

ANALYSIS OF FOREST DEGRADATION IN THE CORE ZONE OF THE MONARCH BUTTERFLY BIOSPHERE RESERVE (2024-2025).

Executive Summary

Between February of 2024 and February of 2025, 2.55 hectares (*ha*) of forests were affected in the core zone of the Monarch Butterfly Reserve (MBBR), this represents significant decrease compared to the 3.728 *ha* reported in the previous year. The main causes of forest degradation were: 0.579 *ha* by one forest fire; 0.117 *ha* by drought; and 1.854 *ha* by illegal logging which also decreased in relation to the previous analysis.

Background

The Monarch Butterfly Biosphere Reserve (MBBR) protects 56,259 hectares (*ha*), that includes a core zone of 13,554 *ha* of forest where monarch butterflies (*Danaus Plexippus*) that migrate from Canada and United States establish their hibernating colonies. The MBBR is located within the Monarch Region where additional monarch colonies and sanctuaries are found in natural protected areas; the water basins of this region supply 40% of freshwater to the Metropolitan Zone of Mexico City, through the Cutzamala Hydrological System (Figure 1).

This analysis is the technical basis for the Monarch Fund (FM in Spanish) created by World Wildlife Fund (WWF) and administered by the Mexican Fund for Nature Conservation (FMCN in Spanish). The FM financial mechanism was achieved by the leadership of the Ministry of Environment and Natural Resources of Mexico (SEMARNAT in Spanish), in coordination with the governments of Michoacán and Estado de México. Currently its economic benefits are in concurrence with the Hydrological Environmental Services Payments of the National Forestry Commission (CONAFOR in Spanish).

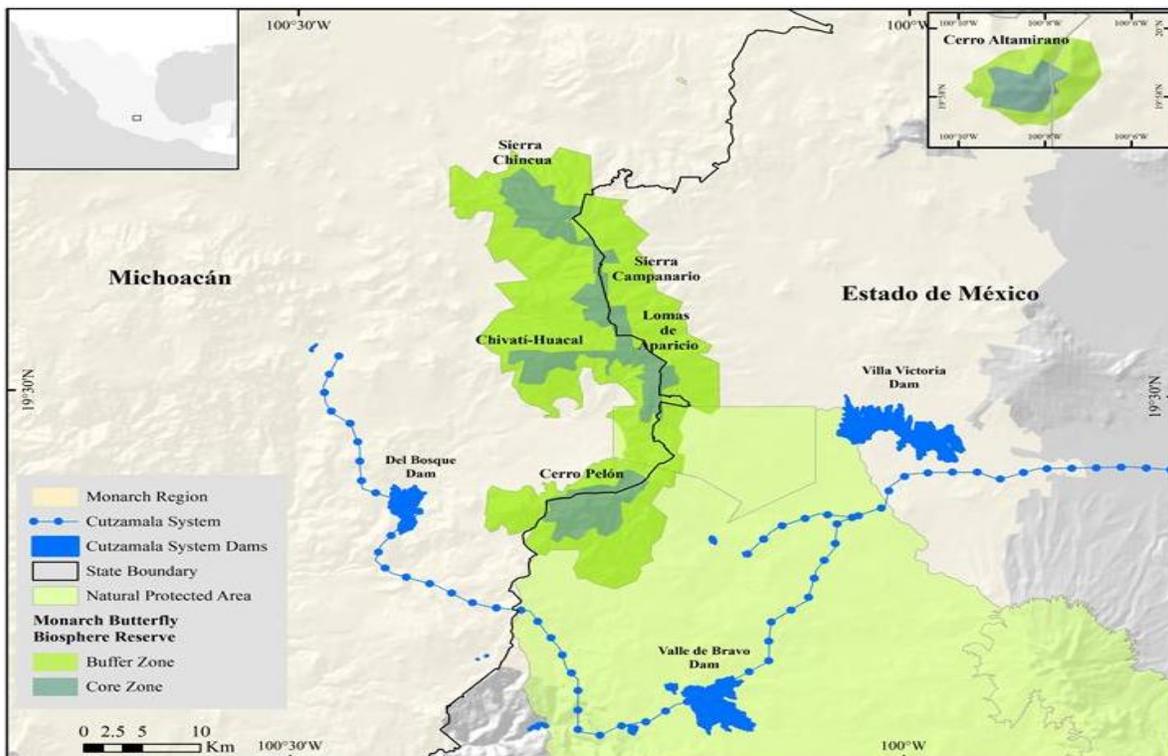


Figure 1. The Monarch Butterfly Biosphere Reserve is in the central zone of the Monarch Region. The forests in this region capture water for the Cutzamala Hydrological System.



The National Commission of Natural Protected Areas (CONANP in Spanish), through the Management Office of the MBBR, manages the federal and others benefits from the international and national cooperation for the landowners within this Natural Protected Area. This analysis is supported and coordinated by WWF while the technical analysis of forest changes is conducted by the Biology Institute of the Autonomous National University of Mexico (UNAM in Spanish).

Method

To perform this analysis, the ortho-corrected mosaics of the aerial photographs of February 2024 were compared with those of February 2025. The changes in the forest cover are incorporated into a Geographic Information System (GIS), and the results are validated by CONANP, the Monarch Fund, PROFEPA and CONAFOR with the presence of the authorities of agrarian properties where forest degradation was found, both in the field and during a meeting with the Technical Committee of the Monarch Fund.

Results

The analysis of changes in forest cover in the core zone of the MBBR allowed us to establish that from February 2024 to February 2025, a total of 2.55 *ha* of forest were affected: 0.579 *ha* by a forest fire; 0.117 *ha* by natural causes (drought); and 1.854 *ha* by illegal logging (Table 1, Figures 2 and 3). The Ejido Hervidero y Plancha suffered the greatest disturbance with 0.721 *ha* due to a fire forest; while the indigenous community San Felipe de los Alzati suffered the greatest disturbance due to illegal logging with 0.552 *ha* affected (Table 1), both located in the state of Michoacán.

Table 1. Properties with affected forest areas in the core zone of the MBBR and respective causes (2024-2025).

State	Municipality	Agrarian property	Forest Fires (ha)	Natural causes (drought) (ha)	Illegal logging (ha)	Total (ha)
Estado de México	San José del Rincón	Ej. El Depósito			0.063	0.063
		Ej. La Mesa			0.030	0.030
		PP. Rancho Verde			0.010	0.010
<i>Subtotal in Estado de México</i>					<i>0.103</i>	<i>0.103</i>
Michoacán	Anganguero	Ej. Anganguero			0.007	0.007
		Ej. Cerro Prieto		0.01	0.021	0.031
		Ej. Hervidero y Plancha	0.579		0.142	0.721
		Ej. Los Remedios			0.013	0.013
		P. F. Propiedad Federal		0.028	0.105	0.133
	Ocampo	C.I. San Cristóbal			0.088	0.088
		Ej. El Asoleadero			0.027	0.027
		Ej. El Rosario		0.017	0.053	0.07
	Senguio	Ej. Senguio			0.283	0.283
		C.I. Crescencio Morales		0.009	0.219	0.228
	Zitácuaro	C.I. Curungueo			0.030	0.030
		C.I. Donaciano Ojeda			0.149	0.149
		C.I. Francisco Serrato		0.036		0.036
		C.I. Nicolás Romero		0.015		0.015
		C.I. San Felipe los Alzati			0.552	0.552
Ej. Crescencio Morales				0.062	0.062	
Ej. Nicolás Romero			0.002		0.002	
<i>Subtotal in Michoacán</i>			<i>0.579</i>	<i>0.117</i>	<i>1.751</i>	<i>2.447</i>
<i>Total</i>			<i>0.579</i>	<i>0.117</i>	<i>1.854</i>	<i>2.550</i>

E= Ejido (Communal Land Management), C.I.= Comunidad Indígena (Indigenous Community), P.P = Propiedad Privada (Private Property).

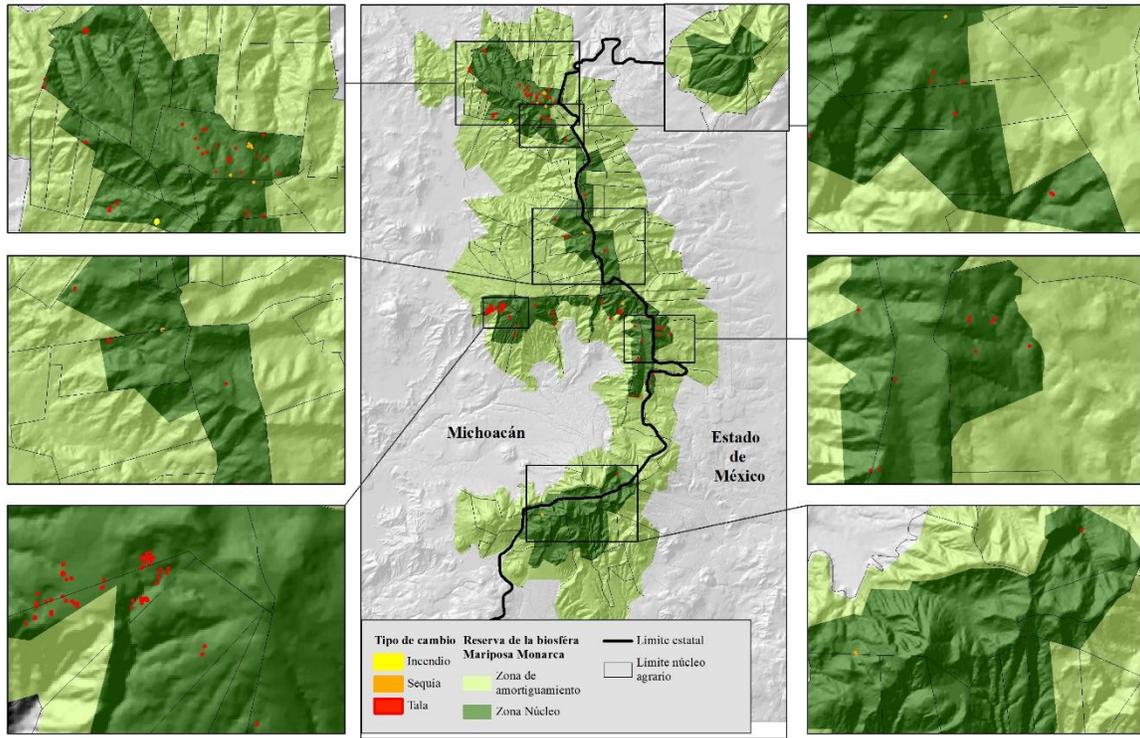


Figure 2. Area of forest affected in the core zone of the Monarch Butterfly Biosphere Reserve (2024-2025).

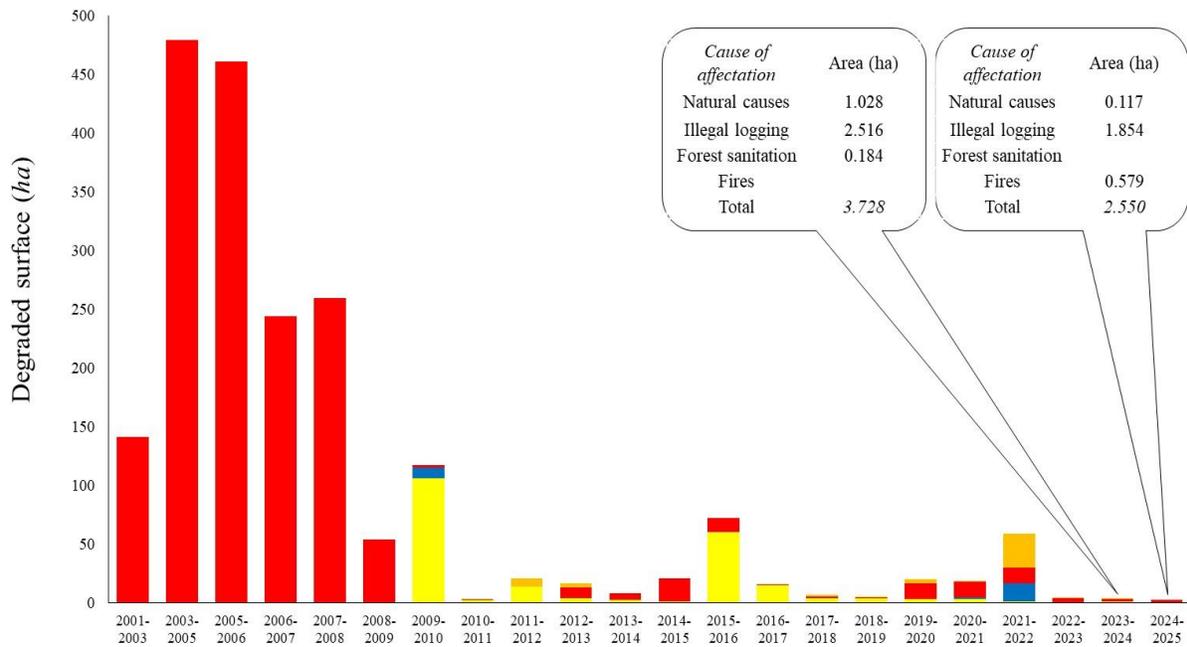


Figure 3. Historical forest degradation in the core zone of the Monarch Butterfly Biosphere Reserve (2001-2025).