



Michigan Tech

# **Cooperative Organization and Responses to Environmental Change in two Communities in Tabasco, Mexico**

Erin Pischke, M. Azahara Mesa, Amarella  
Eastmond, Jesse Abrams, Kathleen Halvorsen





# Introduction

- Rural populations worldwide are confronting diverse environmental changes, including changes driven by global climate dynamics.
- Globalization and land use changes are exacerbated by a lack of climate change adaptation planning (Gobierno de Emiliano Zapata 2016).
- Tabasco, Mexico's rural, low-lying countryside is sparsely populated and particularly susceptible to hydrologic and climatic changes (US EIA 2015).

UNITED STATES

**Mexico**

■ **Tabasco**

*Pacific Ocean*

0 300 Kilometers  
0 300 Miles

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BELIZ

GUATEMALA





# Site context

## **Emiliano Zapata**

- Flood-prone river zone; pop. 29,518 in 2010
- Fishing, cattle ranching, some plantations
- Worked in three villages: Jobal (pop. 344), Nuevo Pochote (pop. 200) and Pochote (pop. 360)

## **Teapa**

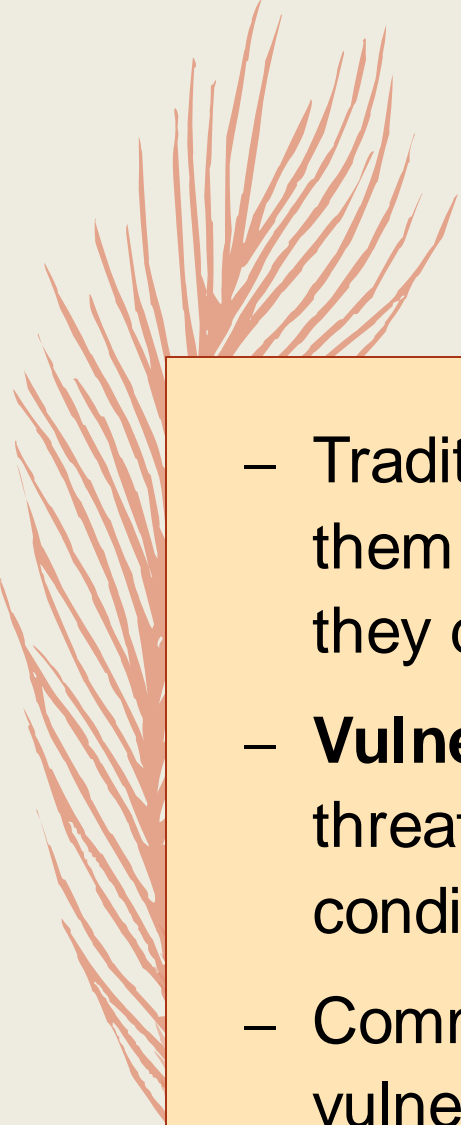
- Mountainous region; pop. 53,555 in 2010
- Subsistence agriculture, plantation wage work, cattle ranching
- Worked in San Pablo Tamborel (pop. 218) and Arcadio Zentella (pop. 667)



# Group organization and resilience

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- Social capital and group cohesion can lead to the government viewing an organization as legitimate and worthy of support (Adger, 2003; Tompkins & Adger, 2004).
- Groups may receive "secondary" benefits to collective action, such as building relationships among community members and with governments, as well as building local capacities (Tompkins & Adger, 2004).
- However, not all community organizations and co-management processes lead to good outcomes (Tompkins & Adger, 2004)



# Community Organization and Vulnerability

- Traditional and indigenous communities' subsistence practices lead them to conserve nature (e.g. trees used for building houses) because they depend on them in daily life (Athayde & Silva-Lugo, 2018).
- **Vulnerability** is due to the inability to adapt and adjust to situations of threat and has as underlying causes, such as socioeconomic conditions, political processes and power structures (Cardona 2001).
- Communities that rely on commodity-oriented agriculture are more vulnerable to natural disasters and, potentially, climate change (Holt-Giminez 2002).





# Research Questions



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- How do residents of Teapa and Emiliano Zapata municipalities organize themselves in order to create resilient livelihoods?

# Qualitative Methods

- Conducted semi-structured interviews, January 2015
- Asked about community, the environment, land use, oil palm production
- Purposive and snowball sampling
- Recorded, transcribed verbatim, coded 87 interviews
- 20-90 minute interviews





# Results







# Problems Facing Tabascans

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The three most common patterns that emerged about people's perceptions about how their lives and environment around them have changed were:

- **The economy**
- **Concern about environmental problems**
- **The government**



# Adaptation Strategies

The four most common patterns of adaptation strategies people mentioned include:

- Mobility (*Looking for better opportunities*)
- Diversification (*Off-farm labor*)
- Communal pooling\* (*Improving social organization*)
- Environmental management (*Modifying the land & working longer hours*)



# Communal pooling\* (Improving social organization)





# Communal pooling\* (Improving social organization)



**Emiliano Zapatan  
fishermen's  
association**

A sepia-toned photograph showing a river scene. In the foreground, a small boat with several people is on the water. In the background, a steep, eroded bank with a wooden ladder leading down to the water is visible. The text "Emiliano Zapatan fishermen's association" is overlaid in bold black font.



**Teapan oil palm  
cooperative**

A sepia-toned photograph of a building with a sign that reads "Soc. COOP DE R.L. DE C.V." and "EL MALAYO". A person is standing in front of the building. The text "Teapan oil palm cooperative" is overlaid in bold black font.



# River Fishermen's Association



**Power struggles  
among fishermen, not  
inclusive, corruption,  
unmanaged invasives**





# El Malayo Association



Collective small-scale farming of oil palm, ornamental flowers and vegetables





# Discussion

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- People who live in the mountains of Teapa have found or created more options for adapting to changes in the communities.
- They showed more community organizing capabilities (Agarwal & Gibson, 1999; Berkes & Ross, 2013; Binford, 1985; Magis, 2010).
- The River Fishermen's Association in Emiliano Zapata was a way for the most powerful fishermen to capture the market and edge out competitors, resulting in conflict within the community (Agarwal and Gibson 1999)





# Discussion

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- El Malayo has diversified their agricultural systems so they rely on both market commodities (oil palm) and other products (ornamental flowers, peppercorn, figs) that are locally-sold and are for self-consumption (Holt-Giminez 2002).
- The fishermen's organization is an example of unsuccessful collective action (Tompkins & Adger, 2004)





# Discussion

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## **Organizational Capacities:**

- El Malayo has used their cooperative status to their advantage to receive state support, which has led to benefits beyond the initial monetary resources its received (Tompkins & Adger, 2004).
- Fisheries management might be a more difficult collective action issue than agricultural challenges because there is uncertainty about the resources (fish) available and uncertainty about the future stock and consumption (Tompkins & Adger, 2004).

# Summary of Findings

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- Adger (2003) argues that adaptive capacity, made possible by institutions and networks of a community's social capital, must be accessible and acceptable to those who it is meant to benefit; not all social groups or actors will need the same type of support from social capital or need it to be provided at the same time.

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# Thank you. Questions?

