

It Started With A Fisher's Tale:

Interdisciplinary Research on Marine Mammals, Their History, & Threats in the Gulf of Mottama, Myanmar

Very little research has been conducted on the marine mammals along Myanmar's extensive coastline. **Dedicated research and conservation – and local capacity for both – are desperately needed.**

The **Gulf of Mottama (GoM)** is a turbid, shallow area of Myanmar's coast, with heavy influence from multiple rivers, extreme tides, and substantial erosion and land accretion. No marine mammal research had been conducted here previously.

However, in early 2018, we learned from local fishers that they did indeed see small cetaceans in the area. Soon after, we were alerted to a capture of a finless porpoise. **→ Thus began our ongoing research project, which has confirmed the presence of 3 species in the GoM: *Neophocaena phocaenoides*; *Orcaella brevirostris*; *Sousa chinensis*.**

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Gulf of Mottama Project
The GoMP works to support co-management of coastal natural resources and biodiversity to benefit local human communities in the Gulf of Mottama. It works with 60 villages, 8 townships, and state- and regional-level government entities "Coastal Resource Management Committees."

Myanmar Coastal Conservation Lab

- With GoMP, the Myanmar Coastal Conservation Lab (MCCL) @ Point B Design + Training conducts research & research training with Bago and Mawlamyine University faculty & students, & recent graduates.
- This marine mammal research has been an opportunity for student interns (n=14), interns (4), and MCCL staff (3) to build skills in fieldwork, data entry & basic analysis, presenting data to stakeholders.
- Point B Design + Training uses **Design Thinking**, including **Human-Centered Research**, to develop collaborative, solutions-driven approaches for diverse issues. Our goal is to bring this approach to marine mammal conservation and other environmental issues in the Gulf of Mottama.

A. Pilot Key Informant Interviews

B. Structured LEK + Rapid Bycatch Assessment (RBA) interviews with fishers

Baung Laung village (BL) n=10

Zee Gone village (ZG) n=18

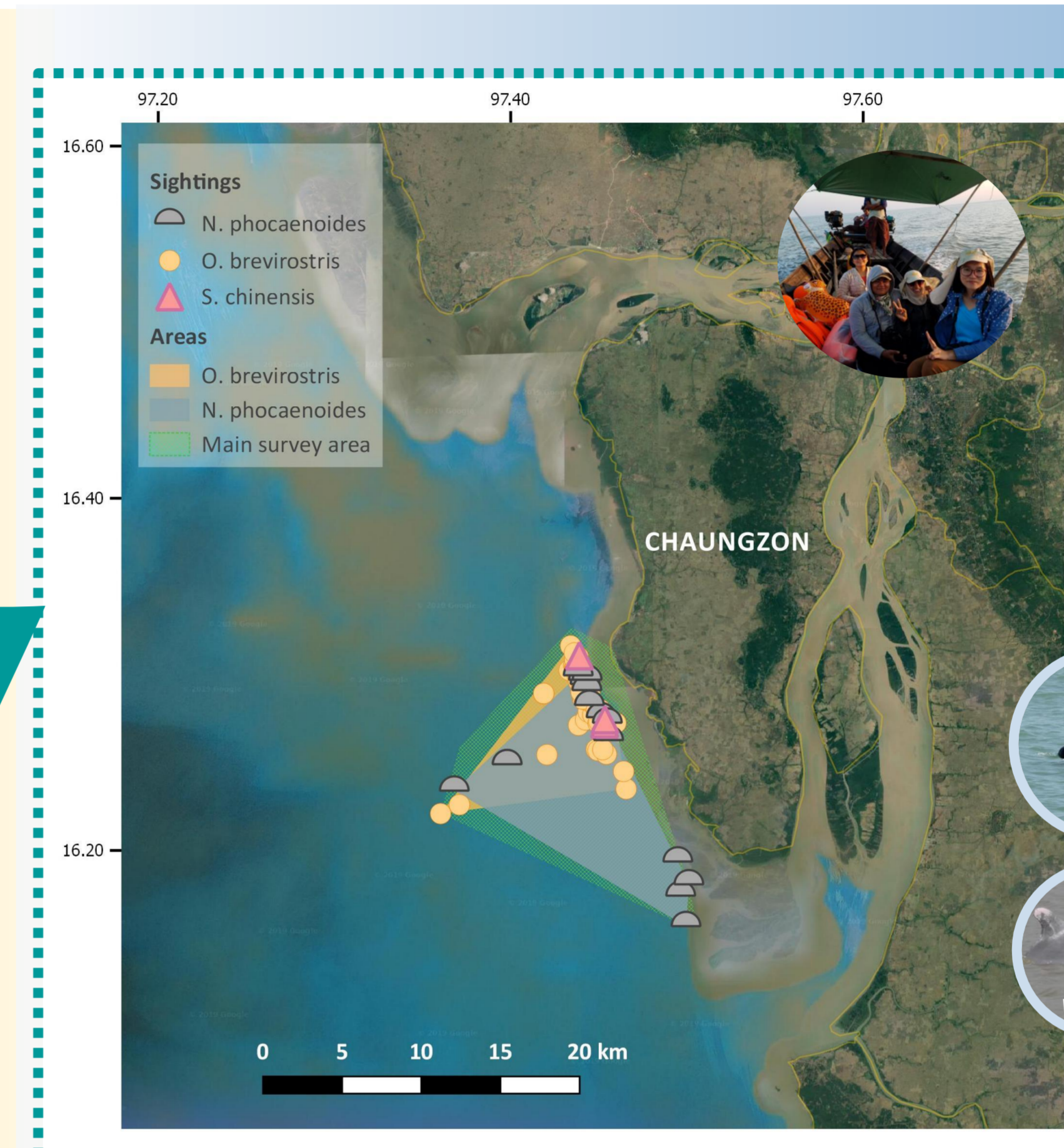
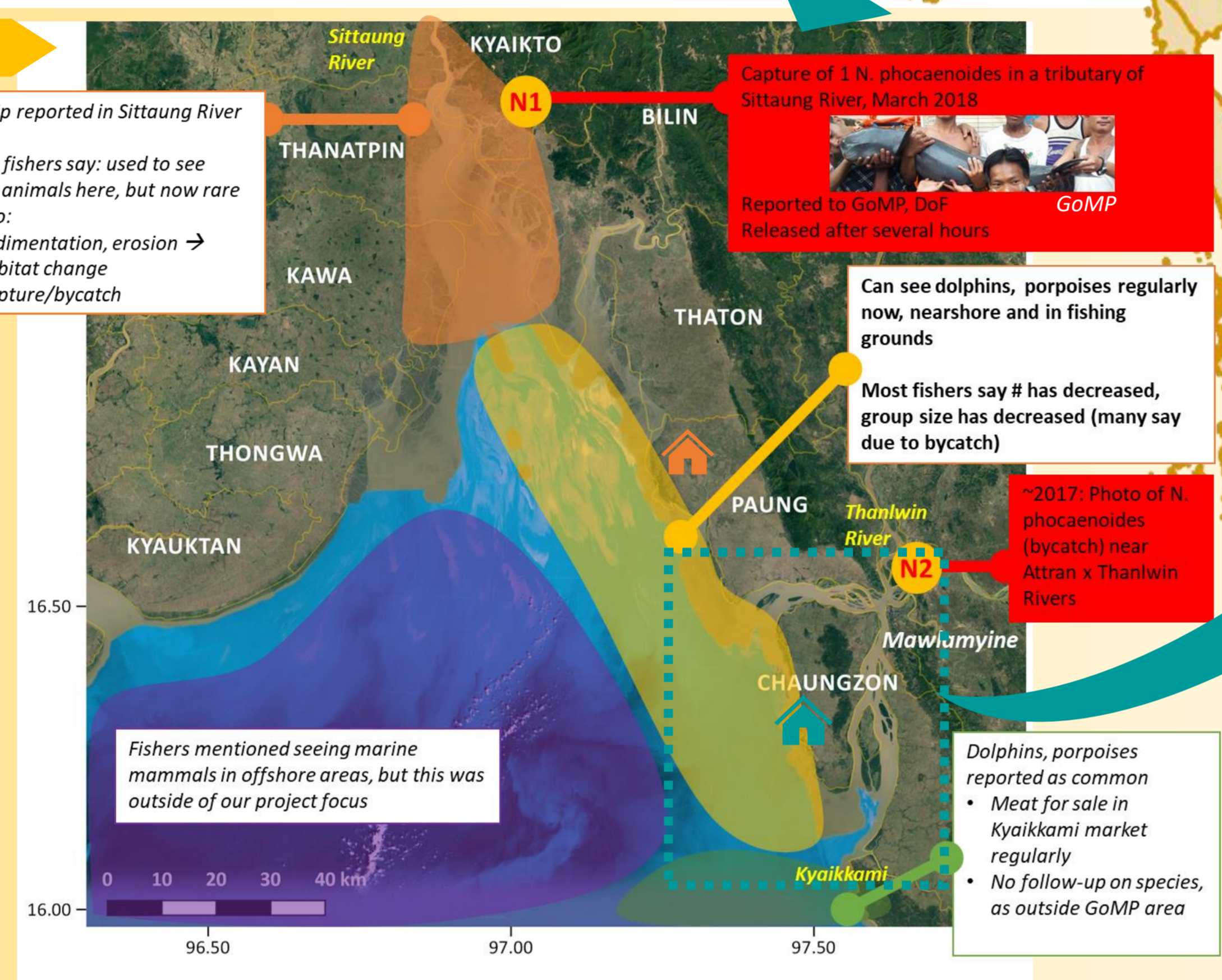
Common Relatively rare

Most fishers reported: **Abundance, Group size over past 10 years**

Many attributed this to:

- Sedimentation, erosion → habitat change
- Capture/bycatch

LOCAL ECOLOGICAL KNOWLEDGE (LEK) INTERVIEWS



October 2018 to March 2019: Opportunistic; photos + locations of sightings.

Challenges: choppy waters and high wind, strong tides, strong currents with freshwater influence coming from north and south of Chaungzone

FINDINGS

3 Species

- O. brevirostris* often seen very close to fishing nets
- N. phocaenoides* seen very close to shore
- S. chinensis* only seen during 2 survey days

PRIORITY: Estimate population abundance → Transect survey to begin Dec 2019

BOAT-BASED SURVEYS

BYCATCH

To understand bycatch and risk of bycatch, we asked about interactions with gears, bycatch in the interviewee's own gear, bycatch events that the interviewee had learned of from other fishers, gears involved, and fate of bycaught animals. We also asked for information on strandings.

(a) # of interviewees reporting these interactions:

		N.p.	O.b.	S.c.
Close to gear?	BL	5	3	0
	ZG	7	13	3
Take fish?	BL	1	1	0
	ZG	4	7	1
Damage gear?	BL	0	0	0
	ZG	1	2	1

(b) # reporting bycatch and stranding events

		N	Y
Bycatch in own gear?	BL	6	3
	ZG	15	2
Bycatch in other gear?	BL	5	5
	ZG	8	9
Strandings?	BL	8	2
	ZG	12	5

(c) # of reports of bycatch events from the past 3 years.

Likely an underestimate.

Bycatch	Village	N.p.	O.b.
Own gear	ZG		2
Other gear	BL	1	
	ZG	2	3

(d) For all reported bycatch events: gear type (broad), soak time (hours), and whether it was unintended. Need more precise information on gear types.

	TOTAL	1 to 3	4 to 6	6+	Unintended
DRIFTNET	4		3	1	1
SET BAG NET	12	1	7	2	12

What happens to the bycatch?

Village	Species	Dead	Eaten	Sold	Buried	
Bycatch own gear	ZG	O.b.	2	1	1	1
	Bycatch other gear	BL	N.p.	1	1	
		ZG	N.p.	2		2
Stranding	ZG	O.b.	3	1	2	
	ZG	O.b.	1		1	
	ZG	O.b.	1		1	

(f) All bycatch reported from past 3 years → fatalities

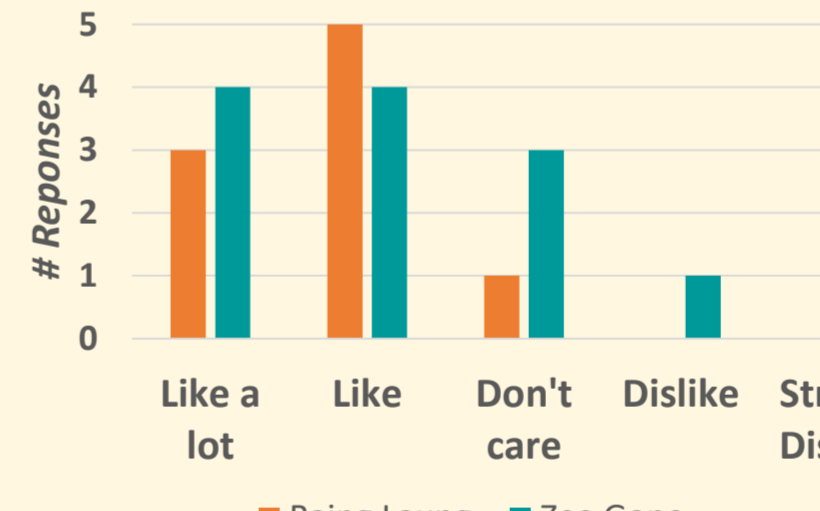
Village	Row Labels	Cook and Eat	Oil from Medicine
BL	Total	6	3
	O.b.	2	1
	N.p.	6	2
ZG	Total	3	3
	O.b.	1	2
	N.p.	1	1

(g) Consumption for food & medicine seems common; # of interviewees who have used marine mammal products

Consumption patterns seem to differ across villages, and are changing over time.

Learned that demand is increasing & some villages are developing new recipes!!!

Do the fishers appreciate these animals? Do they have a conservation mindset?



Mostly positive views of marine mammals + importance of conservation

REPORTING & ENFORCEMENT: Reason for concern for future pathways for conservation... mistrust + fear → under-reporting, lack of cooperation

- Most strandings/bycatch events shared in interviews were not reported to the government (Dept. of Fisheries, DoF).
- Some interviewees mentioned being nervous after the DoF put up posters emphasizing that it is illegal to kill marine mammals; reluctant to share info.
- DoF has voiced opinions including: can't trust fishers ("they catch dolphins on purpose!"), and "need to focus on stricter punishment"

CHALLENGES

- Common challenge with bycatch: How to change fishing practices while respecting human livelihoods, well-being, rights?
- Mistrust between DoF and communities
- DoF instinct to focus on "harsher punishment" likely to be counterproductive
- Increased demand and use for dolphin and porpoise meat, oil ("new recipes"!)!

OPPORTUNITIES

- Interest from the government, including members of state-level Parliament
- Generally positive perceptions about marine mammals among communities
- GoMP efforts to improve livelihoods in general
- Planned formation of "Local Conservation Groups" in most GoMP villages
- High interest among young researchers
- Some individuals showing proactive action to save captured dolphins, porpoises (buying them and releasing them)
- Raise the profile of Myanmar's coastal marine mammals & their conservation status

PRIORITIES

- Population abundance estimates
- Bycatch mortality rate estimates (many more RBAs along possible range!), with improved gear information
- Stranding training with DoF and community members
- Improved reporting of sightings, bycatch, strandings on social media
- Bringing Design Thinking approaches to addressing the bycatch issue
 - Explore participatory research possibilities
 - Engage stakeholders; co-develop solutions, action plans
 - Communication with DoF re: their approaches
 - Shared awareness
- Building a sustainable marine mammal research program
- Continue to train young, local researchers, with assistance from regional network

Potential for marine megafauna data collection through Facebook posts

- Following Long Vu's methodology (Vu 2018): Searching FB re: marine mammals (now, other megafauna) in Myanmar
- English + 2 Burmese fonts
- FB relatively new to Myanmar
- Several whale shark posts from active Scuba pages – good targets to engage for improved reporting
- Plan: to launch guidelines for reporting sightings, strandings, bycatch on FB with useful data

