LUCRĂRI ŞTIINŢIFICE MEDICINĂ VETERINARĂ VOL. XLI, 2008, TIMIŞOARA

THE PREVALENCE OF MALLOPHAGEAN SPECIES ON GALLINACEOUS BIRDS FROM CARAŞ-SEVERIN COUNTY

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Summary

This study describes the abundance of mallophagean lice species in Caraş-Severin County. Lice were collected from 30 localities, and from each locality five households were investigated. A total of 3,381 mallophagean lice were collect, and six species were found: *Menopon gallinae, Menacanthus cornutus, Eomenacanthus stramineus, Goniocotes gallinae, Goniodes gigas* and *Lipeurus caponis,* respectively. *Goniodes gigas* species was identified for the first time in Caraş-Severin County, but at a lowest prevalence (1.34%). The highest prevalence was noticed for *Menopon gallinae* and *Goniocotes gallinae*, which had 60.33% together.

Key words: mallophagean lice species, prevalence, Caraş-Severin County.

Lice are widespread ectoparasites found also in domestic and wild fowls.

The species number is very high exceeding 2,600 after Hiepe and Ribbeck (1982), or 4,000 according to Bowman and col. (2003). Species which are ectoparasites in domestic fowls, mainly in galiformes, represent just a small part out of the total number of mallophagean lice. Price and col. (2003) mentioned 543 species which are parasites on 237 species of gallinaceous birds, meaning around 82.9% out of total galliformes. Smith (2001) considered that lice are ectoparasites of over 2,300 species of birds. However, in domestic chickens 10 species belonging to *Ischnocera* and *Amblycera* suborders were found (Ribbeck, 1992), even Hohorst (1939) has described 16 species and Emerson (1956) 11 species, respectively.

Even there are information concerning the existence of these ectoparasites in the western part of Romania till now there are no minute researches on the biodiversity of mallophagean species in fowls in this part of the country. The aim of this study was to check out all lice species found in domestic fowls, mainly chickens, in Caraş-Severin County.

Materials and methods

The study was carried out in a two years period: 2005 and 2006. During this time 30 localities from whole Caraş-Severin County were investigated. In each locality five households were checked out, and in each household five hens were

randomicaly examined to collect the existent mallophagean lice. The mallophagean lice were collected in plastic tubes with screw cutting cork or in Petri plates, and then were transported to the Parasitic Diseases Department from DSVSA Reşiţa.

Examination of the collected samples was done on a Motic SMZ-140 (Motic, Germany) stereomicroscope with 10x ocular and 0.35 to 1.5 micro-visa. The identified species were photographed with a Canon A40 (Canon, Japan) digital camera.

To identify the mallophagean lice species, the following morphological characteristics were taken into account: the body total length, head, thorax and abdomen dimensions (length, width and shape), body color, antennae structure, presence or absence of respiratory holes and their shape, and, also, chetotaxy, according to identification keys of Eichler (1963), Zlotorzycka (1974), Lonc şi Modrzejewska (1989) and Smith (2001), respectively.

Results and discussions

The identified species from the 750 examined hens are given in table 1.

Table 1

The mallophagean species identified in hens from Caraş-Severin County.

Locality	Mallophagean species						TOTAL
	Menopon gallinae	*Menacanthus cornutus*	*Eomenacanthus stramineus*	*Goniocotes gallinae*	*Goniodes gigas*	*Lipeurus caponis*	
Sacu	29(34.93%)	7(8.43%)	16(19.27%)	13(15.66%)	-	18(21.68%)	83
Oţelu Roşu	45(36.29%)	15(12.09%)	20(16.12%)	28(22.58%)	3(2.41%)	13(10.48%)	124
Rusca Montană	31(28.44%)	19(17.43%)	24(22.01%)	19(17.43%)	-	16(14.67%)	109
Marga	53(28.64%)	17(9.18%)	30(16.21%)	44(23.78%)	5(2.70%)	36(19.45%)	185
Băuţar	69(31.22%)	24(10.86%)	36(16.29%)	50(22.62%)	10(4.52%)	32(14.48%)	221
Caransebeş	19(28.35%)	-	21(31.34%)	16(23.88%)	-	11(16.41%)	67
Turnu Ruieni	32(20.64%)	16(10.32%)	19(12.25%)	34(21.93%)	-	54(34.83%)	155
Slatina Timiş	36(31.03%)	12(10.34%)	37(31.90%)	31(26.22%)	-	-	116
Armeniş	31(33.33%)	-	29(31.18%)	33(35.48%)	-	-	93
Teregova	42(20.19%)	26(12.50%)	36(17.30%)	51(24.52%)	-	53(25.48%)	208
Domaşnea	28(54.90%)	-	11(21.56%)	12(23.53%)	-	-	51
Mehadia	11(61.11%)	-	-	7(38.89%)	-	-	18
Băile Herculane	32(30.47%)	-	-	50(47.62%)	5(4.76%)	18(17.30%)	105
Prigor	14(29.78%)	8(17.02%)	2(4.25%)	17(36.17%)	-	6(12.76%)	47
Lăpuşnicel	28(23.14%)	32(26.44%)	29(23.96%)	21(17.35%)	-	11(9.09%)	121
Bozovici	41(43.61%)	-	22(23.40%)	16(17.02%)	3(3.19%)	12(12.76%)	94
Prilipeţi	20(33.89%)	-	19(32.20%)	7(11.86%)	3(5.08%)	10(16.95%)	59
Anina	61(42.36%)	12(8.33%)	8(5.55%)	47(32.64%)	-	16(11.11%)	144
Caraşova	54(29.51%)	26(14.20%)	12(6.55%)	67(36.61%)	-	24(13.11%)	183
Doman	38(48.10%)	11(13.92%)	-	22(27.84%)	-	8(10.12%)	79
Reşiţa	27(48.21%)	10(17.85%)	5(8.93%)	11(19.64%)	-	3(5.35%)	56
Bocşa	40(51.28%)	14(17.95%)	-	24(30.77%)	-	-	78
Brebu	48(35.03%)	16(11.68%)	14(10.22%)	50(36.49%)	-	9(6.57%)	137
Forotic	98(45.58%)	21(9.76%)	27(12.56%)	42(19.53%)	6(2.79%)	21(9.76%)	215
Grădinari	27(25.23%)	18(16.82%)	15(14.02%)	35(32.71%)	2(1.87%)	10(9.34%)	107
Oraviţa	9(42.85%)	-	-	12(57.15%)	-	-	21
Ciclova Română	20(32.25%)	9(14.51%)	7(11.29%)	21(33.87%)	-	5(8.06%)	62
Răcăşdia	79(32.78%)	41(17.01%)	33(13.70%)	59(24.48%)	8(3.32%)	21(8.71%)	241

Sasca Montană	24(32.43%)	15(20.27%)	-	31(41.89%)	-	4(5.40%)	74
Ilidia	57(44.53%)	24(18.75%)	11(8.60%)	27(21.09%)	-	9(7.03%)	128
TOTAL	**1143(33.80%)**	**393(11.62%)**	**483(14.28%)**	**897(26.53%)**	**45(1.34%)**	**420(12.42%)**	**3381**

Out of 750 examined birds 697 (92.93%) were infested. From these hens 3,381 mallophagean lice were collected (table 1).

Six species of mallophagean lice were identified: *Menopon gallinae*, *Menacanthus cornutus*, *Eomenacanthus stramineus*, *Goniocotes gallinae*, *Goniodes gigas* and *Lipeurus caponis*. Each infested bird was parasited with at least one mallophagean louse species.

From the data presented in table 1 and figure 1 it can be observed that the distribution of these ectoparasites was almost the same, excepting *G. gigas* species. Thus, just two species had a 100% prevalence in all 30 studied localities.

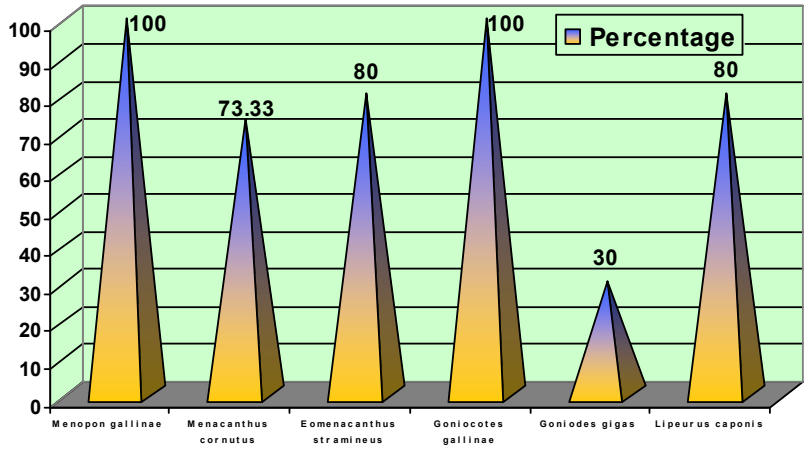

Fig.1. The prevalence of mallophagean species in all 30 studied localities.

Eomenacanthus stramineus and *Lipeurus caponis* were identified in 24 localities (80% from the examined households), *Menocanthus cornutus* was noticed in 22 localities (73.33%), and *Goniodes gigas* was observed in only nine localities (30%).

Also, it can be observed that the predominant species was *Menopon gallinae*, being contered 1143 individuals (33.80%) out of the 3381 collected parasites. In a decreasing order followed: *Goniocotes gallinae* with 897 individuals (26.53%), *Eomenacanthus stramineus* with 483 colected parasites (14.38%), *Lipeurus caponis* with 420 individuals (12.42%), *Menocanthus cornutus* with 393 individuals (11.62%), and *Goniodes gigas* with 45 individuals (1.34%), respectively (figure 2).

The highest number of mallophagean lice was achieved by two species: *Menopon gallinae* and *Goniocotes gallinae* having together 60.33%, while *Goniodes gigas* had the lowest prevalence.

In the case of *Menopon gallinae* species, the minimum spread of parasitism was noticed in Tergova commune (20.19%), and the maximum spread in Mehadia village (61.11%). For *Menacanthus cornutus* species, the lowest widespread was registered in Sacu villige (8.43%) and the highest widespread in Sasca-Montana village (20.27%), excepting the eigth localities in which the parasite was not collected.

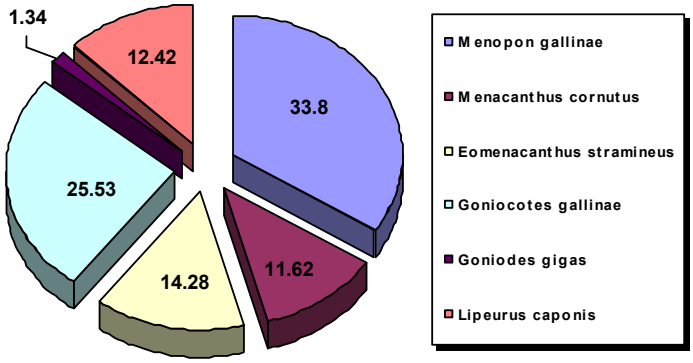

Fig. 2. The distribution of mallophagean species in galiformes from Caraş-Severin County.

Eomenocanthus stramineus had a variable widespread, between 4.25% (in Prigor village) and 32.20% (in Prilipeți village), and it wasn't collected in six localities.

Also, *Goniocotes gallinae* had a large widespread, between 11.86% (in Prilipeți village) and 57.15% (in Oravița city).

Even it wasn't identified in six localities *Lipeurus caponis* had a 5.35% in Reşița and 34.83% in Turnu Ruieni prevalence, respectively.

The lowest prevalence was observed in *Goniodes gigas*, known as a subtropical species, which affected hens from nine households. The louse spread was limited, fluctuating between 1.87% in Grădinari and 5.08% in Prilipeți, respectively.

Same results were noticed by Pinto and al. (2001) in Brasil; they registered five mallophagean species in Sao Jose de Barreiro province. The collected species were: *Menopon gallinae*, *Eomenacanthus stramineus*, *Lipeurus caponis*, *Goniodes gigas* and *Goniodes dissimilis*. The most widespread species was *Menopon gallinae* (69.34%) which had a double count given the results obtained by us in Caraş-Severin County.

In another study conducted in Bulgaria by Prelezov and Koinarski (2006) only four mallophagean lice species were collected in Stara Zagora region: *Menopon gallinae*, *Menacanthus cornutus*, *Eomenacanthus stramineus* and *Goniocotes gallinae*. The most widespread species was, also, *Menopon gallinae* (35.9%), followed by *Goniocotes gallinae* (25.8%), similar to our records.

The results carried out in Caraş-Severin County revealed the presence of only six species out of Ribbeck (1992) 10 frequently considered species of mallophagean lice.

Probably, this fact was due to the relative constant climatic conditions in different sub regions of the County.

Species identified by us have a cosmopolitan distribution, excepting *G. gigas*, and they, apparently, adapted themselves very easy to different geographic regions and climatic conditions (Lancaster şi Meish, 1986), unlike some species like: *M. pallidulus, L. lawrensis tropicalis, Oxylipeurus dentatus* or above mentioned *Goniodes gigas,* which inhabit more restricted area. Actually, these last species are encountered in tropical and subtropical climate zones (Lancaster şi Meish, 1986; Trivedi şi col., 1992; Gabaj şi col., 1993). However, the presence of *Goniodes gigas* in Caraş-Severin County could be explained by the influence of the Mediterranean clime of the zone which permits the maintaining of the species after its introduction together with imported birds by the poultry breeders fans of exotic races.

The presence of the main species of mallophagean lice recorded in Caraş-Severin County was observed, in approximately same percentage, also in Serbia (Pavlovici şi Nesic, 1991) or Turky (Okursoy şi Yilmaz, 2002).

Conclusions

After this trial there were identified six species of mallophagean lice in hens: *Menopon gallinae, Menacanthus cornutus, Eomenacanthus stramineus, Goniocotes gallinae, Goniodes gigas* and *Lipeurus caponis,* respectively.

Goniodes gigas species was identified for the first time in Caraş-Severin County.

The highest prevalence was observed just for two species: *Menopon gallinae* şi *Goniocotes gallinae*, which had 60.33% together.

The lowest prevalence (1.34%) was noticed for *Goniodes gigas* species, proving that this species is searching for now habitats.

Out of the six identified species, *Menopon gallinae* and *Goniocotes gallinae* had the highest prevalence being noticed in all studied localities.

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