Find of bird-pox (*variola avium*) in blackcap *(Sylvia atricapilla)*

J. RAJCHARD[1], V. RACHAČ[2]

[1]*University of South Bohemia, Faculty of Agriculture, České Budějovice, Czech Republic*
[2]*National Veterinary Institute, České Budějovice, Czech Republic*

ABSTRACT: In August 1999 there were netted and ringed passerines in the Naděje fishpond system in Třeboň area. 14 individuals of blackcap (*Sylvia atricapilla*) of both sexes and various age were caught. All individuals of this species had expressive pathological changes on feet. Histological investigations proved bird-pox (*variola avium*). No symptoms of this disease were found in other caught 11 species.

Keywords: blackcap (*Sylvia atricapilla*); bird-pox; skin form

Bird-pox (*variola avium* syn. *epithelioma contagiosum, poxvirus avium, bird-pox*) is a common viral disease, described in more than 60 bird species of 20 families (Tripathy, 1991). This disease is known in domestic fowl (hens, turkeys, pigeons) and in many species of wild birds e.g. ostrich, cormorants, ducks, storks, parrots, some passerines and others).

This disease can express in the skin form, manifested in the epitheliomas on unfeathery skin areas, the mucous membrane form and combined form of both. Other form is expressed as the disease of the nasal cavities, with symptoms like the hemophilous rhinitis. Latent infections also exist. The process of these infections is usually chronic (Jurajda, 1997).

Viral origin of the disease was documented already at the beginning of the century (1902). The virus belongs to a group of pox-viruses, which are relatively large (200–300 μm), with DNA content.

Poxviridae family includes also the genus *Apoxivirus*, bird-pox viruses. Virus differentiation is executed in accordance with their biological features *in vitro*. In accordance with their pathogenicity for relevant bird species bird poxviruses are divided into several types, e.g. hen's, turkey's, pigeon's and others (Jurajda, 1997).

Some types of viruses are more specific, other attact birds of different families (Andrewes and Pereira, 1977). Bird-pox virus was the first virus that was cultivated in the chick embryo chorioallantois.

In external conditions the virus is highly resistant to climatic conditions (especially in winter), and is also resistant to drying. In dry epidermis it survives at a normal temperature several months and even years. In boiling water the virus perishes within 5 minutes, at a temperature of 60°C within 8 minutes (out of the tissue), in the tissue within 30 minutes.

The disease is more frequent in autumn and winter months. In natural infection the incubation period is 4–14 days in hens, turkeys and pigeons, while in canaries it is about 4 days. The skin form is more contagious and it spreads easier. The infection enters injured skin, however it can also enter by inhalation of the virus together with dust. As the vector of infection also mosquitos and ticks can be found. The virus survives more than 200 days in these invertebrates. In ticks the transovarial transfer of the virus is possible. This disease can be even fatal, it depends on many inner and outer factors (Andrewes and Pereira, 1977, Klimeš, 1970).

Circumstances of the finding

On 13th and 14th of August, 1999 fauna research on the occurrence and population density of passerines (*Passeriformes*) was carried in the Naděje pond system in Třeboň basin protected area. It was supported by project CEZ J 06/98: 122200002/4. All caught birds were also ringed.

For netting, mesh nets of 15 mm were used. Nets were located on banks of Pišmistr pond beside shrubs of elder (*Sambucus nigra*) with mellow berries. 36 individuals of 12 species were netted altogether: great tit (*Parus major*), blue tit (*Parus caeruleus*), willow tit (*Parus montanus*), nuthatch (*Sitta europaea*), swallow (*Hirundo rustica*), bullfinch (*Pyrrhula pyrrhula*), spotted flycatcher (*Muscicapa striata*), blackcap (*Sylvia*

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atricapilla), marsh warbler (*Acrocephalus palustris*), chiffchaff (*Phylloscopus collybita*), willow warbler (*Phylloscopus trochilus*), wood warbler (*Phylloscopus sibilatrix*).

The most numerous species was Blackcap (*Sylvia atricapilla*), 14 individuals. There were adult males and females and juvenile birds in this group. Pathologic lesions on legs were manifested in all individuals of this group. Swelling fingers (around talons), metacarpus, instep and joint regions were found. Swelling regions were highly blooded, with tense epidermis, so that each contact causes hemorrhage. Dry blood on legs indicated bleeding during the motion of birds on branches.

Symptoms of the disease in individuals varied, from slight clinical lesions around talons to the presence of extensive swelling regions on both legs. Some birds had large swelling regions on both sides of joints, of size similar to peas. No other lesions were found in other body regions. Afflicted birds were in good body condition. Presence of birds in elder shrubs with mellow berries and also the colour of their droppings confirmed common reception of food at this time of the year.

Birds were released to nature, only one individual (adult female) was taken to a laboratory for further examination.

Diagnosis confirmation

Laboratory examination of the blackcap female did not documente any bacterial infection nor parasitary intestinal invasion. Histological examination of the skin showed lesions corresponding to with the skin form of bird-pox (*variola avium*). Histological finding was characterized by expressive hyperkeratosis of epidermis with lamellarly arranged keratin layers. There were regions with expressive hypertrophy and vacuolar dystrophia of epidermal cells with the finding of cytoplasmic eosinophile inclusions. The finding was associated with blood effusions, inflammation infiltrates and formation of crusts on the epidermis.

Conclusion

The described case was evidently local epidemic of bird-pox in the blackcap (*Sylvia atricapilla*) population in the environment in which this bird species is abundant, in addition to the maximal population density time of the year (after nesting, before migration). Concentration of the bird population near a usual food source (berries of elder) at the end of summer contributed to infection transmission, e.g. rubbing of legs on shrub branches. Absence of disease symptoms in all other netted bird species indicates the possibility of virus strain specificity.

The described case documents a possibility of the finding of infectious disease in wild birds, which may cause a decrease in the population density of pertinent species (without knowing the real cause). A question arises how much the described occurrence of bird-pox of this species was fatal. Afflicted individuals were in good condition and they received food, but the autumnal migration during the next month (September) means a vital burden which only a part of healthy population can survive. In similar cases it is not possible to influence any environmental burden. It is not possible to exclude stress factors of the environment that weach cause weakness of organisms and enable to the breaking of the disease and his spraging.

This contribution is not a result of systematic virological research, it is a reaction to accidental finding of bird-pox in the blackcap population. It is aimed only to inform about possible occurrence of this disease in blackcap.

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Corresponding Author:

RNDr. Ing. Josef Rajchard, Ph.D., University of South Bohemia, Faculty of Agriculture, Department of Ecology, Studentská 13, 370 05 České Budějovice, Czech Republic

Tel.: +420 38 777 24 20, e-mail: rajchard@zf.jcu.cz