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SPATIO-TEMPORAL CHANGE OF ANATOLIAN CHESTNUT (*Castanea sativa* Mill.) FORESTS UNDER CLIMATE CHANGE, NORTHEASTERN TURKEY

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Abstract

In this study, the effects of possible climate change in a 36-year period (1980-2015) in different sites on the spatial-temporal distribution of chestnut forests in the Eastern Black Sea region of Turkey were investigated. For this purpose, Giresun, Trabzon-Arsin and Artvin-Hopa in the Eastern Black Sea region were selected as the study areas. The Mann-Kendall and Sen's trend analyses were applied to the annual temperatures (average, maximum and minimum) and annual total precipitations. Two sets of forestry management plans, the first published in 1984-1987 and the second in 2009-2011, were used to extract forest stand maps and to determine change in chestnut distribution. In the time elapsed, chestnut forests increased from 3.58% to 10.05% in Giresun, from 1.28% to 5.31% in Trabzon-Arsin and from 5.44% to 7.53% in Artvin-Hopa. There were increases in chestnut forest areas along with the increasing temperatures. In the city centers, downward shifts occurred in Giresun (-46 m), Trabzon-Arsin (-185 m) and Artvin-Hopa (-168 m) in the minimum altitude against the increasing population. In rural areas, it was determined that there were upward shifts in Giresun (+371 m) and Trabzon-Arsin (+222 m) and downward shifts in Artvin-Hopa (-31 m) in the maximum altitude against the increasing population. Land abandonments and competition between species may have effects on the changes in the area and vertical spread of chestnut forests. However, when the evidences revealed by this study are considered, the changes in temperature and total precipitation in a 30-year period are more likely to affect the spread of chestnut which is a thermophilic species. This study is an exemplary study with respect to carrying out studies on climate change in the region, monitoring chestnut and other species in this regard and developing regional policies for climate change.

Key words: *Castanea sativa*, Eastern Black Sea, GIS, precipitation, temperature

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