**Aegyptianella-Like organisms and microfilariae in a severely diseased Bittern**

*(Botaurus stellaris stellaris)*

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**SUMMARY**

A Bittern (*Botaurus stellaris stellaris*), an endangered species of the heron family, was caught in Central Italy with symptoms of severe disease and found to be a carrier of *Aegyptianella*-like organisms and microfilariae of an unknown species. Treatment with doxycycline (25 mg/Kg/day, per os.) for 21 days led to a complete recovery from the syndrome and to a significant reduction of the intraerythrocytic microrganisms. Microfilariae, apparently without pathogenicity, were still observable during the check made prior to ringing and releasing the bird in the wild.

**KEY-WORDS :** *Aegyptianella pullorum* - microfilariae - wildlife diseases - Bittern - haemoparasites - doxycycline.

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**RÉSUMÉ**

Organismes types *aegyptianella* et microfilaires chez un Grand Butor (*Botaurus stellaris stellaris*). Par W. TARELLO.

Un Grand Butor (*Botaurus stellaris stellaris*), une espèce de héron menacée d’extinction, a été trouvé épuisé et en mauvaises conditions en Italie Centrale. Des organismes types *Aegyptianella* et des microfilaires inconnues ont été relevés dans le sang. Le traitement avec doxycycline (25 mg/Kg/jour, os.) pendant 21 jours a eu comme résultat la complète guérison du syndrome et la significative diminution des microorganismes observés dans les globules rouges. On a pu encore observer des microfilaires, apparemment non pathogènes, pendant le contrôle exécuté avant la libération de l’oiseau.

**MOTS-CLÉS :** *Aegyptianella pullorum* - microfilariae - maladies aviaires - Grand Butor - haemoparasites - doxycycline.

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The Bittern (*Botaurus stellaris stellaris*) is a rare member of the heron family with a solitary nature which lives in reed-beds, marshes and sluggish streams. It breeds in the Palearctic from the south of the British Isles to Central Asia, wintering in the Mediterranean and parts of Africa [15].

The autumn passage takes place between October and the end of December. It is considered worldwide an endangered species, and inserted into the Red List. There are, today, no more then 50 pairs in Italy.

Blood parasites are often found in the blood smears of domestic and wild-caught birds [12,14]. Of these, a member of the family Anaplasmataceae, *Aegyptianella* (CARPANO, 1929) genus has been reported from domestic fowl, ducks, geese, turkeys, pigeons, quails, ostrichs and psittacine birds [9, 13,14]. The only named species is *Aegyptianella pullorum*, known in the past as *Babesia pullorum* or *Balfouria anserina* [16].

The presence of these rickettsial organisms in the red cells of birds may result in conditions varying from a healthy carrier status to a highly pathogenic and often fatal disease [4, 9, 10]. Its distribution in tropical and subtropical areas and Southern Europe follows that of the fowl tick, *Argas persicus*, by which it is transmitted [13]. Symptoms of the acute disease are fever, paralysis, diarrhoea, anorexia, pale discoloration of legs, staggering gait and bleeding [13].

The aim of this study is to report symptoms, haematological findings and method of treatment in a severely diseased Bittern with *Aegyptianella*-like organisms and microfilariae in the blood.
Clinical report

A young male Bittern (*Botaurus stellaris stellaris*), weighing 1.38 Kg., was found on the shores of the Trasimeno Lake near S. Feliciano (Perugia, Italy) on 7 December 1998, inside the recently established Trasimeno National Park. The bird was unable to move, with paralysis of legs and wings and emaciation. Other symptoms observed were hypothermia (T = 37.5°C), diarrhoea, anorexia and pale buccal mucosae. Two venous blood samples of 0.5 ml with EDTA, were taken from the brachial vein near the elbow joint. A modified Knott test for microfilariae and two fresh blood films to check for haemoparasites were prepared. Stained by the Wright test for microfilariae and two fresh blood films to check for haemoparasites were prepared. Stained by the Wright method, examination of blood smears revealed the presence of round and clover-like, violet to dark coloured organisms in some red blood cells, with size ranging from 0.7 to 1.5 μm in diameter (fig. 1 and 2). These rickettsia-like organisms, morphologically resembling *Aegyptianella pullorum*, were counted in a randomly chosen sample of 10,000 red cells. Thirteen microorganisms were found, i.e. 0.13 % of RBCs were affected.

Several microfilariae of an unknown species were also detected with the Knott technique. They were 350-400 μm long and 6-8 μm large, unsheathed and with a fine tail (fig. 3).

Treatment with doxycycline, 25 mg/Kg/day per os., divided into two doses daily, was performed for 21 days. On the 6th day of treatment the bittern moved its first steps with some difficulty and staggering gait. On the 8th day the diarrhoea disappeared and it began unassisted to eat small fish, without being fed artificially. It could stand upright, now, without loss of balance.

At the end of the course of doxycycline the bittern was more reactive, lively, healthy and able to run. It was also sometimes seen adopting its natural hunched stance with feathers fluffed and the sharp bill thrust forward in a menacing fashion.

A blood check was performed before releasing the bird, in order to verify the presence/absence of the microorganisms previously seen, in a new pool of 10,000 red cells and in a second Knott test. Three *Aegyptianella*-like organisms were still detected (0.03 % infection rate) in the erythrocyte sample, and microfilariae also were still present. However, the number of intraerythrocytic organisms was significantly reduced. No treatment was given against the microfilariae, and reduced body weight, acute depression and sudden death [6, 7]. This avian filariasis is transmitted by the louse *Trinoton anserinum* and can also occur subclinically. Its geographic distribution include Europe (UK, Yougoslavia) and U.S.A. [11] and the range distribution of Bittern [15], an heron sharing the same habitat of Swans.

Apparently, in the case described, the symptoms were not related to the presence of microfilariae, which were still observed in the blood following treatment and recovery, and remained unidentified.

In the case of young wild birds that still have to consolidate their survival skills, post migration stress, sudden cold weather without fat reserves and parasites or opportunistic infectious agents quite easily concur to produce severe disease and death. This was especially true in this case, apparently dominated by symptoms due to *Aegyptianella pullorum*.

There are no serologic tests for the diagnosis of *A. pullorum* [10, 13] and the xeno-diagnostic technique of sub-inoculation of blood into susceptible birds is not always possible [4]. In the clinical practice, diagnosis can be made only by direct observation in blood films, where the haemo-parasites appear as pleomorphic, dark-stained, purple to reddish organisms in the erythrocytes, with size ranging from 0.7 to 1.5 μm [9]. In the case described, such inclusions were mostly round or oval and a clover-like shape, typical for severely diseased wild bird. A previous report on a similar association was of infections in *Amazona estiva* [14]. In that case, it was suggested that *A. pullorum* had been acquired from chickens kept near the aviary.

Microfilariae in the blood of free-living birds are commonly observed but difficult to differentiate. Larval stages of *Chandlerella sinensis* have been found in magpies and other birds worldwide, apparently without pathogenicity [2, 5, 17]. Other filarial nematodes, *Chandlerella bushi* and *Splendido-filaria capereta*, usually are parasites of Railidae [1] and the adult worms occur in the air sacs, thoracic and abdominal cavities. Skin-inhabiting microfilariae of *Pelecitus fulicae-trae* have been reported from grebes and coots [3] and two related species, *Pelecitus clavus* and *Pelecitus mazzantii*, are subcutaneous parasites of the neck of pigeons with microfilariae circulating in the bloodstream [8]. Their larval stages are respectively 80 and 140–180 μm in length and 6 μm in width. Reported symptoms are mild, including disorexia, difficulty in swallowing and anaemia.

These nematodes, related to genus *Dirofilaria* and *Nochtiella* in mammals, are mostly considered non-pathogenic in wild avian species. Nonetheless, it has been suggested that they may be contributing factors in causing diseases or death [14]. Recently, the adult stages of the filarial nematode *Sarconema eurycerca* have been found in the hearth of various swan and goose species, in association with circulating microfilariae and reduced body weight, acute depression and sudden death [6, 7]. This avian filariasis is transmitted by the louse *Trinoton anserinum* and can also occur subclinically. Its geographic distribution include Europe (UK, Yougoslavia) and U.S.A. [11] and the range distribution of Bittern [15], an heron sharing the same habitat of Swans.

The Bittern (*Botaurus stellaris stellaris*) is a rare heron at risk of extinction and some avian illness, such as aegytianellosis, are rarely described outside the narrow confines of the traditional poultry perspectives.

It was thus deemed worthy reporting a case of association between *Aegyptianella*-like organisms and microfilariae in a severely diseased wild bird. A previous report on a similar association was of infections in *Amazona estiva* [14]. In that case, it was suggested that *A. pullorum* had been acquired from chickens kept near the aviary.

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It is acknowledged that birds having the first contact with this haemoparasite at the adult age exhibit a marked reaction to *A. pullorum*, with signs including diarrhoea, paralysis and anaemia [4]. This observation is not in contrast with the fin-
AEGYPTIANELLA-LIKE ORGANISMS AND MICROFILARIAE IN A SEVERELY DISEASED BITTERN

FIGURE 1. — Intraerythrocytic *Aegyptianella*-like organisms, from the Great Bittern (*Botaurus stellaris*) in acute state of illness.

FIGURE 2. — Intraerythrocytic *Aegyptianella*-like organisms, from the Great Bittern (*Botaurus stellaris*) in acute state of illness.

FIGURE 3. — Unidentified microfilaria in the blood of the heron (Knott technique, 10x). Microfilariae are frequently reported in the birds and thought to be non pathogenetic.
dings, because the bird was a young adult probably at its first migration.

Taken together, the complex of symptoms and the light microscopic features of the structures seen in the peripheral blood of the Bittern were strongly suggestive of *Aegyptianella pullorum* infection. The response to doxycycline and the significantly reduced number of such microorganisms after 21 days of oral therapy, seem to confirm it. Furthermore, no cells with the typically blue-staining cytoplasm characteristic of Plasmodium spp. parasites could be seen.

*A. pullorum* and its vector, *Argas persicus*, are not described in Northern Europe, were the Bittern breeds. When considering the age and the site of recovery of the patient (Central Italy), one could assume that the *A. pullorum* was acquired locally, during wintertime.

This case provides a reminder that it is necessary to be aware of the range distribution of animals, vectors and ethiologic agents in the occurrence of diseases among migrating birds and, also, that blood smears from sick wild birds should always be examined for the presence of haemoparasites when the symptoms are not pathognomonic and the diagnosis appears uncertain.

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**References**


