# Grouse populations vary in size naturally and because of human causes

**Camilla Nyberg**
Populärvetenskaplig sammanfattning av Självständigt arbete i biologi VT 2009
Institutionen för biologisk grundutbildning, Uppsala Universitet

*Grouse populations are naturally variable and also highly affected by human made causes. Grouse species demand specific environment types and therefore their biggest threat is when their preferred environment is lost and suitable areas get isolated. In Sweden forest management, and in some parts also agriculture, seem to be the main human factors affecting grouse populations by decreasing suitable areas for grouse.*

## What affects grouse population size?

**Natural variations in population size**
Grouse populations vary in size naturally, mainly because of interactions with their predators and other prey species. These interactions form cycles. As an example, fox populations increase when their main prey, voles, are found in plenty. When the voles then decrease in numbers the foxes will have to switch to alternative prey species, for example grouse. Than the grouse population will decrease until the vole population has recovered and the fox will focus on voles again. Then the grouse population will increase in numbers. These cycles are three or four years long. But these natural causes are not the only factors affecting grouse today, when humans use, and thereby strongly influence most of the land areas.

**Forestry**
Swedish grouse are mostly forest living and they all occupy different parts of the forest (figure 1). The different species lives in forests of different age and composition. This results in that forestry affects grouse species in different ways. The Capercaillie live in forests older than 90 years and is probably the most difficult Swedish grouse to preserve in a managed forest, because industrialised forests are cut down before they reach this age. The Black grouse, on the other hand, seems to be well adapted to live in an industrialised forest. To be able to keep all species in the forest, management needs to keep some variation in structure, size and age of the forest.

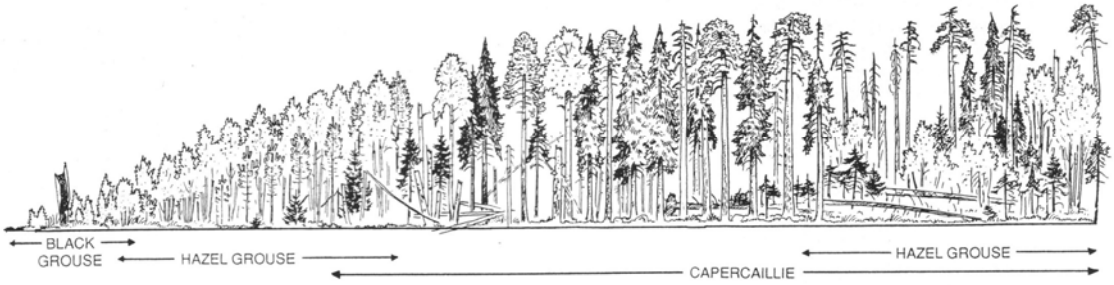


Figure 1. A theoretical, natural, unchanged forest with the preferred habitats marked for each species. With permission from NRC Research Press to use the figure.

**Other human made factors**

Other factors that affect grouse populations are agriculture, grazing, pesticides, pollutants, infrastructure, human disturbance and exploitation. All these factors decrease the grouse populations in size, some factors are more prominent in some countries. When the consequences of these human factors are added to the natural variations in grouse populations, the future size of grouse populations become hard to predict. One problem is how much exploitation should be allowed, that is how many individuals hunters should be allowed to take.

Figure 2. Capercaillie male. Photo: Daniel Pettersson (with permission to use the figure).

Figure 3. Black grouse, male. Photo: Jiri Bodal (with permission to use the figure).

Figure 4. Hazel grouse. Photo: Jirir Bodal (with permission to use figure).

Figure 5. Willow ptarmigan. Photo: Jirir Bodal (with permission to use figure).

Figure 6. Rock ptarmigan. Photo: Daniel Pettersson (with permission to use figure).

## Background

Globally there are 18 species of grouse. Five of these can be found in Sweden, those are; Capercaillie (figure 2), Black grouse (figure 3), Hazel grouse (figure 4), Williow ptarmigan (figure 5) and Rock ptarmigan (figure 6). Grouse are adapted to cold climates and live on the northern parts of the globe in coniferous dominated forests. Grouse are very demanding in what environment the live in, but also good at finding these environments. In Sweden Black grouse, Caapercaillie and Hazel grouse are found in central Sweden in the coniferouse forests. Willow ptarmigan and Rock ptarmigan are found in the northern parts of the country, in the mountain areas. No one of the five grouse species is red-listed in Sweden. Globally however these species are red-listed in some countries, especially in central and southern Europe where the human densities are high.

## Want to know more?

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