

# Evaluation of small scale fisheries in the Gulf of Chiriquí, Panama : participative assessment of captures in Puerto Pedregal

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## Context

- Small-scale (e.g. *subsistence* and *artisanal*) fisheries represent over 90% of all fishers and maritime workers worldwide and correspond to roughly 50% of the total catch for human consumption (FAO 2012; Salas et al. 2011; World Bank et al. 2010).
- However, most existing official statistics poorly assess artisanal catches and do not take into account subsistence catches, which in rural societies form an important part of small-scale fisheries (Carvalho et al. 2011).
- In Panama, as elsewhere in Central America, small-scale catches have to date been poorly assessed and underestimated (CATHALAC 2007, Maté 2005, Teh et al. 2011, Trujillo et al 2012).

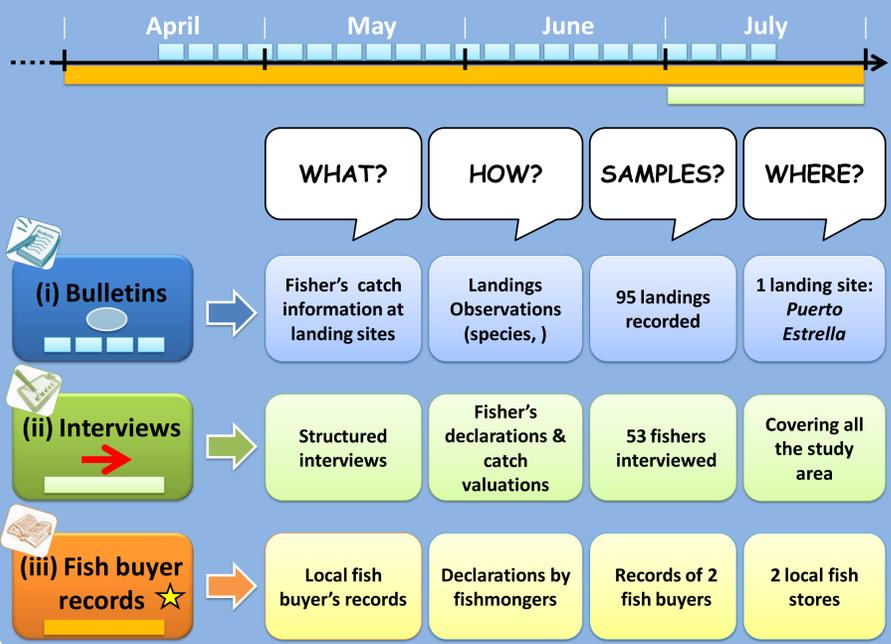
## Objectives

To improve knowledge for developing reliable and efficient methods for small-scale fishery catch statistics, we compared three landings assessment methods in cooperation with fishers and fish buyers:

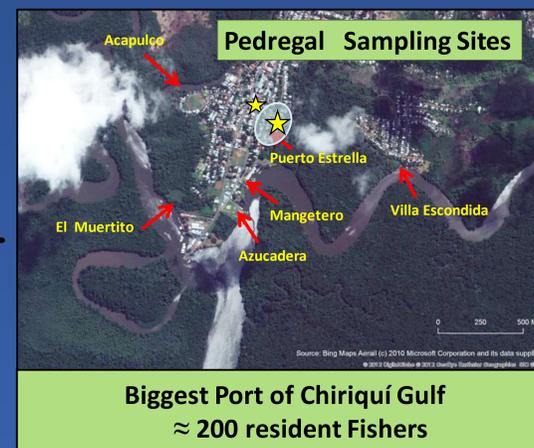
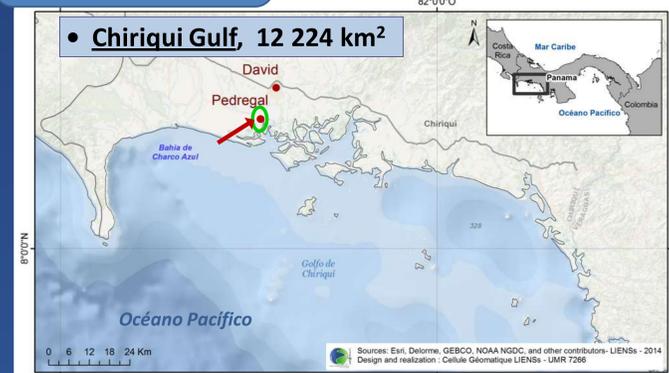
- Fisher's bulletins obtained at landing sites
- Post-capture interviews
- Local fish buyer records.

## Methods

- Evaluate landings of the small scale fleet
- 3 participative approaches, April – July 2011:

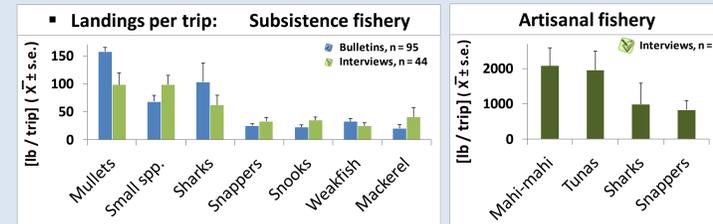


## Study site



## Results

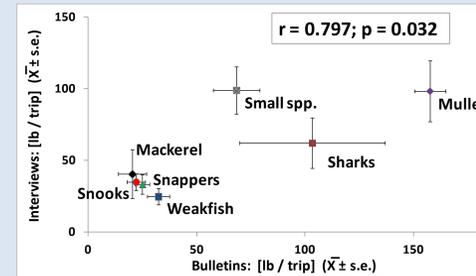
### 2 types of small scale fisheries:



### Bulletins and Interviews

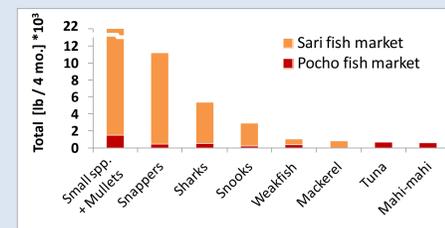
	Subsistence	Artisanal
Fishing sites	Inshore mangrove	Near shore coast
Gears	Nets & lines	Longlines
Target spp.	Many	Few
Trip length	1 day	1 or 2 weeks
Catch / trip	-	+

### Subsistence fishery : Comparison Bulletins / Interviews



Statistically significant correlation

Similar results between interviews and bulletins despite sampling of different fisher groups and fisher numbers



### Fish buyer records

- 45 442 lbs of fish bought in 4 months (2 buyers)
- Comparison with bulletins/interviews impossible because the 2 fisheries (subsistence + artisanal) were not recorded separately

## Discussion

	Advantages	Disadvantages	How to improve?
(i) Bulletins	Most reliable and detailed information obtained	Labor intensive (dispersed landing sites)	Improve distribution of sampling sites and fisher participation
(ii) Interviews	Rapid information gathering with good details	Less reliable information	Improve protocol according to objectives
(iii) Fish buyer records	Rapid information gathering, least labor intensive, contact with fisher not necessary	Needed full cooperation with fish buyers Data lacking details	Sample all local fish buyers Improve record details

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## Virtual Poster



## Sources

<sup>1</sup>Carvalho, N., Edwards-Jones, G., Isidro, E. (2011) *Fisheries Research* 109: 360-369. <sup>2</sup>CATHALAC (2007) Diagnóstico del estado actual de los manglares, su manejo y su relación con la pesquería en Panamá. Centro del Agua del Trópico Húmedo para América Latina y el Caribe. Panamá, 92 p. <sup>3</sup>FAO (2012) The state of world fisheries and aquaculture 2012, Rome, 209 p. <sup>4</sup>Maté JL. (2006) Análisis de la situación de la pesca en los golfos de Chiriquí y de Montijo. The Nature Conservancy, Panamá, 68p. <sup>5</sup>Salas, S., Chuenpagdee, R., Charles, A., Seijo, JC. (2011) Coastal fisheries of Latin America and the Caribbean. *FAO Fisheries and Aquaculture Tech. Pap.* 544, Rome, 430p. <sup>6</sup>Teh, LSL., Teh, LCL., Sumaila, UR. (2011) *Fisheries Research* 110: 450-458. <sup>7</sup>Trujillo, P., Cisneros-Montemayor, AM., Harper, S., Zeller, D. (2012) Reconstruction of Costa Rica's marine fisheries catches (1950-2008). *Fisheries Centre Working Pap.* 2012-03, U. British Columbia, Canada. 21p. <sup>8</sup>World Bank, FAO, World Fish Center (2010) The Hidden Harvests, the global contribution of capture fisheries. Washington, DC, 99p.

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**SYMPOSIUM POSTER ABSTRACT**

**Presented at the Meeting Symposium: *Fisheries management in estuarine systems of Mexico and Central America: An integrative view.***

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**Evaluation of small scale fisheries in the Gulf of Chiriquí, Panama : participative assessment of captures in Puerto Pedregal.**

Effective sustainable management of small scale fisheries and the ecosystems on which they depend, considered economically important world-wide yet lacking reliable data, requires the participation of fishers at all levels of the management process. Over a four-month period, covering about one third of the fisher's population of one of the principal ports of Panama's Chiriquí Gulf, we evaluated captures and landings of the artisanal fleet through three participative approaches: (i) Fisher's bulletins obtained at landing sites, (ii) post-capture interviews, and (iii) local fish buyer's records. (i) The bulletins (N=95) provided the most precise capture, gear, effort and fishing-site data for specific landing sites, yet required much training to become an effective self-management tool. (ii) The interviews (N= 44) provided not only significantly comparable results on species and catch distribution, but also larger-scale information on captures and fishing methods, plus important social, cultural and economic data. (iii) Fish buyer's records afforded good information about total landings from the fishers selling to specific buyers, was cost and effort effective for application as a self-management tool, but lacked details on fish species, effort and other data. The results are discussed in the context of their feasibility toward participative management and ecosystem conservation efforts in the region.