

## MARCH 1 - 14, 2017 NATURAL HISTORY NOTES FOR EASTVIEW

By Dick Harlow

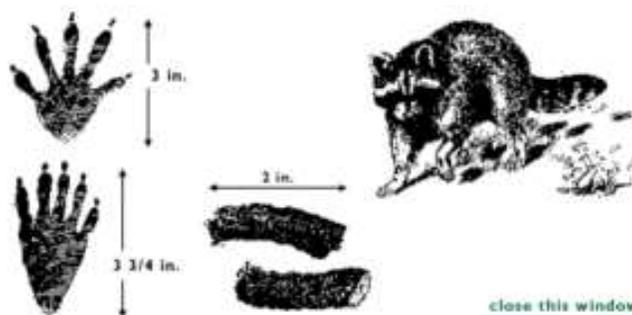
### RACCOON – PROCYONID FAMILY

Procyonids are medium sized carnivores or omnivores, such as the Raccoon, that inhabit a wide range of environments and tend to be generally omnivorous about what they eat. Therefore, their food make-up could be berries, nuts, roots, insects, voles, mice, crayfish, frogs, etc. Any evidence that a Raccoon has been seen around EastView?



North American raccoon, *Procyon lotor* © Ginger Holser

Tracks and scat have been observed, the scat on shore and the tracks in the mud by the south pond. This fellow can live in a number of places either the woods, opposite the meadow, near or in some human habitation or outbuildings. Since they primarily hunt at night our pond or the north pond represent perfect opportunities. And, as there are no kids or outdoor dogs to worry about, EastView could represent the perfect spot providing they can find enough food to survive. Normally Raccoons reside in forests, marshes, mountains, and urban areas; they may den in attics, chimneys, or crawl spaces. They will raid trash. Cottage residents keep their trash inside, put the barrels out once every two weeks; it is unlikely that EastView represents an opportunity for that part of their diet. There doesn't seem to be a prevalence of different type of berries, therefore, it looks like it is either the frogs they catch, the insects or a vole that would make up their diet around EastView. Therefore it is not necessarily a spot where they would take up permanent residency.



© mspca angell

The above drawing shows examples of the footprint and scat.

It was once thought that Raccoons were solitary, but research has shown that they separate by gender. Females that are related will share a common area and males will form groups of four to guard against invading groups of males.

An animal's "home range" is a term given to how much space an animal needs to survive. This space is determined by where they live, either in a human community or in the forest or on the prairies. For example if Raccoons are successful raiding human trash bins to make a living, their actual "home range" will be much smaller than a Raccoon living in a rural area. Research has shown that Raccoons that come in and out of towns and cities have a "home range" of about 7 acres; whereas those living in a rural community might need as much as 12,000 acres, certainly a significant difference in available food. Scarcity requires more space, i.e. a larger "home range".

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### ICE & PLANT CRYSTALS



Picture (1), Ice Crystals © Dick Harlow

Looking at these two pictures of ice crystals and the miniature beauty that they appear to show, I thought it would be interesting to look at a plant's ability to withstand freezing temperatures, whether those temperatures occur early, late or during mid-winter.

Different plants in different parts of the country react differently to freezing temperatures. Obviously I will refer to native Northeastern plants and not mid-latitude or tropical plants even though there may be some similarities.

Within plant tissue the cells are made up of approximately 80-85% water. When water freezes it expands, increasing in size and area. This expansion can quickly rupture cells, connective tissue or whole parts of a plant if it didn't have some form of defense.

When ice crystals form, whether inside tissue, between cells or in the cell itself, miniature sharp ice needles can form and if expansion does not puncture surrounding cells these hard forming needles could. So one can see that ice crystals could certainly be damaging to plant cells.

However, plants seem to go through the winter in a dormant stage and come out in spring and summer, having survived and produce leaves and food by undergoing photosynthesis seemingly unaffected each year.

Besides the many layers of cell tissue on the outside of plants they also are able to develop anti-freeze. The more substances that are in the water the lower the temperature water needs to go before it actually forms ice. Example: freshwater will freeze at 32°F; however saltwater freezes at 28.4°F.

The dried parts of a plant do not have living tissue, consequently there is no water in the dried plant material. However, living tissue does have water along with various dissolved salts, minerals, sugars, such as glucose, sucrose, and fructose. All of these substances in cells act like anti-freeze. Consequently, they decrease the temperature at which water freezes. Also, during Fall and as Winter approaches, plants will move water from outside tissues to the inner part of the stem so water will not freeze when temperatures go below freezing outside the plant.



Picture (2), Ice Crystals, close-up © Dick Harlow

Looking at each of these pictures you can see that the crystals have formed on the outside of

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the branches. The living cells are inside by several layers of the stem with a high degree of dissolved substances and away from immediate freezing.

### AMERICAN BULLFROG



American Bullfrog, *Lithobates catesbeianus* © Dick Harlow

When you hear the Bullfrog “sound-off” during the Spring and early Summer from both south and north ponds, you may be curious about what happens to them when our ponds freeze in the Winter.

Amphibians are true cold-blooded animals. They cannot internally regulate their body temperature. Therefore, in the summer, they will seek out the heat of the sun when they are cold or they will go into the shade or stay deeper in the water when they are hot.

Come Fall and as Winter and freezing temperatures cool the water to below freezing amphibians will sink to the bottom where they will hibernate. Turtles, who are reptiles, might dig into the pond bottom, but Bullfrogs tend not to. Frogs need more oxygen than they would get by staying in one place at the bottom of the pond. So they will swim slowly around in their hibernated state to get no oxygen from the water by absorbing it through the skin.

As pond water or lake water cools during the Fall, which is the beginning of frogs’ hibernation period, the Bullfrog as well as other frogs that hibernate in water, have the ability to add excess glucose to their vital organs. Simply stated it has been found that the glucose acts like antifreeze just as it does in plants. The glucose prevents the freezing temperatures from damaging the vital organs. This is the explanation for why scientists have recorded frogs being unharmed when released from a block of ice!

So not to worry, we will hear Peepers, Bullfrogs, Green Frogs and other amphibians sooner than you know!

### **OBSERVATIONS**

#### MAMMALS

Eastern Coyote (Coywolf) – Heard  
Gray Squirrel – 3+ individuals  
Eastern Chipmunk – individual, 12 March  
Eastern Cottontail – scat, tracks  
Meadow Vole – runways in grass & compost

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**Weather Tidbits**

Month of MARCH 1-14, 2017

*All Measurements taken at solar noon (1230 EST).*

**PRECIPITATION**

Total Precipitation: 12.8 mm or 0.5 inches

Overcast Days: 5

**TEMPERATURE**

Mean Temp: -5.9 C<sup>0</sup>/21.4°F

High Temp: 15.5 C<sup>0</sup>/59.9°F

Low Temp: -20.1 C<sup>0</sup>/-4.2°F

**DAYS**

MAX < 0.0 C<sup>0</sup> 8 DAYS

MIN > 0.0 C<sup>0</sup> 12 DAYS

MAX < -18.0 C<sup>0</sup> 2 DAYS