

Dysphonia in a male hazel grouse *Bonasa bonasia*

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Abstract

During a population study of hazel grouse in the Swiss Jura, we found evidence of dysphonia in an adult male nicknamed “Bille”. In spring 2004 this bird had a normal song, but by autumn 2004 the shrillest element of the song had disappeared, followed by the half melody the following spring. A film made in April 2006 shows this male making the impulses for the entire song (successive movements of the beak), but without the sounds. The most likely hypothesis is that “Bille” suffers from a vocal cords crack. In all other respects this bird continues to product the other calls correctly, but more intensively than the other hazel grouses.

Key words, *Bonasa bonasia*, Dysphonia, Vocalisations.

Introduction

It is very rare to discover a bird with a dysfunction of the vocal cords in the wild, and even more so when the bird concerned is the hazel grouse *Bonasa bonasia*, a secretive species with a thin voice. During the course of a study of the hazel grouse a case of dysphonia in a mature cock became evident.

Since 2002 we have followed the males in a group of hazel grouse in the Swiss Jura with the help of recordings of each territorial song (Mulhauser 2003). We identify the birds by establishing a sonogram of each individual’s song, which is in effect an identity card of each individual bird (Bergmann et al. 1975). This sound track is the same each year (Mulhauser & Zimmermann 2003), so it is possible to follow the travels of each male and, in the long term, to determine the survival rate and the age pyramid. It was within the framework of this study that we discovered the male “Bille” in spring 2004 (Figure 1). The partial loss of voice was suspected in spring 2005 and proved in spring 2006.



Figure 1. The male “Bille” sings his territorial song (April 2006). Photo J.-L. Zimmermann.

Methods

For the sound recording of “Bille”, we used a mini-disc Sony MDPL recorder with a microphone Beyerdynamic MCE 87 S and a preamplifier Sonorax SX-BD1 in 2004 and 2005, then a Kudelsky Nagra 4000 recorder in 2006. We completed the data with a digital video camera Sony DCR-TRV11E which is capable of accurately recording high-pitched sounds. The songs have been analysed with BatSound 3.0. This software is capable of analysing audible sounds and ultrasonic sounds up to 44 kHz.

Results

Many records of “Bille” (n=56) were collected between 5th April 2004 – the date of the bird’s discovery (Figure 2) and 1st of June 2006. We heard the first incomplete song of this bird 30th of September 2004,



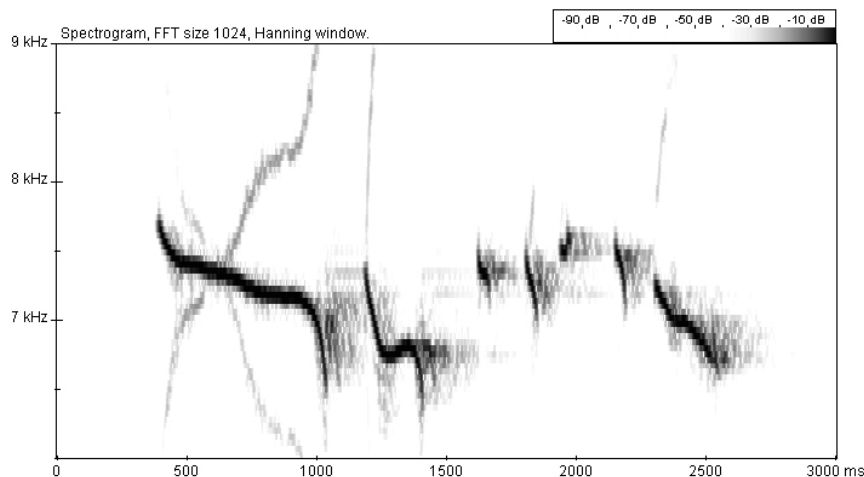


Figure 2. Sonogram of the complete territorial song of “Bille”. 5th April 2004

but just the most high-pitched sounds were missing (Figure 3). After a quiet winter the hazel grouse began their courtship behaviour at the beginning of April 2005. On 6th April we recorded the territorial song of “Bille” but this was incomplete (Figure 4). At this point in the study we asked ourselves if this male was lazy.

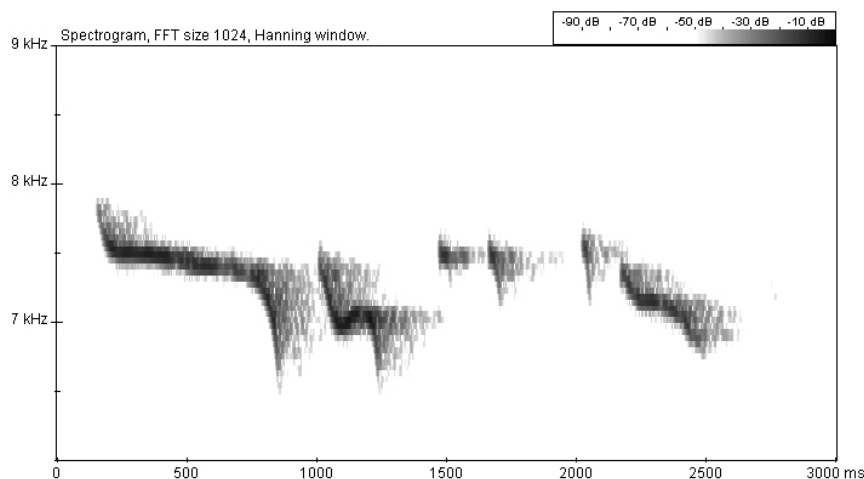


Figure 3. Sonogram of “Bille”. 30th September 2004

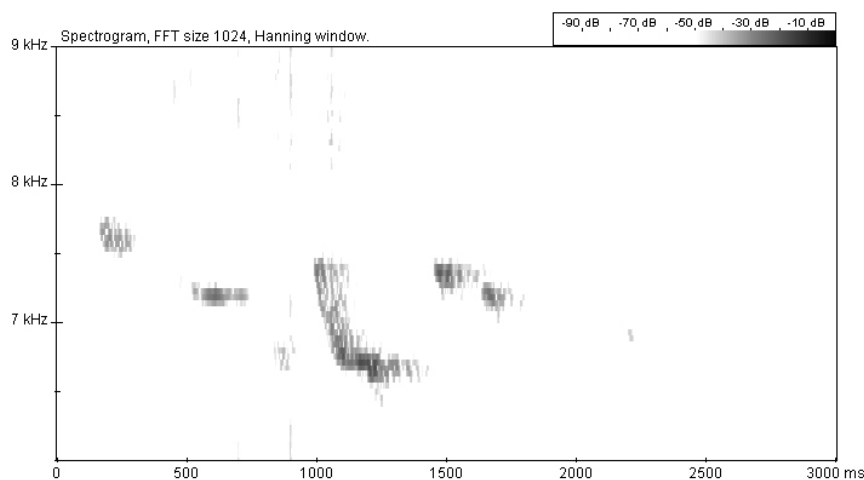


Figure 4. Sonogram of “Bille”. 6th April 2005



However one year later, thanks to the use of the video camera, we confirmed the dysphonia. In two films, shot in perfect conditions on 14th and 15th April 2006, we can see the male making seven impulses for the seven elements of the full song (Figure 2), but our human ear registers only the first two or three notes. The utterance of sounds is proved by the sonograms (Figure 5 and 6).

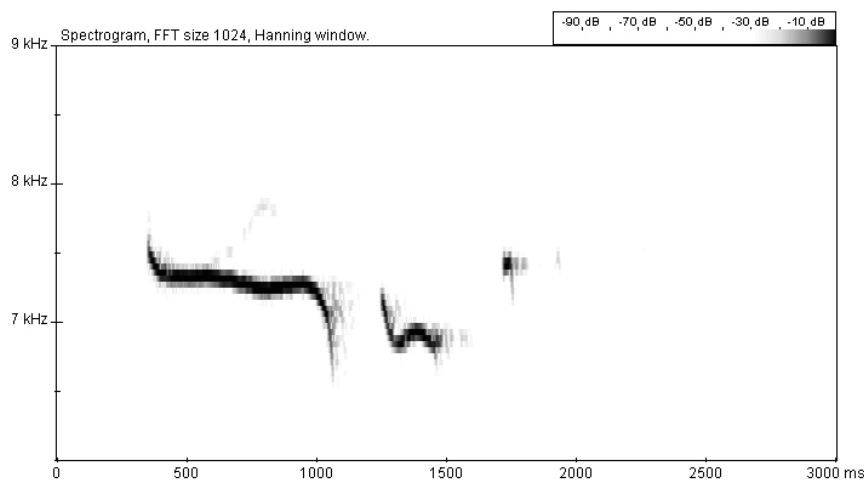


Figure 5. Sonogram of “Bille” 14th April 2006

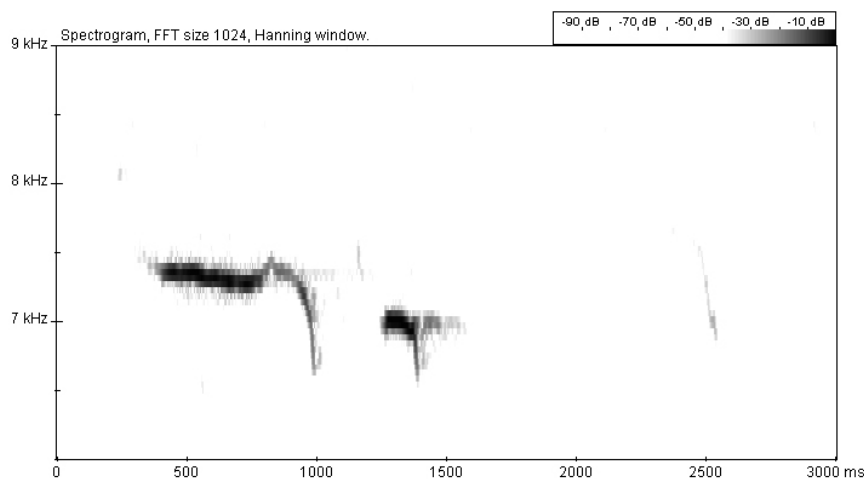


Figure 6. Sonogram of “Bille” 15th April 2006

It should be noted that this aphonia is neither complete nor permanent, because on rare occasions “Bille” has been heard to make almost all of his territorial song (Figure 7).



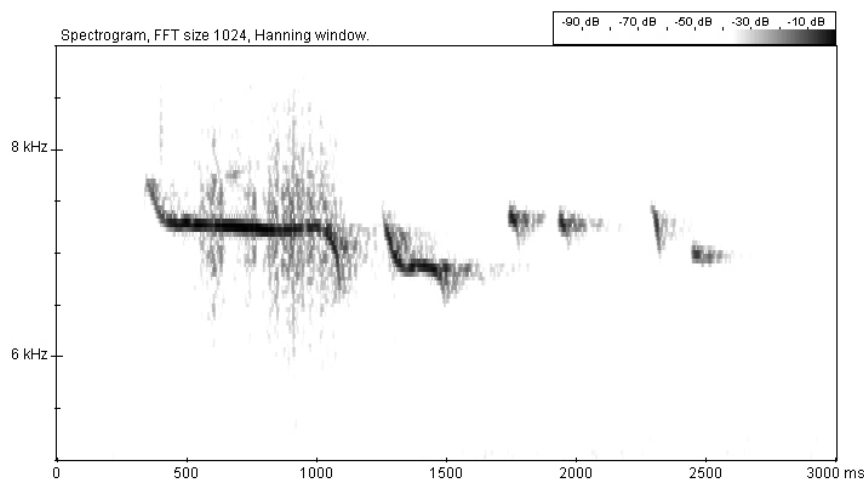


Figure 7. Sonogram of "Bille" 14th April 2006

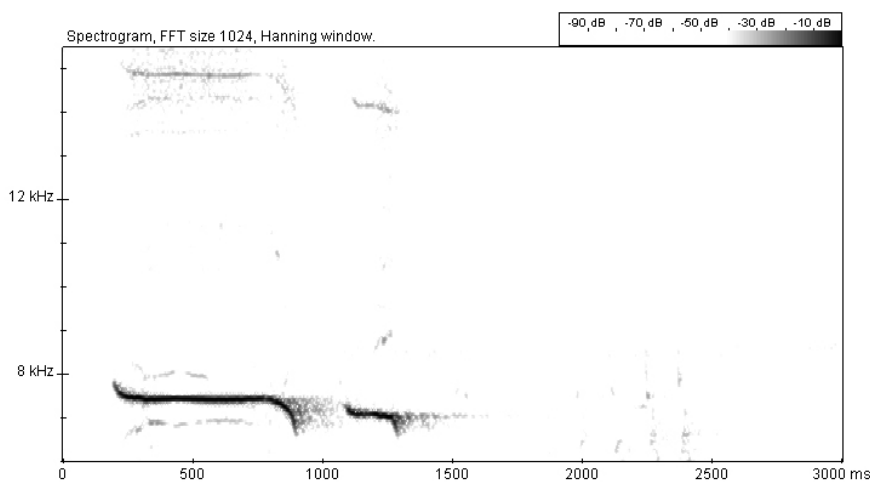


Figure 8. Sonogram of "Bille" with ultrasonic tracks 15th April 2006

Compared to the full song (Figure 9), another analysis shows that during the dysphonia both low and ultrasonic tracks of the same element are missing (Figure 8).

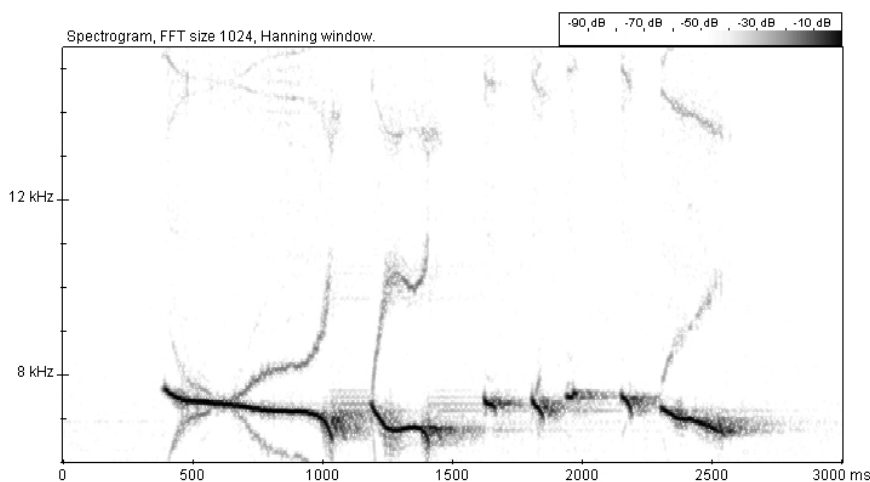


Figure 9. Sonogram of "Bille" with ultrasonic tracks 5th April 2004



Discussion

According to several authors (Scherzinger 1981, Del Hoyo et al 1992, Bergmann et al. 1996, Klaus et al 2003), the vocalisations of the hazel grouse are not limited to the territorial song. We have counted twenty-three different messages in this rich vocal repertoire (Klaus et al 2003), including different calls at short distance between male, female and chicks (Scherzinger 1981).

Except for the problem of dysphonia over the territorial song the repertoire of “Bille” is complete. However, we noticed that this male emitted the contact sounds (“ouit ouit ouit” or “gjuk gjuk”) with a frequency not exceeding 4 kHz more frequently than the other hazel grouse.

It would seem, therefore, that the dysphonia is only in relation to the high-pitched sounds of the song. The cause of the dysphonia is probably an alteration to the vocal cords due to their over-use – this is well-known in the domestic fowl *Gallus gallus domesticus* and... human *Homo sapiens sapiens*.

The partial aphonia of “Bille” over the high-pitched notes suggests that the territorial song of the hazel grouse can be affected. It is the only emission the male produces with the head held high, which stretches the tympaniforme membranes of the vocal cords over the syrinx and alters the shape of the trachea (Del Hoyo et al. 1992). For this shrill whistling sequence, whose first notes are similar to the alarm calls of small songbirds (Bergmann et al. 1996), the males must inflate their air sacs, which in turn cause the inflation of the breast (figure 1). Most of the muscles in the body are used during the expulsion of air; each note is accompanied by a simultaneous movement of the tail.

The effort required to sing causes the hazel grouse to use a large amount of energy. The dysphonia suffered by “Bille” shows that this action is not without risk. The desire to save energy could explain why some males do not respond to the bird-call (Swenson 1991). These individuals are usually mature males, with a mate, who know their home-range and their neighbours very well. The young, inexperienced males are more vocal and could become victims of a partial loss of voice such as that shown to us by “Bille”.

References

- Mulhauser, B. 2003. Survival of the hazel grouse *Bonasa bonasia rupestris* in the Jura mountains. Between board and lodging. - Bull. Soc. Neuchât. Sci. Nat. 126 (2): 55-70.
- Bergmann, H.-H., Klaus, S., Müller, F. & Wiesner, J. 1975. Individualität und Artspezifität in den Gesangsstrophen einer Population des Haselhuhns (*Bonasa bonasia* L., Tetraoninae, Phasianidae). - Behaviour 55: 94-114.
- Mulhauser, B. & Zimmermann, J.-L. 2003. Recognition of male hazel grouse *Bonasa bonasia* by their song. - Bull. Soc. Neuchât. Sci. Nat. 126 (2): 107-119.
- Klaus, S., Martens, J., Andreev, A.V. & Sun, Y.-H. 2003. *Bonasa bonasia* (Linnaeus, 1758) Haselhuhn. - Atlas der Verbreitung paläarktischer Vögel 20: 1-15.
- Scherzinger, W. 1981. Stimminventar und Fortpflanzungsverhalten des Haselhuhnes *Bonasa bonasia*. - Orn. Beob. 78: 57-86.
- Del Hoyo, J., Elliot, A. & Sargatal, J. (eds) 1992. Handbook of the Birds of the World. Volume I Ostrich to Ducks. - Lynx Editions, Barcelona: 696 p.
- Bergmann, H.-H., Klaus, S., Müller, F., Scherzinger, W., Swenson, J.E. & Wiesner, J. 1996. Die Haselhühner *Bonasa bonasia* und *B. sewerzowi*. Haselhuhn und Chinahaselhuhn. - Die Neue Brehm-Bücherei 77. Westarp Wissenschaften Magdeburg, 276 p.
- Swenson, J.E. 1991. Evaluation of a density index for territorial male Hazel Grouse *Bonasa bonasia* in spring and autumn. - Ornis Fennica 68: 57-65.

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Capercaillie *Tetrao urogallus* midwinter display

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Introduction

The background for this article is the midwinter registering of capercaillie *Tetrao urogallus* display at several lekking locations in the municipalities of Grimstad, Froland, Birkenes, and Åmli, in Aust-Agder County, South Norway.

Early in the 1980's we found several capercaillie lekking locations as a result of having registered display activity, with wing dragging, in the February snow. Male capercaillie display tracks and several fir trees nearby that had obviously provided food, resulted in the areas being revisited in April and new

