THE REGULATORY ROLE OF INSECTS ON *IMPATIENS GLANDULIFERA* IN BULGARIA

Dr. Gergana Zaemdzhikova,
Dr. Plamen Glogov,
Dr. Mira L. Georgieva

Forest Research Institute, Bulgarian Academy of Sciences

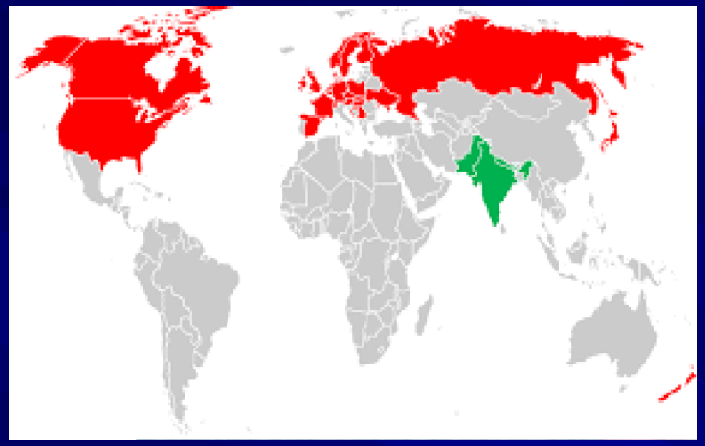
Hymalayan balsam
(Impatiens glandulifera Royale)

One of the most dangerous Invasive alien plants causing:
habitat degradation and biodiversity loss

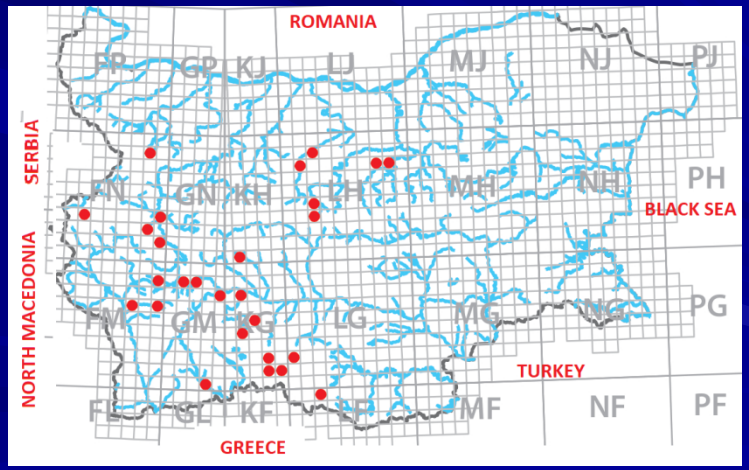
Strategy: Fast growth. Dense communities. Strong vegetative and seed propagation Uses water for transmission.

Distribution of Hymalayan Balsam

World distribution



Distribution in Bulgaria



Aim of the study

The aim of this study is to analyze the effectiveness of insects as a possible method for controlling the spread of *I. glandulifera* in Bulgaria, based on data from European and world experience in the research of the so-called biological control agents

Materials and methods

A complete up-to-date list of insects, trophically associated with the invasive alien species *I. glandulifera* has been done, using information from local and foreign publications.

Data on the food specializations of insects are also presented, as well as the type of damage they cause on Hymalayan balsam.

Based on the received information, a preliminary assessment of the role of insects, as a possible regulator of *I. glandulifera* in the country was made.

Terrain investigations are conducted on the part of the Iskar river (The largest tributarie of Danube river in Bulgaria)

Results and Discussion

Based on literature review, only 9 insect species, trophically associated with *I. glandulifera* have been identified:

Pristerognatha fuligana
fam. Tortricidae
monophagous
larvae live and feed on the stem

Deilephila elpenor
fam. Sphingidae
polyphagous
larvae gnaw the leaves

Results and Discussion

Xanthorhoe biriviata
fam. Geometridae
monophagous

larvae live and feed on the stem

Chrysolina herbacea
fam. Chrysomelidae
monophagous

larvae and adults gnaw the leaves

Results and Discussion

Phytoliriomyza melampyga
fam. Agromyzidae
monophagous

larvae mine the leaves

Siobla sturmi
fam. Tenthredinidae
narrow oligophagus

larvae feed on leaves, stems and fruits

Results and Discussion

Impatientinum asiaticum
fam. Aphididae
monophagous

Aphis fabae, A. nasturtae
fam. Aphididae
polyphagous

Nymphs and adult forms cause deformations on leaves, shoots and flowers. They are a vector for phytopathogenic viruses and fungal pathogens.

A. nasturtae
fam. Aphididae
polyphagous

Results and Discussion

From the list of identified insects in the region of European countries, 3 species (*Siobla sturmi*, *Phytoliriomyza melampyga* and *Impatientinum asiaticum*) are unknown in the Bulgarian fauna. The other 6 species – *Deilephila elpenor* , *Xanthorhoe biriviata* , *Aphis fabae, A. nasturtae* , *Chrysolina herbacea* and *Pristerognatha fuligana* are spread in the country and they can be potential pests on the invasive plant.

Until now from 6 species met in Bulgaria only two– *C. herbacea and P. furigana have been* identified on the Himalayan balsam. The other four ones (*D. elpenor*, *X. biriviata, A. fabae and A. nasturtii*) have not yet been found.

The majority of the total number of identified insects is mono- and oligophagous (7 species) and 2 species (*A. fabae and A. nasturtii) are polyphagous*

Conclusion

No native insect has much potential to control Himalayan balsam in the region of Iskar River.

However, there seems to be considerable impact of specialist herbivores and some patogens in its native area Therefore, we recommend comparative studies on the role of pathogens and generalist herbivores, as regulators of *I. glandulifera* in other areas of the country not covered by the NATURA network.