

## Evaluating the Effects of Tourism on Urban Development: Case Study of Amasra (Bartın), Turkey

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**Abstract:** Worldwide, coastal areas have provided food, transportation, tourism, recreation, and energy resources for the growing number of people each year. Tourism, transportation and settlement are among the prominent human activities within these coastal areas. On the other hand, coastal areas are extensively affected by those human activities particularly due to the development of tourism. In this study, Amasra (Bartın) settlement is selected to evaluate the effects of tourism on the urban development. The objectives of this study also include the emphasis of the value of the Amasra in terms of tourism activities and the discussion about the tourism effects on the urban development and expansion within the study area. In Amasra, the tourism sector has rapidly developed especially within the recent years. Urban development is negatively influenced by those tourism activities, facilities and second housing in the study area. In this study, the negative impacts of tourism on urban development are presented using Geographical Information Systems (GIS). In this study, satellite images were used in order to generate land cover maps. Land cover maps of the two periods (2000 and 2015) were obtained through the supervised classification using maximum likelihood algorithm under the ERDAS Imagine. Significant results of the study indicate the unplanned development and incompatibility of the actual land use situation with the topographical attributes. Results show that land cover has changed along the 15-years period. In 2000, the urban and/or built-up land coverage had been 78 ha and had occupied 15% of the total area. The urban and/or built-up land has expanded 24 ha along the 15 years period. Accordingly, forestland and cropland have decreased. Touristic facilities and second housing are the main causes to induce the urban development and landscape change within the research area. Precautions should be taken in order to mitigate the pressure of tourism and unplanned urban sprawl within the study area. Results of this study may be evaluated by the governmental agencies.

**Keywords:** Tourism, urban sprawl, coastal areas, land use, Amasra (Bartın)

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### 1. Introduction

Recently in overall the world, pressure on the land uses primarily in the coastal areas has increased due to the rapid increase in population, urbanization and unplanned development [1]. Coastal areas supply food, transportation, recreation, tourism and energy resources globally for the growing number of people each year. Throughout the history, great civilizations, important settlements and commercial areas have been established along the coastal areas. Depending upon this situation, coastal areas have been intensively used and affected negatively [2].

Coastal areas have severely been impacted from the distribution of human populations, commercial and tourist activities. Changes and developments have continually occurred within the coastal areas. Main factors for the transformations of coastal areas are the human activities besides the natural processes. In coastal areas, evaluation of these natural and anthropogenic processes would assist their sustainable planning and management goals [3, 4, 5].

Landscape ecological principles have been applied in order to achieve fundamental progress in the coastal areas for sake of the conservation management and monitoring studies [6]. During the evaluation processes of urban development, the satellite images and analysis of these data using the remote sensing techniques supply substantial contribution for the production of the land use maps and the determination of the urban changes [7, 8, 9, 10].

In this study, it is aimed to reveal the causes of the tourism development on urban sprawl. The objectives of this study involve: (1) to explain the importance of the Amasra for the tourism activities. (2) to highlight and discuss the effects of tourism on urban development and urban expansion within the study area. This study also concerns the effects of tourism on planning and management activities for the coastal areas.

## 2. Material and Method

In this study, Amasra settlement where is known with its' historical features, is selected as the research area. Study area is located at the north-eastern part of the Turkey (Figure 1). The area is surrounded by the Kurucaşile settlement in the east, central part of the Bartın Province in the west and south, respectively.

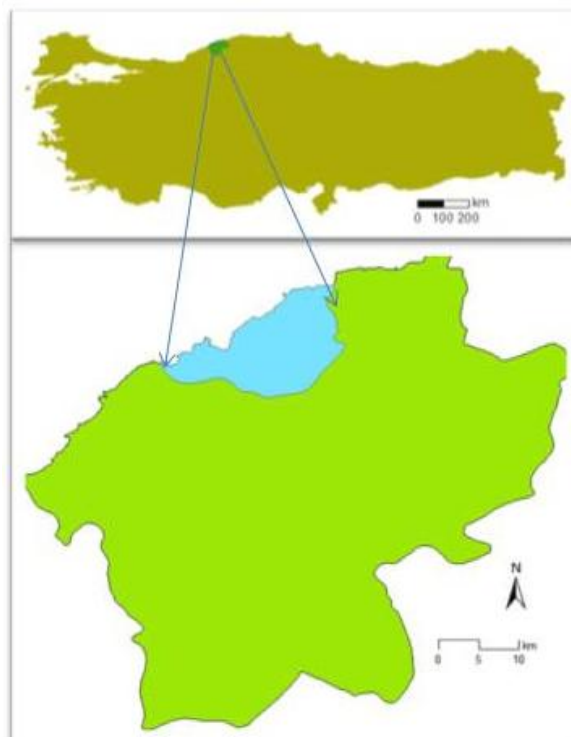
The topographical attributes of the study area include the slopes getting steeper from north to south, and urban area including valuable historical houses are surrounded by steeply sloping forest areas (Figure 2). The research areas nearby the sea consist of shrubs and maquis species, such as bay laurel (*Laurus nobilis* L.) and strawberry tree (*Arbutus unedo* L.). Forest areas include prevalent deciduous tree species (sweet chestnut-*Castanea sativa* Mill., European hornbeam-*Carpinus betulus* L., silver linden-*Tilia argentea*, oriental beech-*Fagus orientalis* Lipsky, European hop-hornbeam-*Ostrya carpinifolia* Scop.) and coniferous tree species (Bornmüllerian fir-*Abies nordmanniana* Stev. ssp. *Bornmülleriana* Mattf., Scots pine-*Pinus sylvestris* L., black pine-*Pinus nigra* Arn. ssp. *pallasiana* (Lamb.) Holmboe J) [11]. In the study area, the agricultural areas occupy the relatively suitable slopes and non-forest areas although they are invaded by the settlements recently.

Amasra is dominated by the humid mesothermal climate regime. The study area is rainy throughout the year due to the airflows which comes over the Black Sea (from the northern part of the study area) [12]. The population of Amasra was determined as 6,684 people in 2015 [13]. In the summer and on holidays, the population of Amasra increases two-threefold.

Research begins with the determination of the touristic characteristics of the research area. In the research area, historical, cultural and natural features are the most important touristic values. Evaluating the effects of tourism on urban sprawl of Amasra city was conducted using the land cover maps.

In this study, land cover maps were used based on the study of Gökyer et al (2016) [14,15]. In that study, Gökyer et al (2016) used satellite images in order to generate land cover maps. Land cover maps of the two periods (2000 and 2015) were obtained through the supervised classification [16] using maximum likelihood algorithm under the ERDAS Imagine. The overall accuracy of the image classification was acquired to use reference points and error matrices [17, 18]. The accuracy of the classified maps was assessed by verifying the general land cover delineations on topographical maps, municipal maps, field observations and Google Earth. The overall classification accuracies were determined as 95% and 86% of the images respectively. Three main land use types were identified including forestland, cropland, urban or built-up land (Table 1).

Landscape metrics were used to quantify the landscape structure and to analyze the changes in urban area. Landscape metrics and related descriptions are given below; 1- Total Class Area (TCA): Total area that belongs to a land cover class, 2- Total Landscape Area (TLA): The total area of the landscape. These metrics are calculated using Patch Analyst extension for ArcMap Version 5.1.



**Figure 1:** Location of the Research Area in Turkey

**Table 1:** Descriptions of the Land Use Types Within the Study Area.

Land Use Category	General Description
Forestland	Deciduous forest, coniferous forest and mixed forest
Cropland	All cultivated lands and vegetable lands
Urban and/or built-up land	Residential areas, industrial land, roads and mine land, rural settlements, sandy areas

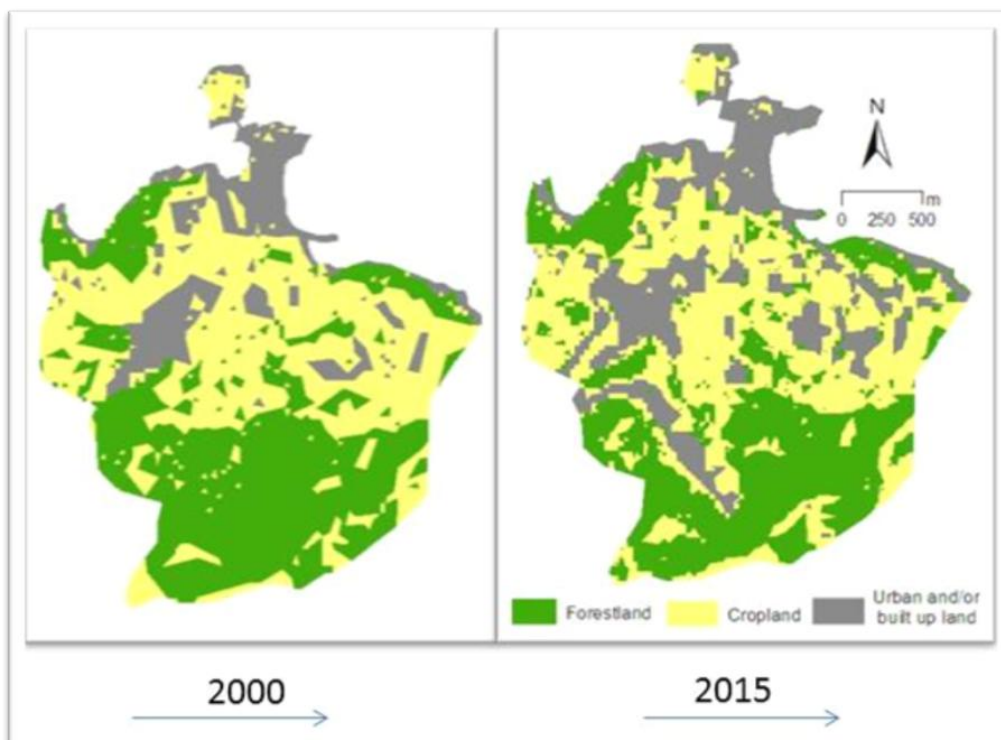
### 3. Result and Discussion

Amasra attracts tourists and visitors with its historical, cultural and natural attributes. During the summer season and long-term holidays, large numbers of visitors come to the research area. During these periods, overcrowding is observed in the city center. As a result of the overcapacity populations, some problems have occurred related to the urban development and management.

Results of the research indicate that important changes have occurred along the 15-years period from 2000 to 2015. Land cover maps pertaining to 2000 and 2015 are presented in Figure 2. Also, results of the landscape metrics are presented in Table 2. Results show that land cover has changed along the 15-years period. In 2000, the urban and/or built-up land coverage had been 78 ha and had occupied 15% of the total area. The urban and/or built-up land has expanded 24 ha along the 15 years period (Table 2). Accordingly, forestland and cropland have decreased. These areas have been transformed to urban and/or built-up land. In particular, associated with the tourism, rapid and unplanned urban development has occurred in the Amasra along the 15-years period. According to the results of this study, precautions should urgently be taken in order to mitigate the impacts of unplanned urban development (Figure 2).

**Table 2:** Calculation Results of TCA for the Years of 2000 and 2015.

Land Cover Classes	2000		2015	
	TCA (ha)	%	TCA (ha)	%
Forestland	213	41	180	35
Cropland	224	44	211	41
Urban and/or built-up land	78	15	124	24
<b>TLA</b>	<b>515</b>	<b>100</b>	<b>515</b>	<b>100</b>



**Figure 2:** Land Cover Maps (2000 and 2015) of the Research Area.

#### 4. Conclusions

The results of this research indicate that the urban area of Amasra has continuously changed due to the development of tourism. Touristic facilities and second housing (Figure 3) are the main causes to induce the urban development and landscape change within the research area. Precautions should be taken in order to mitigate the pressure of tourism and unplanned urban sprawl within the study area. Results of this study may be evaluated by the governmental agencies.

Historical values and natural beauties should be considered under the new sustainable urban development plans. Urban area should be developed compatible with the topographic structure. Furthermore, traffic and parking problems should be handled with those sustainable plans. In the summer season and long-term holidays, human pressure should be minimized. This research not only assessed the urban sprawl and effects of tourism on coastal development but also provided some ideas for planning and management of similar areas.



**Figure 3:** New Settlement and Second Housing Areas

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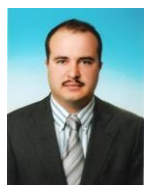
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### Author Profile



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Ercan Gökyer was born in Bartın, Turkey on July 12th of 1977. He achieved to attend Zonguldak Karaelmas University (Bartın, Turkey), Faculty of Forestry, Department of Landscape Architecture in 1995 where he graduated in 1999. He acquired the master of Natural and Applied Sciences from the Institute of Graduate School of Natural and Applied Sciences in Zonguldak Karaelmas University (Zonguldak, Turkey) where he has studied along the years between 2000 and 2003. The title of his master thesis is “A Research on to Examine Natural and Cultural Characteristics of Amasra and Kurucaşile with Respect to Landscape Architecture”. He has attended as Research Assistant to the Zonguldak Karaelmas University (Bartın, Turkey), Faculty of Forestry, Department of Landscape Architecture on September 27th of 2000. He also gained to conduct his Ph.D on Natural and Applied Sciences from the Institute of Graduate School of Natural and Applied Sciences in Ankara University (Ankara, Turkey) studying along the years from 2004 to 2009 when he has acquired his Ph.D. The title of his Ph.D. thesis is “Landscape Assessment in Bartın City and Arıt Basin”. He has been Assistant Professor in the Department of Landscape Architecture at the Faculty of Forestry within Bartın University (Bartın, Turkey) since 2010. Ercan Gökyer has published 9 papers in the international journals some of which is included in the SCI and SCI-Expanded. He has also published 14 papers in the national journals. He has presented his 24 studies in the international and 4 studies in the national conferences and symposiums which were published in the proceedings book of those conferences and symposiums. He has published 3 book chapters. His scientific researches has been concentrated on relatively the diverse scopes involving the Landscape change, landscape ecology, landscape planning, land use dynamics.



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Melih Öztürk was born in Ordu, Turkey on December 14th of 1976. He completed his primary, secondary and high schools in İstanbul, Turkey. He achieved to attend Ege University (İzmir, Turkey), Faculty of Agriculture, Department of Landscape Architecture in 1994 where he graduated in 1998. He acquired the master of Environmental Sciences from the Institute of Environmental Sciences in Boğaziçi University (İstanbul, Turkey) where he has studied along the years between 1998 and 2003. The title of his master thesis is “Evaluation of Water Erosion in the Ağaçlı Region, İstanbul, Turkey”. He also worked as Landscape Architect and Plant Nurse Engineer for the Acart Landscape and Construction Company (İstanbul, Turkey) along the years between 1999 and 2000. He has attended as Research Assistant to the Zonguldak Karaelmas University (Bartın, Turkey), Faculty of Forestry, Department of Landscape Architecture on January 17th of 2003. He also gained to conduct his Ph.D on Environmental Sciences from the Institute of Environmental Sciences in Boğaziçi University (İstanbul, Turkey) studying along the years from 2003 to 2009 when he has acquired his Ph.D. The title of his Ph.D. thesis is “An Integrated Land Use-Hydrological Model for the Bartın Spring Watershed-Bartın”. He has finished his military service between 2009 and 2010. He has been Associate Professor in the Department of Landscape Architecture at the Faculty of Forestry within Bartın University (Bartın, Turkey) since 2017. He is married with two children. Melih Öztürk has published 14 papers in the international journals most of which is included in the SCI and SCI-Expanded. He has 1 Chapter in the “Sustainable Landscape Planning and Design” Book which was published by Peter Lang Publications. He has also published 4 papers in the national journals. He has presented his 22 studies in the international and 9 studies in the national conferences and symposiums which were published in the proceedings book of those conferences and symposiums. His scientific researches has been concentrated on relatively the diverse scopes involving the hydrological modelling, landscape ecology, planning of forest landscapes and recreation, land use dynamics, land use suitability classification, climate change.



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I was born in Ankara, Turkey on 1977. I completed primary, secondary and high schools in Ankara. I started to Master in 2003 in Ankara University, Department of Landscape Architecture. After that I made my PhD in Ankara University Department of landscape Architecture between 2008-2013. After PhD degree, I started to work in Karabük University, Department of Landscape Architecture and I am working as an assistant professor in the same

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