



Some reasons of degradation of Tugai Forests near Ili River in Kazakhstan

Yuliya BORISSOVA^{*1}, Oto NAKLADAL², Arsen NURGALIYEV³

¹Department of Forest Resources and Game Management, Faculty of Forest, Land Resources and Fruit-and-Vegetable Growing, Kazakh National Agrarian University, Abay st. 8, Almaty, 050010, Kazakhstan

²Department of Forest Protection and Entomology, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences in Prague, Kamycka 129, 165 21 Praha 6 - Suchbát, Czech

³Charyn State National Nature Park, Kadyrbayev st. 4, Shondzha vil., Uigur district, Almaty region, Kazakhstan

Abstract

Tugai forests are intrazonal forests formations, which grow along bottomlands of rivers in arid regions. These forests are called intrazonal forests because they are not separate zones. They are like inclusions in an extensive arid zone but they are intra-area vegetation, which is different from the main background arid flora. Main tree species are *Populus diversifolia* Schrenk, *Populus pruinosa* Schrenk, *Fraxinus sogdiana* Bunge and *Elaeagnus angustifolia* L. Area of the tugai forests is decreasing because of many reasons. The aim of this study was to know some reasons of their degradation. There were used methods of forest pathology observation. We installed window traps for catching insects, which are pests. In addition, we collected samples of damaged parts of trees as herbarium to know diseases. According the results of this study, the main pests and disease of tugais were identified. Description of main pests was written. The most numbered species of pests was *Hylesinus varius* Fabricius for *Fraxinus sogdiana*. *Scolytus jaroschewskii* Schevyrew was often in *Elaeagnus angustifolia*. *Agrilus ganglbaueri* Semenov was identified for both species of *Populus*. The main disease of *Populus pruinosa* was *Melampsora tremulae* Tul. (*Melampsora populnea* (Pers.) P. Karst.) For *Fraxinus sogdiana* and *Elaeagnus angustifolia* dangerous diseases were not established. For conservation of the tugai forests, ecosystem method of study and forest pathology monitoring will be suggested.

Key words: Tugai forests, degradation, pests, diseases, forest pathology monitoring

1. Introduction

Tugai forests are intrazonal forests formations, which grow along bottomlands of rivers in arid regions. These forests are called intrazonal forests because they are not separate zones. They are like inclusions in an extensive arid zone but they are intra-area vegetation, which is different from the main background arid flora (Prohorov, 1982). The tugai forests of the present are tree, shrub and herb communities in flood plains of the Syr Darya, Chu, Ili, Karatal, Lepsy, Aksu and Charyn rivers with total area of about 400 thousand ha of which is covered by forest no more than 150 thousand ha (Baizakov, 2007).

The tugai forests have a large agricultural and economic significance: They protect against soil erosion, water evaporation and they firm the banks of the rivers. They often play an agricultural field-protection role against wind or snow, for example, and realize biodrenage in slumpy bottomland regions (Kolesnichenko, 2013). Main tree species of tugai forests near Ili River are *Populus diversifolia* Schrenk, *Populus pruinosa* Schrenk, *Fraxinus sogdiana* Bunge and *Elaeagnus angustifolia* L. Because of the specificity of the tugai forests, such as a peculiarity of the trees and shrubs, conditions of the climate, soil and hydrology, they have their own species of insect fauna. In spite of the harsh climatic conditions, low humidity and species limitations of trees and shrubs, the forest insect fauna is very diverse in the tugais (Sinadskii, 1963).

Both natural and anthropogenic factors are the causes of desertification in Kazakhstan. The main natural factor contributing to desertification processes in Kazakhstan is the intra continental state of the country, determining continental and arid climate, the scarcity and irregularity water resources distribution, causing widespread sand and saline lands (Sarsekova et. al., 2015). Similarly, area of the tugai forests is decreasing because of many reasons. In

* Corresponding author / Haberleşmeden sorumlu yazar: Tel.: +7272621136; Fax.: +7272621108; E-mail: yuliyacecarevna@yandex.kz

