Preliminary Report

Approach With Local Actors

The project was presented to the agrarian authorities as mandated to obtain the Indigenous Peoples 'right to free, prior and informed consent (FPIC). In these meetings the objectives and scope of the project were pointed out. Likewise, the main accesses to the areas of the forest affected bark beetles were identified, using topographic charts.

Field Work

With the support of community guides and youth, sampling sites were established. In total, 100 sites were distributed in areas with pest, with management (CCA) and without management (CSA); and without pest, with management (SCA) and without management (SSA), as control area.

Dasometric variables of trees with diameters greater than 5 cm were measured. In addition, general information about the site, exposure, altitude and slope was recorded.

Stumps were measured within the sites to estimate the volume affected by bark beetle.


A record was obtained of individuals who are part of the regeneration, because the affectations occurred between the period of 2005-2009.


Trees of the *Quercus* genus that formed a large part of the canopy in areas where species of the *Pinus* genus were removed were measured.

Collection of botanical samples of the genus *Quercus*

In order to identify the *Quercus* species prevalent in the forests affected by the pest, botanical samples were collected from the specimens. For this purpose, the tool was used to cut twigs, five specimens were collected, all from the same plant and with the same collection number, the collection code was recorded, and the resulting copies were placed in a botanical press. For each collection the data was filled according to a field format with the information about it. This information was used to prepare the label of the herbarium specimens.

No new outbreaks were recorded within the affected areas, only beetles were collected in other areas.

Results

5029 trees distributed under the four conditions were measured, it was generally observed that the sampling sites were distributed between a range of 2500 to 3100 m.a.s.l., with slopes between 20 and 23 degrees. The amount of organic matter in the sites had values between 7.8 to 10 cm. Temperatures ranged between 10 and 13 °C and precipitation between 1283 to 1655 mm. A moderate regeneration was found in the sites with pest and low in the sites without pest, a high percentage of the regeneration already exceeded 5 cm in diameter. A greater amount of combustible material was found at sites with pests.

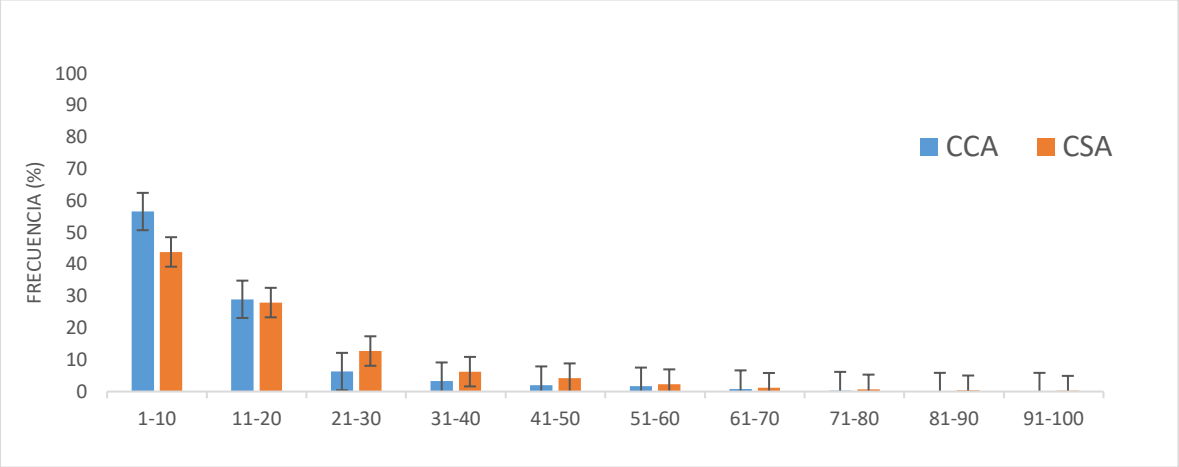
Composition of tree species in areas affected by bark beetle.

Familia	Especie
Pinaceae	*Abies hickelii*
	Pinus ayacahuite
	Pinus douglasiana
	Pinus leiophylla
	Pinus montezumae
	Pinus oaxacana
	Pinus patula
	Pinus pseudostrobus
	Pinus rudis
Fagaceae	*Quercus aff. rugosa*
	Quercus acatenangensis
	Quercus aff. Acatenangensis
	Quercus crassifolia
	Quercus glabrescens
	Quercus laurina
	Quercus obtusata
	Quercus rugosa
	Quercus trinitatis
Betulaceae	*Alnus acuminata*
Ericaceae	*Arbutus xalapensis*
Rosaceae	*Cercocarpus macrophyllus*
Lauraceae	*Litsea glaucescens*
Rosaceae	*Prunus serotina*

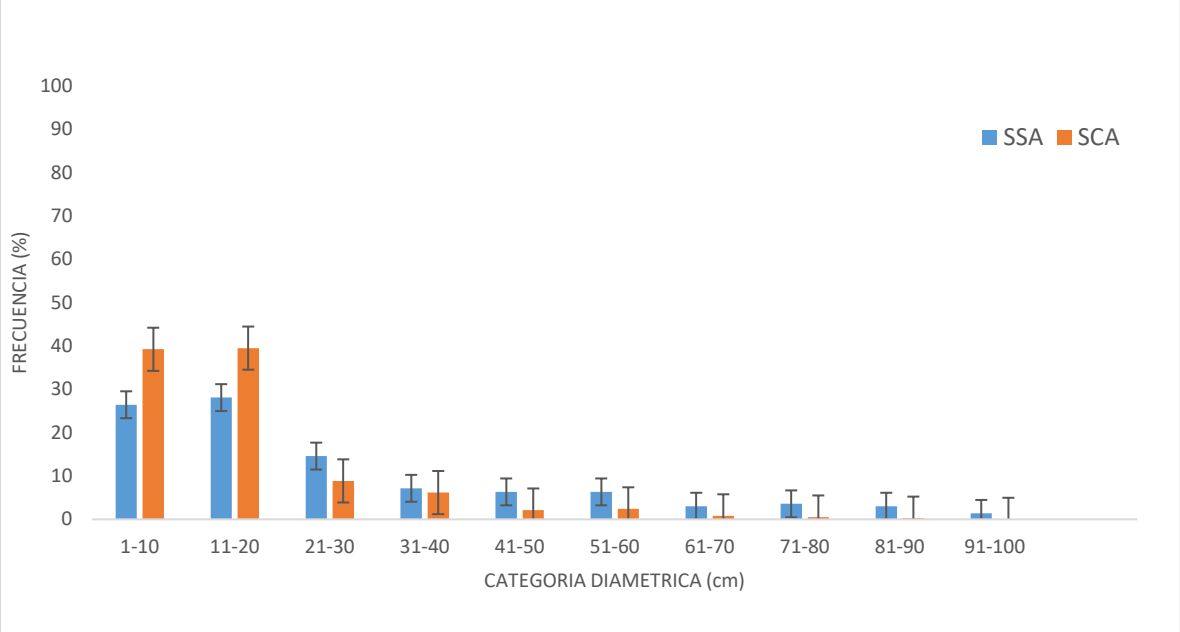
Structure variables in the different conditions evaluated.

	CON PLAGA		SIN PLAGA	
Condición Clave	**con aprovechamiento CCA**	**sin aprovechamiento CSA**	**con aprovechamiento SCA**	**sin aprovechamiento SSA**
Densidad/sitio	48 ± 17	43 ± 17	43 ± 17	37 ± 21
Área basal/ sitio (m^2)	1.2 ± 0.5	1.7 ± 1.0	1.3 ± 0.5	3.6 ± 3.0
Arboles removidos/sitio	**8 ± 5 a**	**7 ± 5 a**	**6 ± 2 a**	**1 ± 1 b**
Área Basal removida/sitio (m^2)	0.5 ± 0.2	0.4 ± 0.2	0.7 ± 0.3	0.03 ± 0.1
Altura arbórea (m)	**8.7 ± 6.9 a**	**10.1 ± 7.2 b**	**10.0 ± 7.1 b**	**14.2 ± 10 c**

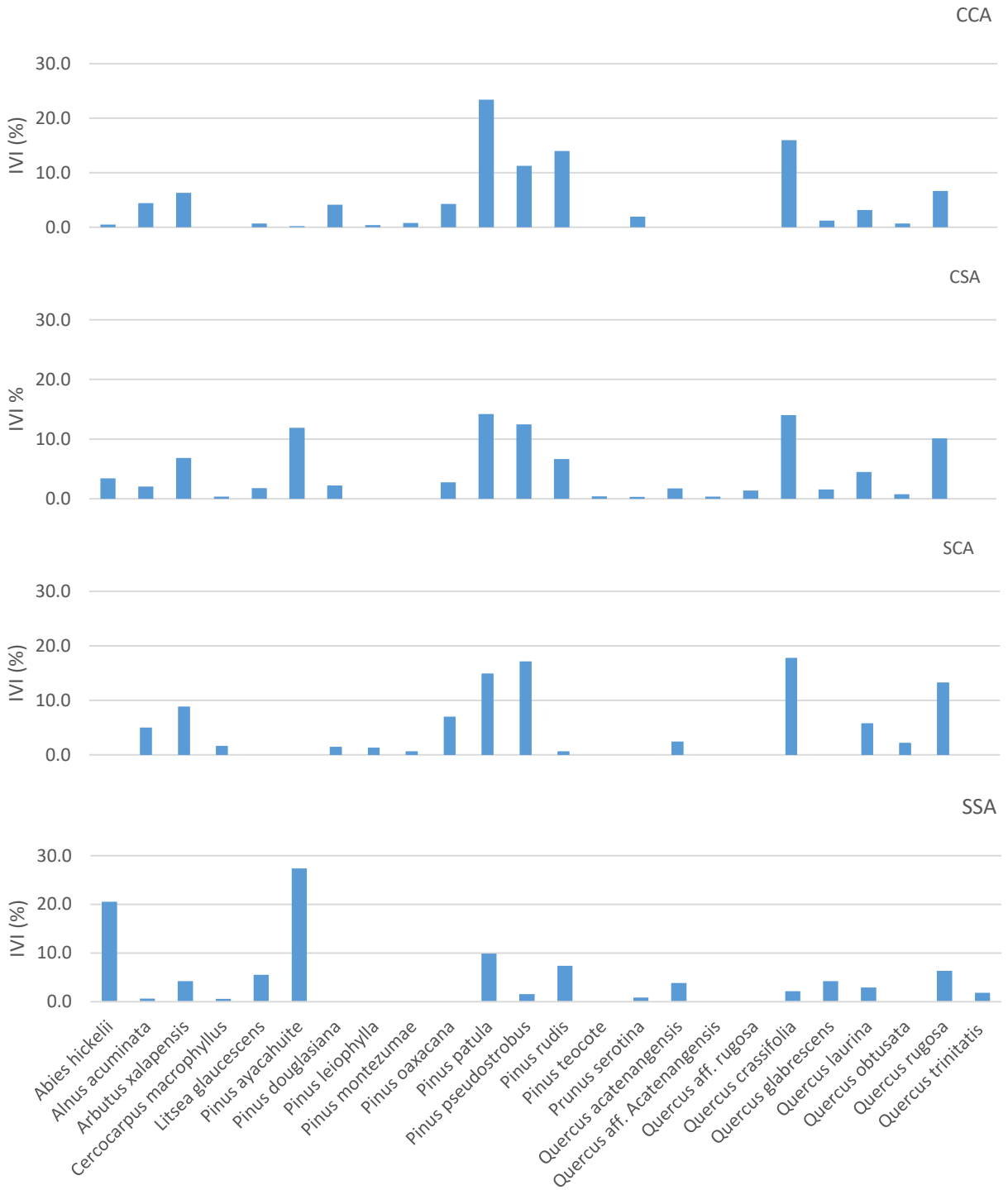
The horizontal structure described with the diameters of each individual presented a distribution of an inverted J, with a greater number of individuals in the smaller categories and as the diameter increases gradually decreases. Added to this information is the percentage of regeneration less than 5 cm in diameter for the pest areas. On the other hand, pest free sites showed fewer individuals in the smaller categories in relation to pest areas.



Relative frequency of the diameters in areas with BB, with and without use of wood.



Relative frequency of the diameters in areas without BB, with and without use of wood.

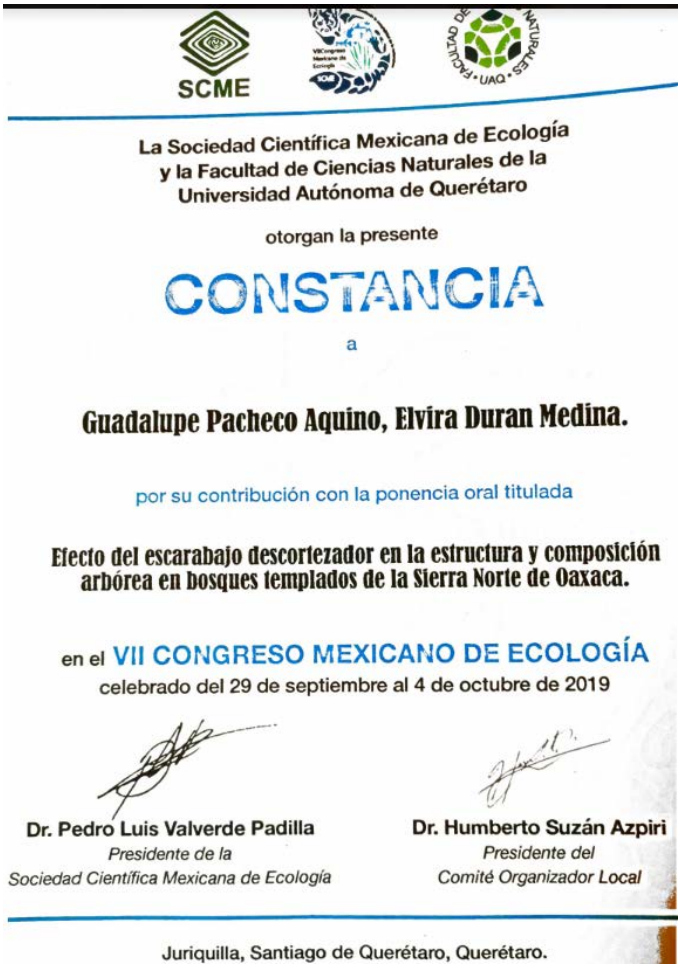

CCA
IVI (%)
30.0
20.0
10.0
0.0
CSA
IVI %
30.0
20.0
10.0
0.0
SCA
IVI (%)
30.0
20.0
10.0
0.0
SSA
IVI (%)
30.0
20.0
10.0
0.0
Abies hickelii
Alnus acuminata
Arbutus xalapensis
Cercocarpus macrophyllus
Litsea glaucescens
Pinus ayacahuite
Pinus douglasiana
Pinus leiophylla
Pinus montezumae
Pinus oaxacana
Pinus patula
Pinus pseudostrobus
Pinus rudis
Pinus teocote
Prunus serotina
Quercus acatenangensis
Quercus aff. Acatenangensis
Quercus aff. rugosa
Quercus crassifolia
Quercus glabrescens
Quercus laurina
Quercus obtusata
Quercus rugosa
Quercus trinitatis

Index of importance value for each species of each condition evaluated.
Species with higher IVI for each of the conditions evaluated.

CON PLAGA				**SIN PLAGA**			
con aprovechamiento CCA		**sin aprovechamiento CSA**		**con aprovechamiento SCA**		**sin aprovechamiento SSA**	
Pinus patula	23.4%	*Pinus patula*	14.2%	*Quercus crassifolia*	17.7%	*Pinus ayacahuite*	27.4%
Quercus crassifolia	16.0%	*Quercus crassifolia*	14.0%	*Pinus pseudostrobus*	17.1%	*Abies hickelii*	20.6%
Pinus rudis	14.0%	*Pinus pseudostrobus*	12.5%	*Pinus patula*	14.9%	*Pinus patula*	9.9%
Suma IVI (%)	**53.40%**		**40.70%**		**49.70%**		**57.90%**

Socialization of Results

Left: Workshop "Forest health" with the participation of forest owners and youth (men and women). Right: Presentation of preliminary results at the Mexican Congress of Ecology.



SCME

La Sociedad Científica Mexicana de Ecología
y la Facultad de Ciencias Naturales de la
Universidad Autónoma de Querétaro

otorgan la presente

CONSTANCIA

a

Guadalupe Pacheco Aquino, Elvira Duran Medina.

por su contribución con la ponencia oral titulada

Efecto del escarabajo descortezador en la estructura y composición arbórea en bosques templados de la Sierra Norte de Oaxaca.

en el VII CONGRESO MEXICANO DE ECOLOGÍA
celebrado del 29 de septiembre al 4 de octubre de 2019

Dr. Pedro Luis Valverde Padilla
Presidente de la
Sociedad Científica Mexicana de Ecología

Dr. Humberto Suzán Azpiri
Presidente del
Comité Organizador Local

Juriquilla, Santiago de Querétaro, Querétaro.

Publication of the video “Importance of the oaks” in the following link
https://www.youtube.com/watch?v=acuJbzhDLsA