

FOREST DEGRADATION IN THE CORE ZONE OF THE MONARCH BUTTERFLY BIOSPHERE RESERVE (2020-2021).

Executive Summary

Between March 2020 and March 2021, 18.83 hectares (*ha*) of forest in the core zone of the Monarch Butterfly Biosphere Reserve (MBBR) were affected: 1.30*ha* experienced forest fires, 0.53*ha* were cleared for sanitation cutting, 3.06*ha* experienced drought, and 13.94*ha* experienced illegal logging; this is similar to last year's illegal logging data (13.36 *ha*). In general, the forest degradation decreased slightly (7%) compared to the 20.26 *ha* affected in 2019-2020.

The Monarch Butterfly Biosphere Reserve (MBBR) protects 56,259 hectares (*ha*) of forest where monarch butterflies (*Danus plexippus*) from North America hibernate (Fig 1.). The reserve has a core zone of 13,551 *ha* where the most important colonies of monarch butterflies are established and is part of the “Monarch Region” in the Mexican Neovolcanic System, between Michoacán and the State of Mexico. The MBBR is also the habitat of 132 species of birds, 56 mammals, 432 vascular plants and 211 fungi. The forests in this region capture fresh water from the Cutzamala System which supplies water to 13 municipalities of Mexico City and 14 municipalities of the State of Mexico, where more than 5 million people benefit from it.

The analysis of the change in the forest cover in the core zone of the MBBR includes a system of “Monitoring, Reporting, and verification (MRV)” that represents the scientific basis for the allocation of the economic incentives of the Monarch Fund (MF), which benefits the owners of these forests. The MF was established by World Wildlife Fund (WWF) and is administrated by the Mexican Fund for the Conservation of Nature (SEMARNAT). It was created in coordination with the Ministry of Environment and Natural Resources (MENR), as well as with the governments of Michoacán and the State of Mexico. Currently its benefits are in concurrence with the payment of hydrological environmental services of the National Forestry Commission (CONAFOR).

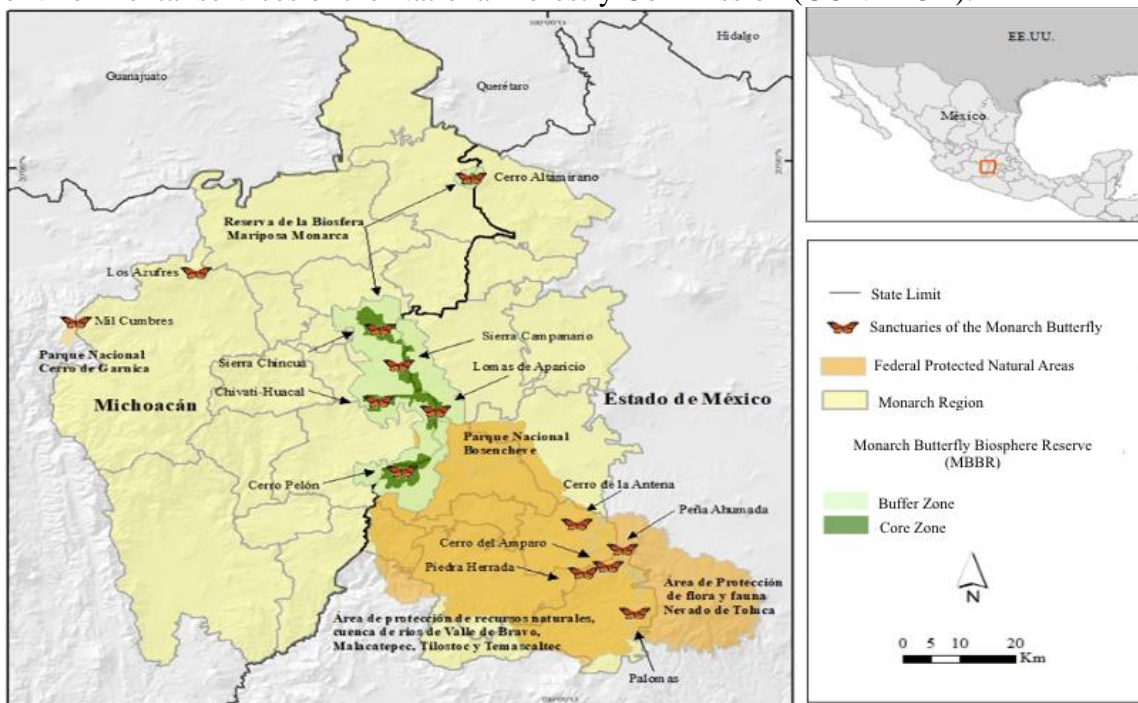


Figure 1. The Monarch Butterfly Biosphere Reserve (MBBR) located in the central zone of the Monarch Region.

The owners, both in the core zone and in the entire MBBR receive support for conservation and sustainable development projects from the National Commission of the Natural Protected Areas (CONANP), through the Management Office of the MBBR and the state governments. The WWF Telmex-Telcel Foundation Alliance supports, among other things, this analysis which compares aerial photographs from March 2020 and March 2021. The changes in the forest cover are incorporated into a Geographic Information System (GIS), where the magnitude is calculated, and the results are validated in the field under the leadership of the MBBR Management Office, with the participation of the UNAM Biology Institute, the Monarch Fund and PROFEPA, as well as with authorities of the agrarian properties with forest degradation.

Forest Degradation 2020-2021

This monitoring, based on the analysis of the change in forest cover in the core zone of the MBBR, allowed us to establish that from March 2020 and March 2021, 18.83ha of forest were affected: 1.30ha experienced forest fires, 0.53ha were cleared for sanitation cutting, 3.06ha experienced drought and 13.94ha experienced illegal logging; similar to the 13.36ha affected by illegal logging the previous year (Table 1, Figures 2 and 3). The Indigenous Community of San Felipe de los Alzati in Zitácuaro, Michoacán, suffered the greatest disturbance due to illegal logging with 8.17ha affected, representing a significant increase of more than three times compared to the 1.87ha affected in the previous period in this property.

Table 1. Properties with forest affectation in the core zone of the MBBR and its causes (2020-2021).

State	Municipality	Property	Forest Fires (ha)	Sanitation Cutting (ha)	Drought (ha)	Illegal Logging (ha)	Total	
State of Mexico	Donato Guerra	E. El Capulín			0.272		0.272	
		E. Mesas Altas de Xoconusco			0.024		0.024	
		P.P. Cañada Seca			0.206		0.206	
		P.P. Los Saucos			0.322		0.322	
	San José del Rincón	E. El Depósito				0.223	0.223	
		E. La Mesa	1.297			0.044	1.341	
		P.P. Catingo III			0.006		0.006	
		P.P. Catingo IV			0.024		0.024	
		P.P. Rancho Verde		0.078			0.078	
	Temascalcingo	E. Pueblo Nuevo Solís			0.020		0.020	
		Villa de Allende	C.I. San Pablo Malacatepec			0.004		0.004
			Litigio: CM, SM, SB, NR, SPM			0.019	0.017	0.036
	<i>Subtotal in State of Mexico</i>			<i>1.297</i>	<i>0.078</i>	<i>0.897</i>	<i>0.284</i>	<i>2.556</i>
	Michoacán	Angangueo	E. Angangueo		0.007	0.021	0.082	0.110
			E. Hervidero y Plancha			0.499		0.499
E. Jesús Nazareno					0.057		0.057	
E. Santa Ana				0.079	0.004		0.083	
Propiedad Estatal					0.021		0.021	
Contepec		Propiedad Federal				0.649	0.649	
		E. Contepec			0.068		0.068	
Ocampo		E. Cerro Prieto		0.104	0.008		0.112	
		E. El Rosario		0.264	0.074		0.338	
Senguio		E. Chincua			0.071		0.071	
		E. El Calabozo I				0.589	0.589	
		E. El Calabozo II				0.966	0.966	
Zitácuaro		E. Senguio				0.298	0.298	
		C.I. Crescencio Morales			0.399	0.062	0.461	
		C.I. San Francisco						
	Curungueo			0.325	0.478	0.803		
	C.I. Donaciano Ojeda			0.241		0.241		
	C.I. Francisco Serrato			0.379		0.379		

C.I. Nicolás Romero				1.235	1.235
C.I. San Felipe los Alzati				8.708	8.708
E. Crescencio Morales				0.310	0.310
E. Nicolás Romero				0.275	0.275
<i>Subtotal in Michoacán</i>	<i>0</i>	<i>0.454</i>	<i>2.167</i>	<i>13.652</i>	<i>16.273</i>
<i>Total</i>	<i>1.297</i>	<i>0.532</i>	<i>3.064</i>	<i>13.936</i>	<i>18.829</i>

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

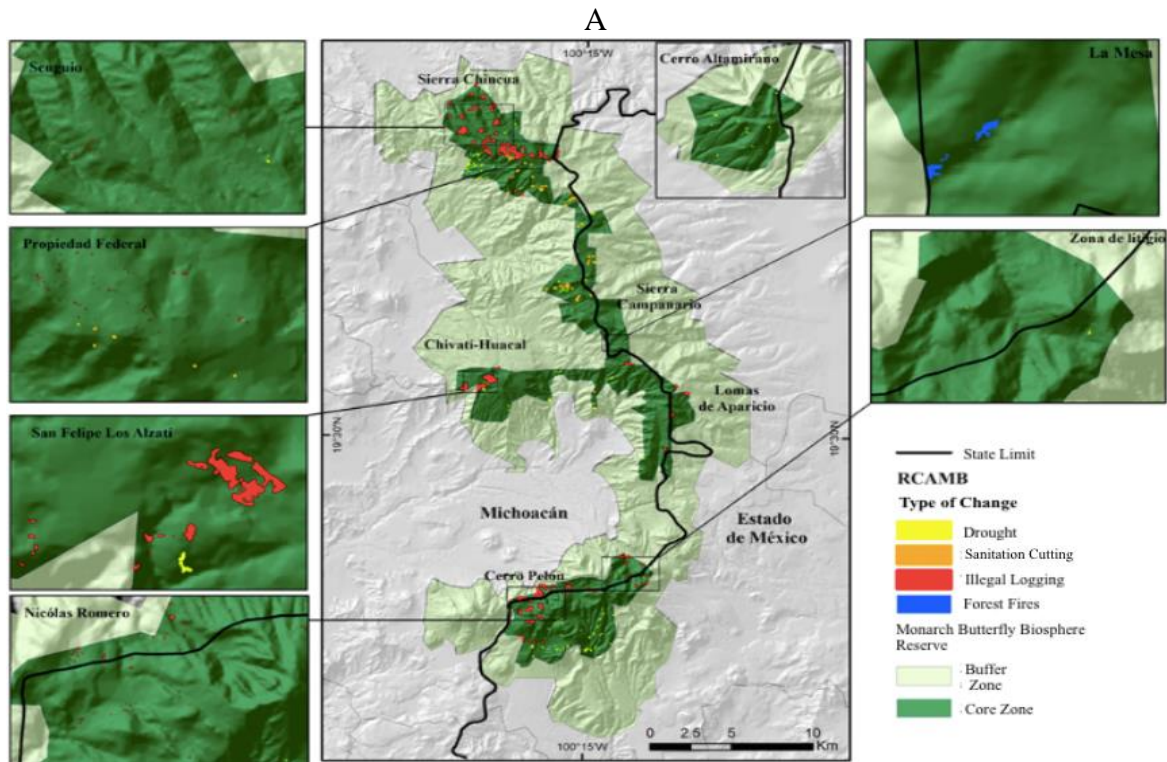


Figure 2. Area of Forests Affected in the Core Zone of the Monarch Butterfly Biosphere Reserve (2020-2021).

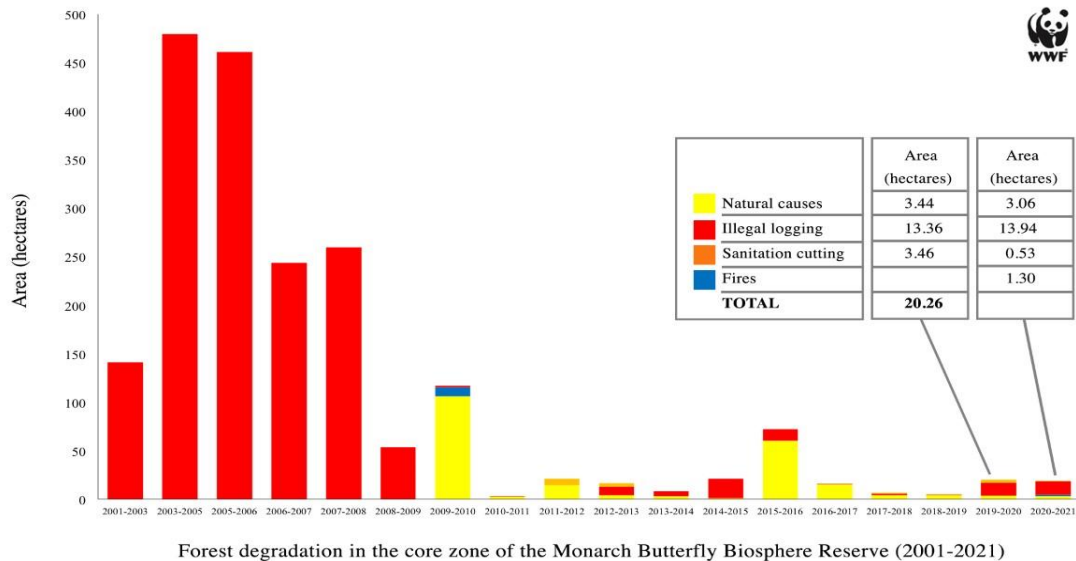


Figure 3. Historical Forest Degradation in the Core Zone of the Monarch Butterfly Biosphere Reserve (2001-2021).