

ASERS

# Journal of Environmental Management and Tourism

Quarterly

Volume XV

Issue 3(75)

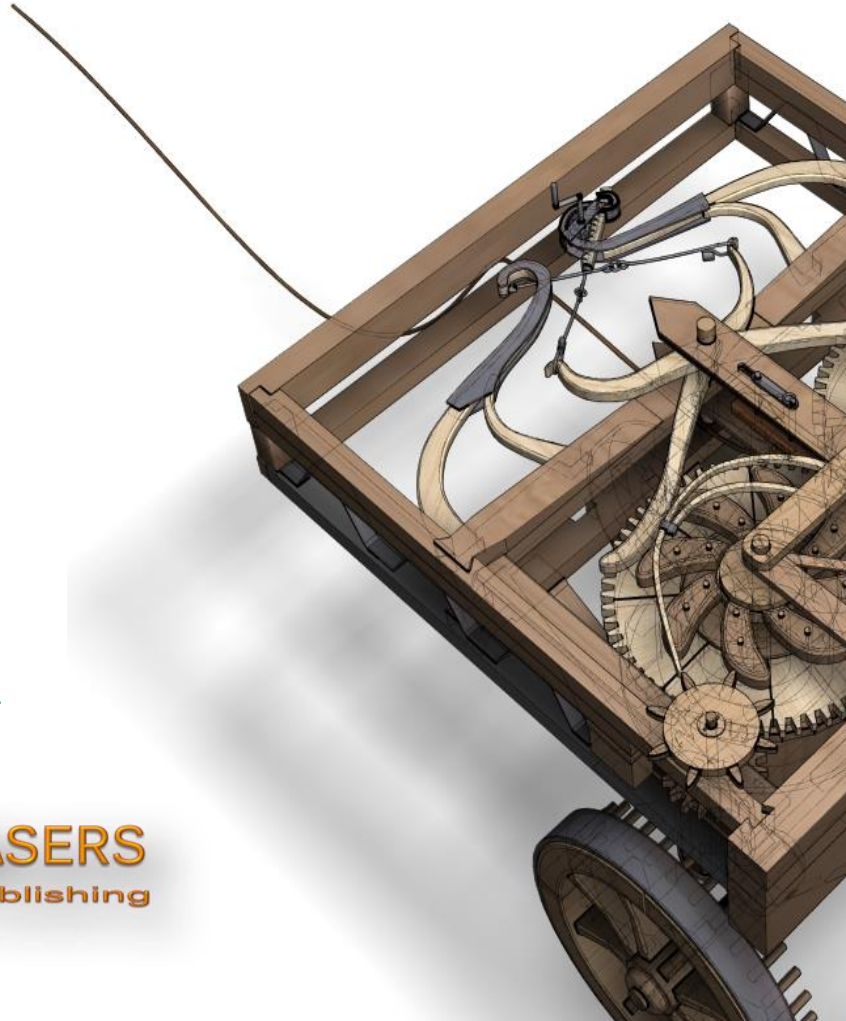
Fall 2024

ISSN 2068 – 7729

Journal DOI

<https://doi.org/10.14505/jemt>

ASERS  
Publishing



Editor in Chief:  
**Ramona Pirvu,**  
University of Craiova, Romania

Co-Editor:  
**Cristina Mihaela Barbu,**  
Spiru Haret University, Romania

**Editorial Advisory Board:**

**Omran Abdelnaser,** University Sains  
Malaysia, Malaysia

**Huong Ha,** Singapore University of Social  
Sciences, Singapore

**Harjeet Kaur,** HELP University College,  
Malaysia

**Janusz Grabara,** Czestochowa University of  
Technology, Poland

**Vicky Katsoni,** Technological Educational  
Institute of Athens, Greece

**Sebastian Kot,** Czestochowa University of  
Technology, The Institute of Logistics and  
International Management, Poland

**Andreea Marin-Pantelescu,** Academy of  
Economic Studies Bucharest, Romania

**Piotr Misztal,** The Jan Kochanowski  
University in Kielce, Faculty of Management  
and Administration, Poland

**Agnieszka Mroziak,** Faculty of Biology and  
Environmental Protection, University of  
Silesia, Katowice, Poland

**Chuen-Chee Pek,** Nottingham University  
Business School, Malaysia

**Roberta De Santis,** LUISS University, Italy

**Fabio Gaetano Santeramo,** University of  
Foggia, Italy

**Dan Selişteanu,** University of Craiova,  
Romania

**Lesia Kucher,** Lviv Polytechnic National  
University, Ukraine

**Lóránt Dénes Dávid,** Eötvös Loránd  
University, Hungary

**Laura Ungureanu,** Spiru Haret University,  
Romania

**Sergey Evgenievich Barykin,** Peter the  
Great St. Petersburg Polytechnic University,  
Russian Federation

**Omar Abedalla Alananzeh,** Faculty of  
Tourism and Hotel Management, Yarmouk  
University, Jordan

**Marco Martins,** Polytechnic Institute of  
Tomar, Portugal

**Konstantinos Antoniadis,** University of  
Macedonia Thessaloniki, Greece

**Table of Contents:**

1	<b>Food Security and Marine Capture Fisheries of BUGSAY Association of La Libertad, Negros Oriental, Philippines</b> Eden Grace V. TABANAO, Christine B. GALLOSA	429
2	<b>Fuzzy Analytical Hierarchy Process Evaluation of Stakeholder Groups Involvement in Forest Management Situations</b> Dorina GRAZHDANI	435
3	<b>How Advanced Is Green Participatory Budgeting in Poland and Spain? A Case Study of Gdansk and Barcelona</b> Małgorzata SIEMIONEK-RUSKAŃ, Anna SIEMIONEK-LEPCZYŃSKA	449
4	<b>Alternative Forms of Tourism: User Generate Content Promote Birdwatching Tourism in Kefalonia island, Greece</b> Michail XANTHAKIS, Nikos ANTONOPOULOS, Andreas KANAVOS, Anastasia KOMNENOU	459
5	<b>Integration of the Pro-Environmental Concepts in Various Management Accounting Tools</b> Anna SIEMIONEK-LEPCZYŃSKA, Michał CHALASTRA	479
6	<b>How Green Are Hotels in Ghana? Evidence from Star-Rated Hotels in Kumasi Metropolitan Area</b> Amoako Noble SARKODIE, Jane DERY, Charlotte GYIMAH, Comfort GYEDUAH, Hannah Esi Akyere ACQUAH	488
7	<b>Integrating Marine Tourism into the Blue Economy Framework</b> Kiran REDDY, Bhaskar SAILESH	501
8	<b>Tourists' Preferences in the Context of Their Psychological Well-Being: Conjoint Analysis</b> Anna MŁYŃKOWIAK-STAWARZ, Robert BĘBEN	521
9	<b>Improving Tourist Loyalty: Examining the Role of Environmental Tourism Policy on Tourist Behavior</b> Ivo NOVITANINGTYAS, Clarisa Alfa LIONORA, Andhatu ACHSA, Budi HARTONO	537
10	<b>Assess the Barrier of Small and Medium-Sized Hotel Digitalization: A Combination of AHP and DEMATEL Analysis</b> Pham Thanh TUNG	547
11	<b>The Interconnection of Rural Tourism Development with Local SMEs: The Potential of Startup Business Networking in Southern Malang Indonesia</b> Agung WINARNO, Desti Nur AINI, Norlida Hanim Mohd. SALEH, Muhammad Aris ICHWANTO, Agus PURNOMO, Amalia Arifah RAHMAN	564
12	<b>Exploring Tourists' Experience in Cinema-Induced Tourism through Sentiment Analysis Approach: Case of Ouarzazate Film Attractions</b> Moulay Abdellah TAIBI, Raja HANBALI, Fatima-Zohra IFLAHEN	575
13	<b>AI in Competitive Intelligence, Traditional and New Techniques for Gathering and Analysing Data</b> Silvia Denisa TARANU, Adrian Gabriel CIORANU	591

# Call for Papers Winter Issue 2024

## Journal of Environmental Management and Tourism

**Journal of Environmental Management and Tourism** is an open access, peer-reviewed interdisciplinary research journal, aimed to publish articles and original research papers that contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences. The Journal publishes original research and seeks to cover a wide range of topics regarding environmental management and engineering, environmental management and health, environmental chemistry, environmental protection technologies (water, air, soil), pollution reduction at source and waste minimization, energy and environment, modelling, simulation and optimization for environmental protection; environmental biotechnology, environmental education and sustainable development, environmental strategies and policies.

Authors are encouraged to submit high quality, original works that discuss the latest developments in environmental management research and application with the certain scope to share experiences and research findings and to stimulate more ideas and useful insights regarding current best-practices and future directions in Environmental Management.

Also, this journal is committed to a broad range of topics regarding Tourism and Travel Management, leisure and recreation studies and the emerging field of event management. It contains both theoretical and applied research papers and encourages obtaining results through collaboration between researchers and those working in the tourism industry.

The journal takes an interdisciplinary approach and includes planning and policy aspects of international, national and regional tourism as well as specific management studies. Case studies are welcomed when the authors indicate the wider applications of their insights or techniques, emphasizing the global perspective of the problem they address.

**Journal of Environmental Management and Tourism** is indexed in RePEc, CEEOL, ProQuest, EBSCO, DOAJ and Cabell Directory databases.

Details regarding the publication in this journal are here: <https://journals.aserspublishing.eu/jemt/about>

**Deadline for submission:** 15<sup>st</sup> October 2024

**Expected publication date:** November 2024

**Website:** <https://journals.aserspublishing.eu/jemt>

**E-mail:** [jemt@aserspublishing.eu](mailto:jemt@aserspublishing.eu)



DOI: [https://doi.org/10.14505/jemt.v15.3\(75\).01](https://doi.org/10.14505/jemt.v15.3(75).01)

## Food Security and Marine Capture Fisheries of BUGSAY Association of La Libertad, Negros Oriental, Philippines

Eden Grace V. TABANAO  
Social Science Department  
Negros Oriental State University, Philippines  
ORCID: 0009-0001-0914-6941; Researcher ID: JED-7485-2023  
[edengracetabanao@norsu.edu.ph](mailto:edengracetabanao@norsu.edu.ph)

Christine B. GALLOSA  
Social Science Department  
Negros Oriental State University, Guihulngan, Philippines  
[christinegallosa101@gmail.com](mailto:christinegallosa101@gmail.com)

**Article info:** Received 11 June 2024; Received in revised form 27 June 2024; Accepted 22 July 2024; Published 30 August 2024. Copyright© 2024 The Author(s). Published by ASERS Publishing 2024. This is an open access article distributed under the terms of CC-BY 4.0 license.

**Abstract:** Marine Capture Fisheries are a valuable food source, but challenges related to humanitarian and environmental factors often hinder access to sufficient nutrition. This study aimed to evaluate food security and analyze marine capture fisheries practices among members of the BUGSAY Association in La Libertad, Negros Oriental. Employing a stratified random sampling method, the researcher gathered data from 254 respondents from six coastal barangays in La Libertad - Pisong, Martilo, North Poblacion, South Poblacion, Cantupa, and San Jose. The majority of respondents, predominantly male fishermen aged 46-60, were married with 1-5 dependents, had incomplete elementary education, and earned less than ₱9,520 monthly. Findings revealed prevalent challenges in accessing adequate and nutritious foods, with many respondents experiencing these hardships ten times or more in the past four weeks. The study highlighted May as the peak fishing month, with 144 respondents engaging in high fishing activity, followed by June (129 respondents) and April (123 respondents). The ranking indicated heightened fishing activities in the first half of the year (April, May, June), coinciding with the spawning season of many fish species in the Philippines during late spring and early summer. This period witnesses increased fish abundance, driven by rising water temperatures that enhance fish activity and accessibility to fishermen. Warmer waters also promote plankton growth, a crucial food source for fish (Mcevoy, L., and Mcevoy, J., 2006). In contrast, February exhibited the lowest fishing activity, with only 34 respondents identifying it as a peak fishing period. February falls within the Amihan season, characterized by cooler temperatures, strong winds, and rough seas - conditions that pose risks and challenges for fishing endeavors. The use of cast nets, pump boats, and traditional fishing vessels is tailored to local environments and cultural norms, enabling fishermen to efficiently catch and sell fresh fish during peak fishing months (Xing, Q., Yu, H., and Wang, H., 2024).

**Keywords:** food security; marine capture fisheries; La Libertad; Negros Oriental; BUGSAY association.

**JEL Classification:** Q22; Q25; I19; R11.

### Introduction

Food security poses a serious social and global concern as the global population increases. Fisheries constitute a significant source of proteins, vitamins, and micronutrients, especially for many low-income populations in rural areas, and the sustainable management of these resources for long-term global food security has attracted significant public policy attention. However, in changing ecosystems, maintaining or restoring fisheries' sustainability and stock sizes, minimizing environmental impact and degradation, and enhancing local and global food security continue to present enormous challenges despite some progress (Garcia and Rosenberg, 2010).

In the Philippines, a fishing nation, fisheries provide a livelihood to the people and sustain the economy. According to Lamarca (2018), the fishing sector employed over 1.6 million people, most of whom worked in municipal, commercial, and aquaculture sectors, significantly contributing to the country's Gross Domestic Product (GDP). This proves that marine capture fisheries hold the utmost significance in food security, particularly in the

Filipino community. However, the nation's resources are light to heavily exploited and overfished in municipal waterways, not to mention the gradual degradation of the mangrove resources. Factors include overfishing due to an increased number of fishermen and open access to fisheries, disputes among resource users as commercial fishing boats operate in municipal waterways, and the use of detrimental fishing methods (e.g., dynamite and cyanide), which resulted to the quick depletion of fish stocks and habitat deterioration (Lamarca, 2018).

The Municipality of La Libertad relies on farming, carpentry, buy-and-sell, and fishing to sustain the local economy; thus, it seeks to preserve marine diversity. This pursuit establishes the Baryohanong Ugmad Gambalay sa Yanong Mangingisda (BUGSAY), an association that aims to preserve and protect marine life for present and future generations. Since there is an inadequate amount of studies concerning the food security and marine capture fisheries in the Philippines, nor is there a study solely dedicated to identifying and determining these variables in Negros Oriental, let alone in La Libertad, the researcher opted to set the ground for social and environmental research not only to foster marine life preservation but to advocate for sustainable livelihood for future generations amid the expected growth of the population.

The study on food security and marine capture fisheries among association members addresses a critical and under-researched intersection of sustainable food systems and marine resource management within the community. As the global demand for food escalates, the reliance on marine capture fisheries for nutrition and livelihoods intensifies, highlighting the need for sustainable practices. By focusing specifically on the members of BUGSAY Association, this research generates a tailored insight that reflect the distinct challenges and opportunities faced by the community. The study's findings not only advantageous to academic understanding but also inform targeted strategies for enhancing food security, promoting sustainable fisheries, and supporting the economic resilience of the members of the association.

## 1. Literature Review

The issue of food security cannot be categorized or confined by geography or defined by a particular grouping, *i.e.*, demography, education, geographic location, or income, food security is a complicated problem to handle. Currently, 16% of the world's population (1 billion people) experiences chronic hunger, despite the fact that there is more than enough food available to sustain every person on Earth. Herein lies the challenge of achieving food stability - how to deal with growing food shortages brought on by a confluence of waste and a population that continues to grow. Predictions assert, at current levels, that we must boost the global production of food by 70% earlier than 2050 on the already finite infrastructures (Carthy *et al.* 2018).

On the other hand, marine capture fisheries play a major part in this scenario. Fish have historically served an integral part in human diets, particularly in places nearby lakes, rivers, deltas, floodplains, and coastal regions, and especially on small islands just like Negros Oriental. Fisheries can help with food security in two ways: (i) immediately by providing vital nutrients; and (ii) indirectly by offering income for food expenditures (Garcia and Rosenberg, 2010). Moreover, Negros Oriental's First District had the highest rate of poverty incidence in Central Visayas. Nearly half of the families in the province derive most of their income from agriculture, such as fishing, earning a yearly income of less than PHP 17,500 on average (Calumpong *et al.* 1997; Ablong *et al.* 2001). In connection, the researcher of this study came to do a research which will help identify the food security and determine marine capture fisheries in the Municipality of La Libertad (who is included in the 2015 highest rate of poverty) particularly, on its active association of fishermen named BUGSAY. They are likewise interested to know the maritime trends and the future perspectives or outlooks of the members of the mentioned association regarding fishers and marine capture fisheries, for the aims of establishing a research paper that would as well, help address some of the respondents' concerns and contribute to the development of their association.

Loring *et al.* (2019) states that, it is ideal to achieve food security through strategies that foresee and adapt to changes in the food supply throughout time because many factors can weaken food security in any of these regions. This demonstrates that security goes beyond just food production.Carthy *et al.* (2018) show that there is no single measure that can guarantee sustained food security in the years to come. Thus, a thorough systems-based approach, anchored on the combination of policy and technological reform, will be vital for attaining sustainable food security worldwide which will use current systems in conjunction with innovative technologies, techniques, and best practices described in the study.

According to FAO (2011), the economy and well-being of coastal communities are greatly affected by marine fisheries, which offer food security, employment possibilities, income, and livelihoods as well as preserving traditional cultural identity. Marine capture fisheries are vital to the survival and nourishment of human civilization. Hence, in recent years, human activities have been compromising the health of the ocean and putting immense strain on marine ecosystems for many years. Thus, there is an urgent need to strengthen sustainable practices and



legislation in fisheries all over the world to propel marine capture fisheries toward sustainability (Jesintha and Madhavi, 2020).

The researcher is motivated to conduct a study to determine food security, identify marine capture fisheries by the members of the BUGSAY Association of La Libertad, Negros Oriental.

## 2. Research Methodology

This study was conducted in the coastal barangays of the Municipality of La Libertad, one of the provinces of Negros Oriental. This was specifically executed in the respective barangays of Pisong, Martilo, North Poblacion, South Poblacion, Cantupa, and San Jose which are the fortress of BUGSAY Association. Since Marine Capture Fishery is one of the livelihoods of the La Libertadnons that does not just sustain their lives but has also supported the local economy, the Local Government Unit (LGU) seeks to protect its inhabitants and their source of income. The respondents of this study were the registered members of the Baryohanong Ugmad Gambalay Sa Yanong Mangingisda (BUGSAY) Association from the different coastal Barangays of La Libertad. The Local Government Unit (LGU) of the Municipality of La Libertad shows that BUGSAY Association has 699 registered members as of May 2023. In order to identify the sample size of the study, Sloven's formula was used. The 254 sampled members of BUGSAY Association in La Libertad is proportionately distributed and randomly identified in six (6) coastal barangays of Pisong, Martilo, North Poblacion, South Poblacion, Cantupa, and San Jose of La Libertad. The respondents were well represented by the different coastal barangays of La Libertad to avoid bias and inconsistency in the result. This study utilized a stratified random sampling technique, and the researchers politely asked the members of the association to participate in the study willingly. The researchers ensured that all the respondents were members of BUGSAY Association with the help of the leadership of the BUGSAY Presidents from every coastal barangay. The main data-gathering instrument was modified questionnaires. It was composed of three (3) parts, namely, the Demographic Profile of the Respondents, Level of Frequency of Food Security in the last four (4) weeks, and Knowledge and Practices of the Respondents in Marine Capture Fisheries.

To determine the level of frequency of food security among the respondents, the researchers used this descriptive interpretation using the scale below:

Range	Verbal Interpretation
2.51 – 3.50	Rarely (1 to 2 times)
1.51 – 2.50	Sometimes (3 to 10 times)
0.51 – 1.50	Often (10 times or more)

To answer the knowledge and practices of the respondents in Marine Capture Fisheries in terms of fisheries calendar, the researchers use the percentage formula to convert their responses into percentages. Whereas, to answer problem which deals with the knowledge and practices of the respondents in Marine Capture Fisheries in terms of fisheries input and output, the researchers use the ranking method to rank the responses of the respondents.

## 3. Research Results and Discussions

### 3.1 Residents' Knowledge about Solid Waste Management Program

Generally, the level of food security within the BUGSAY Association of La Libertad, Negros Oriental, often eat a limited variety of food and often eat fewer meals in a day due to a lack of resources.

Table 1. Level of Frequency of Food Security

No	Statements	Mean	Interpretation
1	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	1.39	Often
2	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	1.45	Often
3	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	1.43	Often
4	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	1.35	Often
5	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	1.23	Often
6	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	1.35	Often

No	Statements	Mean	Interpretation
7	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	1.35	Often
8	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	1.35	Often
Total		1.37	Often

Only the top 5 statements with the highest and lowest percentage ratings were included in the table.

Statement number 2 and 5 count as the highest and lowest weighted mean, respectively, all of which have the same descriptive interpretation - often. This means that most of the respondents often eat a limited variety of food and often eat fewer meals in a day due to a lack of resources. This implies that they were able to experience the mentioned conditions ten times or more in the past four (4) weeks. The total weighted mean also reveals the same verbal interpretation. This implies that as the respondents earn the lowest income bracket every month, it is indisputable that they would have experienced all the conditions ten or more times in the past four (4) weeks.

### 3.2 Fisheries Calendar According to the Respondents

Table 2 is interpreted through the Months with High Fishing and Rank column beside. The data represents the high fishing months as ranked by respondents. The month of May was identified as having the highest fishing activity with 144 respondents, making it the peak month for fishing. This was followed by June with 129 respondents and April with 123 respondents.

Table 2. Fisheries Calendar

Month	High Fishing (H)	Rank
May	144	1
June	129	2
April	123	3
March	80	4
July	68	5
August	54	6
October	49	7
January	47	8
November	46	9
December	45	10
September	44	11
February	34	12

The ranking indicates that the first half of the year (April, May, June) sees the highest fishing activities. Many fish species in the Philippines spawn during the late spring and early summer months. This period sees an abundance of fish, making it a prime time for fishing activities. The transition from the cooler months to warmer ones increases water temperatures, which stimulates fish activity and makes them more accessible to fishermen. Warmer waters also encourage plankton growth, which serves as food for fish (Mcevoy, L., and Mcevoy, J., 2006).

Conversely, February is the month with the lowest fishing activity, with only 34 respondents indicating it as a high fishing period. February falls within the Amihan season, which brings cooler temperatures, strong winds, and rough seas. These conditions are not conducive to fishing activities as they can be dangerous and make it difficult to catch fish.

Table 3 shows that among the 254 respondents, 107 answered Cast Net as the common fishing equipment used, followed by Pump Boat corresponding 98 respondents, and Old Fishing Boat constituting 13 respondents. The rest includes pasol (indicated by the respondents themselves) with 12 respondents, Outboard Engine, Gill Net, Long Hand Line, Beach Seine, and Fish Traps - constituting 8, 7, 4, 3, 2 respondents respectively.

Table 3. Fisheries Input

Fisheries Input	Frequency	Fisheries Input
Cast Net (Pukot)	107	1
Pump Boat (Pambot)	98	2
Old Fishing Boat (Sakayan)	13	3
Others (Pasol)	12	4
Outboard Engine (Makina)	8	5
Gill Net (Pahubas)	7	6
Long Hand Line (Bugsay)	4	7
Beach Seine (Sarap)	3	8
Fish Traps (Panggal)	2	9

This is in consonance with the study of Kwen *et al.* (2013), which found that among fishing equipment, net is one of the commonly used tools since the findings of the study show that the Cast Net is usually utilized by BUGSAY Association, casually known as pukot/net. Institutional/governance aspects, on the other hand, displayed a high mean rating. city's solid waste management policies, rules, and laws.

Table 4. Quantity Landed and Processing Code

Kinds of Fish	Quantity Landed (in kilograms)					Processing Code				
	1-5	6-10	11-15	16-20	Total	1	2	3	4	Total
Lumyagan	72	64	0	0	<b>136</b>	136	0	0	0	<b>136</b>
Gutob	94	39	0	0	<b>133</b>	117	0	16	0	<b>133</b>
Bansikol	114	5	0	0	<b>119</b>	119	0	0	0	<b>119</b>
Malangsi	69	13	0	0	<b>82</b>	79	0	3	0	<b>82</b>
Pulag-ikog	65	14	0	0	<b>79</b>	72	0	7	0	<b>79</b>
Anduhaw	62	7	0	0	<b>69</b>	69	0	0	0	<b>69</b>
Sihag-sihag	15	20	0	0	<b>35</b>	35	0	0	0	<b>35</b>
Bakulan	30	0	0	0	<b>30</b>	30	0	0	0	<b>30</b>
Yellow Fin	25	0	0	0	<b>25</b>	25	0	0	0	<b>25</b>
Tuloy	24	0	0	0	<b>24</b>	24	0	0	0	<b>24</b>
Alukihok	23	0	0	0	<b>23</b>	23	0	0	0	<b>23</b>
Balo, Katambak, and Timbungan	22	0	0	0	<b>22</b>	22	0	0	0	<b>22</b>
Gurayan, Mamsa, and Tamban	21	0	0	0	<b>21</b>	21	0	0	0	<b>21</b>
Danggit, Bangsi, and Maya-maya	18	0	0	0	<b>18</b>	18	0	0	0	<b>18</b>
Lilang, Kinsan, and Bilason	15	0	0	0	<b>15</b>	15	0	0	0	<b>15</b>
Bilong- bilong, Budburon, and Tamarong	10	0	0	0	<b>10</b>	10	0	0	0	<b>0</b>

Processing Code (1 – Fresh; 2 – Sun Dried; 3 – Smoked; 4 – Iced)

Table 4 revealed that there are three most commonly fish landed, these are lumyagan (squid), gutob (Indian mackerel), and bansikol (rainbow runner). The total landed quantity of lumyagan or squid is 136 kg, with 72 kg in the 1-5 kg range and 64 kg in the 6-10 kg range. All 136 kg are processed as fresh (Processing Code 1). The gutob (Indian mackerel) fish quantity landed was 133 kg, with 94 kg in the 1-5 kg range and 39 kg in the 6-10 kg range. 117 kg are processed fresh, and 16 kg are smoked (Processing Code 3). On the other hand, the bansikol (rainbow runner) fish has a landed quantity of 119 kg, with 114 kg in the 1-5 kg range and 5 kg in the 6-10 kg range. All 119 kg are processed fresh. Understanding which fish species are most commonly landed can provide insights into the preferences of local consumers and the demand for different types of seafood. Lumyagan (squid), gutob (Indian mackerel), and bansikol (rainbow runner) are popular choices, indicating a significant market for these species. This information can help fishers and fishery managers make decisions about which species to prioritize in their fishing efforts.



## Conclusions and Further Research

Having multiple options for sourcing and processing fish helps mitigate the impacts of supply chain disruptions and ensures continued access to nutritious food during emergencies. Monitoring the quantities of landed fish and implementing sustainable fishing practices are essential for ensuring long-term food security. Overfishing or unsustainable harvesting practices can deplete fish stocks, jeopardizing the availability of seafood as a food source for future generations. Therefore, efforts to promote sustainable fisheries management and conservation are crucial for maintaining food security of the members of BUGSAY Association. The importance of diverse, accessible, and sustainable seafood resources in ensuring food security for the people. It underscores the need for holistic approaches to fisheries management that prioritize both economic development and environmental sustainability.

## Acknowledgments

The author would like to thank the BUGSAY Association of La Libertad, Negros Oriental for their active participation in the study and Negros Oriental State University-Guihulngan Campus for the support.

## Credit Authorship Contribution Statement

**Eden Grace V. Tabanao:** Conceptualization, Formal analysis, Writing –original draft, Supervision, Data curation, Validation, Writing – review and editing, Visualization, and Funding acquisition.

**Christine B. Gallosa:** Investigation, Methodology, and Project administration.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

## References

- [1] Ablong, W., Alcala, M., Yambao, A., and White, A. 2001. *Coastal Environmental Profile of Negros Oriental, Philippines*. Coastal Resource Management Project, Cebu City, Philippines, 107 p.
- [2] Calumpang, H.P., J.S. Estacion, M.V. Lepiten and C.E. Acedo. 1997. Status of the Coastal Resources of the Negros Learning Site (Manjuyod to Dauin). Silliman University Marine Laboratory and the Center of Excellence on Coastal Resources Management, Silliman University, Dumaguete City, Philippines, p. 196
- [3] Carthy, U. M., *et al.* 2018. Global food security – Issues, challenges and technological solutions. *Trends in Food Science and Technology*, 77: 11–20. DOI: <https://doi.org/10.1016/j.tifs.2018.05.002>
- [4] FAO. 2011. Review of the state of world marine fishery resources. FAO Fisheries and Aquaculture Technical Paper No. 569. Rome. [www.fao.org/3/i2389e/i2389e.pdf](http://www.fao.org/3/i2389e/i2389e.pdf), ISBN 978-92-5-107023-9
- [5] Garcia, S. M., and Rosenberg, A. A. 2010. Food security and marine capture fisheries: characteristics, trends, drivers and future perspectives. *Philosophical Transactions - Royal Society. Biological Sciences*, 365(1554): 2869–2880. DOI: <https://doi.org/10.1098/rstb.2010.0171>
- [6] Jesintha, N., and Madhavi, K.R. 2020. Marine capture fisheries: Sustainability issues. *International Journal of Fisheries and Aquatic Studies*, 8: 34-37.
- [7] Kwen, K. I., Davies, O. A., and Binyotubo, T. E. 2013. Survey of fishing gear and status of fishers in Igbedi Creek, Nigeria Delta, Nigeria. *International Journal of Scientific Research in Knowledge*, 1(11): 493–501. DOI:<https://doi.org/10.12983/ijsrk-2013-p493-501>
- [8] Lamarca, N. S. (2018, June 26). Fisheries Country Profile: Philippines. SEAFDEC.
- [9] Loring, P. A., *et al.* 2019. Fish and Food Security in Small-Scale Fisheries. In MARE publication series (pp. 55–73). Springer International Publishing. DOI: <https://doi.org/10.1007/978-3-319-94938-34>
- [10] McEvoy, L. A., and McEvoy, J. 1992. Multiple spawning in several commercial fish species and its consequences for fisheries management, cultivation and experimentation. *Journal of Fish Biology*, 41(sB): 125–136. DOI: <https://doi.org/10.1111/j.1095-8649.1992.tb03874.x>
- [11] Xing, Q., Yu, H., and Wang, H. 2024. Global mapping and evolution of persistent fronts in Large Marine Ecosystems over the past 40 years. *Nature Communications*, 15(1). DOI: <https://doi.org/10.1038/s41467-024-48566-w>

# ASERS



The logo for ASERS Publishing, featuring the word "ASERS" in a bold, orange, sans-serif font with a stylized fan-like graphic to the left, and the word "Publishing" in a smaller, orange, sans-serif font below it.

Web: [www.aserspublishing.eu](http://www.aserspublishing.eu)

URL: <http://www.journals.aserspublishing.eu/jemt>

E-mail: [jemt@aserspublishing.eu](mailto:jemt@aserspublishing.eu)

ISSN 2068 – 7729

Journal DOI: <https://doi.org/10.14505/jemt>

Journal's Issue DOI: [https://doi.org/10.14505/jemt.v15.3\(75\).00](https://doi.org/10.14505/jemt.v15.3(75).00)