**Buck Rubs and Buck Scrapes**

雄鹿摩擦印记和雄鹿窝

A conspicuous sign indicating the presence of white-tailed deer in a woodlot is a buck rub. A male deer makes a buck rub by stripping the bark (outer layer) off a small tree with its antlers. When completed, the buck rub is an obvious visual signal to us and presumably to other deer in the area. A rub is usually located at the shoulder height of a deer (one meter or less above the ground) on a smooth-barked, small-diameter (16-25 millimeters) tree. The smooth bark of small red maples makes this species ideal for buck rubs in the forests of the mid-eastern United States.

一个表示白尾鹿在小树林中存在的显著标志是雄鹿擦痕。雄鹿利用鹿角剥除小树的树皮以制造雄鹿擦痕。完工后，雄鹿擦痕对我们来说是一道明显的标志，对当地的其它鹿来说也可能如此。擦痕常与鹿肩齐高(距地面一米或不到一米)，并位于树皮光滑、树径较细(16-25cm)的树上。美国中东部森林中的树皮光滑的红色小枫树是雄鹿摩擦的理想物种。

Adult male deer usually produce rubs in late summer or early autumn when the outer velvet layer is being shed from their antlers. Rubs are created about one to two months before the breeding season (the rut). Hence for a long time biologists believed that male deer used buck rubs not only to clean and polish antlers but also to provide practice for the ensuing male-to-male combat during the rut. However, biologists also noted that deer sniff and lick an unfamiliar rub, which suggests that this visual mark on a small tree plays an important communication purpose in the social life of deer.

成年雄鹿通常在夏末或秋初当它们的鹿茸上的外皮脱落时制造擦痕。雄鹿差不多在它们交配期(发情期)的前一到两个月制造擦痕。因此长期以来，生物学家们认为雄鹿擦痕不仅可以清除并磨光鹿茸，还可以借此练习发情期时雄鹿之间的角斗。然而，生物学家们也认识到鹿会嗅和舔舐陌生的擦痕，这表明这种小树上的视觉记号在鹿群社会生活中起到重要的交流目的。

Buck rubs also have a scent produced by glands in the foreheads of deer that is transferred to the tree when the rub is made. These odors make buck rubs an important means of olfactory communication between deer. The importance of olfactory communication (using odors to communicate) in the way of life of deer was documented by a study of a captive adult mule deer a few decades ago, which noted that males rubbed their foreheads on branches and twigs, especially as autumn approached. A decade later another study reported that adult male white-tailed buck exhibited forehead rubbing just before and during the rut. It was found that when a white-tailed buck makes a rub, it moves both antlers and forehead glands along the small tree in a vertical direction. This forehead rubbing behavior coincides with a high level of glandular activity in the modified scent glands found on the foreheads of male deer; the glandular activity causes the forehead pelage (hairy covering) of adult males to be distinctly darker than in females or younger males.

雄鹿擦痕都有一种由雄鹿前额上的腺体分泌的气味，它在制造擦痕时涂抹到树上。这些气味使得雄鹿擦痕成为鹿与鹿之间重要的嗅觉交流方式。嗅觉交流(利用气味交流)在鹿群生活中的重要性可以通过几十年前一项对圈禁的雄鹿的研究得以印证。研究发现，特别是当秋天将近时，雄鹿就将其前额在树枝上蹭来蹭去。十年后的另一项研究发现成年雄性白尾鹿在其发情期或发情期前会摩擦其前额。当白尾鹿制造擦痕时，它将其鹿茸和前额腺体在小树上垂直磨蹭。这种前额的磨蹭行为和雄鹿前额上散发气味的腺体的异常活跃一致。该腺体活动导致成年雄鹿的前额皮毛比雌鹿或未成年鹿的暗很多。

Forehead rubbing by male deer on buck rubs presumably sends a great deal of information to other members of the same species. First, the chemicals deposited on the rub provide information on the individual identity of an animal; no two mammals produce the same scent. For instance, as we all know, dogs recognize each other via smell. Second, because only male deer rub, the buck rub and its associated chemicals indicate the sex of the deer producing the rub. Third, older, more dominant bucks produce more buck rubs and probably deposit more glandular secretions on a given rub. Thus, the presence of many well-marked rubs is indicative of older, higher-status males being in the general vicinity rather than simply being a crude measure of relative deer abundance in a given area. The information conveyed by the olfactory signals on a buck rub makes it the social equivalent of some auditory signals in other deer species, such as trumpeting by bull elk.

雄鹿前额在擦痕上的摩擦很可能向同类中的其它成员发出了大量信息。首先擦痕上残留的化学物质提供了一只动物的个体信息。没有两只气味相同的哺乳动物。就如我们熟知的那样，狗就是通过气味区别彼此的。第二，因为只有雄鹿制造擦痕，所以擦痕及其携带的化学物质表示了制造擦痕的鹿的性别信息。第三，年龄更大、更具统治地位的雄鹿制造的擦痕更多，而且其分泌在擦痕上的气味分泌物很可能也更多。因此大量的标记得很好的擦痕的出现表明年龄较大、地位较高的雄鹿就在附近，而不仅只是粗略的说明了该区域鹿群的相对丰富。雄鹿擦痕上的气味记号所携带的信息与其它种类鹿群中的某些声音信号，比如雄性麋鹿的叫声，一样重要。

Because both sexes of whitetails respond to buck rubs by smelling and licking them, rubs may serve a very important additional function. Fresher buck rubs (less than two days old), in particular, are visited more frequently by adult females than older rubs. In view of this behavior it has been suggested that chemicals present in fresh bucks may help physiologically induce and synchronize fertility in females that visit these rubs. This would be an obvious advantage to wide-ranging deer, especially to a socially dominant buck when courting several adult females during the autumn rut.

因为雄性和雌性白尾鹿都会嗅和舔舐雄鹿擦痕，所以这些擦痕还有一个重要的功能。尤其是新鲜擦痕(两天以内制造的)要比更久远的擦痕受到更多关注。这种行为表明新鲜擦痕上的化学物质可能有助于从生理上诱导并让关注这些擦痕的雌鹿同时受孕。这对分布广泛的鹿群显然是一个有利条件，尤其在秋天发情期，处于较高社会统治地位的雄鹿可以同时向几只成年雌鹿求爱。

Another visual signal produced by white-tailed deer is termed a buck scrape. Scrapes consist of clearing (about 0.5 meter in diameter) and shallow depression made by pushing aside the leaves covering the ground; after making the scrape, the deer typically urinates in the depression. Thus, like a buck rub, a scrape is both a visual and an olfactory signal. Buck scrapes are generally created after leaf-fall in autumn, which is just before or during the rut. Scrapes are usually placed in open or conspicuous places, such as along as a deer trail. Most are made by older males, although females and younger males (2.5 years old or less) occasionally make scrapes.

由白尾鹿制造的另一种视觉记号叫做雄鹿窝。雄鹿窝是一个通过将地面上的树叶推开而产生的干净而较浅的低坑(直径约0.5m)。雄鹿窝制造完成后，鹿通常会在低坑里小便。因此，像雄鹿擦痕一样，雄鹿窝既是视觉上的也是嗅觉上的记号。雄鹿窝通常在秋天树叶落下后，雄鹿发情期或之前出现。雄鹿窝常位于开阔或显眼的位置，比如沿着鹿的行动路线。绝大部分雄鹿窝由年龄更大的雄鹿制造，但有些雌鹿和年轻雄鹿(2.5岁或更年轻)偶尔也制造雄鹿窝。