COMMUNITY PERCEPTIONS OF ECOSYSTEMS IN ST. THOMAS, U.S. VIRGIN ISLANDS

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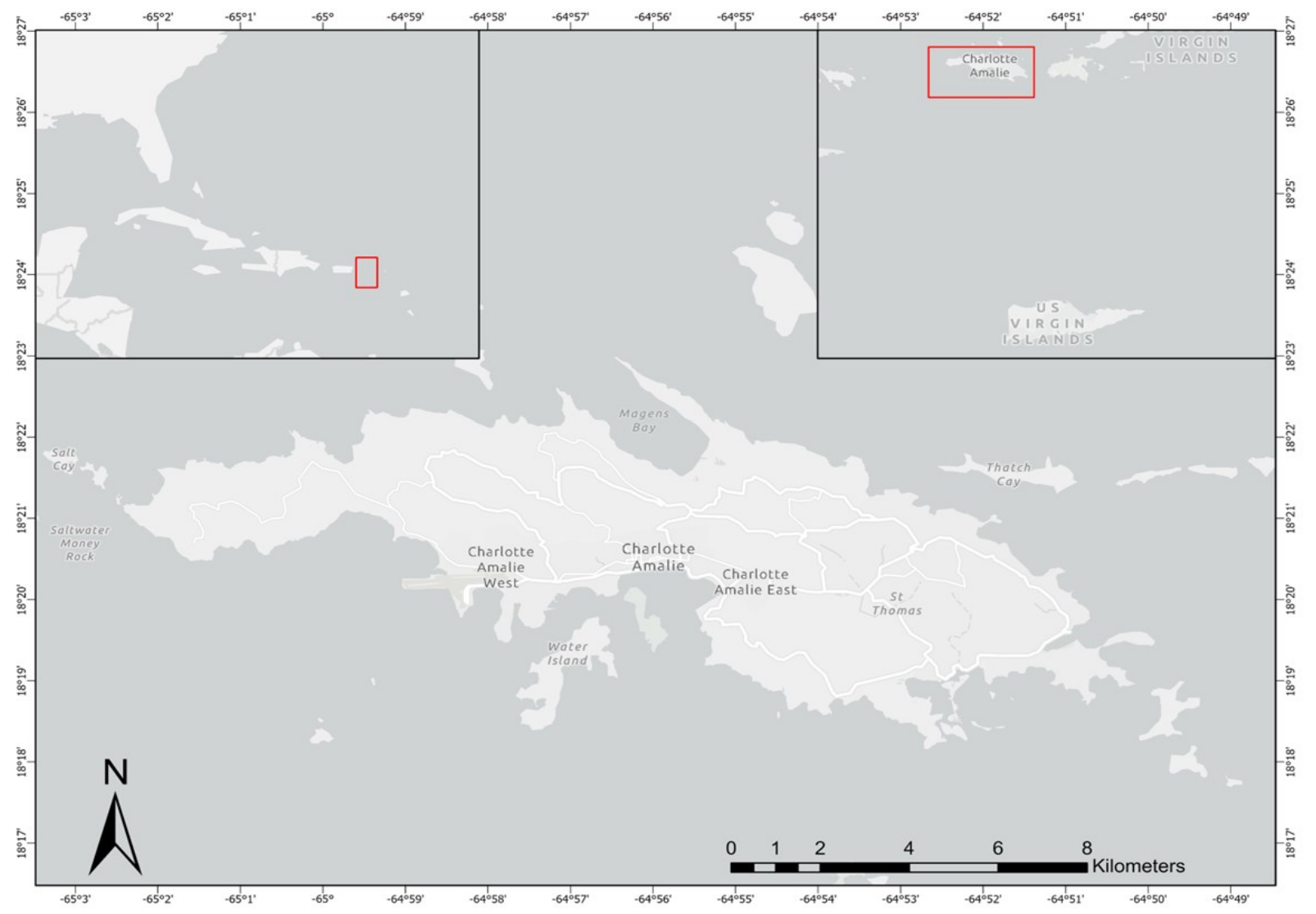
ABSTRACT

The social ecological system of the United States Virgin Islands (USVI) is vulnerable to natural hazards and climate change. Sustainable management of the ecosystems (forests, guts/ghuts, mangroves, beaches, salt ponds/salt flats, coral reefs, seagrass beds) in this system involves coordination between local resource managers and residents. However, the perceptions of residents towards these ecosystems have not been sufficiently documented, and are inferred to be limited. This study sought to identify the local perceptions of ecosystems in St. Thomas, an island within the USVI territory, and if those perceptions were reflected in the territory's governing documents. It was hypothesized that perceptions of residents would not be in the governing documents. A sample of 384 respondents were surveyed to collect perceptions of the seven ecosystems. An inductive thematic analysis produced sub-themes and themes of perceptions of ecosystem services, ecosystem health, and ecosystem importance. A binarized presence-absence analysis was conducted to compare these sub-themes to the governing documents. Only 11 of 51 ecosystem services were present in at least half of the governing documents. Perceptions of ecosystem health and ecosystem importance were related to ecosystem services, but their presence in the governing documents were more difficult to qualify. Perceptions from St. Thomas' residents may have educational and future land use implications for the territory.

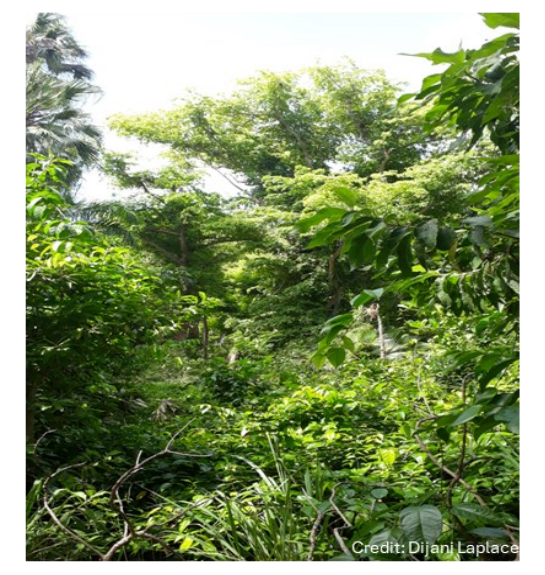
BACKGROUND

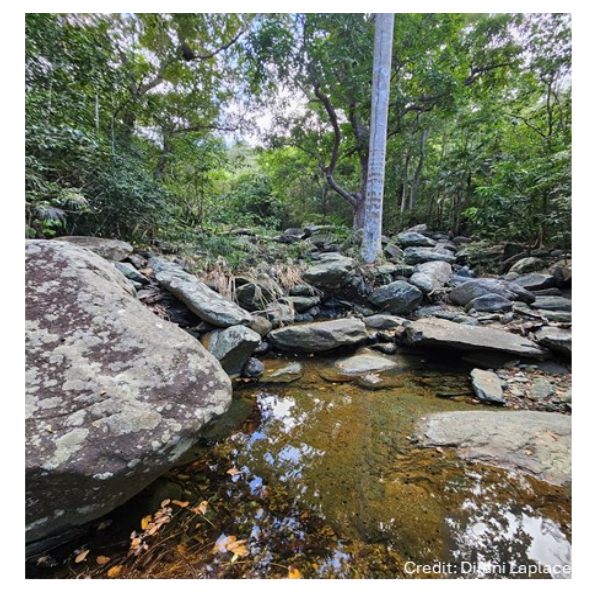
- The social ecological system of the U.S. Virgin Islands is comprised of seven major ecosystems, natural resource management agencies, tourists, and residents
- St. Thomas has undergone rapid increases in urban development over the last five decades, and this development threatens the major ecosystems (Platenberg & Valiulis, 2018)
- Understanding how people perceive ecosystems has been incorporated into a variety of management approaches (Kim & Marcoiller, 2016; Kiley et al., 2017; Shao et al., 2017; Quintas-Soriano et al., 2018; Petrun Sayers et al., 2022; Thiemann et al., 2022)
- Some local resource managers do not believe residents understand their connections to the ecosystems in the territory (Hale et al., 2021)

Location of St. Thomas, USVI



Major Ecosystems of the USVI


Forests


Guts/Ghuts


Mangroves


Beaches


Salt Ponds/Salt Flats


Coral Reefs


Seagrass Beds

METHODOLOGY

Overall Methodology Overview

Governing Document Selection

Survey Distribution (n=384)

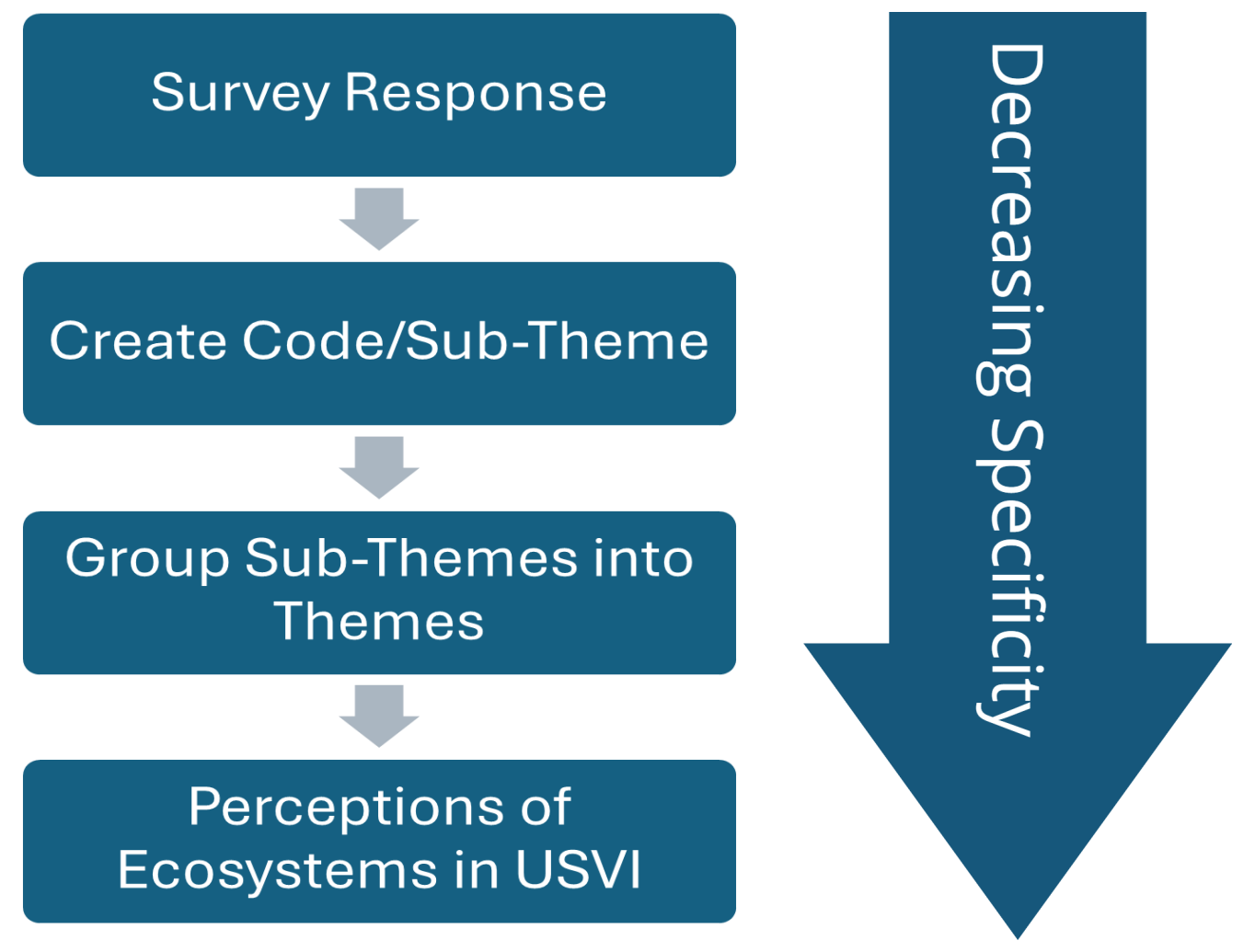
Inductive Thematic Analysis of Survey Responses

Re-analysis of Governing Documents

Presence-Absence Analysis

Interpretation

Simplified Coding Process


Survey Response

Create Code/Sub-Theme

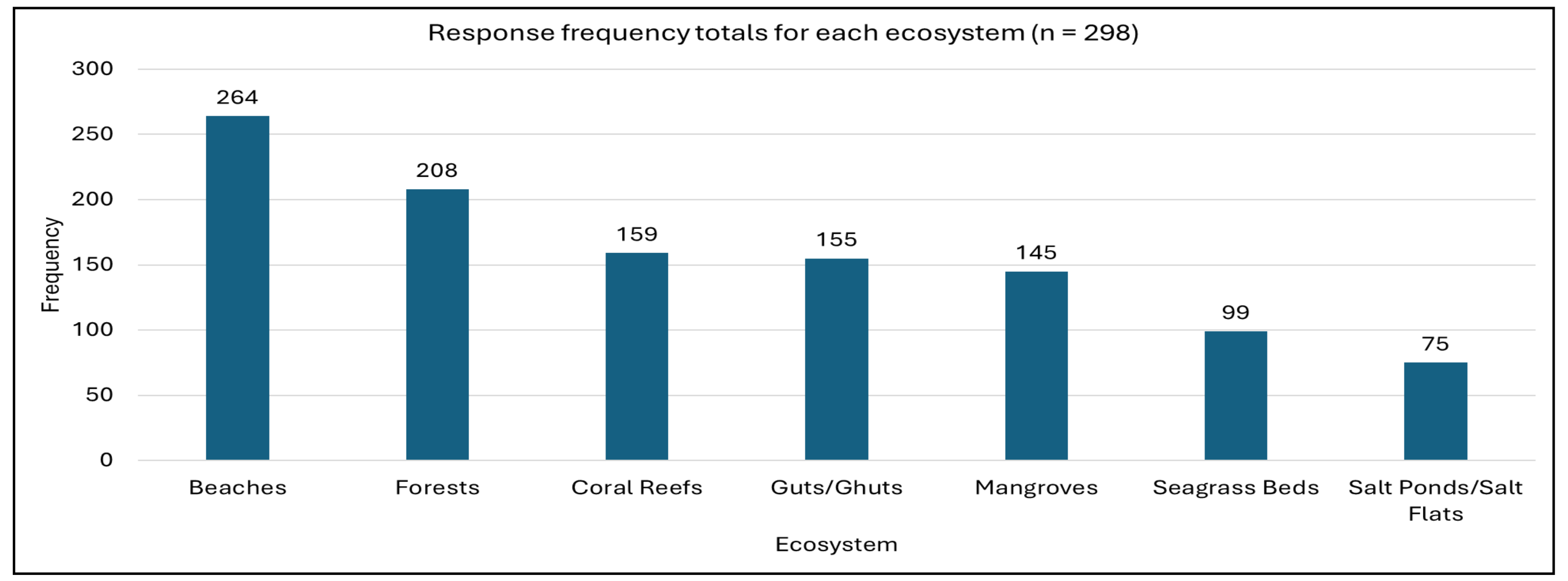
Group Sub-Themes into Themes

Perceptions of Ecosystems in USVI

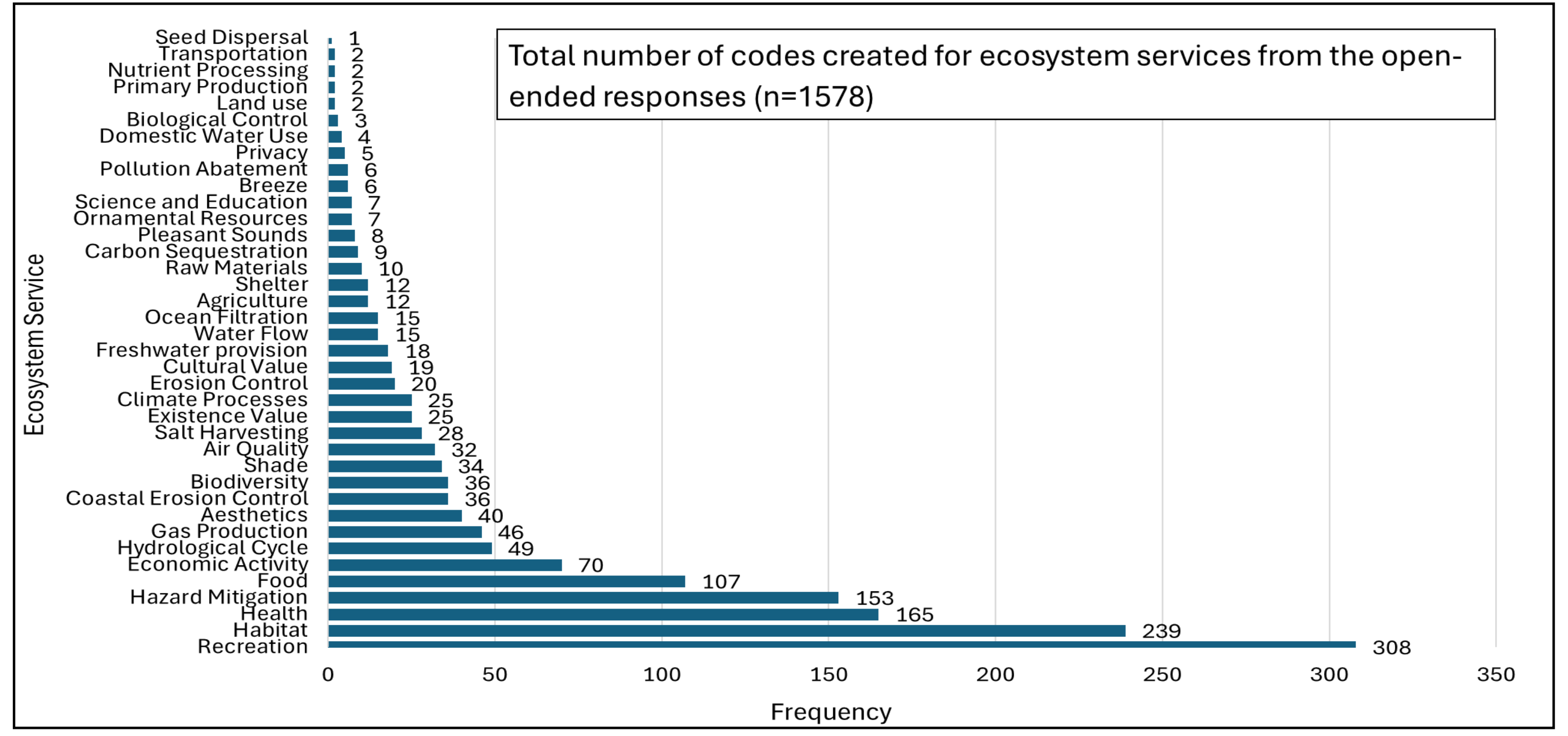
Decreasing Specificity

RESULTS

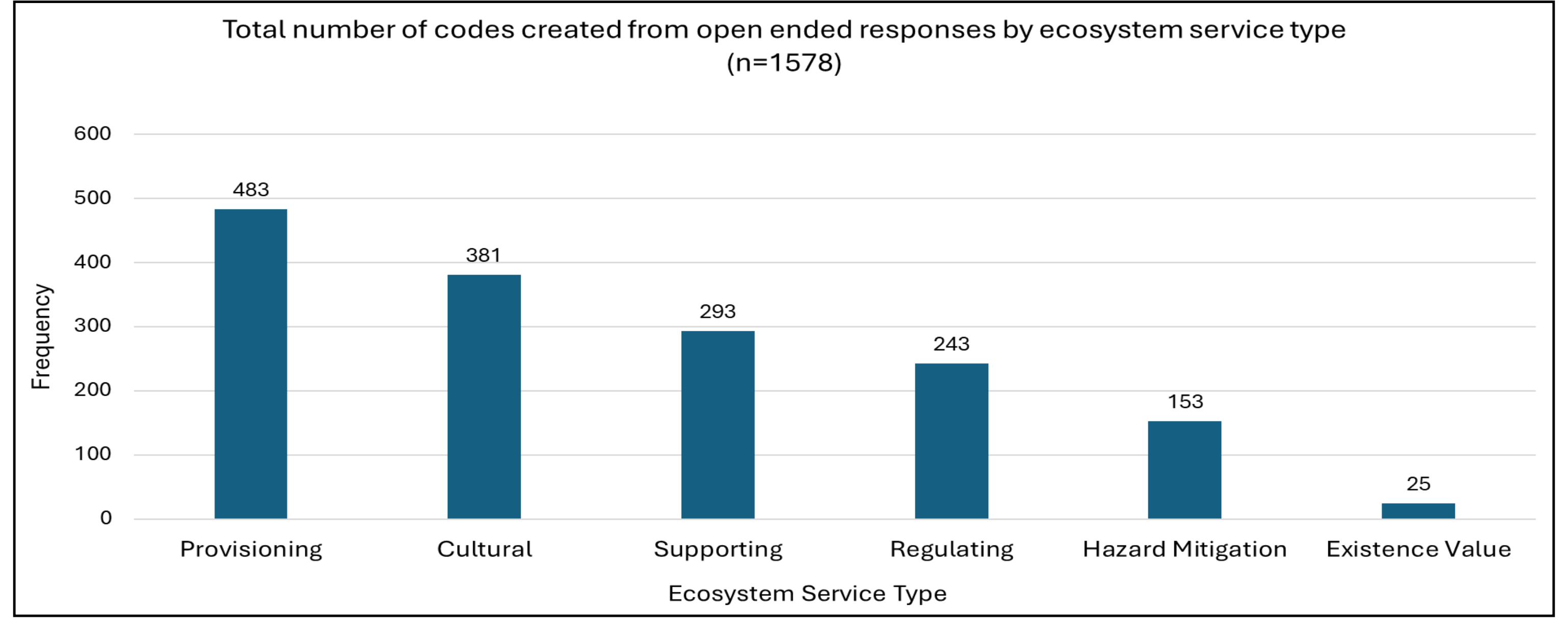
Most Beneficial Ecosystem Identified By Respondents



Individual Ecosystem Services Identified



Ecosystem Services Grouped By Type



Top Coded Reasons for Ecosystem Health

"Healthy" Ecosystems	
Reason	**Frequency**
Provides Ecosystem Services	92
Unclear Responses	55
Unaltered/Natural State	19
Existence	15
They Look Healthy (Group)	15
Adequate Management	10
High Biodiversity	5

Top Coded Reasons for Ecosystem Importance

Ecosystem Importance	
Reason	**Frequency**
Provides Ecosystem Services	264
All Ecosystems Equally Important	22
Ecosystem is Threatened	22
Ecosystem Linkage	11
Other Responses	8
Biodiversity	8
Other Ecosystem Groups	7

Top Ecosystem Services Present in Governing Documents

Ecosystem Service	No. of Documents	% Presence
Habitat	20	100%
Recreational Activities	17	85%
Science and Education	13	65%
Aesthetics	13	65%
Food	11	55%
Freshwater provision	11	55%
Cultural Value	11	55%
Hydrological Cycle	11	55%
Runoff Control	11	65%
Tourism	11	55%
Fisheries	10	50%

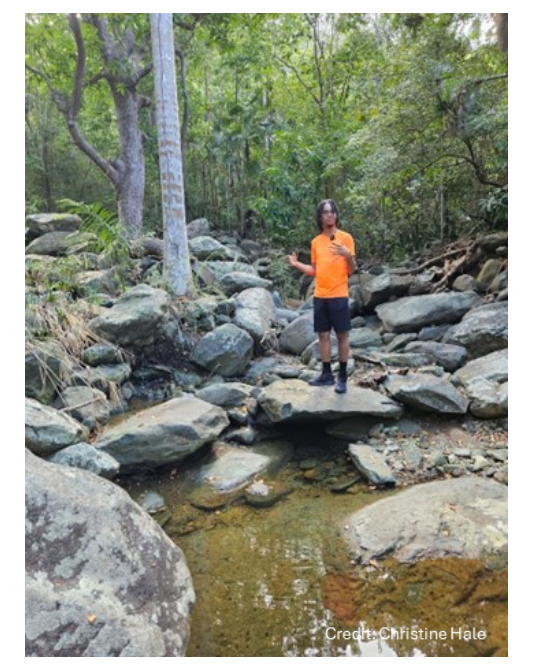
DISCUSSION

- St. Thomas residents identified beaches as the most beneficial ecosystem in terms of providing ecosystem services.
- St. Thomas residents may be placing higher value on provisioning services because they provide tangible benefits and/or due to land use tradeoffs. (Foley et al., 2005; Rodriguez et al., 2006; Quintas-Soriano et al., 2018)
- Recreation, health, food, and hazard mitigation were major ecosystems services identified respondents that also had cultural implications.
- Perceptions of healthy ecosystems and ecosystem importance were primarily driven by the provision of ecosystem services.
- Most of ecosystem services identified by residents of St. Thomas were not present in the governing documents.

CONCLUSION

- Perceptions of ecosystems services were largely absent from the governing documents, supporting the hypothesis
- Residents of St. Thomas illustrated knowledge of the local ecosystems that was not present in the governing documents
- High recognition of provisioning services by respondents may have future land-use implications


Credit: Christine Hale


Credit: Christine Hale


Credit: Christine Hale


Credit: Dijani Laplace


Credit: Christine Hale

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