

## Geographical synthesis of the landscape in Vista Hermosa, Acapulco

### Síntesis geográfica del paisaje en Vista Hermosa, Acapulco

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#### Abstract

Worldwide, human activity is becoming more frequent and intense, which brings with it changes in the vegetation cover and land use. Hence, the objective of the essay was to contribute to the existing literature on Vista Hermosa, Acapulco. Through, exposing the current characteristics of the elements of nature and their interrelation with land uses promoted by local residents. The methodology used was: consultation, review and selection of documentary, statistical-cartographic materials, both printed and digital, on the area under study and the method used was the integrated analysis of the landscape. Results: location map of the area and 2) a geographic-ecological diagnosis of the landscape. The conclusions obtained were: i) the site that shows a wide sustainable tourism potential and ii) high probability of local development based on its natural attributes to meet the expectations of economic progress *in situ*.

**Geography, Land use planning, Landscape, Sustainability**

#### Resumen

A nivel mundial, la actividad humana es cada vez más frecuente e intensa lo que trae consigo modificaciones en la cubierta vegetal y usos del suelo. De ahí que, el objetivo del ensayo fue contribuir a la literatura existente sobre Vista Hermosa, Acapulco. A través de, exponer las características actuales de los elementos de la naturaleza y su interrelación con usos del suelo que fomentan los pobladores locales. La metodología empleada fue: consulta, revisión y selección de materiales documentales, estadístico-cartográficos tanto impresos como digitales sobre el área en estudio y el método empleado fue el análisis integrado del paisaje. Resultados: 1) mapa de localización del área y 2) un diagnóstico geográfico-ecológico del paisaje. Las conclusiones obtenidas fueron: i) el sitio que ostenta amplio potencial turístico sustentable y ii) elevada probabilidad en el desarrollo local cuyo fundamento son sus atributos naturales para satisfacer las expectativas de progreso económico *in situ*.

**Geografía, Ordenación territorial, Paisaje, Sustentabilidad**

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## Introduction

Worldwide, human activity is increasingly frequent and intense, which brings with it changes in vegetation cover and land use (Barrientos *et al.*, 2022), which, in 2022, has a global catastrophic dimension that occupies various groups of the planetary citizenship to achieve sustainable development, linked to the elements of nature that has undergone transformations over thousands of years (Cuétara *et al.*, 2022). For this reason, the United Nations Global Compact was signed in 2000 with the aim of aligning business strategies with principles of human rights, favourable labour indicators and care for the environment that promote the achievement of sustainable development objectives (Global Compact 2022, p. 1).

In Mexico, this problem is current in all sectors of the academic and non-governmental population, the three levels of government and business in order to solve, as far as possible, various environmental problems including environmental pollution, the decline of flora and the extinction of wildlife and even the deforestation of the jungle to make way for the expansion of the urban sprawl of many modern cities. Since 2015, these cities have sought to achieve goal 11 of the Sustainable Development Goals "Sustainable cities and communities" (United Nations 2022, p.1).

Research on these issues in Guerrero is incipient, which is exacerbated in the topics of firewood and charcoal extraction, which is constantly growing. In addition, scientific research on the elements of nature is outdated, so studies are conducted at the local level to provide more detailed geographic, economic and population information and from this, generate more reliable data for decision making at the municipal level with the goal of sustainable development (Reyes *et al.*, 2022).

The community of Vista Hermosa in Acapulco, paradoxically, gained momentum after the declaration of El Veladero National Park in 1980 (DOF, 1980). This motivated some people to demarcate plots of land of various extensions with the aim of owning a house, and in this way they began to populate the nearby slopes and hillsides by implementing the slash-and-burn logging of the protected area in the eastern portion of El Veladero National Park.

It is known that 85% of the energy used by the current inhabitants corresponds to hydrocarbons (crude oil, diesel, and gas), 10% to in situ biomass, which includes firewood from logging and slash, while the remaining 5% corresponds to other types of electrical and solar energy.

Hence, the purpose of this contribution is to contribute to the existing literature on Vista Hermosa, Acapulco. Therefore, another purpose is to expose the current characteristics of the elements of nature and their interrelation with the land uses promoted by the inhabitants of this geographical enclave. Hence, it is hoped to contribute to the updating of information on the natural environment, socio-economic characteristics and current population of the site under study.

The problem to which this essay contributes information is the deforestation currently practised by the local population. Given that, it is known that the inaccessibility of the resident and/or migrant peasant population of the economic regions of the state: Central, North, Mountain, Sierra, Tierra Caliente, Costa Grande, Costa Chica and rural area of Acapulco that lack credit for the acquisition of decent housing by the Institute of the National Housing Fund for Workers (Infonavit) (CNBV, 2022).

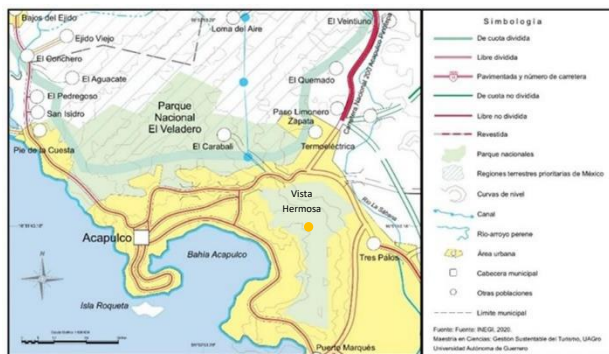
## Methodology

In accordance with the above, a review of the relevant literature was carried out, together with desk research. This essay was conducted from a qualitative, descriptive and cross-sectional approach with an emphasis on Vista Hermosa, Acapulco. This included analysis of statistical databases from the National Institute of Statistics, Geography and Informatics (INEGI), the Ministry of Environment and Natural Resources (Semarnat) and the National Commission of Natural Protected Areas (Conanp). Complemented with field work through three rounds carried out in the months of October-December of this year 2022. Information gathering techniques were applied by means of field logs, photographs and participant observation.

The working method is related to the fundamentals of Landscape Geography in order to achieve sustainability. Landscape is fundamental because: a) it reflects the physical potential of the land, b) it is a biological response on which man acts, c) it allows characterising the territory, d) the fundamental data to classify the geographical enclave is the landscape and e) it is the backbone of any study that allows achieving a deep knowledge of the territorial system. The Integrated Landscape Analysis method is supported by qualitative techniques such as participant observation and in a quantitative way with the cartographic technique. The resulting synergy is useful because it allows correlating the elements of nature with the existing environmental problems in Vista Hermosa, Acapulco.

## Results

Vista Hermosa, Acapulco is located in the eastern part of El Veladero National Park and has an area of 8 785 584.39m<sup>2</sup> (DOF, 2000). It is located between the geographical coordinates 99° 50' 20" west longitude with respect to Greenwich and 16° 51' 35" north latitude with an altitude of 299 metres above sea level (m.a.s.l.) (Figure 1).



**Figure 1** Geographical location of Vista Hermosa, Acapulco

Source: INEGI, 2022

The population analysis shows that Vista Hermosa has a population of 532 people according to INEGI (2022). This settlement has an ejidal police station, a primary school, a grocery shop where they buy basic processed products. There is also a taxi site, which connects the inhabitants with another site near the Acapulco Naval Base (INEGI, 2020a).

*Economic analysis*, the resident population that receives an economic income for their labour force is 312, which means that 60% of the population is responsible for sustaining the economy of the settlement under study. The number of people who do not receive any income is 220, i.e. 40% of the total resident population, including housewives and children under 12 years of age. There are 100 people employed in primary economic activities, who practice rain-fed agriculture on steep slopes (INEGI, 2021).

Shearing is also practised since the villagers cut specimens of low deciduous forest such as the Amate (*Ficus insipida*) and the Ceiba (*Ceiba pentandra*), among others, to obtain firewood to be able to cook their own food. The average household consumption of these fuels is higher in this forest as a result of the variety of existing plant species, including mesquite (*Prosopis juliflora*), huizache (*Vachellia farnesiana*), guásimo or cuaulote (*Guazuma ulmifolia*) and mangrove (*Rhizophora mangle*), which are frequently found next to roads and unguarded and unfenced properties.

Housewives raise backyard livestock, mainly goats and poultry. Men poach raccoons (*Procyon lotor*), rabbits (*Sylvilagus cunicularius*), green iguanas (*Iguana iguana*) and black iguanas (*Ctenosaura pectinata*) and extract stone materials for self-construction. 212 people work in the centre of Acapulco as cleaners, waitresses, labourers, and public transport workers, among other jobs (INEGI, 2021).

155 dwellings are established, of which 35 are not permanently inhabited, but only for long weekends, summer and end of year holidays. Ninety per cent of the houses are self-built and only 10 per cent have architecture that allows good ventilation, lighting and spatial distribution to accommodate more than four family members.

Infrastructure and equipment is reduced to 25% of streets with asphalt surfacing and the remaining 75% are paved streets or rustic soil. Piped water is delivered to homes through hoses connected to springs or directly through artesian wells, and in the dry season water is supplied by public and private water pipes.

The population affiliated to the federal health services provided by the Mexican Institute of Social Security (IMSS) amounts to 200 which represents almost 40% of the total population. The literate population in the 8-14 age range is 82; the illiterate population aged 8-14 is 4; the population aged 15 and over who can read and write is 329 and the population aged 15 and over who cannot read or write is 35 (INEGI, 2022).

The average level of schooling in Vista Hermosa is as follows: population aged 15 years and over with incomplete basic education 136; population aged 15 years and over with complete basic education 107; population aged 15 years and over with post basic education 94; population aged 18 years and over with at least one degree approved in higher secondary education 26 and population aged 25 years and over with at least one degree approved in higher education 17 (INEGI, 2020b).

Environmental analysis, the presence of Selva Baja Caducifolia stands out due to the fact that it is found in elevated, steeply sloping sites and therefore plays a fundamental role in the infiltration of water into the phreatic mantle that supplies the local springs. The vegetation also has the function of protecting the soil from water erosion, as well as being part of the eastern lung of the city of Acapulco, which from the hillside represents an element of scenic beauty (Masiero and Hrankai, 2022) with visual amplitude from Vista Hermosa towards the bay of Acapulco to the north, Puerto Marqu ez to the west (Figure 2), Barra Vieja to the south and Ciudad Colosio to the east.



**Figure 2** Panoramic overlooking Puerto Marqu ez  
Source: Own Take

The local relief is made up of homogeneous slopes from the points of view of their origin, formative processes and landforms. The stony materials geologically belong to the Mesozoic era and are therefore ancient, although nowadays they are found as boulders, gravel, sand and silt here the land use is wildlife.

In addition, the high presence of vegetation on the terrain serves as protection against runoffs that are activated in the wet season of the year between July and November when the number of landslides, mudslides and landslides also increases. The dominant climate is Tropical with summer rainfall (Aw) with a mean annual temperature of 27.8  C; where the mean annual precipitation is 1 411.1 mm (Ibidem, 2020b).

The fluvial network in the area of influence of Vista Hermosa, Acapulco is made up of permanent and intermittent streams that are activated during the rainy season and in the highest part of El Veladero National Park there are springs. The elevated sector of the rocky and sandy soil stimulates water infiltration that feeds the aquifer of La Sabana, which benefits the town of the same name, Llano Largo, El Coloso, Cayacos, Tunzingo, Tres Palos, El Salto and San Isidro Gallinero.

From the elevated part of Vista Hermosa down the slopes, the presence of vegetation is less closed, although the existence of more evolved soil favours the formation of several intermittent runoffs fed by the infiltrated water flows from the elevated portion; thus, further down, these flows emerge in the form of permanent streams (Z arate and Ni o-Castillo, 2021).

The soil units are composed of Feozem haplic soil cover, followed by Regosol and Litosol. The former refers to soils of advanced development, showing fluvial erosive processes on stony soils where there are large granitic rocks of igneous origin. The Regosol and Litosol units cover contiguous slopes in the surrounding area.

The Regosol is characterised as an incipient soil of scarcely consolidated, coarse-grained material, with shallow layers of coarse-grained rock. The Litosol soil, on the other hand, is a rocky substrate, which can be seen with the naked eye on the slopes of the neighbouring hills. The incidence of erosion processes is evident in gullies, areas with altered natural vegetation, main roads and erosion in rainfed agricultural land and on the roads that allow access to the village under study.

Diagnosis, deforestation in Vista Hermosa, Acapulco grows year by year at a minimum rate, however, it is necessary to know that the presence of population increases with the passage of time and that with its primary activities can lead to a constant exploitation of the vegetal resource when in 2022 the jungle cover suffers minimal deforestation, an attribute that stimulates high edaphic development and reduces water and wind erosion.

The geo-ecological diagnosis of the landscape shows that the rugged relief conditions the slow evolution of the soil, reflected in thin soil layers, minimal depth and low agrological capacity, making it suitable only for sustaining the wildlife of the low deciduous forest. Because, it is their natural vocation.

However, the presence of the human being constitutes a harmful agent that for diverse causes depredates the timber resources and alters the ecosystem in such a way that, in the medium term of 10 years it can be transformed into a jungle landscape on the verge of extinction to give way to a consolidated urban human settlement, in addition to the coexistence with cultivation plots and pastoral areas, which implies a serious deterioration of the scenic-landscape attribute, still prevailing.

In this order of ideas, it is necessary to consider other energy options such as, for example, the use of agricultural residues such as dry grass, straw, animal excrement and dry sticks as options to substitute firewood as a local fuel. To this end, it is necessary to remember that the conservation of the Selva Baja Caducifolia translates into eight benefits: a) it provides wood for the production of local crafts that are offered to tourists (Rojas *et al.*, 2020); b) it restores soil fertility; c) it stops desertification; d) it prevents water erosion; e) it reduces flooding; f) it is a thermal regulator; g) it is useful for promoting regional environmental education and h) it increases economic benefits through tourism (Comisión Nacional de Áreas Naturales Protegidas, 2018).

Therefore, recommendations include: i) to organise the management of existing natural resources; ii) to develop a local land use plan; iii) to carry out an inventory of natural resources as has been done in other places such as Oaxaca (Velázquez-Sánchez *et al.*, 2018); iv) link the resident population with academics from various local public and private institutions; and v) envision a tourism development in Vista Hermosa, Acapulco, since nature tourism constitutes an invaluable opportunity for economic diversification and dynamisation (Cuétara, Sablón, Márquez and Cartay, 2022).

In this sense, the municipal tourism and ecological authorities, together with the population of Vista Hermosa, can undertake actions for the conservation and protection of the still existing jungle landscape in the eastern polygon of El Veladero National Park (Zárate and Niño-Castillo, 2022; Figure 3): 1) construction of terraces to prevent the constant loss of soil; 2) patrols to prevent fires, especially during the dry season (March-June); 3) workshops with community members to recycle municipal solid waste and thus reduce the number of open dumps; and 4) open forums for participation with the academic, business and government sectors in person or virtually to reach a consensus on the sustainable use of the site.



**Figure 3** Scenic beauty from Vista Hermosa  
Source: Own Take

## Conclusions

The geographic methodology of the integrated landscape analysis translates into a geographic-ecological synthesis model that outlines practical-applicable actions that aim to re-establish the jungle ecosystem of Vista Hermosa, Acapulco, an action that brings with it the sustainable use of natural resources, as well as contributing to improve the economy of the local population.

This motivation, although it seems utopian, is feasible, since the geo-ecological state of the Selva Baja Caducifolia can still be balanced, without preventing the sustainable use of the forest through the diversification of profitable economic activities such as nature tourism, and at the same time compatible with the regeneration of the ecosystem.

The necessary elements exist to carry out a geographic-ecological study that allows for the elaboration of a territorial planning in Vista Hermosa, Acapulco. Based on the multifunctionality of the site, which has a broad sustainable tourism potential given that, in its various facets, it allows a broad and effective use of local development based on its natural attributes to satisfy the expectations of economic progress in situ, without detriment to the productive activities to be implemented to promote regenerative processes of the Low Caducifolia Forest ecosystem and to recover its scenic beauty.

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