

The Secret Lives of Horses

by Daniel I. Rubenstein

HORSES IN THE BARNYARD LEAD SHELTERED LIVES. They are cared for and loved by people and in return provide pleasure to riders or livelihoods to those working the land. When they are on their own, horses in barnyards walk and *gambol* in seemingly carefree abandon. Thousands of years of breeding and domestication have created the horse we all know and love. But deep inside lie secrets of their former wild lives.

The horses I study roam freely on Shackleford Banks, a barrier island off the North Carolina coast. The ancestors of these horses — much like those of *Misty of Chincoteague* — were sailing from the Caribbean to Virginia when their ship went aground on Shackleford's beach over 350 years ago. Horses that were accustomed to receiving food, comfort, and protection from people had to fend for themselves for the first time. They had to learn what to eat and where to go to find food and water. They had to learn how to get along with other horses

without the help of people. They had to learn how to mate, give birth, and rear foals by themselves. And they had to learn how to signal to each other their needs and abilities. In short, they had to reinvent how to live on their own. My studies, and those of other field biologists, on the behavior and ecology of free-ranging horses have revealed the lessons they and their ancestors have learned. Their secrets reveal a life in the wild full of wonder and intrigue. Once understood, traces of the wild can be seen today even in the *dobbin* in the barnyard.

Ranging and Feeding

Horses in paddocks rarely miss a meal and often receive treats.

They have their coats groomed regularly and their hoofs are trimmed and shod when needed. They're given a blanket if cold and provided with shade if hot. In the wild, horses have to figure out how to meet their own needs. Understanding horses' choices requires that researchers know each horse individually. Fortunately for us, horses come in a variety of colors and are graced with facial stars and blazes. By repeatedly following the movements and actions of recognizable individuals, we begin to see how horses solve problems posed by nature and the actions of other horses.

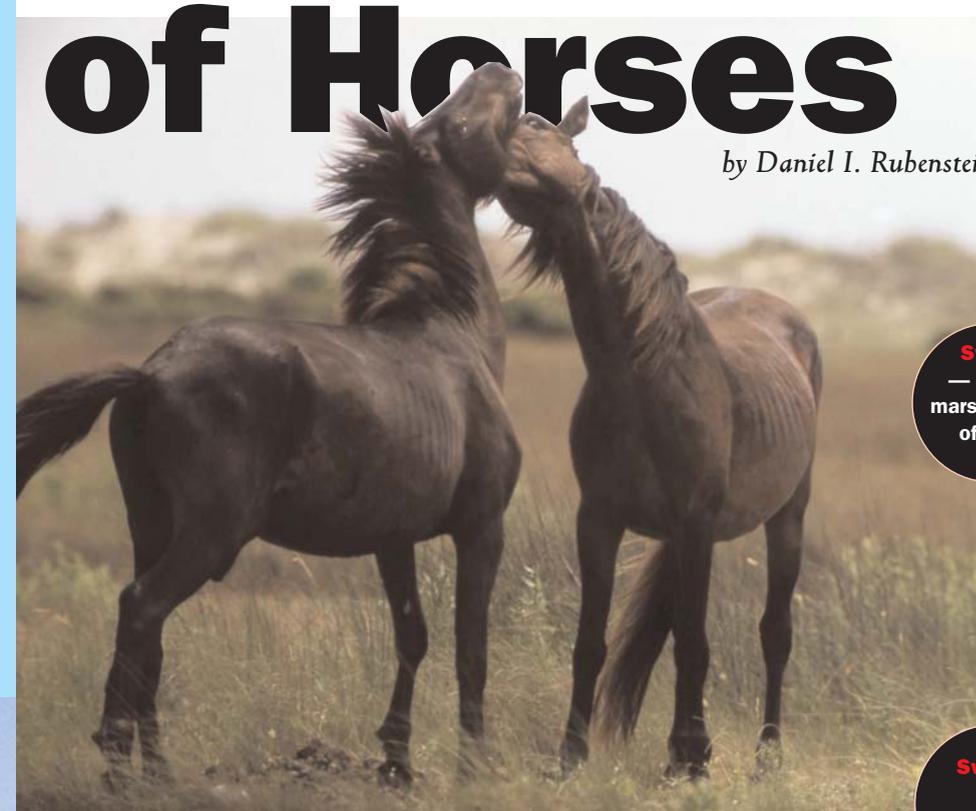
Our studies have shown that on Shackleford Banks, grass makes up the bulk of a horse's diet. But

Gambol
— Leap playfully

Swale
— A low, marshy tract of land

Swards
— Grasslands

Dobbin
— Working horse



The secrets of free-ranging horses reveal a life in the wild full of wonder and intrigue.

grasses come in many varieties, and not surprisingly, the rarest types are often the most nutritious and are located in inaccessible or dangerous places. How then does a clever horse get a meal? Shackleford horses solve this problem by restricting their movements to known areas called *home ranges*. Even though these ranges can be large, moving about in familiar places teaches horses where the best foods grow and when they can be eaten.

On the island, each family group tends to follow a daily routine. Early in the morning they eat marsh grasses if the tide is out. Then they move to grassy lawns amid the dunes during the middle part of the day, and finally, in the evening, they eat the tall grasses growing on the dunes.

One reason Shackleford horses

follow this routine is that they are pestered by biting horse flies. Tail swishing swats away some, but the best remedy to avoid these pests is to stand in the wind. In the early morning, the air is generally still, except on the tidal flats, so that is where the horses head first. Then as the onshore winds strengthen, horses can occupy the low-lying grassy *swales* containing the highest diversity and richest foods. And as the winds die with the setting sun, the horses climb the dunes to catch what is left of the breeze. Even though some of the most moist and digestible grasses grow under the trees deep in the maritime forest that covers the back side of the island, they are off limits until near gale-force gusts drive the flies away from these nutritious *swards*.

Fighting and Cooperating

The most striking differences between *feral* horses — formerly domesticated horses that now live free — and those living in barnyards, are the ways aggression and cooperation organize their lives. Females in barnyards rarely fight over access to food and water. A few contests early on when horses are getting to know each other create a pecking order in which each horse becomes boss to some and subordinate to others. Once such a social, or dominance, hierarchy is established, a peaceful ordering of access to important resources is assured.

In the wild, however, food and water are rarely clumped as they are in barnyard troughs. Instead, grass is spread out and water can be



accessed in many places. As a result, competition among females is rare and dominance is rarely shown. For females, daily life is mostly peaceful, which is good since about 70 percent of days and nights are spent feeding. The rest of the time they walk, nap, and socialize by grooming each other to keep pesky biting flies away.

Without strife, females can come together to form long-lasting family groups. But the groups they live in are rather special. They consist of many unrelated females and their young, but also contain one male. This group is called a *harem*, but the males are not bossy “harem masters.” If harem males become too aggressive and herd their females too vigorously, females will leave and the group will disintegrate.

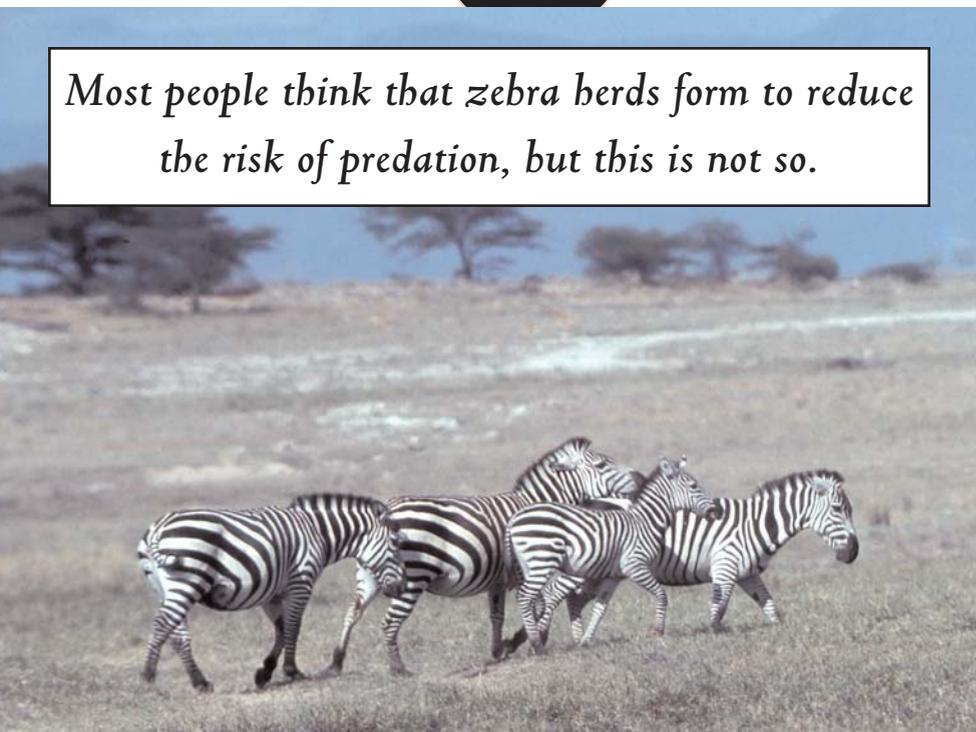
Since females abandon overzealous males, males are faced with a difficult balancing act. On the one hand,

stallions must fight with other males to establish dominance so they can gain rights to associate, and mate, with females in family groups. On the other hand, they must tone down their aggression and limit herding of their females while also protecting them from harassment by males from outside the group. If a male succeeds in balancing these competing demands, he will attract many females to his group, keep other suitors away, and will thus sire many offspring, a measure of evolutionary success.

Since successful males are surrounded by many females, some males must go without. These subordinates, instead of living in family groups, form all-male groups called “bachelor groups.” Among horses, these groups are much less *cohesive* than family groups. Males come and go, and over time, establish social relationships with many other males. Building

Cohesive
— Sticking together; resisting separation

Most people think that zebra herds form to reduce the risk of predation, but this is not so.



such links allows young males to enter the social hierarchy of breeders as they mature.

In plains zebras, close relatives of horses, bachelor groups are much more permanent because wandering alone in a landscape with lions and hyenas is dangerous. Bachelor groups of zebras are much more cohesive than those of horses, so coordinated actions develop, which often overwhelm the defenses of a single harem male. This puts the solitary zebra male’s females at risk of being mated by a stranger.

To reduce this risk, stallions of different harems band together to repulse the attacks of bachelors. An arms race develops, but it is one that breeding males win by virtue of teamwork. Most people think that zebra herds form to reduce the risk of predation, but this is not so. It is the banding together of many harems that creates the large zebra herds seen on the African savanna. Since pressure on harem males by horse bachelors is weak, herds of horses are rarely seen on the plains of North America or central Asia.

Signaling and Communicating

Barnyard horses communicate, but not often. Snorts, nickers, and whinnies are occasionally heard, but for the most part the horses living in small paddocks have few places to hide, and all the horses know each other well.

In the wild, however, horses roam over large distances that bring them in contact with many others. How is a horse to know if the stranger is friend or foe? Also, when a landscape is dotted with



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hills and trees, even known acquaintances have a hard time staying in touch.

To cope with these challenges, free-ranging horses are continually signaling each other. Snorts help remind neighbors that everything is alright; nickers and whinnies do the same at great distances, often beckoning those out of sight to reassure the signaler that nothing is wrong.

But sounds and scents also allow males to keep rivals at bay. Squeals showcase a male’s fighting ability, while scent reveals individual identity and aspects of personality. Our studies have shown that dominant stallions utter longer squeals with higher “notes” than subordinates.

The studies also show

that stallions use dung to deter competitors from entering their home ranges. Whether deposited in large piles that can easily be seen or secretly scattered throughout the range, unique fragrances help resident males effortlessly and silently keep strangers away. By recognizing the smell of residents’ dung as that of males who previously beat them up, *interlopers* are enabled to make a hasty retreat before another costly fight ensues.

It is this collage of signals that helps males and females socialize and know when to be naughty or nice.

Interlopers
— Trespassers; meddlers

Wild Spirits and Domestic Worlds

Our studies on the behavior of wild horses have uncovered many secrets of horses. They show that those in the wild tend to be different from those in barnyards mostly because the wild ones have to fend for themselves in order to survive. Free-ranging horses have to make many decisions that people make for domesticated horses. The ways wild horses act and the choices they make are remarkably clever. Now that the secrets of the wild ones have been revealed, the behavior displayed by horses in the barnyard may never appear quite the same again.

Daniel I. Rubenstein is consulting editor for this issue (see p. 1).