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The economic value of natural protected areas in Ecuador: A case of Villamil Beach National Recreation Area

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A B S T R A C T

With 2,472 hectares, *Villamil Beach National Recreation Area (VBNRA)* is the main beach in the province of *Guayas*, Ecuador. It is protected by the Ministry of Environment and its recreational services are offered on the seashore, attracting large numbers of tourists throughout the year. It is essential to understand characteristics of resident and tourist populations, to develop public policies which contribute to coastal management of the VBNRA. Economic valuation has been considered as an instrument that evidences the different uses of the natural resources as beaches. Hence, this study estimates the economic value of the VBNRA by using the Individual Travel Cost Method. This method can be used when two conditions are met. First, there must be a high frequency visitor's rate and second, visitors must be heterogeneous. VBNRA meets both conditions. Our results show that for the entire sample (tourists and residents); the per-person-per-visit value of the beach is estimated to be USD 16.95. The semi-elasticity analysis applied in this paper concludes that tourists are less sensitive to marginal changes in the travel costs.

1. Introduction

Coastal and marine ecosystems provide a range of goods and services that supply direct and indirect contributions to human well-being. These ecosystems provide services that are commonly not marketed, such as coastal protection (Castaño-Isaza et al., 2015; Schuhmann, 2012; Partelow et al., 2017). According to the Millennium Ecosystem Assessment (2005), coastal zones represent 4% of the world's total land area, and 11% of the total ocean area. These zones host more than 30% of the world's human population, with a population density three times higher than inland areas, and provide the majority of the world's marine fish catch. The coastal zones are characterized by their dry warm climate and natural features including: wetlands, estuaries, lagoons, coral reefs, mangroves and beaches.

Beaches are one of the most important Natural Capital assets found in coastal zones (Brenner et al., 2010; Ariza et al., 2012). They supply services (land, sand, recreation, and tourism) that are critical for the survival of coastal communities and possess intrinsic values that need to be protected from overexploitation (Lucrezi et al., 2016; Chan et al., 2016). The overuse of these services negatively affects the proper functioning of beach ecosystems and consequently, the services themselves (Leatherman, 1997; Pereira et al., 2003; Halpern et al., 2015; Partelow et al., 2015). Indirect impacts from climate change and pollution exacerbate this situation (Defeo et al., 2009; Schlacher et al., 2008).

The Ecuadorian government, through the Ministry of Tourism (MINTUR) and the Ministry of Environment (MAE), have implemented projects to sustainably harness ecosystem services of beaches, for which the National System of Protected Areas (NSPA) was created in 2011 (MAE, 2017). The NSPA is managed by the MAE to allow free access for tourists and, at the same time, to ensure the preservation of ecosystems and services of environmental goods. The MAE has ruled 20% of the national territory as protected area, where *Villamil Beach National Recreation Area* (VBNRA) resides. The land area and the two-kilometer-wide marine strip off the coast were established to protect the natural remnants of marine and coastal ecosystems and to promote adequate environmental management for the treatment and disposal of solid wastes coming from the surrounding population.

The VBNRA is one of the main tourist destinations in the Central Coast of Ecuador, (MAE, 2015). It includes 14 kilometers of stunning gray sand beaches extending from the city of *General Villamil*, known as *Playas*, to the town of *Data Posorja*, at the southern end of *Santa Elena Peninsula* (Fig. 1). It is located in the coastal region of Ecuador, specifically in the province of *Guayas* (Fig. 2). It is an important marine habitat and is one of the most visited of the natural areas within the NSPA. In fact, among the places that belong to the NSPA, VBNRA is the most visited one (MAE, 2015). According to authorities, the beach receives more than 1.25 million local and foreign tourists every year (MINTUR, 2015). The main attraction of the VBNRA is

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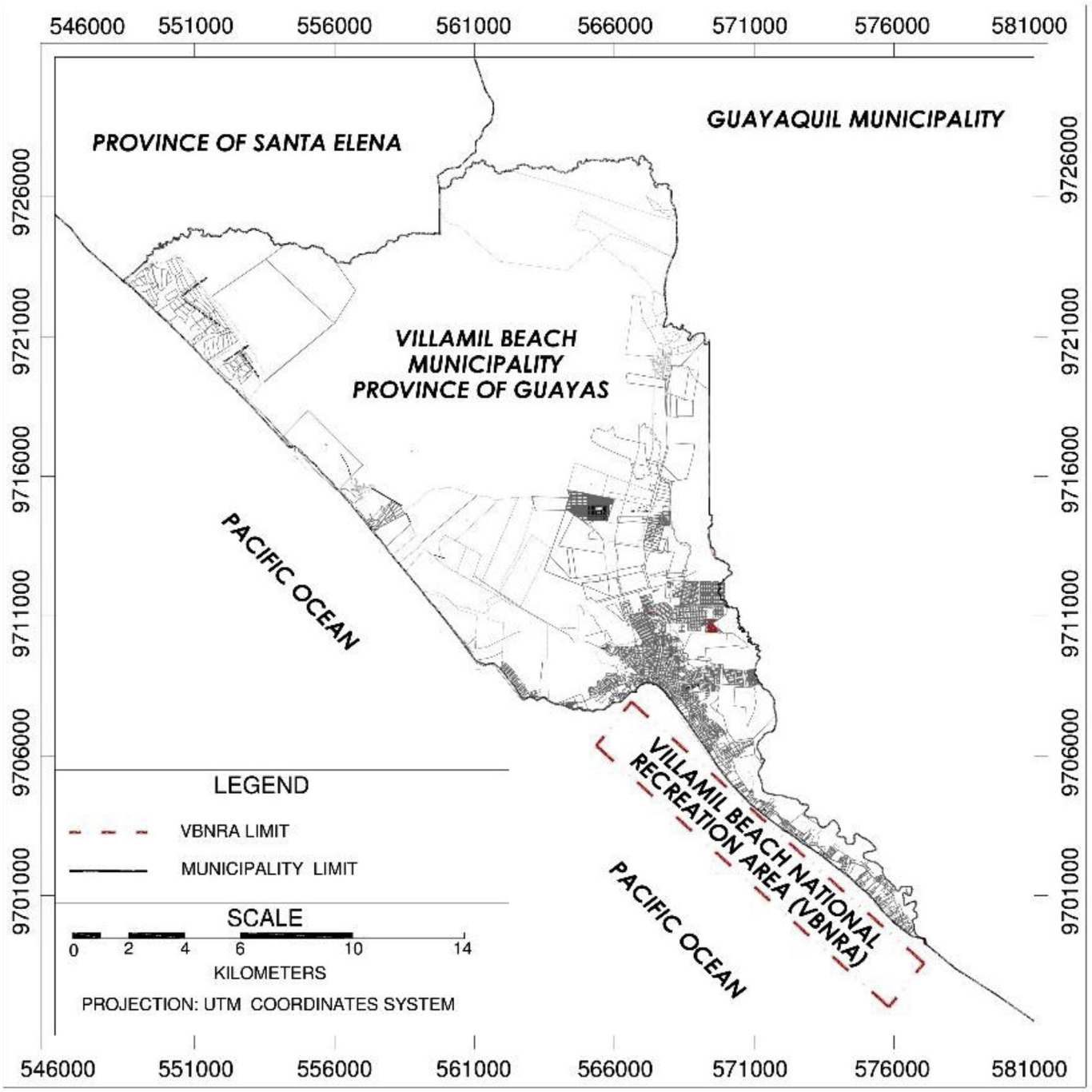

Fig. 1. Location of *Villamil Beach National Recreation Area* (*Guayas*-Ecuador).
Source: Elaborated by the authors.

its tranquility, which makes it ideal for relaxing, walking, bird watching and water sports offered by local tourism businesses. From a cultural point of view, it is the only place in the Ecuadorian coast where you can watch fishermen as they launch their three-mast fishing rafts.[1] VBNRA still retains some remnants of typical arid areas of the Ecuadorian coast, such as *salt mountain*[2] and *muyuyo*[3] (MAE, 2017), which is why it is important to analyze the proper management of this ecosystem.

One way to inform proper management of ecosystem services of beaches is through Economic Valuation (EV). EV has been considered as an instrument that evidences the different uses of the natural resources as beaches. EV allows estimating, through an indicator measured in monetary units, the monetary value of the benefits (or changes in the benefits) derived by humans from ecosystems (Marre et al., 2016). If the conservation of the ecosystem services, that these natural resources provide, has a positive economic value greater than the cost of misusing them, the information that can be generated about its ecological, cultural, aesthetic and economic benefits will support the actions to protect them and conserve them productively (Kolstad, 2011). Therefore, EV becomes an important tool to influence government; social, collective and individual decision making

[1] Traditional boats, which pay homage to the ancient arts of navigation of coastal anglers.

[2] Scientific name: Cryptocarpus pyriformis. It is a native bush of the Ecuador.

[3] Scientific name: Cordia lutea. The muyuyo is a wild shrub that grows in the dry forests of the Ecuadorian coast. Its wood is used for the manufacture of furniture and decorative items.