32# Winter and Ice

One measure of when winter begins for a marsh is when ice completely covers the surface.

Dramatic changes take place then. Snow piles up on the ice and forms a blanket that blocks out light, leaving many organisms to spend much of the winter in the dark.

This may not be as bad as one might imagine, because snow and ice also insulate the waters below from heat loss. Even in the ice-covered waters, the water, of course, is above freezing.

Living in the dark at temperatures above freezing is not without problems in a shallow marsh. All plants and animals need oxygen for respiration. Is there dissolved oxygen for them beneath the ice? Perhaps, but not always.

After ice forms, oxygen from the air above can no longer be mixed into the water.

Water plants can also release oxygen as a bi-product of photosynthesis. Would plants release oxygen in the dark? Unfortunately not; they need light to energize photosynthesis.

Flows from winter rains or thaws do carry oxygenated water into the marsh that refreshes the oxygen supply under the ice from time to time in some winters.

Even so, in a shallow marsh dissolved oxygen usually is used up by the life in the water well before the ice melts in spring. Thus oxygen needed by aquatic plants and animals beneath the ice becomes rare or even absent in winter.