

Attitudes Towards Mariculture Among Men and Women in Mariculture Areas in the Philippines

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MARICULTURE IN THE PHILIPPINES

- Mariculture or Marine Aquaculture started in the Philippines wayback before the government promoted the mariculture park program in the early 2000. Without legislative framework and enforcement, mariculture development was unregulated leading to inefficient practice and environmental problems such as fish kill.
- The Mariculture Park Program was introduced by the Bureau of Fisheries and Aquatic Resources (BFAR), the fisheries arm of the Philippine government, for efficient and regulated mariculture operation, at the same time provide employment and alternative livelihood to the marginalized fisherfolks.
- However, the establishment of the fish cages and pens led to issues of displacement of fishers from their traditional fishing ground, and occurrence of water pollution due to organic enrichment resulting from intensive fish culture.
- Support from the local residents in the mariculture sites in the country is needed to address these issues and improve the policies in promotion of balanced mariculture operation.
- This research focused on describing the attitude towards mariculture among men and women in the seven mariculture areas in the country that could help improve policies for mariculture operation.

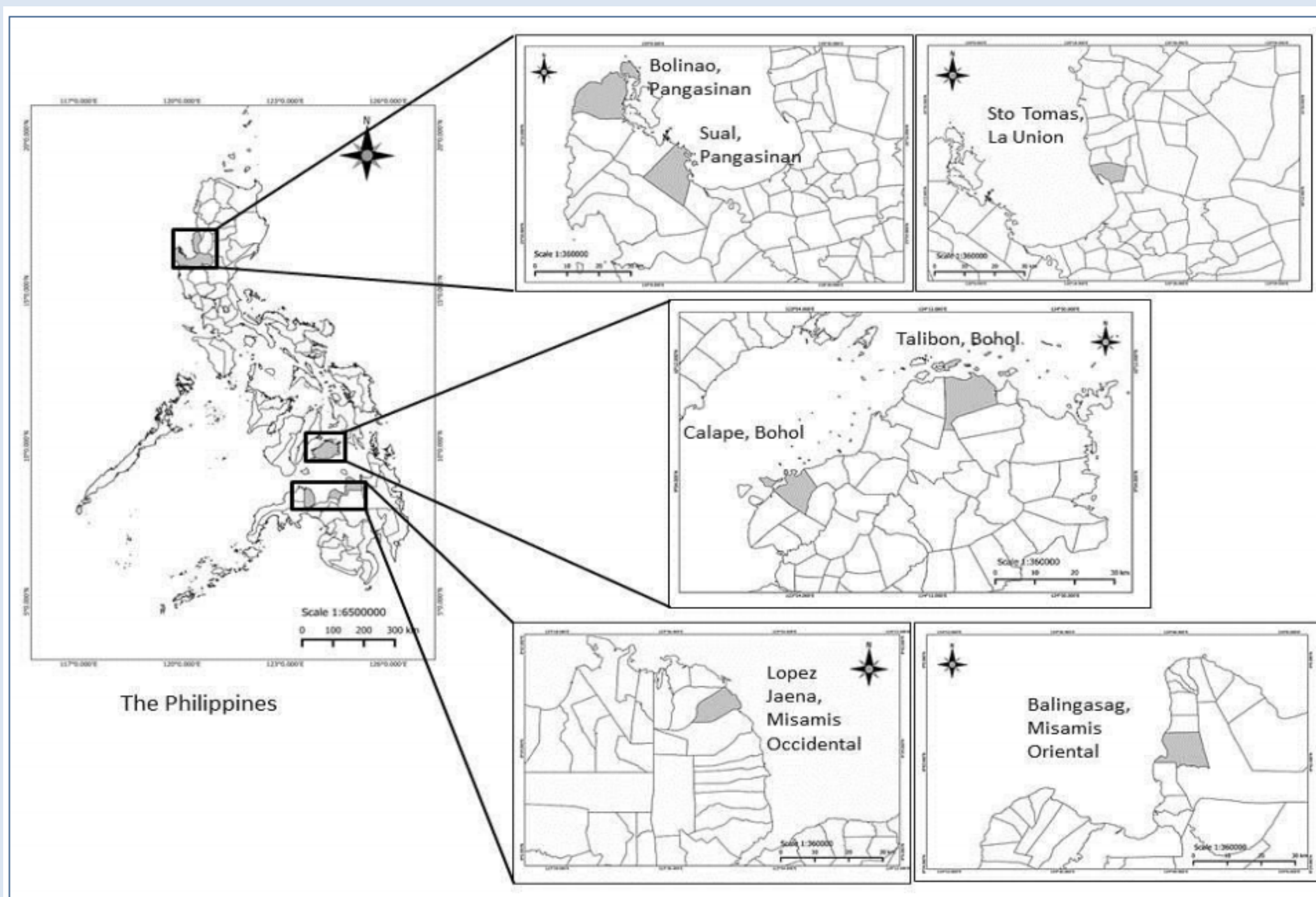


Figure 1. Location of the Study Sites

SELECTION OF THE STUDY SITES

- Balingasag in Misamis Oriental Province and Lopez Jaena in Misamis Occidental Province (Region 10-Northern Mindanao)
- Calape and Talibon in Bohol Province (Region 7-Central Visayas)
- Sto. Tomas in La Union Province and Bolinao and Sual in Pangasinan Province (Region 1-Ilocos Norte).

Table 1. Area and Management Profile of the seven Mariculture Areas in the Philippines

PROFILE OF SITES	Balingasag	Lopez Jaena	Calape	Talibon	Sto. Tomas	Sual	Bolinao
SPECIFIC LOCATION	Majacajalar Bay	Iligan Bay	Calape Bay	Danajon Bank, Bohol Sea	Sto. Tomas Cove	Cabalitan Bay	Bolinao Bay
INITIATED MARICULTURE IN THE AREA	BFAR	BFAR	BFAR	BFAR	BFAR	Private Sector	Private Sector
YEAR STARTED MARICULTURE OPERATION	March 2007	February 2011	October 21, 2008	2008	October 2, 2002	1996	1995
WITH AREA DESIGNATED AS MARICULTURE PARK (current)	Yes	Yes	Yes	Yes	Yes	Yes	No
TOTAL AREA (Current ha.)	195.7	313.26	220	250.28	10	208	279.9
AREA FOR FISH CAGE (ha)	19.5	31.2	22	25.28	10	208	84.4
CURRENT MANAGEMENT	Executive Management Council (EMC)	Executive Management Council (EMC)	EMC not active; private sector left to themselves	EMC not active; private sector left to themselves	private sector left to themselves in non-mariculture park area; BFAR in mariculture area	Private sector with LGU	Private sector with LGU

Table 2. Operation Profile of the seven Mariculture Areas in the Philippines

PROFILE OF SITES	Balingasag	Lopez Jaena	Calape	Talibon	Sto. Tomas	Sual	Bolinao
NUMBER OF OPERATORS	(as of Jan 2014) TOTAL: 63	(as of 2014) TOTAL: 79	(as of Feb 2015) TOTAL: 6 (inclusive of BFAR demo cage)	(as of Nov 2013) TOTAL: 7	(as of May 2015) TOTAL: 6 (Inside MZ-3 inclusive of BFAR demo cage) Outside MZ-71	(as of May 2015) TOTAL: 21	(as of Mar 2015) TOTAL: 131
NUMBER OF CAGES/PENS	(as of Jan 2014) TOTAL: 203	(as of 2014) TOTAL: 177	(as of Feb 2015) TOTAL: 17 (inclusive of BFAR demo cage)	(as of Nov 2013) TOTAL: 65	(as of May 2015) TOTAL: 17 (Inside MZ-8 inclusive of BFAR demo cage) Outside MZ-71	(as of May 2015) TOTAL: 750	(as of Mar 2015) TOTAL: 435
RESIDENCE OF THE OPERATORS	• Big & Medium - outside of LGU • Small-within LGU	• Big & Medium: Almost all are from LGU • Livelihood: within LGU	Outside of the LGU	Almost all are from within LGU	• Outside MZP: All within LGU • Inside MZP: Outside and within LGU	Almost all are outside of the LGU	Within and outside of the LGU
KINDS OF CAGES	Square bamboo cages, high density polyethylene (HDPE)	HDPE floating circular Square bamboo cages	Floating bamboo, square	Fish pen, floating bamboo cages	Outside of MP: Floating bamboo and fish pen Inside MP - HDPE, rope-frame cage	HDPE Square steel Circular steel	HDPE Fish pen Square Fish cages Steel square cages
SPECIES CULTURED	Milkfish, Siganids, Pompano	Milkfish, Siganid, Pompano	Milkfish	Milkfish	BFAR Demo: Pompano, Mangrove Snapper, Malaga a. Inside MZ: Milkfish, Green Group Outside MZ: Groupers, Milkfish, Malaga	Milkfish, Red Snapper, Green Group, Pompano, Siganid	Milkfish

FRAMEWORK

To measure attitude towards mariculture among men and women, the three components: cognitive (set of beliefs), emotional or affective (feeling or an evaluation of the attitude object; like or dislike of the object of attitude), and the behavioural (way of acting toward the attitude object) were assessed. Figure 2 shows the components and the variables in the study that were used to assess them.

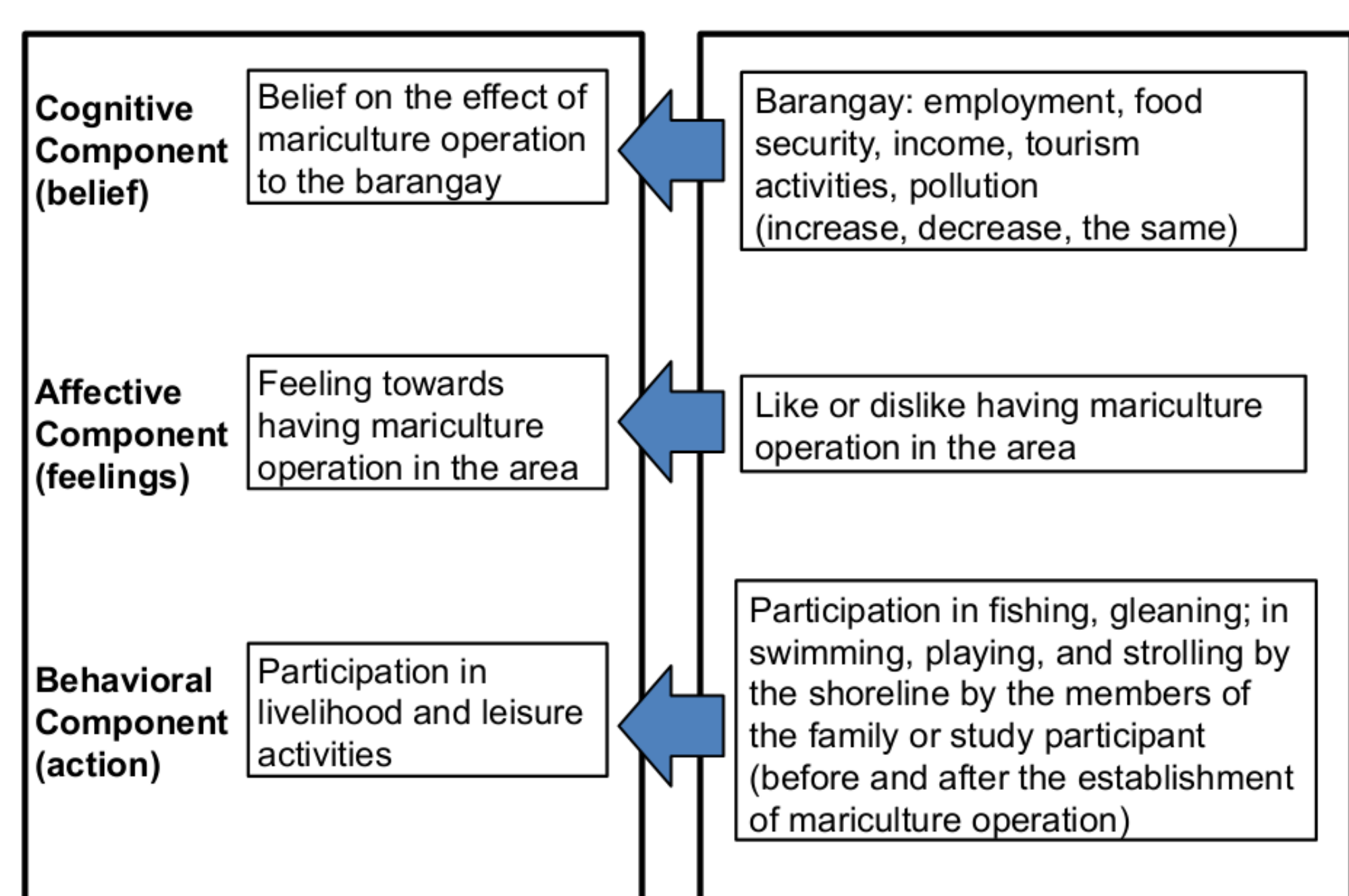


Figure 2. Attitude Components and their corresponding variables

DATA COLLECTION

Multiple field data collection methods were conducted from January 2015 to August 2015. The data set had data from 48 focus group discussions with 315 participants, a household survey with 785 household participants, 138 key informant interviews, secondary data collection, and observation. Data used in assessing attitude towards mariculture among local residents was based on the household survey conducted. The household survey covered 473 fishing and 312 non-fishing households in the 28 barangays (4 barangays per site) selected in the seven study sites. The 28 barangays were selected based on distance to the mariculture area. The survey participants were randomly selected from a list of fishing and non-fishing households in the barangay.

RESULTS

Profile of Research Participants in the seven study sites

PROFILE OF RESEARCH PARTICIPANTS	Balingasag (N=105)	Lopez Jaena (N=105)	Calape (N=105)	Talibon (N=105)	Sto. Tomas (N=140)	Sual (N=120)	Bolinao (N=105)
Age (Mean)	47.29	43.88	42.41	45.39	46.67	42.00	44.03
Male (%)	50.48	50.48	69.52	60.95	76.43	50.83	53.33
Number of Years in School (Mean)	8.06	8.64	8.08	7.16	9.41	7.69	8.23
No. of Years in the barangay (Mean)	31.67	32.88	30.15	31.86	40.25	28.79	30.30
Household size (Mean)	5.56	4.88	5.25	5.35	5.41	5.24	5.22
No. of household members with income (Mean)	1.90	1.31	1.51	1.74	1.42	1.35	1.59
From fishing household (%)	62.86	61.90	61.90	61.90	66.43	58.33	61.90
From non-fishing households (%)	37.14	38.09	38.09	38.09	33.57	41.67	38.10
From barangay near mariculture area (%)	63.81	46.67	46.67	47.61	55.71	47.50	53.33
From barangay far from mariculture area (%)	36.19	53.33	53.33	52.38	44.29	52.50	46.67

Percentage Distribution of Research Participants who support mariculture operation in their area

Site	FISHING HOUSEHOLDS		NON-FISHING HOUSEHOLDS		TOTAL	
	Men	Women	Men	Women	Men	Women
Balingasag	66.67	54.55	50.00	42.11	60.38	50.00
Lopez Jaena	75.00	58.62	76.47	69.57	75.47	63.46
Calape	79.25	83.33	80.00	80.00	79.45	81.25
Talibon	86.05	63.64	76.19	89.47	82.81	75.61
Sto. Tomas	72.97	84.21	84.85	78.57	76.64	81.82
Sual	41.03	45.16	59.09	53.57	47.54	49.15
Bolinao	42.50	28.00	50.00	54.17	44.64	40.82
TOTAL	60.89	45.61	63.09	60.27	61.46	52.36

Changes in Coastal Activities before and after establishment of Mariculture Area (Arrows reflect changes of activity before and after establishment mariculture area)

Changes in Coastal Activity	FISHING HOUSEHOLDS		NON-FISHING HOUSEHOLDS		TOTAL	
	Men	Women	Men	Women	Men	Women
	Changes in Fishing Activity					
Balingasag	↓	↓	↓	↓	↓	↓
Lopez Jaena	↓	↓	↓	↓	↓	↓
Calape	↓	↓	↓	↓	↓	↓
Talibon	↓	↓	↓	↓	↓	↓
Sto. Tomas	↓	↓	↓	↓	↓	↓
Sual	↓	↓	↓	↓	↓	↓
Bolinao	↓	↓	↓	↓	↓	↓

Perception to Changes in the Community (Arrows reflect majority's response)

LOCAL EMPLOYMENT	FISHING HOUSEHOLDS		NON-FISHING HOUSEHOLDS		TOTAL	
	Men	Women	Men	Women	Men	Women
Balingasag	↔	↔	↑	↑	↑	↑
Lopez Jaena	↔	↓	↑	↑	↑	↔
Calape	↔	↔	↑	↑	↑	↔
Talibon	↑	↑	↑	↑	↑	↑
Sto. Tomas	↔	↔	↑	↑	↑	↑
Sual	↑	↑	↑	↑	↑	↑
Bolinao	↑	↑	↑	↑	↑	↑

CONCLUSION

Results show that the proportion of men who like having a mariculture operation in their area is higher than women. In general, there is a significant association between gender and the attitude toward mariculture but it was not true to specific sites. The proportion of men and women who like having mariculture operation was higher for non-fishing households, but there was no significant association between household type and attitude toward mariculture by gender. Fishing and gleaning as well as leisure activities including swimming and strolling decreased after mariculture was established. Local employment was perceived to have improved by the mariculture operation. Increasing the women's involvement in mariculture operation may increase their support to mariculture operation.

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