

Can wild animals

See colors?

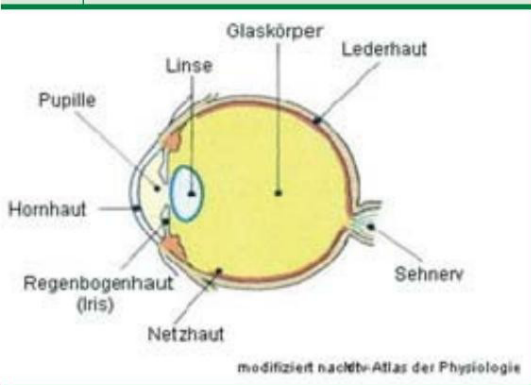


Figure 1: Cross section and structure of the mammalian eye

Question: How do our game choose colors? and whether signal hat bands might reduce hunting success. These and other questions should be in the following article by the wildlife biologist of the Upper Austrian Hunting Association, Mag. Christopher Böck will be explained.

Since signal hat bands at driven hunts and signal bands for working dogs used, is popular with many hunters known that the color red or blaze orange, like the light orange signal color also means that mammals are not considered red can be perceived. But what colors can the game, and here primarily the hoofed game, perceive? Is it really true that shades of green can be distinguished very well and therefore the hunting loden green is not actually a camouflage color represents?

One thing in advance: The possibilities to find out which animals which Colour vision is limited. In addition to anatomical examinations of the eyes can only be achieved through conditioning, i.e. through training tame animals to certain stimuli, find out which colors can be distinguished.

Rods and cones - deciding between color or brightness

“At night all cats are grey” – everyone knows this saying. The fact that in the dark no or hardly any colors are seen can be based on the fact that in the eye of vertebrates, as well as humans, two different light receptors are found.

light rays reflected from an object can create an image, They must be recorded and placed in a signal understandable to the brain This is done by both the two different natural light receptors, the cones and the rods, as well as the downstream nerve cells in the network skin of the eye (Figure 1). Cones are responsible for color vision, the rods for vision in the dim-responsible for the improvement, as they are up to 1,000 times more sensitive to light than the cones. Since the latter is a require higher light intensity to trigger nerve cell excitation, they work optimally in daylight, ie color can be perceived. In principle, the proportion of rods significantly higher than that of the cones - For hoofed game, this figure is even higher

over 90%. This, and the fact that they, for example, a much larger pupil opening hoofed animals can be seen in the dark see up to 100 times better than the Humans. Predators that are active at night and at dusk also see particularly well in the dark, as they can species only have one to four percent cone content. “Ungulates can see in the dark up to 100 times better than humans.” To perceive different colors men, there are various Cone types and visual pigments are prerequisites. Humans have Example of three different types, which are respectively for light sources in the blue, Green and red range sensitive In contrast, most of the hoofed game animals examined predators and rodents only have two different types of cones: a receptor for short-wave light from ultraviolet to blue and a receptor for the green to yellow color range. Most people lack a receptor for red Mammal species. Their color perception is comparable to that of a red-blind person to compare the green, yellow and red tones are described as green to yellow. For the mammals among the wild animals So, blue tones stand out in particular- that act like signal colors.



The author (right) with hikers in the typical colorful clothing as seen by humans.

However, the world is much more colorful for Birds that even have up to four different color receptors. Many

Birds see in the ultraviolet

area and are therefore able to perceive purple tones that are

Humans do not know; so they react particularly sensitive to red and ultra-purple. Kestrels find mice at

for example, through their urine traces, which reflect ultraviolet light.

A molecule was also recently discovered in the retina of migratory birds.

covers that is used to detect the Earth's

magnetic field. This means that the

Birds are able to sense the magnetic field of To see the earth as a visual grid.



This is how a person sees a roe deer in the Twilight...



... and this is how another deer sees the piece in rapeseed.

UV radiation also plays a role in crepuscular species play a role.

Deer, for example, have been proven to be able to detect short-wave

Radiation up to UV light. The animals are found in the

Twilight is therefore so well managed, because the proportion of shortwave radiation in twilight is significantly higher than

during the day.

"If the hunter wants to

to be on the safe side,

Brown and medium green tones

Means of choice."

The differentiated perception of light and dark allows the night-



Hoofed game, on the other hand, probably perceives the blue tones as a signal color, the red tones (see also Irish Setter) are seen as greenish-grey and the colour green is relatively good lighting conditions are not so well differentiated.

and crepuscular animals also see colors, with light green

to yellow the sensitivity of the the rods responsible for twilight vision decrease significantly and

Red is perceived as very dark

However, the rods are particularly sensitive to blue to

dark green color. This appears the game in the dark

very bright. The hunting loden green is

So for night hunting only conditionally usable, but in "good" light conditions it is not suitable for game

more striking than the green of the surroundings.

If the hunter wants to focus on camouflage

To be on the safe side, brown and medium green tones would be the means of election. This will mean that he will

by people, such as hikers,

nor can it be seen by hoofed game if it remains still.

The motionless persistence is, if wind conditions permit

sen, the only way to adjust the visual acuity of most

mammalian species in terms of color and sharpness. Even the highly developed twilight vision is namely, surpassed by the ability to see motion. Who has not experienced that a small movement enough to make the hopeful deer suddenly jump away?

Responsible for this are motion-sensitive nerve cells at the edge of the retina, which perceive even the smallest movements at a considerable distance.

Although no details can be recognized, However, animals react to the smallest changes in position. The reason is It is assumed that prey or Enemies always first at the edge of the field of vision and become

because of.

Literature:

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