

Ethnobiology of plant and animal-based foods among the Bajo People in Gorontalo, Indonesia

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Abstract. Solang M, Isra M, Ahmad J, Kumaji SS, Akbar MN, Rahayuningsih M, Rahayu ES, Marianti A, Ramasamy S. 2026. *Ethnobiology of plant and animal-based foods among the Bajo People in Gorontalo, Indonesia. Biodiversitas 27 (2): d27026.* <https://doi.org/10.13057/biodiv/d270226>. Indigenous communities maintain complex food systems that are closely linked to local biodiversity and traditional ecological knowledge (TEK). This study documents the ethnobiological knowledge of the Bajo people in Gorontalo, Indonesia, focusing on the diversity and culturally perceived functions of plant and animal-based foods. Fieldwork was conducted from April to June 2025 using semi-structured interviews, direct observation, and participatory approaches in three coastal villages. A total of 54 informants (37 men and 17 women, aged 35-76 years) reported the use of 25 species, comprising 11 plant species and 14 animal species, utilized for food, medicinal, and ritual purposes. Frequently cited species included *Tacca leontopetaloides* (*ubi teo*), *Tridacna* sp. (*kima*), *Sesuvium portulacastrum* (*gaganga*), *Holothuria scabra* (*tripang putih*), and *Caulerpa lentillifera* (*lato*). Quantitative ethnobiological indices indicated high cultural salience of *T. leontopetaloides*, which recorded the highest Relative Frequency of Citation (RFC = 0.78) and Use Value (UV = 0.82), followed by *Tridacna* sp. (RFC = 0.62; UV = 0.70). Traditional preparation techniques, including fermentation, boiling, and raw consumption, reflect adaptive strategies developed to optimize food use and culturally perceived health-related benefits. Although only a limited number of informants explicitly used the term “functional food,” local practices demonstrate an implicit understanding of the relationship between food and health. This study highlights how biodiversity, traditional ecological knowledge, and subsistence practices intersect within the Bajo food system, underscoring the relevance of ethnobiological knowledge for sustaining community-based food systems and supporting biodiversity conservation.

Keywords: Bajo communities, biodiversity conservation, coastal Indonesia ethnobiology, traditional ecological knowledge (TEK)

INTRODUCTION

Human societies have long depended on biological resources for subsistence, health, and cultural continuity. Both wild and cultivated species contribute significantly to food security, public health, and the maintenance of traditional ecological knowledge (TEK) transmitted across generations. Globally, approximately 7,000 plant species are used for food and medicine (Sabar et al. 2022), yet fewer than 30 species dominate global agriculture and supply over 90% of the world’s food demand (Tremblay et al. 2020). This imbalance reflects the underutilization of biodiversity, particularly local and wild species with nutritional and functional potential. Increasing food demand, climate change, and poverty further threaten food access and sustainability, especially in coastal and indigenous communities (Franco et al. 2020; Ebata 2023; Bennett et al. 2024). At the same time, modernization and urbanization

have contributed to the erosion of TEK, weakening community resilience and traditional resource management systems (Jayathilake and Jayewardena 2021).

TEK is essential for maintaining food systems in coastal and island communities. It includes inherited knowledge, beliefs, and practices that help people manage biodiversity through local ecological understanding and diverse harvesting methods (Mohd Salim et al. 2023; Senadheera et al. 2023). This knowledge supports dietary diversity, adaptation to environmental change, and conservation (Singh et al. 2020). However, modernization, market integration, and cultural homogenization are accelerating knowledge loss in Southeast Asia, while monocultures and youth migration further weaken traditional food systems and cultural transmission (Domingo et al. 2021; Negi et al. 2021; Sabar and Midya 2022).

In coastal regions, interconnected mangrove-seagrass-reef ecosystems sustain livelihoods by supporting fisheries,

household economies, nutrient cycling, productivity, and climate buffering (Stewart-Sinclair et al. 2020; Salma et al. 2022; Alcantara et al. 2023; Ochieng et al. 2023). They also provide wild plants and marine organisms that underpin traditional diets, health, and culturally rooted functional food practices, linking food, health, and environmental stewardship (Perera-Valderrama et al. 2020; Sun et al. 2020; Arthur et al. 2021; Quiros et al. 2021; Im et al. 2022; Pickard and Bonsall 2022; Digdo et al. 2023; Ebrahimi et al. 2023; Senadheera et al. 2023; Yamashita et al. 2023; Bennett et al. 2024). However, overexploitation and habitat degradation threaten these socio-ecological systems, highlighting the need for integrated, culturally informed conservation that supports ecosystem integrity, cultural resilience, and food sovereignty (Macusi et al. 2021; Jenzri et al. 2022; Qiu et al. 2023; Isra et al. 2025).

The Bajo people of Gorontalo, Indonesia, exemplify a close relationship between biodiversity, TEK, and food-based health practices. As seafaring communities, the Bajo depend heavily on coastal and marine ecosystems for subsistence and cultural identity. Their diets include species such as *Holothuria scabra* (white sea cucumber), *Stichopus* sp., *Tridacna* sp. (giant clam), *Caulerpa lentillifera* (sea grapes), *Tacca leontopetaloides* (Polynesian arrowroot), and *Sesuvium portulacastrum* (sea purslane). These species serve multiple functions as food, medicine, and ceremonial materials, reflecting multifunctional ecological knowledge. For example, *T. leontopetaloides* is traditionally fermented prior to consumption, while *Tridacna* sp. is often consumed raw and locally believed to enhance vitality. Despite their cultural and subsistence importance, systematic ethnobiological documentation of these practices remains limited, particularly in relation to functional food perspectives.

Ethnobiology offers an interdisciplinary framework for examining interactions between humans and their environments across cultural and ecological dimensions. By documenting traditional practices and knowledge

systems, ethnobiological research contributes to sustainable resource management, food security strategies, and conservation planning. This approach is increasingly relevant amid ongoing biodiversity loss and cultural change affecting coastal livelihoods. Examining Bajo food systems through an ethnobiological lens can reveal underutilized species and provide insights into culturally grounded conservation and sustainable development.

Although earlier studies have examined medicinal plants (Navia et al. 2021), wild edible species, and biodiversity, functional food practices in coastal Indonesia remain poorly studied. In particular, the links among functional foods, traditional ecological knowledge, and connected marine-terrestrial ecosystems have received little attention. This study therefore documents plant and animal-based functional foods used by the Bajo people in Gorontalo, identifies culturally important species using ethnobiological indices, and describes traditional knowledge on food preparation and perceived health benefits. It contributes by combining ethnobiological and functional food perspectives to highlight links between biodiversity conservation, nutrition, and community resilience.

MATERIALS AND METHODS

Study area

This ethnobiological research was conducted in three Bajo Villages-Torosiaje ($0^{\circ}28'25''\text{N}$, $121^{\circ}26'17''\text{E}$), Torosiaje Jaya ($0^{\circ}28'53''\text{N}$, $121^{\circ}26'26''\text{E}$), and Bumi Bahari ($0^{\circ}29'32''\text{N}$, $121^{\circ}26'43''\text{E}$)-located in the Popayato Sub-district of Pohuwato District, Gorontalo Province, Indonesia (Figure 1). These settlements are situated within a mosaic of mangrove forests (*Rhizophora* spp., *Sonneratia* spp.), seagrass beds (*Enhalus acoroides*, *Thalassia hemprichii*), and coral reef ecosystems that provide essential resources for subsistence, nutrition, and cultural practices.

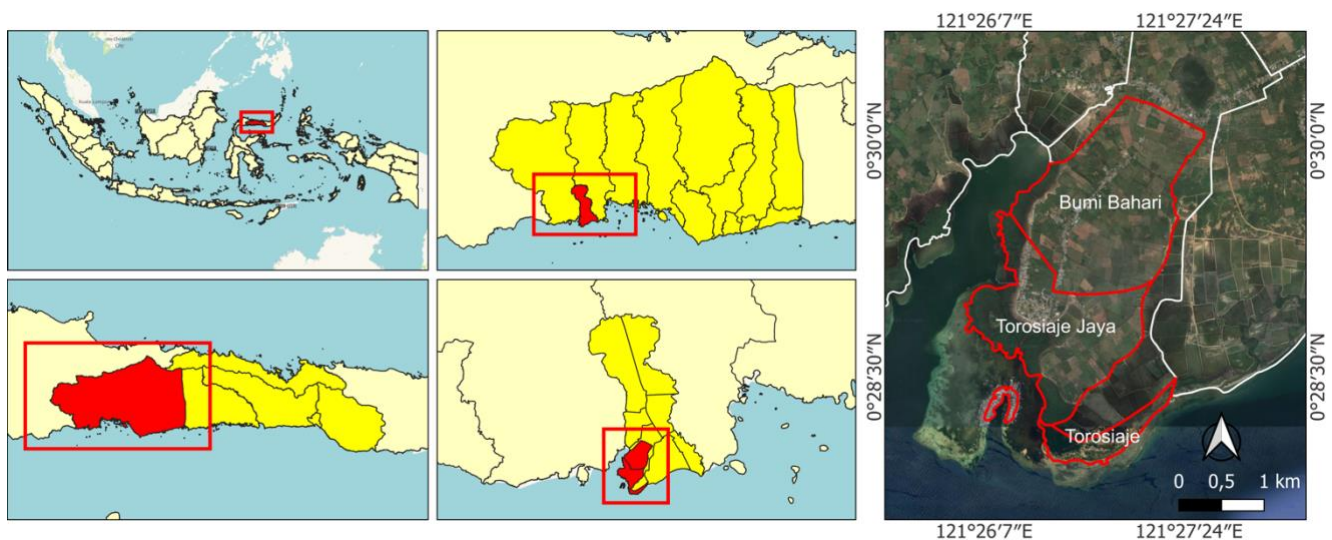


Figure 1. Map of the study area showing the three Bajo Villages in Popayato Sub-district, Pohuwato District, Gorontalo, Indonesia

The region experiences a humid tropical climate, with annual rainfall ranging from 2,000 to 2,500 mm and average temperatures between 26 and 30°C. The dry season generally occurs from May to September, while the rainy season extends from October to April. As historically seafaring communities, the Bajo people rely extensively on coastal and marine biodiversity for food, medicine, and ritual activities, making this area particularly relevant for ethnobiological investigation.

Sampling and data collection

Fieldwork was conducted between April and June 2025. The target sample size was determined using the Cochran formula as a guideline to estimate a minimum number of informants, based on an estimated adult population (≥ 15 years) of approximately 150 individuals across the three villages. This calculation indicated a minimum requirement of 54 informants, which was also the final number included in the study. The Cochran formula was used to provide a structured reference for sample adequacy rather than to support statistical generalization.

Informants were selected through purposive and snowball sampling to ensure the inclusion of individuals recognized within the community for their ethnobiological knowledge, such as fishers, traditional healers, community leaders, and householders. These sampling approaches are commonly applied in ethnobiological research to capture specialized and experience-based knowledge. The final sample comprised 54 informants, 37 men and 17 women aged between 35 and over 75 years. Most participants had completed elementary education, and fishing was the predominant occupation ($n = 25$), followed by housewives ($n = 9$), traditional healers ($n = 4$), community leaders ($n = 5$), and several other professions, including teachers and traditional birth attendants.

Prior to data collection, the objectives of the study and ethical considerations were explained to all participants, and oral informed consent was obtained. Data were collected through semi-structured interviews guided by questionnaires covering local and scientific species names, parts used, preparation and consumption methods, categories of use (food, medicine, and ritual), and intergenerational transmission of knowledge. This approach ensured consistency across interviews while maintaining flexibility to capture detailed and context-specific information (Abidin et al. 2024).

To enhance data reliability, interviews were complemented by direct observation, participatory field walks, and focus group discussions (Franco et al. 2020; Galisong and Kholifah 2023). Triangulation of these methods increased analytical rigor and ethnographic accuracy (Jadid et al. 2020). Although purposive and snowball sampling may limit representativeness at the population level, these approaches are appropriate and widely accepted for documenting specialized local knowledge within ethnobiological research contexts.

Specimen collection and identification

Voucher specimens of plant species were collected, pressed, and identified using regional floras and subsequently

verified through Plants of the World Online (<https://powo.science.kew.org/>). Animal species were identified using standard taxonomic keys and FishBase (<https://www.fishbase.se>). These procedures ensured taxonomic accuracy, which is fundamental to ethnobiological documentation (Rodrigues et al. 2020). No destructive sampling of protected marine species was conducted; instead, photographic documentation and confirmation through local knowledge were employed when necessary.

Data analysis

Data were coded and analyzed using descriptive statistics to summarize informant characteristics, species diversity, and categories of use. To assess cultural importance, use intensity, and knowledge agreement, three ethnobiological indices were applied following established methods (Renck et al. 2022; Turner et al. 2022; Zocchi et al. 2023). These indices were used for descriptive and comparative purposes within the study context and were not intended for statistical inference.

Relative Frequency of Citation (RFC)

The cultural importance of each species was assessed using the Relative Frequency of Citation (RFC), calculated as:

$$RFC = \frac{FC}{N}$$

Where, FC is the number of informants citing a particular species, and N is the total number of informants ($N = 54$). RFC values range from 0 to 1, with higher values indicating greater cultural salience and wider recognition of a species within the community (Lawal et al. 2022).

Use Value (UV)

The Use Value (UV), was calculated as:

$$UV = \frac{\sum U_i}{N}$$

Where, U_i represents the number of use-reports mentioned by informant i , and N is the total number of informants. Higher UV values indicate species with greater versatility or frequency of use, reflecting their multifunctional roles in food, health, and ritual practices (Turner et al. 2022).

Informant Consensus Factor (ICF)

Knowledge agreement among informants within specific use categories was measured using the Informant Consensus Factor (ICF), calculated as:

$$ICF = \frac{N_{ur} - N_t}{N_{ur} - 1}$$

Where, N_{ur} is the number of use-reports for a particular use category, and N_t is the number of taxa (species) used for that category. ICF values range from 0 to 1, with values approaching 1 indicating a high degree of consensus among informants regarding species use (Zocchi et al. 2023).

Ethical considerations and validation

This study followed standard ethical guidelines for ethnobiological research. All participants provided oral

informed consent after receiving clear explanations of the study objectives, methods, and intended use of the data. Confidentiality and cultural sensitivity were maintained throughout the research process. Data validation was achieved through triangulation of interviews, observations, and group discussions, reducing potential bias and enhancing reliability.

Analytical framework

A qualitative ethnobiological framework was applied to integrate ecological, morphological, and cultural dimensions of species use. Field observations and informant narratives were used to contextualize species functions within Bajo traditional ecological knowledge. Morphological characteristics—such as plant parts or shell features—were recorded primarily to support species identification. Comparative analysis was employed to explore relationships between species use, ecological adaptation, and cultural significance, complementing the quantitative indices applied in the data analysis.

RESULTS AND DISCUSSION

Socio-demographic profile of informants

A total of 54 informants participated in the study across the three Bajo villages of Torosiaje, Torosiaje Jaya, and Bumi Bahari (Table 1). The sample consisted of 37 men and 17 women, with informants ranging in age from 35 to over 75 years. Most participants fell within the 45-74 years range group, reflecting the involvement of senior community members in ethnobiological knowledge. Educational attainment among informants was generally low. Most respondents had completed elementary school, while fewer had attained junior or senior high school education, and only one informant reported higher education. One participant reported having no formal education. Occupational roles were dominated by fishers, followed by housewives, community leaders, and traditional healers. A small number of informants were engaged in other occupations, including teaching and traditional birth attendance. Overall, the socio-demographic profile reflects a community largely dependent on marine-based livelihoods and characterized by limited formal education, which is typical of small-scale coastal and seafaring societies.

Diversity of documented plant and animal species

The ethnobiological survey documented a total of 25 species used by the Bajo communities, comprising 11 plant species and 14 animal species (Figure 2). The recorded

plant taxa were primarily associated with coastal or near-shore environments and included *Tacca leontopetaloides*, *Sesuvium portulacastrum*, *Caulerpa lentillifera*, *Borassus flabellifer*, and *Sonneratia caseolaris*. The documented animal species consisted predominantly of marine taxa. Frequently reported invertebrates included *Holothuria scabra*, *Stichopus* sp., *Tridacna* sp., and *Temnopleurus alexandrii*. Vertebrate taxa reported by informants included *Chelonia mydas* and *Elasmobranchii* sp.

Species with high local salience

Quantitative analysis based on ethnobiological indices identified *T. leontopetaloides* and *Tridacna* sp. as the species with the highest local salience among informants (Figure 3). *T. leontopetaloides* recorded the highest Relative Frequency of Citation (RFC = 0.78) and Use Value (UV = 0.82), followed by *Tridacna* sp. (RFC = 0.62; UV = 0.70). Other frequently cited species included *H. scabra*, *C. lentillifera*, *S. portulacastrum*, and *Elasmobranchii* sp. These species exhibited moderate RFC and UV values relative to the two highest-ranked taxa. A summary of RFC and UV values for the six most frequently cited species is presented in Table 2.

Table 1. Socio-demographic characteristics of Bajo informants across the three study villages

Category	Torosiaje	Torosiaje Jaya	Bumi Bahari	Total
Gender				
Male	16	13	8	37
Female	8	5	4	17
Age (years)				
35-44	3	1	1	5
45-54	5	2	3	10
55-64	7	3	5	15
65-74	6	2	5	13
≥75	3	1	2	6
Education				
No formal education	1	0	0	1
Elementary school	12	10	16	38
Junior high school	2	1	1	4
Senior high school	2	0	1	3
Higher education	0	0	1	1
Occupation				
Fisherman	11	9	5	25
Housewife	6	1	2	9
Traditional healer	0	2	2	4
Traditional leader	1	1	3	5
Teacher	1	0	0	1
Traditional birth attendant	0	0	1	1

Table 2. Relative Frequency of Citation (RFC) and Use Value (UV) of selected plant and animal species

Species name	Local name	Type	RFC	UV	Reported use categories*
<i>Tacca leontopetaloides</i> (L.) Kuntze	<i>Ubi teo</i>	Plant	0.78	0.82	Food, medicine
<i>Sesuvium portulacastrum</i> (L.) L.	<i>Gaganga</i>	Plant	0.54	0.60	Food, medicine, ritual
<i>Caulerpa lentillifera</i> J.Ag.	<i>Lato</i>	Marine alga	0.46	0.53	Food
<i>Tridacna</i> sp.	<i>Kima</i>	Marine animal	0.62	0.70	Food, medicine
<i>Holothuria scabra</i> Jaeger, 1833	<i>Tripang putih</i>	Marine animal	0.50	0.58	Food, medicine
<i>Elasmobranchii</i> sp.	<i>Ikan pari</i>	Marine animal	0.42	0.49	Food, ritual

Utilization of documented species

The documented species were classified into three categories of use: food, medicine, and ritual practices (Figure 4). Several taxa were reported as food resources, including *T. leontopetaloides* as a carbohydrate source that was typically consumed after fermentation, as well as marine species such as *C. mydas*, *T. alexandrii*, and *Tridacna* sp., which were prepared using locally practiced cooking methods. Medicinal uses were also reported for selected species. For example, *Stichopus* sp. was consumed either fresh or prepared as a tonic (Jayathilake and Jayewardena 2021). In addition, *S. caseolaris* was associated with ritual-related uses. Overall, the reported uses reflect the multifunctional roles of plant and animal taxa within the Bajo subsistence system (Figure 4).

Preparation and consumption methods

Preparation and consumption methods varied across the documented species (Figure 5). *T. leontopetaloides* was processed through fermentation and subsequently prepared into flour. *B. flabellifer* was commonly prepared by boiling prior to consumption. Some marine species, including *Tridacna* sp., were also consumed raw. Comparable preparation practices have been reported in coastal communities in Southeast Asia (Ebrahimi et al. 2023; Senadheera et al. 2023).

Community understanding of functional foods

Eighteen informants addressed the concept of functional foods during interviews. Among them, three informants reported understanding the scientific meaning of the term, four indicated partial awareness, and eleven stated no familiarity with the concept (Figure 6). Despite the limited explicit recognition of the term “functional food,” informants associated several species-including sea cucumbers (*H. scabra*, *Stichopus* sp.), giant clams (*Tridacna* sp.), and *T. leontopetaloides* with perceived health-related uses based on local experience and cultural practices. These responses indicate that, although the terminology is not widely used, the relationship between food and health is implicitly understood within the community.

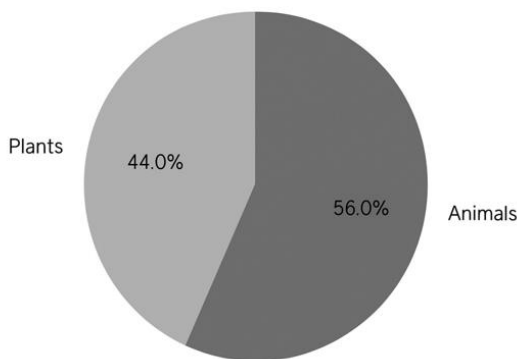


Figure 2. Identified plant and animal species with local uses among the Bajo communities

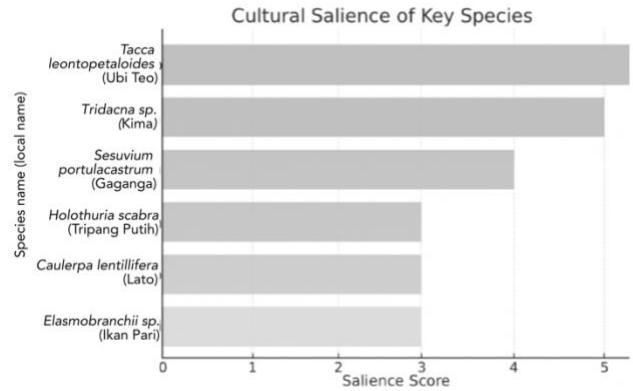


Figure 3. Species with the highest levels of recognition and use among Bajo informants based on ethnobiological indices

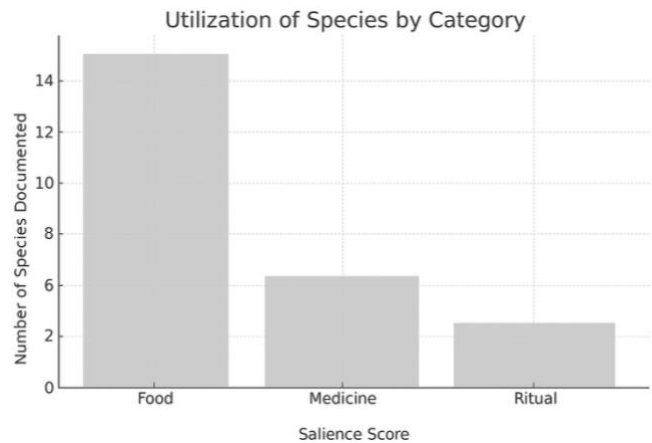


Figure 4. Categories of use (food, medicine, and ritual) reported for the documented plant and animal species by Bajo informants

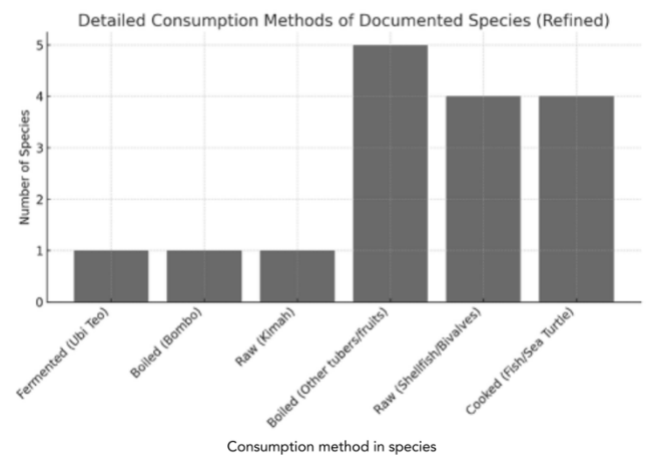


Figure 5. Preparation and consumption methods reported for documented plant and animal species

Morphological identification of plants and animals used as functional foods

A total of ten plant species and three marine animal species categorized as functional foods were identified based on observable morphological characteristics (Tables 3-4). For plant species, key morphological features-including growth form, leaves, stems, flowers, fruits, and roots-were documented to support accurate species identification. For marine animal species, external characteristics such as shell shape, size, and surface structures were recorded.

These morphological records were used to confirm the taxonomic identification of species reported by informants and to ensure consistency between local names and scientific classification. The Bajo community commonly utilized three marine animal species as sources of functional food, each possessing distinct morphological and ecological characteristics associated with coral reef and shallow-water habitats (Table 4). Detailed morphological descriptions of plant and animal species are provided in Tables 3-4.

Discussion

The findings highlight the persistence of traditional ecological knowledge (TEK) and its role in shaping dietary, medicinal, and ritual practices among the Bajo communities in Gorontalo. The consistently high RFC and UV values for *T. leontopetaloides* (*ubi teo*) and *Tridacna* sp. (*kima*) indicate that these taxa occupy central positions within the Bajo food system, reflecting how biodiversity supports subsistence needs while remaining embedded in culturally meaningful practices.

The prominence of *T. leontopetaloides* is comparable to the role of root crops such as *Ipomoea batatas* and

Colocasia esculenta in Pacific Island communities, where staple plant foods also carry cultural significance (Quimby et al. 2023). The documented fermentation of *T. leontopetaloides* into flour can be interpreted as an adaptive food-processing strategy that supports storage, palatability, and food utilization, consistent with patterns described in ethnobiological studies (Sun et al. 2020; Ebrahimi et al. 2023). Similarly, the consumption of *Tridacna* sp. in minimally processed forms reflects locally embedded practices associated with food use and perceived vitality, which are not necessarily articulated through formal biomedical terminology.

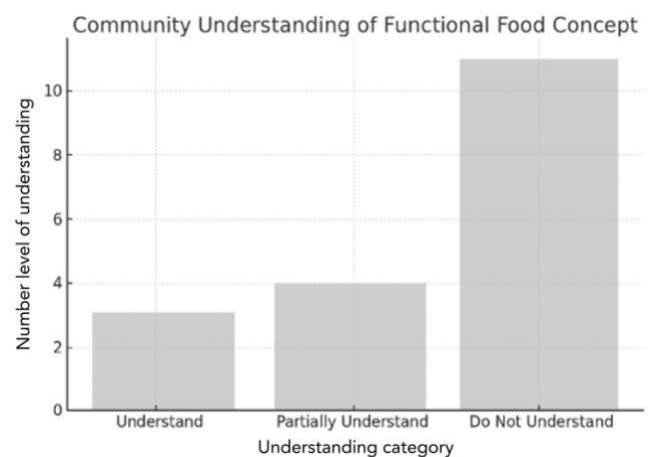





Figure 6. Levels of community familiarity with the concept of functional foods among Bajo informants

Table 3. Morphological characteristics of plant species categorized as functional foods reported by Bajo informants in Gorontalo, Indonesia

Species	Family	Growth form	Habitat	Key morphological traits
<i>Tacca leontopetaloides</i> (L.) Kuntze	Dioscoreaceae	Herbaceous (tuberous)	Sandy coastal soils	Palmate leaves, yellow-green flowers, flattened tuber
<i>Guilandina bonduc</i> L.	Fabaceae	Liana (spiny climber)	Dry sandy areas	Spiny stem, compound leaves, spiny fruit
<i>Pemphis acidula</i> J.R.Forst. & G.Forst.	Lythraceae	Shrub	Coastal sand dunes	Woody stem, rosette flowers, deep taproot
<i>Colubrina asiatica</i> (L.) Brongn.	Rhamnaceae	Shrub	Arid beach zones	Serrated leaves, axillary inflorescences, woody branches
<i>Sesuvium portulacastrum</i> (L.) L.	Aizoaceae	Succulent herb	Sandy seashores	Fleshy leaves, creeping stem, solitary flowers
<i>Scaevola sericea</i> Vahl	Goodeniaceae	Shrub	Coastal zones	Oval leaves, axillary inflorescences, woody base
<i>Cryptocarya triplinervis</i> R.Br.	Lauraceae	Tree	Coastal forest	Lanceolate leaves, clustered flowers, aromatic bark
<i>Canavalia rosea</i> (Sw.) DC.	Fabaceae	Liana	Beach areas	Trumpet-shaped purple flowers, pod fruits
<i>Ipomoea pes-caprae</i> (L.) R.Br.	Convolvulaceae	Creeping vine	Sandy beaches	Corolliform purple flowers, extensive fibrous roots
<i>Sonneratia caseolaris</i> (L.) Engl.	Lythraceae	Tree	Mangrove ecosystem	Opposite oval leaves, solitary pinkish flowers

Table 4. Morphological identification of animals functional foods

Species	Morphological characteristics	Figure
<i>Vasum turbinellus</i> (Linnaeus, 1758)	Vase-shaped shell with blunt spines, brownish-black spots, 2-3 cm in length	
<i>Lambis scorpius</i> (Linnaeus, 1758)	Large, heavy shell (95-220 mm), white exterior with yellow or orange markings	
<i>Hippopus hippopus</i> (Linnaeus, 1758)	Greenish-yellow ridged shell (22-45 cm), interlocking vertical ribs	

The inclusion of marine invertebrates such as sea cucumbers (*H. scabra*, *Stichopus* sp.) aligns with patterns reported across Asia-Pacific coastal societies, where these taxa are used as both food and medicine (Jayathilake and Jayawardena 2021). While previous studies have discussed bioactive compounds in sea cucumbers and bivalves that may relate to health-associated properties (Hossain et al. 2020; Moruf et al. 2021; Anh et al. 2023; Sarwat 2023), the present study uses such literature primarily to contextualize reported local perceptions and practices rather than to imply direct biochemical validation.

High levels of agreement in ethnobiological indices (including ICF, RFC, and UV) suggest a cohesive local knowledge system in which certain species are consistently prioritized and widely recognized. The shared recognition of *T. leontopetaloides*, *Tridacna* sp., and *H. scabra* indicates structured knowledge transmission and the presence of culturally salient taxa that function as keystone resources within everyday subsistence practices. Comparable patterns have been reported in ethnobiological studies where widely shared knowledge supports food security and community well-being (Renck et al. 2022).

The ecological setting of the Bajo settlements—characterized by interconnected mangrove, seagrass, and reef ecosystems—directly shapes the availability of the documented plant and animal taxa. Coastal-adapted plants and shallow-water marine organisms form a locally accessible resource base, reinforcing close feedbacks between ecological conditions, harvesting practices, and culturally embedded food use. This linkage emphasizes that maintaining biodiversity-rich coastal ecosystems can support both subsistence strategies and the continuity of TEK in daily life (Gbayisemore et al. 2022).

Despite the persistence of ethnobiological knowledge among older informants, younger community members showed more limited familiarity with species uses and with the term “functional food.” This generational pattern mirrors broader trends in Southeast Asia, where modernization and livelihood transitions reduce opportunities for intergenerational learning and everyday engagement with local biodiversity (McEachern et al. 2022; Lopes et al. 2024). Over time, such shifts may weaken biodiversity-based food practices and locally grounded resource management, with potential implications for cultural continuity and community resilience (Jarzebski et al. 2023).

Overall, the Bajo ethnobiological system illustrates how TEK mediates relationships between biodiversity, food use, and cultural continuity. By documenting culturally salient taxa and associated practices, this study contributes to ethnobiological evidence showing that locally grounded knowledge systems remain critical for understanding sustainable food use and supporting culturally informed conservation approaches in coastal environments.

This study represents an initial ethnobiological documentation of plant- and animal-based food practices among the Bajo communities in Gorontalo, and several limitations should be acknowledged. Data collection relied primarily on informant-based qualitative methods conducted within a limited time frame, which may not capture seasonal variations in species availability or patterns of use. In addition, the absence of quantitative nutritional and biochemical analyses restricts the ability to directly assess the functional properties of the documented species beyond locally reported uses. The study was conducted in three Bajo villages, and the findings may therefore not represent the full diversity of ethnobiological knowledge across Bajo communities in other regions of Indonesia. These limitations highlight the need for broader spatial coverage and complementary methodological approaches in future research.

In conclusion, this study documented the ethnobiological knowledge of the Bajo communities in Gorontalo Province, Indonesia, with the objective of documenting plant- and animal-based foods associated with perceived health-related functions and cultural practices. The results demonstrate that Bajo food systems are strongly shaped by local biodiversity and traditional ecological knowledge. A total of 25 species were documented, comprising 11 plant species and 14 animal species, used across food, medicinal, and ritual categories. Quantitative ethnobiological indices identified *T. leontopetaloides* (*ubi teo*) as the most culturally salient species, with the highest Relative Frequency of Citation (RFC = 0.78) and Use Value (UV = 0.82), followed by *Tridacna* sp. (Kima) (RFC = 0.62; UV = 0.70). Other frequently cited species included *S. portulacastrum*, *H. scabra*, and *C. lentillifera*, reflecting the central role of coastal and marine ecosystems in Bajo subsistence strategies. Although only 3 of 54 informants explicitly recognized the scientific concept of “functional food,” local practices indicate an implicit understanding of the relationship between food consumption and health. The findings highlight the close relationship between local biodiversity and traditional ecological knowledge, where

culturally salient species play an important role in subsistence practices and food-related traditions. Variations in knowledge across generations suggest challenges in the continuity of ethnobiological knowledge, underscoring the importance of documenting and maintaining traditional practices as part of sustainable, community-based food systems in coastal environments.

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