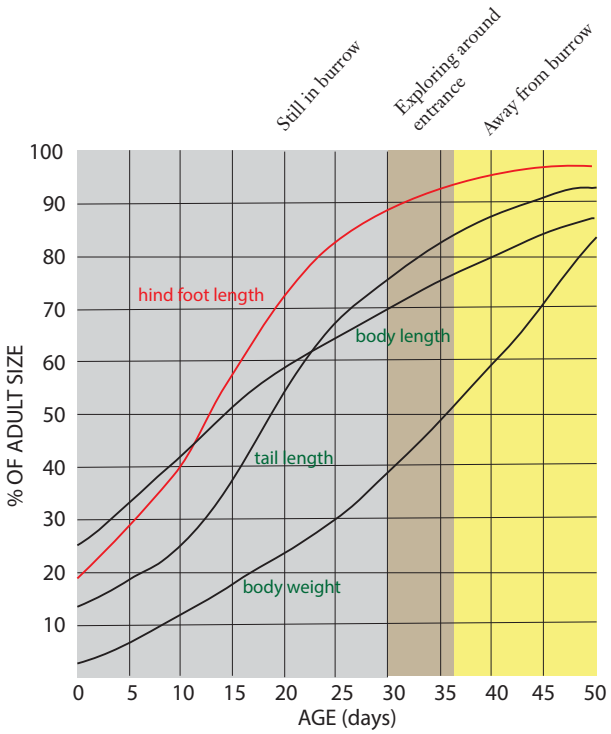
THE LEARNING CIRCLE: NOTES, THOUGHTS & PROJECTS

I. Juvenile Animals, Adult Tracks

Telling the age of an animal from the size of its tracks can be straightforward or it can be nearly impossible. The animal will determine which, because it depends upon the overall growth rate of the animal, and on the relative growth rate of the feet vs. the rest of the body.

Slow-growing mammals such as black bears take 4 1/2 years to reach their full size, and their feet seem to develop proportionately. So a tracker can pretty easily tell the difference between the tracks of a cub in its first year and those of a yearling in its second year; both would be traveling with their mother and their track widths would likely vary by an inch or more in width. Some predators grow slowly enough that juveniles' tracks can be distinguised for at least part of the year. For example, in summer gray fox pup tracks will measure perhaps 3/4 to 7/8 inches wide, but by October their tracks begin to overlap in size with some adults'.

However it's an entirely different story with many rodents, so I'd like to share some fascinating information I found as I studied rodent biology. We trackers are indebted to field biologists from the 1940's through 1960's who, when studying the growth rates of species such as ground squirrels, woodrats and kangaroo rats, also measured the *length of their feet* as they matured. No, they did not measure *tracks* nor the *width* of the feet, but I'm confident that these would be proportional.



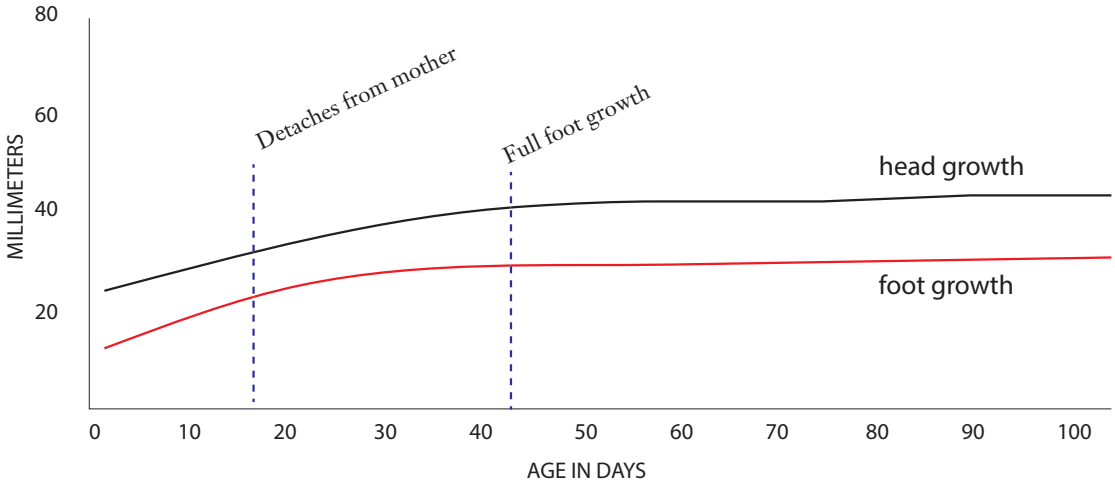
Belding ground squirrel development, adapted from Richardson, 1971

Take a look at the chart at left showing the growth of the Belding ground squirrel. When young squirrels first emerge from their natal burrow, they weigh 40% of adult size though their body length is 70%. However, their foot length is already 90% of adult size as they begin to explore around their burrows at 30 days, and is 93% by the time they venture away from the burrow entrance.

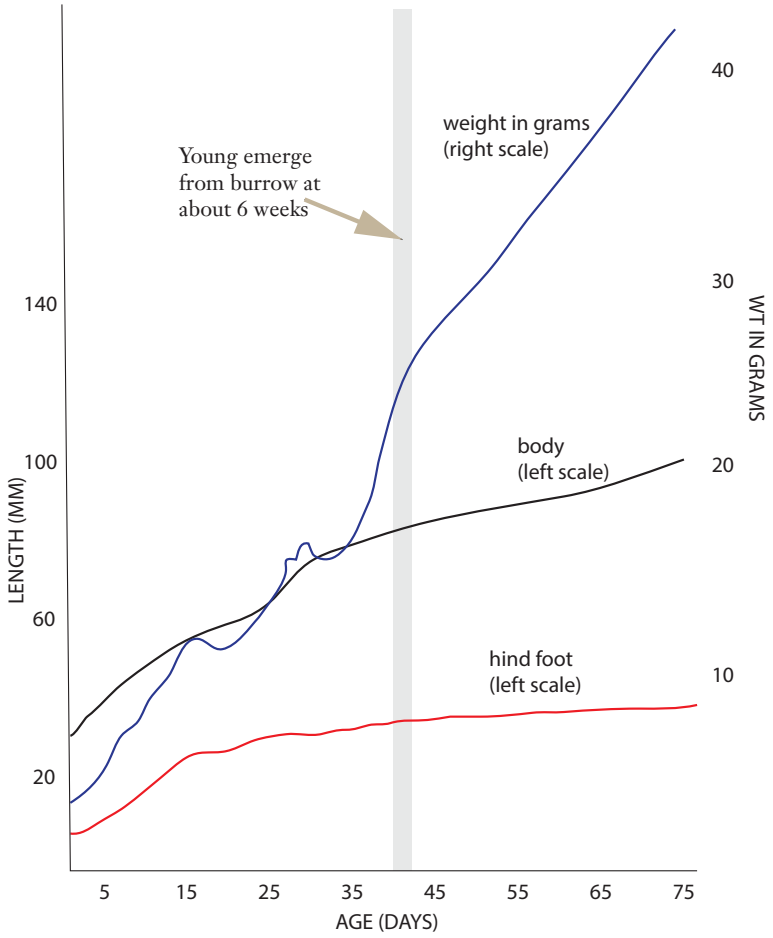
A few years ago a female California ground squirrel raised five young in a burrow in our backyard, giving me the opportunity to capture and measure tracks on tracking boards placed nearby. By the time I recorded good tracks, the young squirrels were probably just at the beginning of the "away from burrow" stage. Then, a typical hind track measured 5/8 inches wide by 1 5/8 inches long. The latter measurement falls exactly in the middle of all of my ground squirrel ones, and the former, though at the bottom, coincides with a number of measurements I made at times of the year when only adult ground squirrels would have been present.

A similar pattern was found in woodrats, detailed in research from in 1943. Actually, in the first part of a young woodrat's life, extending to about 16 days or longer, the baby is securely attached to the mother's nipple, even as she moves about and feeds, so that the only time a tracker might find its tracks is if the mother has forceably detached one of its young. (In this way, if the female suddenly has to run to safety, she carries the next generation with her.) By the end of the attachment period, both the animal's head and its foot length are about 75% adult size. But in a mere 25 more days the woodrat's feet become adult size; practically, a tracker might distinguish young woodrat tracks from adult ones by their size for only two weeks during that animal's life. See the chart on page 2.

In 1941, some biologists studying the Tulare kangaroo rat observed a female raising her young in captivity in a Berkeley laboratory, and charted their growth rate as well as their maturing motor skills. At 16 days old, just a day or two after their eyes opened, the rats' feet were already 75% adult size though their body weight was only 25%. At 25 days, young kangaroo rats could hop bipedally. By the time juveniles would emerge from their burrow for the first time at about 42 days, their foot length was 93% of adult



Woodrat development, adapted from Richardson, 1941.



Tulare kangaroo rat growth, adapted from Tappe, 1941

size while their body mass was only 60%. The young could begin to dig small holes soon after they emerged but could not dig tunnels until they were about two months old.

These examples show why we do not see half-sized tracks of ground squirrels that might be mistaken for chipmunk as one example. Then how do we begin noticing tracks of young animals of species whose feet grow much faster than their weight? One clue, subtle to say the least, would be noticing weight differences in tracks. Another more evident clue is behavior. From our home we watch gray squirrels in the forest below us during early summer. Juveniles are easy to spot because they frequently run amok, chasing one another, leaping from the ground onto a sapling and somersaulting back to earth among many other acrobatic manuvers. Goal directedness and efficient foraging are not in their vocabulary, something the tracks will tell.

Resources:

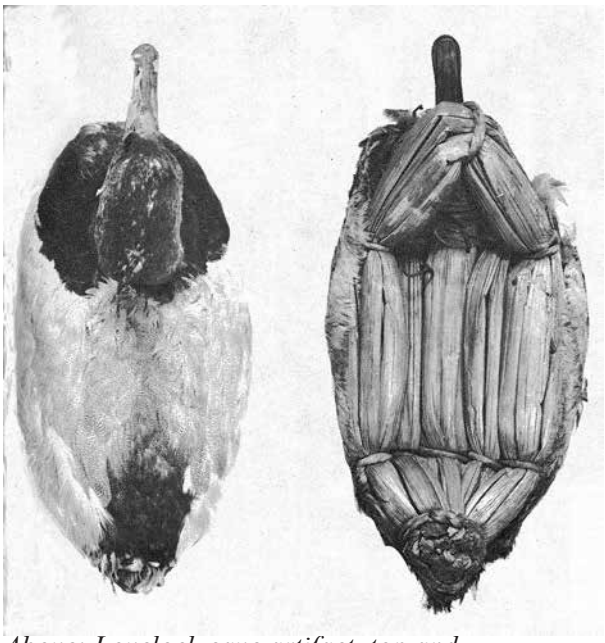
Morton, M. L, "Growth and development in the Belding ground squirrel," *Journal of Mammalogy*, 52:611-616 (1971)
Richardson, R. B., "Wood rats: their growth and development," *Journal of Mammalogy*, 24:130-143 (1943)
Tappe, Donald T., "Natural history of the Tulare kangaroo rat," *Journal of Mammalogy*, 22:117-148 (1941)

II. Traditional Duck Decoys

(reprinted from Dirt Times, Winter 1999-2000)

Decoys to attract waterfowl have a long history and thus our learning to make them in a Traditional Skills class brought with it the satisfying connection with an ancient skill as well as practical knowledge.

In the Lovelock cave in Nevada, as well as other places, decoys have been discovered that date to about 1,500 years ago. The Smithsonian has one of these artifacts constructed much like we learned from Jacques Condor, our teacher and an elder whose tribal heritage is Tsimshian/Abenaki/Naskapi. Some of the Lovelock decoys were covered with the actual skin of a duck; this covering



Above: Lovelock cave artifact, top and underneath view, in Smithsonian.

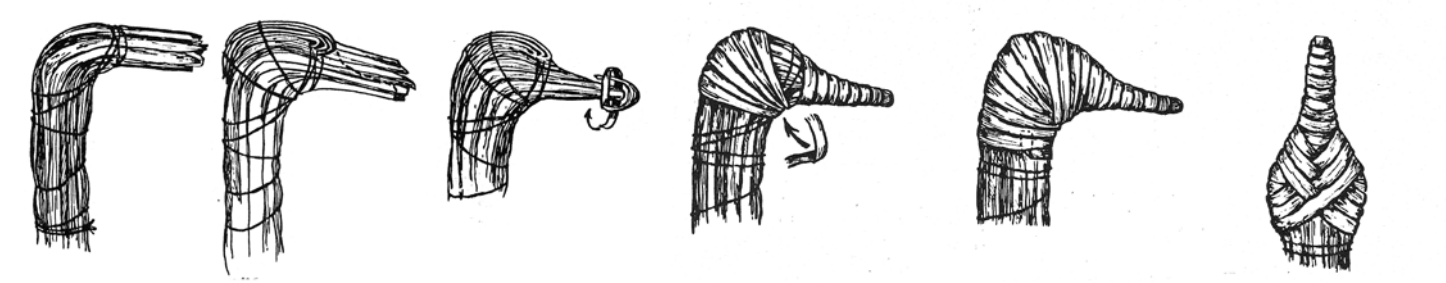
technique is depicted in detail in Margaret Wheat's *Survival Arts of the Primitive Paiutes*. But some were merely decorated with feathers. Decoys were made and used into this century.

We began by taking about twelve tule reeds and trimming them to two or two and a half feet long. Because tules taper, we alternated the fat with the thin ends so the whole bundle was more or less uniform. We happened to use green tules, but could have used dried ones which had been soaked. Green materials create a handsome decoy which will, though, shrink as it dries.

This bundle is tied at the midpoint and halfway towards each end; then it's bent into a "U" shape and the two tail ends are tied together. To make this elliptically shaped ring wider at the duck's breast, we next inserted a second, shorter "U" shaped bundle of tules inside of it, pressing it down until the front of the duck was pushed out quite a bit. This second bundle sits below the top of the outside ring, in other words leaving a depression inside the duck.

Next we placed a third bundle of tules, once again "U" shaped, inside the above mentioned depression so that it rises a little above the top of the outside ring. These three bundles were then wrapped together with long cattail leaves.

Now that the duck's body was finished, we constructed the head. About ten tules were gathered together and the last four or five inches bent to a ninety degree angle suggesting the duck's neck and head; this was tied with cord. From the short end of this "L," about half of the tules were doubled back so that the beak became narrow and the crown became fatter. This whole neck and head was then wrapped tightly with cattail leaves, and the neck stuck tightly into the body, in the hole in the center of the three rings. The head was painted red.



Sequence of wrapping the head to be inserted into the body loop.

Wrapping the tule reed loops which make up the decoy's body. The decoy here is upside down.

Newly finished decoys on shore attract curiosity, as planned.

1113 Cougar Ct., Frazier Park, CA 93225 • 661-245-0318 • jim@earthskills.com