately as the 'loonie'.
- C. Lady Jane Franklin's signature. Jane was wife of Captain Franklin, whose ship the HMS Erebus was lost when exploring the NW Passage (see G below). She pressed the Admiralty to offer rewards for finding the missing expedition. Along with Franklin's fame, this reward led to many subsequent expeditions to the NW Passage. At one point there 13 ships looking for them and searches continued for many years. They only found a few relics of the expedition, including 3 graves, empty cans of food, some stories from local Inuits and a note with details of the expedition fate.
- D. Rig to reef project. Abandoned oil rigs are being converted into reefs. These rigs are from Tuktoyaktuk, an Inuit hamlet in northern Canada, but rig to reef projects are being studied and are happening over the world eg Gulf of Mexico and it is being considered in the North Sea.
- E. Caribou, based on Cape Dorset Inuit Art. These migrate over the tundra and boreal forests of northern Canada. The Caribou of Canada and the Reindeer of Norway, Scandinavia and Russia are almost the same animals.
- F. NW Passage with islands and Croker Mountains mirage under a clear water flap. John Ross, aboard HMS Isabella lead an expedition exploring a route through the North West Passage in 1818. Whilst in Lancaster Sound, he thought he saw some distant mountains blocking their way. These were just a mirage, and there were no mountains, as in fact, there was clear water and this was the route through the passage. He named the non existent mountains, Croker Mountains after John Wilson Croker, the First Secretary of the Admiralty. He then returned home, despite the protests of several of his officers, including Parry and Sabine. The account of his voyage, published a year later, brought to light their disagreement, and the ensuing controversy over the existence of the Croker Mountains

ruined his reputation. This expedition failed to discover much that was new. Its main effect was to open a route for whale ships to northern Baffin Bay and provoke Parry to re-explore Lancaster Sound and find a major portion of the Northwest passage.

- G. In 1845, Captain Sir John Franklin led an expedition to traverse the last un navigated section of the Northwest Passage. Both of his ships, HMS Erebus and Terror were trapped in ice in Victoria Strait near King William Island. The entire expedition, 129 men including Franklin were lost. Beneath is a radar image of the recently discovered HMS Erebus on the sea floor <http://www.dfo-mpo.gc.ca/media/infocus-alaune/2014/Franklin/index-eng.htm>.
- H. Frobisher's gold – iron pyrites. Sir Martin Frobisher (1535 or 1539 to 1594) was an English seaman and Privateer. He made three voyages to The New World to look for the NW Passage. All landed in NE Canada. On his second expedition Frobisher found what he thought was gold. He carried 200 tons of it back in three ships. He returned and dug several mines and carried 1,350 tons back. It was only after years of smelting that it was realised that this wasn't gold, but worthless iron pyrite. As a privateer he went on to collect many riches from French ships and was later knighted for his services in repelling the Spanish Armada in 1588.
- I. Archaeological remains of Viking turf house settlement – specifically L'Anse aux Meadows Hall A from one thousand years ago.. These also appear on Iceland and are evidence of Vikings settling and moving between Newfoundland and Iceland. There are different types of turf houses over an extended period of time. http://www.hurstwic.org/history/articles/daily_living/text/Turf_Houses.htm has more information on these turf houses.
- J. Greenland with melt water lakes.
- K. Twilight Owl, based on Cape Dorset Inuit Art. This is on Greenland to show that Inuit live there.
- L. Receding glacier. Greenland is covered by a huge amount of ice. As a result of global warming, its glaciers are now retreating and these are studied by glaciologists at SPRI.
- M. Iceland. The red and orange represents the 'Line of Fire', where the volcanoes lie on the Mid-Atlantic Ridge that bisects the country. Archaeological remains of a Viking turf house settlement, similar to those on Newfoundland (see I above).
- N. Cold water circulating out of the Arctic Ocean
- O. Mother Walrus and young, based on Cape Dorset Inuit Art.
- P. Rainbow cirrus cloud – atmospheric effect caused by ice crystals.

- Q. Beluga whales trapped in a bay by ice in the north easternmost corner of Russia. The patch is inspired by a Cape Dorset Inuit representation of Beluga whales. The whales went into a bay to feed, but then got trapped by ice and started to die from suffocation and starvation. A Russian ice breaker, the Muskva broke through the ice but the whales didn't follow it back out through the ice-free path. They had to enticed out by the ship playing different types of music, popular, martial and classical. It was the classical that persuaded the herd to follow the ship to freedom. <http://www.nytimes.com/1985/03/12/science/russians-tell-saga-of-whales-rescued-by-an-icebreaker.html>
- R. Oil derrick. Oil extraction in northern Russia, Canada and Alaska
- S. Nuclear submarine crossing the North Pole by going under the ice. Source of image Hervey 1994. There are white beams depicting the types of sonar and echo sounders that the submarine used, to find its way safely under the ice. There are narrow echo sounders beams going upwards from the front and back of the submarine. From the front, there is a downward looking discreet echo sounder. The narrower, upper beam looking forward is a forward looking mine and ice keel detection sonar beam. The broader beams, shown going forward and backwards represent 'all round broadcast cylindrical Melee sonar. The patch on the mat has ice keels and a polynya of clear water. The top and underneath of the flap have a polynya of open water in the same place.
- T. Deep pocket for narwhal – they are very shy creatures who like to hide, and only come out when everyone/everything is quiet!
- U. Amundsen's Airship, The Norge crossed The North Pole in 1926.
- V. Novaya Zemlya, with three craters used as nuclear weapon testing sites.
- W. Polar Bear den, often found on Svalbard and nearby islands. The dens are often divided up and can get very warm. The entrance is sealed up, so you can't see in from outside, (unlike the den on the mat), and at the appropriate time the Mother bear punches a hole to let the cubs out. The cubs pooh in one area of the den, and the mother covers over the pooh by scraping ice and snow over the top. The mother doesn't pooh as she is fasting for several months whilst they are in the den.
- X. Algal bloom in the Barents Sea. These are often caused by the warm and nutrient rich water flowing north from the Atlantic. More details and beautiful images of this, which inspired this patch at <http://mallemaroking.org/barents-sea-plankton-patterns/>
- Y. Hot water from The Atlantic moves into The Arctic Ocean and The Barents Sea
- Z. Sun dogs and light pillars beneath a flap inspired by a Moon with arcs and halos. Sun dogs and light pillars are examples of phenomenon caused by icy crystals in the atmosphere. It is possible to get seven sun dogs in a row. Light pillars can also form from artificial lights, especially from settlements in the Arctic. Halos can form around the sun and moon.

1. Generic icy water pocket.
2. Reindeer and seasonal migration routes, generally perpendicular to the coastline.
3. Boreal forests are being affected by the melting permafrost. The ground lets and the trees no longer have the support of solid ground, so they fall over and die. As they lie at rakish angles, they are called 'drunken trees'. Researchers from SPRI who visit these forests come back with their notes covered in squashed mosquitoes, as there are so many there. So the researchers often wear protective clothing.
4. The Aurora Borealis, or Northern Lights 'dancing ' around The North Pole. Charged particles emitted from the sun during a solar flare enter the earth's magnetic shield and collide with atoms and molecules in the atmosphere. These collisions result in countless little bursts of light, called photos, which make up the aurora. You can put some colourful elastic hair bands into the pocket, which can then be stretched to show how the aurora move.
5. Beaded River, a feature of the permafrost tundra. These are common but unstable features in the permafrost zone. They can only form with small gradients and flow rates and are caused by differential melting of various types of ice in the permafrost. If you want to know more: https://www.researchgate.net/publication/263479340_Beaded_channels_of_small_rivers_in_permafrost_zones
6. Pollution around Norlisk caused by metal smelting The main metal smelting is Nickel (Ni), but also Copper (Cu) and Cobalt(Co). The town is very polluted and the air is full of smoke and the ground covered in fine grey and black ash. There is dead boreal forest for miles all around the town, shown by the 3 black tree trunks. The top surface of the flap represents lush, unpolluted land that should be surrounding the town.
7. Lichen. This looks like a plant, but its not. Its a composite organism that arises from algae or cyanobacteria living amongst filaments of multiple fungi. It often forms branchlike structures and is eaten by the herbivores living in the tundra eg reindeer.
8. Generic land pocket.