

# Mother Knows Best



“**M**other knows best” is a familiar saying most of us hated to hear as youngsters. But for young herbivores paying attention to mother is crucial for learning where and where not to go and what and what not to eat. Through interactions with mother, young animals learn about their surroundings - from the whereabouts of water, shade, cover, and predators to the kinds and locations of nutritious and toxic foods.

**In the beginning.** Learning about foods begins before birth as young animals experience the flavors of their mother's diet in the womb. Young animals also learn about the flavors of foods mother prefers as they suckle as those flavors are transferred through her milk. The flavors of plants like onion and garlic are transferred to offspring in the womb and in milk, and familiarization increases the likelihood that offspring will eat onion and garlic when they forage.

**Learning to eat.** As young animals begin to forage, they learn which foods to eat by following mother. Young animals learn quickly about new foods and they remember those foods for years. Lambs fed nutritious foods like wheat with their mothers for 1 hour a day for 5 days ate more wheat than lambs introduced to wheat without their mothers. Even 3 years later, with no additional exposure to wheat, intake of wheat was nearly 10 times higher if lambs were exposed to wheat with their mothers than if they were exposed to wheat by themselves.

Offspring learn to eat nutritious foods and avoid toxic foods by observing mother select nutritious foods and avoid harmful foods. Lambs given a choice of the two palatable shrubs - mountain mahogany and service-berry - one of which their mother was trained to avoid by pairing shrub ingestion with toxicosis, avoided the shrub their mother avoided. Through her actions, mother models beneficial foraging behaviors for her offspring.

Despite mother's influence, young animals don't eat foods that make them sick even if their mother relishes the food. Lambs made sick each time they eat a food, even a food their mother strongly prefers, soon refuse to eat the food. The same is true for humans. Children who are lactose intolerant refuse to eat dairy products even if their parents eat them.

A lamb learns about new foods more quickly when it eats with its mother. Lambs exposed to barley with their mothers ate 40% more barley than lambs exposed to barley with an adult female from the flock. However, eating barley with any ewe dramatically improved consumption by lambs compared with lambs exposed alone to barley.

Watching mom eat a food is not nearly as effective as eating the food with mom. Lambs that ate barley with their mothers subsequently ate 5 times more barley than lambs that merely watched their mothers eat, but could not actually eat the barley.

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**Learning where to go.** Both livestock and wildlife inhabit specific areas in the environment called home ranges, areas animals tend to occupy year after year. Interactions with mother influence where home ranges are established.

In one study, Welsh Mountain sheep preferred native range while Clun sheep preferred seeded range. Lambs from Welsh Mountain sheep were grafted onto Clun sheep and vice versa. After weaning, the Clun lambs preferred native ranges, whereas the Welsh Mountain lambs preferred seeded ranges. The same has been shown for cattle on rangelands.

Animals may stray from home ranges because of interactions with peers or lack of water or food in times of drought or fire. But they generally return to their home ranges when conditions improve. If drought dries up a water or forage supply, cattle must travel to find other sources of water and forage, thereby increasing the size of their home range. When precipitation returns, cows are likely to return to their original home ranges.

Peers can also affect home range use. In one study, calves from different summer home ranges spent the winter together. The following summer, the size of their home ranges increased as animals with different backgrounds interacted. As they matured, each group eventually returned to the home range they used as calves.

Wild herbivores also learn habitat preferences from their mothers. In some cases, home range fidelity is so strong that offspring actually use poorer quality habitats as a result of experiences with mother. For instance, each fall a herd of moose in central Norway migrates to high-elevation winter ranges even though this is contrary to normal patterns of migration to the lowlands near the sea. Archeological evidence indicates this has been occurring for the past 5,000 years. The moose evidently began this migration pattern because of hunting pressure. This behavior continues despite lower-than-normal calf production of the herd due to poor winter ranges conditions, and it demonstrates the persistence of learned habits.

**Conclusions.** The fact that animals learn quickly and effectively from mother creates both problems and opportunities for managers. It is a problem with "bad" habits that are difficult to change. Many problems with cattle result from learned preferences for riparian habitats. On the other hand, the fact that preferences are learned also creates opportunities. Bad riparian habits can be changed through the use of routine riding. Once new behaviors are learned, they will be passed from mother to offspring. The same is true of dietary habits. For example, feeding ammoniated straw in winter reduces feed costs. Unfortunately, cows with no exposure to straw lose more weight, produce less milk, and take longer to breed back than cows exposed to straw as calves with their mothers. Knowing that experience influences behavior, managers can devise ways to expose replacement animals to straw, thereby reducing the cost of operation without compromising the productivity of their mature cows.

## References

Howery, L.D., F.D. Provenza, R.E. Banner and C.B. Scott. 1998. Social and environmental factors influence cattle distribution on rangeland. *Applied Animal Behavior Science* 55:231-244.

Provenza, F.D. 1995. Tracking variable environments: There is more than one kind on memory. *Journal of Chemical Ecology* 21:911-923.

Funding provided by Utah Agricultural Experiment Station and USDA-IFAFS. Produced by Utah State University in collaboration with University of Arizona, University of Idaho, Montana State University and the National Wildlife Research Center with research conducted at Utah State University.

