Introduction to Weddell Seals
McMurdo Sound, Antarctica

By Jean Pennycook
McMurdo Sound is about 35 miles long and wide and surrounded by the Ross Ice shelf to the south, Ross Island on the East, the Royal Society Mountain range on the west and the Ross Sea to the north. This area is the southernmost place in Antarctica with open water and was used by many of the early explorers as a jumping off place to explore the continent.
In the winter (March –Sep) McMurdo Sound becomes frozen with a cover of about 2 meters (6 feet) of ice. In the summer much of the ice breaks up offering easy access to the ocean for the seals.

A frozen McMurdo Sound. A few scattered seals are resting on the ice.
Weddell seals (*Leptonychotes weddelli*) are one of five species of seals that live in Antarctic Waters, and are the southernmost mammal in the world. The other species are Leopard, Southern Elephant, Crabeater and Ross Seals.
It is estimated that between 32,000 and 50,000 Weddell Seals live in Antarctica with about 2,000 in our study area of McMurdo Sound.*
Weddell Seals are uniquely adapted to live on fast ice (ice that is connected to the land). They live near natural cracks in the ice or use their teeth to create and maintain a hole for access to the ocean and breathing during foraging trips.

Fast ice connected to an island with seals on the ice near some cracks. This is their natural habitat.
Pack ice with large ice floes for seals to rest on.

Other seals prefer more open water and haul out on land or onto ice floes to rest.
Living in areas of fast ice, which can be a long way from open water, helps protect Weddell Seals from their main predators, Leopard Seals and Killer Whales.
Weddell Seals get their food from the ocean, so living on the fast ice means these seals must maintain a hole in the ice to 1) gain access to their food and to 2) breathe during foraging trips. They do this using their strong teeth to wear away the ice. Males will guard these holes against other males.
A young Weddell seal pup on the sea ice. It’s mother is nearby.

Weddell Seal pups are born on the sea ice from September to November, depending on latitude. In the southernmost area of their range (McMurdo Sound), the pupping dates are late October to early November.
At birth, the pups go from an environment of 37°C (98.6°F) to -20°C (-40°F), a drop of over 57°C (100°F). Weddell Seal pups have to be tough to survive in this harsh environment. Pups are about 1.5 meters (4.5 feet) long and weigh between 22-29 kg (48-64 lbs) at birth.
The mother’s milk can contain up to 60% fat, so these pups gain between 1 and 2 kg per day. When they are weaned at 7 weeks, they can weigh 100 kg. At weaning, the pups are left alone to find food.
For the first 3-4 years of their life, Weddell Seals are considered sub-adults and spend their time on the pack ice eating, growing, and resting on ice floes as far as 400 miles north of the McMurdo Sound area*.
Adult Weddell seals reach 2.6-3.0m (males) and 2.6-3.3m (females) in length and weigh between 300-600 kg.

A group of adult Weddell seals on the ice.
A Weddell seal using an access hole in the ice.
Foraging trips have been recorded up to 82 minutes long and 700 meters (2,300 feet) deep, but the average is 350 meters (1,150 feet) deep and 20 minutes long.
Breeding takes place in December after weaning of the pups and, although much of the population moves north for the fall-winter-spring season, many animals stay in the McMurdo Sound area all winter long.

This group of seals will stay close to this hole near the crack in the ice. As long as they have access to the ocean, these seals may stay in this location.
Here you can see a large group of Weddell Seals on the fast ice near some tidal cracks. The cracks provide access to the ocean (and food) underneath the ice. Photos like these are used to count seals. If you would like to help us count the seal population in McMurdo Sound, visit our activity page.
Some places to explore if you would like to learn more about Weddell seals:

http://weddellsealscience.com/
http://www.montana.edu/rotella/research.htm
http://www.montana.edu/rgarrott/antarctica/