

# INVASIVE SPECIES – POWERFUL COMPETITORS TO THE NATIVE SPECIES

## SPECIILE INVAZIVE – CONCURENTE PUTERNICE ALE SPECIILOR AUTOHTONE

*BĂDEANU Marinela, SANDU Tatiana, MARTA Alina Elena*

University of Agricultural Sciences and Veterinary Medicine Iasi, Romania

**Abstract.** *In Romania, as well as in Europe, there are many vegetal and animal species that have acclimated here and rapidly spread aggressively occupying even larger areas, and their activity often influences negatively the ecosystems in which they grow. The number of invasive species registered in Romania is very large; it comprises plants such as Galisoga parviflora, mammals such as Canis aureus, birds such as Streptoptelia decaocto, fishes such as Ictalurus nebulosus, gasteropods such as Rapana tomasina, aranea such as Latrodectus spp. The largest number of invasive species is represented by the insects, some of them being veterans of the invasion, such as Leptinotarsa decemlineata, Hyphantria cunea, Phylloxera vastatrix, Quadraspidiotus perniciosus and other new guests such as Phyllonorychter robiniella and Parecopta robiniella, Cameraria ohridella, Diabrotica virgifera virgifera, Anoplophora chinensis și Anoplophora malasiaca, Linepithema humile, Losius neglectus. All these species have a powerful negative impact on the cultivated plants or on the spontaneous flora and they don't present specific entomofag, which makes them difficult to control with biological methods.*

**Key words:** invasive species, impact, fauna.

**Rezumat.** *În Romania, ca de altfel și în Europa, există numeroase specii vegetale și animale care s-au aclimatizat aici, iar activitatea lor influențează adesea negativ mediul înconjurător. Diseminarea acestor specii departe de arealul lor de origine a fost favorizată de accelerarea procesului de globalizare, sub toate formele sale. Intensificarea schimburilor comerciale, acvatice sau terestre, intensificarea turismului, schimbările climatice globale, constituie tot atâtea categorii de factori majori, favorizanți ai speciilor invazive. În lucrarea de față ne propunem centralizarea datelor existente pe plan național până la această dată, legate de prezența și activitatea speciilor de animale invazive, ( nevertebrate și vertebrate) și evidențierea efectelor negative pe care le atrage instalarea lor în noile ecosisteme.*

**Cuvinte cheie:** specii invazive, impact, fauna

## MATERIAL AND METHOD

In this paper there was made a study on the fauna, correlated to all the information existing already and after that we have tried to bring together and interpret the results and the effects they have on nature. An invasive species is a species whose population has the ability to massively cover new and wide areas and which lead to an exaggerated increase in the number of organisms. These species produce ecological disequilibrium in the invaded ecosystem, being also helped by the absence of any natural enemies (parasites or predators) which would be able to limit the reproduction rate.

## RESULTS AND DISCUSSIONS

The following table presents the most popular species of invertebrates noticed on the territory of Romania (table 1).

Table 1

### Invasive invertebrates signalled on the territory of Romania

No.	Scientific name	Common name	Order	Family	Year
<b>Branch Mollusca-Class Gastropoda</b>					
1	<i>Rapana venosa</i> Vall.	-	<i>Monotocordia</i>		1947
<b>Branch Mollusca-Class Bivalvia</b>					
2	<i>Mya arenaria</i> L.	-	<b>Myoidae</b>	<i>Myidae</i>	1967
<b>Branch Arthropoda- Class</b>					
3	<i>Latrodectum</i> spp.	Black widow	Aranea	Tiredida	-
<b>Branch Arthropoda- Class Insecta</b>					
4	<i>Dicerca furcata</i> Thun.	-	<i>Coleoptera</i>	<i>Buprestidae</i>	2002
5	<i>Leptinotarsa decemlineata</i> Say.	Colorado beetle	<i>Coleoptera</i>	<i>Chrysomelidae</i>	Europa 1922, România-Săpânța 1952
6	<i>Diabrotica virgifera virgifera</i>	-	<i>Coleoptera</i>	<i>Chrysomelidae</i>	Europa 1992, România-Nădlac 1996.
7	<i>Pedicia apusenica</i>	-	<i>Diptera</i>	<i>Pediciidae</i>	1986
8	<i>Ula mixta</i>	-	<i>Diptera</i>	<i>Pediciidae</i>	1983
9	<i>Dicranota brevicornis</i> Niels.	-	<i>Diptera</i>	<i>Pediciidae</i>	1981
10	<i>Lossius neglectus</i>	Ant garden	<i>Hymenoptera</i>	<i>Formicidae</i>	-
11	<i>Linepithema humile</i> Mayr.	Australian ant	<i>Hymenoptera</i>	<i>Formicidae</i>	-
12	<i>Formica rufa</i>	Ant forest	<i>Hymenoptera</i>	<i>Formicidae</i>	-
13	<i>Phylloxera vastatrix</i> Plank.	-	<i>Homoptera</i>	<i>Phylloxeridae</i>	Europa 1863, România-Dealul Mare 1884
14	<i>Quadraspidiotus perniciosus</i> Comst.	Testos scale	<i>Homoptera</i>	<i>Diaspididae</i>	1933 Bihor
15	<i>Eriosoma lanigerum</i> Hansm.	Linus scale	<i>Homoptera</i>	<i>Eriosomatidae</i>	Europa 1787
16	<i>Hyphantria cunea</i> Drury	American white butterfly	<i>Lepidoptera</i>	<i>Arctiidae</i>	1949 Bihor
17	<i>Cameraria ohridella</i> Desch.	-	<i>Lepidoptera</i>	<i>Gracilariidae</i>	1986
18	<i>Parectopa robinella</i> Clem.	-	<i>Lepidoptera</i>	<i>Gracilariidae</i>	1989
19	<i>Phyllonorichter robinella</i> Clem.	-	<i>Lepidoptera</i>	<i>Gracilariidae</i>	1989

In the table 1 there are presented 19 out of more 100 species of invertebrates, respectively the most dangerous ones and newest on the territory of our country. It can be easily noticed that more than 90% are insects. Some of them entered this habitat at the beginning of the last century, others very recently.

From the species entered a long time ago we distinguish *Phylloxera vastatrix* which practically destroyed European vineyards immediately after it had reached Europe, the vineyard did not have any resistance mechanism against this pest and the main measure which had to be taken in order to revive viticulture was to import and then use American engrafts. Another pest coming from the same area is the Colorado potato beetle -*Leptinotarsa decemlineata*, which gradually and relatively quickly conquered the potato crops in Europe, remaining until this day the most dangerous pest for Solanaceae. In the fight against this pest there were used various chemical methods to which the organisms gradually developed resistance.

From the species recently appeared in Romania we can individualize coleoptera *Diabrotica virgifera virgifera*- a corn rootworm from the West which reached Europe and our country at the time of the war in Yugoslavia and it is advancing to the East at great speed being possible to reach Lunca Prutului corn crop in a few years. This pest is helped by the fact that it does not have any natural enemies, it spends the winter in eggs under the ground. Another species – horse chestnut leaf-miner - *Cameraria ohridella* was signalled in Europe in 1986 and in our country in 1996, thus, in a decade, it succeeded in covering a surface larger than 2000 km, a rather strange fact, as this is known as a strictly monophagous species with a reduced potential of dissemination. This species is also distinguished by the lack of natural enemies. Leaf mines and leaf miners - *Phyllonorycter robiniella* and *Parectopa robiniella* are also new inhabitants in Europe and our country, starting from 1989, both species are monophagous and lack natural enemies in the ecosystems of our country.

But as we mentioned earlier, not only the invertebrate species could have an invasive character, vertebrates as well. The table below shows the most popular species of invasive vertebrates noticed on the territory of our country during this century (table 2).

Out of these, many species of fish have invaded Romanian freshwaters to the detriment of many aboriginal species (topmouth gudgeon- *Pseudorasbora parva*), and also many species of birds and mammals, for example the golden jackal - *Canis aureus*, was present only scarcely in the south of the country, whereas now it lives in packs, conquering the areas left free by the decrease in number of wolf packs; the Florida turtle or *Trachemys scripta elegans* conquers the areas inhabited by the aboriginal species; the Euroasian collared-dove - *Streptoptelia decaocta* has invaded the territory occupied by the aboriginal species *Streptoptelia turtur* ( the feeding but also the nesting territory), to their detriment.

Table 2

## Invasive vertebrates signalled on the territory of Romania

No.	Scientific name	Common name	Order	Family	Year
<b>Branch Vertebrata-Class Pisces</b>					
1	<i>Lepomis eupomotis gibosus</i>	Sun perch	<i>Teleosteeni</i>	<i>Centrarchidae</i>	19th century
2	<i>Ctenopharyngodon idella</i>	Withe amur	<i>Teleosteeni</i>	<i>Ciprinidae</i>	1960
3	<i>Mylopharyngodon piceus</i>	Brack amur	<i>Teleosteeni</i>	<i>Ciprinidae</i>	1965
4	<i>Hypophthalmichthys nobilis</i>	-	<i>Teleosteeni</i>	<i>Ciprinidae</i>	1960
5	<i>Hypophthalmichthys molitrix</i>	-	<i>Teleosteeni</i>	<i>Ciprinidae</i>	1960
6	<i>Ictalurus nebulosus</i> L.	-	<i>Siluriformes</i>	<i>Ictaluridae</i>	1908 in Sf. Ana Lake
7	<i>Pseudorasbora parva</i>	-	<i>Teleosteeni</i>	<i>Ciprinidae</i>	1960
8	<b>Class Reptilia</b>				
9	<i>Chrysemys (Trachemys) scripta elegans</i>	Florida turtle	<i>Chelonia</i>	<i>Emididae</i>	After 1990
<b>Class Aves</b>					
10	<i>Streptopelia decaocta Friv.</i>	-	<i>Columbiformes</i>	<i>Columbidae</i>	1872- Calafat, 1950 in the carpathian area
11	<i>Phasianus colchicus</i> L.	pheasant	<i>Galliformes</i>	<i>Phasianidae</i>	Introduced in Europe and in our country in the 17th century
12	<i>Coturnix coturnix</i> L.	quail	<i>Galliformes</i>	<i>Phasianidae</i>	-
13	<i>Passer hispaniolensis</i>	Spanish sparrow	<i>Passeriformis</i>	<i>Passeridae</i>	1964
14	<i>Turdus pilaris</i> L.	-	<i>Passeriformis</i>	<i>Turdidae</i>	1972
15	<i>Strutio camelus</i>	ostrich	<i>Struthioniformes</i>	<i>Struthionidae</i>	20th century
<b>Clasa Mammalia</b>					
16	<i>Alces alces</i> L.	Elan	<i>Artyodactyla</i>	<i>Bovidae</i>	1960
17	<i>Ovis amon musimon</i> Pall.	mouflon	<i>Artyodactyla</i>	<i>Bovidae</i>	Disappeared from our habitat and reintroduced in the 20th century
18	<i>Canis aureus moreticus</i> Geoff.	Sacal	<i>Carnivora (Fissipeda)</i>	<i>Canidae</i>	-
	<i>Marmota marmota</i> L.	Marmot	<i>Rodentia</i>	<i>Sciuridae</i>	Disappeared from our habitat and reintroduced in 1973

19	<i>Nyctereus procynoides</i>	Enot	<i>Carnivora (Fissipeda)</i>	<i>Canidae</i>	1951
20	<i>Mustela vision</i>	mink	<i>Carnivora (Fissipeda)</i>	<i>Mustelidae</i>	Its number is 5 times or more than that of the European species.
21	<i>Rhinolophus euryale euryale Blas</i>	-	<i>Chiroptera</i>	<i>Rhinolophidae</i>	-
22	<i>Myotis bechsteinii</i> Leis.	-	<i>Chiroptera</i>	<i>Vespertilionidae</i>	1965
23	<i>Myotis ikonnikovii</i> Ag.	-	<i>Chiroptera</i>	<i>Vespertilionidae</i>	1962
24	<i>Neomys anomalus milleri</i> Mott.	-	<i>Insectivora</i>	<i>Soricidae</i>	1958
25	<i>Ondatra zibetica</i> L.	Bizam	<i>Rodentia</i>	<i>Cricetidae</i>	1905
26	<i>Cricetus migratorius migratorius</i> Pall.	-	<i>Rodentia</i>	<i>Cricetidae</i>	1963
27	<i>Myocastor coypus</i>	coypu	<i>Rodentia</i>	<i>Myocastoridae</i>	1960
28	<i>Rattus alexandrinus</i>	-	<i>Rodentia</i>	<i>Muridae</i>	-

## CONCLUSIONS

During the last 100 years, on the territory of our country have entered more than 200 species of vertebrate and invertebrate animals, some of them having the ability to rapidly disseminate, others conquering the habitat of other, aboriginal species.

The insects are amongst the most numerous, in 2005 the statistics made at national level registered more than 98 species in the category of invasive species.

The invasive species of insects with the widest presence amongst cultivated plants but also with the greatest ability to disseminate *Diabrotica virgifera virgifera*, *Cameraria ohridella*, *Parectopa robinella*, *Phyllonorycter robinella*. Another extremely invasive species is *Rapana venosa*, which destroyed the whole population of oysters in the Black Sea and it is now affecting the population of blue mussels.

We mention as a destructive vertebrate the golden jackal - *Canis aureus*, which 10 years ago could be hardly met in the south of the country, but today it wanders in large packs, occupying the habitat of the aboriginal wolf; the Euroasian collared-dove - *Streptopelia decaocta* which occupies the habitat of the turtle dove - *Streptopelia turtur*; as well as numerous species of fish, native from Asia, which entered the Romanian waters and feed on the roe and larvae of the aboriginal species.

## REFERENCES

1. **Bădeanu Marinela, Sandu Tatiana, Slabu Cristina, 2007** - *Recherches sur les maladies et les ravageurs de quelques especes des arbres ornamentales utilisee dans les jardins particulieres*. Lucr. Șt. Vol. 50, Seria Horticultură Iași, ISSN 1454-7376.
2. **Botnariuc N., 1987** - *Monitoringul ecologic*. Ocrotirea naturii și Mediului înconjurător, (Ecological Monitoring, Nature and Environment Preservation), 31,2; 109-115.
3. **Perju T., Olteanu I., 2001** - *La dynamique des populations de la mineuse du feuillage (Cameraria ohridella DESCHKA & DIMIC), insecte niosible du chataignier ornamental (Aesculus hippocastanum L.)*. Bul. Inf. Soc. Lepidopter. Soc., **12** (1-4): 121-126
4. **Rakosy L. 1999** - *Molia castanului sălbatic Cameraria ohridella DESCHKA & DIMIC, 1986 (Lepidoptera: Gracillariidae) în România*. II. Bul. Inf. Soc. Lepidopter. Rom., **10** (1-2): 67-70.
5. **Sandu Tatiana, Trofin Alina-Elena, Bădeanu Marinela, Păduraru E.I., Bernardis R., Dascălu M.C., 2007** - *Aspecte privind activitatea de monitoring forestier în Ocolul Silvic Vaduri-Neamț.* („Observations regarding the forestry monitoring activity in Vaduri-Neamț Forest Ward”). Lucr. Șt. Vol. 50, Seria Horticultură Iași, ISSN 1454-7376