Egyptian Journal of Aquatic Biology & Fisheries
Zoology Department, Faculty of Science,
Ain Shams University, Cairo, Egypt.
ISSN 1110 – 6131
Vol. 29(5): 639 – 651 (2025)
www.ejabf.journals.ekb.eg

The Tradition of Falo Laor (Sea Worm) as a Seasonal Local Food Products in the Waters of Morotai Island

Nurafni*, Kismanto Koroy, Sandra Hi Muhammad, Gigih M. Nugroho, Safira M. Kasim and Faradila M. Djen

Departemen of Marine Science, Faculty of Fisheries and Marine Science, Pacific University Morotai, North Maluku Province, Indonesia

***Corresponding Author: nurafniarif@gmail.com**

ARTICLE INFO

Article History:
Received: June 3, 2025
Accepted: Aug. 28, 2025
Online: Sep. 13, 2025

Keywords:
Sea worm,
Tradition,
Falo laor,
Processing laor,
Morotai

ABSTRACT

The emergence of *laor* (sea worms) represents an important seasonal event for the local community in Morotai, serving not only as a source of food but also as a cultural practice and tourist attraction. In addition to their distinctive taste, *laor* carry symbolic and social value, embodied in the traditional activity known as *falo laor*—the community practice of catching sea worms in the intertidal zone. This study aimed to examine the *falo laor* tradition in the Morotai community and to document the various methods of processing sea worms. The research was conducted in Morotai Island Regency, with sampling points across six sub-districts: South Morotai, South West Morotai, East Morotai, North Morotai, Morotai Jaya, and Rao Island. The *laor* worms, regarded as a vital source of sustenance, exhibit a distinctive emergence pattern three times annually—in April, May, and June. In April, their appearance is referred to locally as *masango*. In May, they emerge on the fifth to sixth day after the full moon, known as *mangopa*. In June, they reappear on the sixth to seventh day after the full moon, referred to as *ma'awa*. Collection of *laor* is preceded by ritual practices performed the day or night before emergence. Community members wear traditional attire, clean or new clothes, and the event is accompanied by traditional musical instruments such as gongs and *tifa*. The worms are processed into a variety of dishes, including *tari* (smoked), fried with spices, *tiba* (grilled in bamboo), chili sauce, and *bakasang* (fermented fish paste).

INTRODUCTION

Morotai Island is the northernmost region in Eastern Indonesia and is part of North Maluku Province, covering an area of 2,314.90 km² **(BPS, 2017)**. The island is included in the National Strategic Tourism Area (KSPN), the Special Economic Zone (KEK), and the Morotai Integrated Marine and Fisheries Center (SKPT). Morotai is also known for its significant World War II historical sites, abundant natural and cultural

resources, and diverse marine tourism potential, both coastal and underwater **(Mouw *et al.*, 2022)**.

Cultural heritage on Morotai Island has been passed down through generations, functioning both as philosophy and education for the community. Morotai's culture reflects the customs and traditions of its people, evident in daily social life through celebrations, traditional kingdoms, art, clothing, cuisine, and local wisdom tied to natural resources **(Salim, 2016; Zanol *et al.*, 2021)**. Among these traditions, the emergence of sea worms (*laor*) represents a unique cultural and ecological event, linking community practices with the surrounding environment **(Schulze & Tim, 2011; Kelso *et al.*, 2023)**.

One such tradition is *falo laor*, which refers to the communal practice of catching sea worms. Comparable practices exist elsewhere in Indonesia, such as *bau nyale* in Lombok **(Fazalani, 2018)**. The worms themselves are known by different names across the archipelago: *laor* or *wawo* (Maluku), *oele/uli* (Banda), *melaten* (Hitu and Saparua), *nyale* (NTB), and *ule nale* (NTT). The appearance of *laor* is eagerly anticipated as a seasonal food source, valued both for its taste and its cultural and touristic significance. In Maluku, *laor* typically emerge in March or April on the night of the full moon or several days after **(Megumi, 2020)**, while in Sikka, NTT, they appear in March or April after 19:00 h **(Fajar, 2020)**. By contrast, in Morotai, *laor* surface two to three times per year between April and June, usually after the full moon, with emergence occurring around 05:00 h until sunrise.

The term *falo laor* derives from "falo," meaning "to catch/take." In Morotai, the practice involves collective gathering of sea worms from the intertidal zone. While the tradition shares similarities with those in NTB, NTT, and Maluku, variations exist in timing, rituals, fishing gear, processing methods, and terminology. In Morotai, community rituals associated with *falo laor* were once integral to cultural life but are now rarely practiced.

Biological research confirms that *laor* on Morotai belong to *Eunice viridis*, with documented populations in three sub-districts **(Koroy *et al.*, 2020)**. They are known to contain bioactive compounds with antioxidant potential **(Alican, 2024)**. Other studies have examined the amino acid, fatty acid, and mineral content of marine worms across Indonesia **(Nurhikma *et al.*, 2017; Ndahawali & Marabi, 2023; Windarto *et al.*, 2023)**. In Ambon Island waters, *laor* live under conditions of 32‰ salinity, pH 8–10, and DO 5.9, with protein levels of 13.92% and essential amino acids that make them both nutritious and healthy **(Latumahina, 2011; Latumahina & Mailoa, 2016; Siahaya & Rehena, 2022; Vertygo *et al.*, 2022)**.

Traditionally, *laor* are processed into a variety of dishes, including smoked (*tari*), fried with spices, grilled in bamboo (*tiba*), chili sauce, and *bakasang* (fermented fish paste). Beyond culinary uses, *laor* are valued for their nutritional content and potential bioactive properties.

This study was conducted in recognition of the fact that while *laor* continue to be consumed as a seasonal delicacy, the *falo laor* tradition is no longer widely practiced. Historically passed down from generation to generation, the tradition was once tied to the lunar cycle, as communities anticipated the worms' emergence. Revitalizing *falo laor* through community celebrations could serve as a powerful form of cultural preservation, ensuring that younger generations understand and appreciate its ecological, nutritional, and cultural significance.

MATERIALS AND METHODS

This study employed a qualitative approach conducted directly in the field. The research focused on the *falo laor* tradition across six sub-districts in the waters of Morotai Island. Data collection was carried out in June 2025 through interviews with key informants, supported by direct observations and focus group discussions (FGDs).

A. Research location

The study was conducted in Morotai Island Regency, with sampling points in six sub-districts: South Morotai, South West Morotai, East Morotai, North Morotai, Morotai Jaya, and Rao Island. The distribution of research locations is shown in the map below.

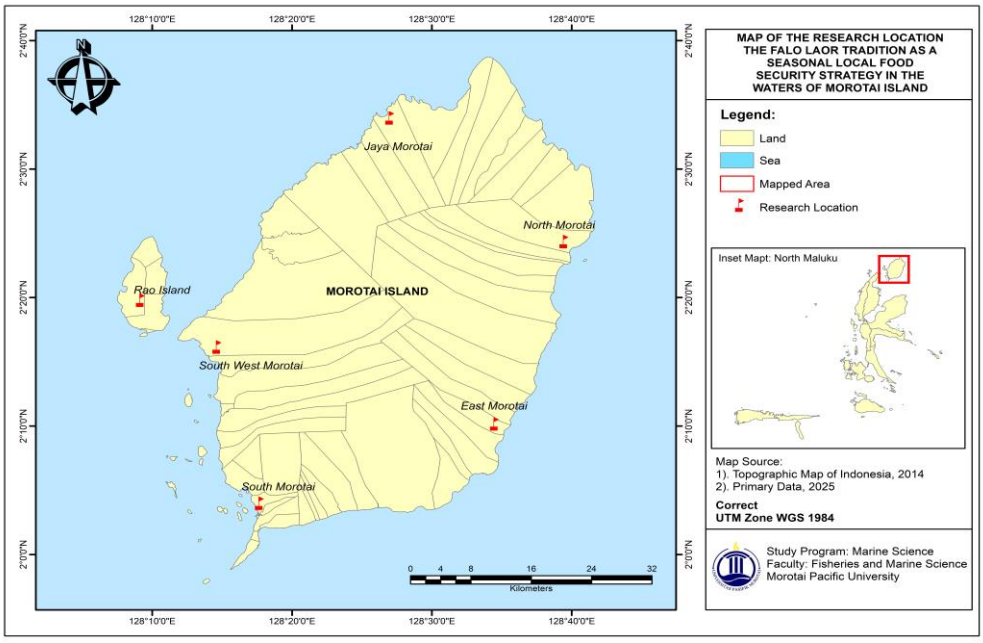

Fig. 1. Research location

B. Research procedure

Data on the *falo laor* tradition were collected from members of the local community, specifically native speakers of the Morotai language. The primary sampling technique applied was random sampling (probability sampling), in which each individual in the population had an equal chance of being selected. In addition, purposive sampling was employed when it was necessary to include participants who could provide information particularly relevant to the research objectives.

Data were gathered through interviews, direct observations, questionnaires, documentation, and focus group discussions (FGDs). Interviews were conducted to capture community perspectives and to interpret social phenomena that could not be observed directly in the field. Respondents were asked about the *falo laor* tradition, including seasonal determination of *laor* emergence, methods of catching worms, fishing gear used, and processing techniques for *laor* as a seasonal local food product. The combination of interviews and documentation was designed to ensure the validity and reliability of the data.

C. Data analysis

Analysis of the *falo laor* tradition followed a qualitative descriptive approach. The process was structured into five stages: data reduction, data presentation, understanding, interpretation, and conclusion drawing **(Kaelan, 2012)**. Descriptive analysis was employed not only to outline empirical facts but also to provide explanation and contextual understanding of the cultural meanings embedded in the tradition.

RESULTS

A. *Falo laor* tradition

The *falo laor* tradition on Morotai Island is a long-standing cultural heritage and an integral part of coastal community life. *Falo laor* refers to the seasonal practice of catching sea worms (*laor*) during the full moon, when water conditions are favorable for swarming. According to **Supriyadi *et al.* (2021)**, traditions function not only as a source of food but also as a means of strengthening social ties within communities. Similarly, **Fitriyani and Ribawati (2025)** emphasize that traditions serve as forums for fostering friendship and reinforcing kinship bonds. In this sense, the *falo laor* tradition invites all Morotai residents to recall and honor the legacy of their ancestors and leaders who contributed to maintaining this practice.

Laor worms, regarded as both a seasonal food source and livelihood for the Morotai people, display a distinctive emergence pattern three times a year—in April, May, and June. In April, they typically emerge four to five days after the full moon, a period known locally as *masango*. Field interviews revealed that *laor* worms appearing in April are generally larger than those in subsequent months. In May, emergence occurs five to six

days after the full moon and is locally termed *mangopa*. Worm sizes at this stage vary from small to large, influenced by environmental factors such as water temperature and food availability. According to **Sari and Wibowo (2021)**, this variation is closely linked to the lunar cycle and climate change, both of which affect the worms' habitat conditions.

In June, *laor* emerge on the sixth to seventh day after the full moon, locally referred to as *ma'awa*. At this time, the worms are observed to be smaller and smoother in texture, with catch volumes generally lower compared to April and May. This pattern indicates that the life cycle of *laor* worms is tied to lunar phases and specific environmental conditions.

In addition to relying on the moon's age, the community also uses traditional ecological knowledge to anticipate *laor* emergence. This involves tapping on dead coral reefs that serve as the worms' habitat. If the worms emerge intermittently and quickly sink, it is taken as a sign that only a few have appeared. Conversely, if the worms rise and float to the sea's surface, it signals that a large emergence is imminent

Fig. 2. Laor worm catching activity
Source: **Research documentation (2025)**

The emergence of *laor* worms in Morotai waters varies by location. On Rao Island, the worms typically appear in the evening between 17:00–18:00 WIT, while in South Morotai, South West Morotai, North Morotai, and Morotai Jaya, they emerge in the early morning between 05:00–06:30 WIT. This pattern differs from other regions. In Maluku, *laor* worms usually surface in the early morning before sunrise, whereas in West Nusa Tenggara (NTB), *nyale* appear from dawn until sunrise during the *bau nyale* festival. The *bau nyale* tradition distinguishes between "jelo pemboyak" (trial day) and "jelo penumpah" (closing day), each falling on the 19th and 20th of February or March **(Purna, 2018; Ilhami *et al.*, 2025)**. In Central Halmahera (Patani waters), *laor* emerge in

April or May during the full moon high tide between 05:15–07:00 WIT **(Kamal & Cholsy, 2021)**, while in Tobelo, North Halmahera, emergence usually occurs in May or June, with worms caught using traditional nets **(Wairata *et al.*, 2020)**.

The worms appear in shades of green, brown, orange, and red, though green and brown dominate. Their slippery and fragile texture requires careful handling. As they generally emerge in coral reef areas, residents from non-coastal villages often travel in advance to neighboring villages to harvest them. Communities usually arrive at dawn, as early arrivals allow for larger catches. Historically, people built small temporary shelters (*para-para*) near the coast to smoke worms for preservation, an activity that fostered strong social solidarity. Interviews revealed that 97% of respondents believed the *falo laor* tradition strengthens communal ties. This finding aligns with **Ilhami *et al.* (2025)**, who noted similar solidarity in the *bau nyale* tradition, where communities cooperate in preparing campsites and harvesting worms.

Rituals also precede the *laor* harvest. On the day or night before emergence, villagers don traditional attire or clean clothing, accompanied by gongs and *tifa* drums. Traditional dances—such as *cakalele, tide-tide,* and *tokuela*—are performed alongside other artistic expressions. Reciprocal poetry (*pantun*) exchanges between elders, leaders, and youth add to the celebration, using polite and entertaining language. In earlier times, women who were menstruating were prohibited from participating, though this restriction is no longer observed. Some elders interviewed suggested that declining *laor* catches today may reflect a weakening of traditional observances.

For the Morotai community, rituals are not merely cultural performances but expressions of belief that *laor* symbolizes fortune and fertility. Despite the laor season (April–June) coinciding with heavy rains and storms, locals interpret the worms' presence as a sign of blessing. **Sari and Wibowo (2021)** argue that this belief reflects a form of local wisdom linking ecological events with human well-being. Similarly, in Patani, Central Halmahera, preparations to welcome *laor* (locally called *mimnyem*) also involve communal music and dance, using the *tifa* and gong as signals of the worms' arrival **(Kamal & Cholsy, 2021)**.

This body of knowledge, passed down through generations, forms part of Morotai's cultural identity. Communities use a traditional calendar, alongside ecological cues such as tapping on coral reefs, to predict *laor* emergence. If worms appear briefly and sink, it signals a poor harvest; if they rise and float, it indicates an abundant harvest is imminent. This indigenous ecological knowledge highlights how the community links sustainability of natural resources with cultural practice.

In practice, *falo laor* is carried out collectively, often accompanied by prayers for safety and success. Beyond its cultural role, *laor* fishing contributes significantly to household income and food security. During the season, worm harvests are processed into distinctive dishes such as *sambal laor*, smoked *laor*, spiced *laor*, *laor* grilled in bamboo, and *laor* served in ceremonial contexts. However, generational shifts threaten

the continuity of these practices. Community-government collaboration is therefore critical to safeguarding *falo laor* as part of Morotai's living cultural heritage.

B. Types of *Falo laor* fishing gear

Fishing gear used in the *falo laor* tradition is diverse and adapted to local conditions. On Morotai Island, common tools include *siu-siu*, *laba*, *sapu lidi* (coconut leaf ribs), nets, scoops, and other implements designed specifically for catching worms. According to **Nurlela *et al.* (2025)**, these traditional gears are effective and environmentally friendly, minimizing harm to marine ecosystems. In NTB, people catch *nyale* using scoops and cloth, while in Maluku, *laor* worms are harvested using *kareng-kareng*, a triangular frame made of bamboo and wood, covered with fine cloth, with a wide opening to capture worms **(Latumahina, 2011)**.

Among Morotai's tools, the *siu-siu* is one of the most commonly used. Constructed from fine netting, it is swept across the water surface to collect worms. This method reduces habitat disturbance compared to modern, more invasive fishing technologies, making it vital for sustaining sea worm populations and ensuring ecological balance.

Description: a,b: Siu-siu; c. Siu-siu and Laba

Fig. 3. Types of fishing gear for laor worms (Siu-Siu and Laba)

Source: **Research documentation (2025)**

In addition to *siu-siu*, some communities also employ traditional fishing gear made from recycled clothing with a fine mesh, commonly referred to as *laba*. The use of environmentally friendly fishing gear such as *siu-siu* and *laba* not only reflects cultural continuity but also raises community awareness of the importance of preserving marine ecosystems. In Patani, Central Halmahera, *laor* worms are harvested using a tool called *sib-sib*, made from a long piece of cloth tied at one end to form a cone, attached to a rattan rope shaped into a circle. The Patani community also uses *pajeko*, consisting of two bamboo poles (1–3 m), two cork floats to prevent sinking, and a strand of *keramba* net (woven from tree fronds) measuring 2–3 m **(Kamal & Cholsy, 2021)**.

C. Processing of sea worms

For local communities, *laor* worms can be consumed directly (fresh) or after processing. Based on interviews, they are widely regarded as substitutes for fish, eggs, chicken, or meat in local diets. Processing is crucial not only for taste but also for ensuring food quality and safety. Typically, housewives hold specialized knowledge and skills for preparing *laor* into various food products. In West Nusa Tenggara (NTB), *nyale* (sea worms) are prepared into traditional foods ranging from soups to fried dishes, consumed during the *nyale* season **(Harja *et al.*, 2022)**.

Processing begins with cleaning, where freshly caught worms are rinsed thoroughly to remove sand and other debris. Once cleaned, they may be cooked or preserved in several ways. Common preparations include frying with spices, grilling in bamboo (*tiba*), smoking (*tari*), or flaking (*garampati*). Worms are also used as the base ingredient for chili sauce or fermented into *bakasang*.

The preparation of *bakasang* typically involves two stages:

1. **Basic bakasang** — worms are placed in plastic bags and dried over a traditional stove.
2. **Dry bakasang** — worms are dried using leaves as the preservation medium.

These methods ensure the preservation of *laor* as a seasonal food resource while also contributing to culinary diversity and cultural identity.

Description: (a) Bakasang; (b). Processed Tiba; (c). Tari Process; (d). Processed fried spices; (e). Raw laor

Fig. 4. Types of worm processing

Source: **Research documentation (2025)**

One of the most popular processing methods is *bakasang*, which extends the product's shelf life up to a year and makes it easy to transport. Historically, *bakasang laor* served as a vital food source for people during extended stays in their gardens. The smoking process, which uses firewood, improves both efficiency and product quality. In Ambon, *laor* worms are commonly processed into *lawar* and *bakasang*. Two types of *bakasang* processing are practiced: cooking over a stove or drying under solar heat **(Latumahina, 2011; Mahulette, 2020)**.

Research has highlighted the nutritional benefits of *laor* and related species. **Fitriani (2023)** reported that drying increases the nutritional content of *nyale* worms, particularly protein and omega-3 fatty acids, both highly beneficial for health. A study on *nyale* worms in Central Lombok confirmed their role as a valuable protein source **(Suhardatan, 2020)**. Similar results were observed in Maluku, where *laor* worms also demonstrated potential as a protein-rich food **(Liline & Corebima, 2017)**. Beyond nutrition, **Nurfahmiatunnisa *et al.* (2019)** found that *nyale* worm extract exhibited antidiabetic properties, effectively lowering blood sugar levels. In addition, **Zhang *et al.* (2022)** reported strong antioxidant activity, indicating promising applications in both food and medical fields.

The processing of *laor* also creates opportunities for developing micro, small, and medium enterprises (MSMEs) on Morotai Island during the *laor* season. This seasonal activity contributes to household income and enhances women's empowerment in the community. **Amelia and Prasetyo (2022)** observed that successful *laor*-based enterprises can strengthen local food security and reduce poverty. However, attention to food safety remains critical. The adoption of good processing standards and the involvement of relevant authorities in quality monitoring are essential to ensure consumer safety and to support the long-term sustainability of *laor*-based enterprises.

CONCLUSION

Laor worms (sea worms), an important source of livelihood for the Morotai people, have a distinctive annual emergence pattern, occurring three times a year in April, May, and June. In April, their appearance is locally referred to as *masango*; in May, the emergence is known as *mangopa*; and in June, it is called *ma'awa*.

The collection of *laor* worms is traditionally preceded by rituals performed the day or night before their emergence. Community members wear traditional attire or clean new clothes, accompanied by the sounds of gongs and *tifa* drums. These cultural practices highlight the deep connection between the community and the seasonal cycle of *laor*.

Once harvested, *laor* worms are processed into a variety of foods. Common preparations include frying with bamboo, grilling in bamboo (*tiba*), or smoking (*tari*). They are also used as raw ingredients for chili sauce and fermented into *bakasang*, a traditional preserved product.

ACKNOWLEDGMENTS

The author wishes to express sincere gratitude to all parties who contributed to the successful implementation of this research, including:

1. The Directorate of Research, Technology, and Community Service (DRTPM), Directorate General of Higher Education, Research, and Technology, for funding through the 2025 Regular Fundamental Research program;
2. The Institute for Research and Community Service (LPPM), Universitas Pasifik Morotai, for institutional support; and
3. The research team, for their dedication and assistance in field data collection.

REFERENCES

Alican, I. (2024). *Environmental Chemistry Physics of Laor Worms in Morotai Island Waters and Their Potential as Antioxidants* [Master's Thesis]. Marine Science Study Program, Khairun University. Ternate.

Amelia, V. and Prasetyo, D. (2022). Community-Based Tourism Village Management as Food Security Strengthening. *JSEH (Jurnal Sosial Ekonomi dan Humaniora)*, 8(4): 550-556.

Badan Pusat Statistik Kabupaten Pulau Morotai. (2017). *Morotai Island Regency in Figures*. BPS Kabupaten Pulau Morotai.

Fajar, J. (2020). The Festivity of the Annual Tradition of Hunting Sea Worms in Sikka. [Internet]. [Accessed 18/01/2025]. https://www.mongabay.co.id/2020/07/12/meriahnya-tradisi-tahunan-berburu-cacing-laut-di-sikka/.

Fazalani, R. (2018). The Bau Nyale Tradition on Multicultural Values of the Sasak People. *FON; Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 13(2): 1-10.

Fitriyani and Ribawati, E. (2025). Preservation of the Bau Nyale Tradition as a Form of Local Wisdom and Cultural Identity of the Sasak People. *Triwikrama: Jurnal Multidisiplin Ilmu Sosial*, 9(6): 1-8.

Harja, O.; Nirmalasari and Wathoni, H. (2022). Nyale (Sea Worm) as a Traditional Food Preserving Culture in West Nusa Tenggara. *Jurnal Ilmiah Hospitality*, 11(2): 1-6.

Ilhami, H.; Thohir, A. and Supendi, U. (2025). Oral Tradition and Patterns of Inheritance of Local Wisdom Values in the Bau Nyale Tradition of the Sasak People, West Nusa Tenggara. *Jurnal Bahasa*, 14: 15-27.

Kaelan, I. (2012). *Interdisciplinary Qualitative Research Methods: Social, Cultural, Philosophical, Artistic, Religious and Humanities Fields*. Yogyakarta: Paradigma.

Kamal, A.S. and Cholsy, H. (2021). Lexicon in the Sib Mimnyen (Sea Worm/Nyale) Tradition in Central Halmahera Regency. *Deskripsi Bahasa*, 4(1): 1-12.

Kelso, N.; Plunkett, G.M.; Dovo, P.; Ramík, D.M.; Vusqal, C.B.P.; Harrison, K.D. and Balick, M.J. (2023). The Palolo Worm as a Cornerstone of Pacific Ecological Time-Reckoning. *Ethnobiology Letters*, 14(1): 24–35.

Koroy, K.; Nur, R.M.; Nurafni and Alican, I. (2020). Characterization of morphology and identification of bioactive compounds of laor (*Eunice viridis*) from the waters of Morotai Island. *IOP Conference Series: Earth and Environmental Science*, 584: 012055.

Latumahina, M.C.H.A. (2011). Processing and Nutritional Composition of Polychaete Worms in Ambon Island. [Seminar Proceedings]: Development of Small Islands. Bogor (ID) Bogor Agricultural Institute.

Latumahina, M.C.H.A. and Mailoa, M.N. (2016). Iodine content and nutrition worms Polychaeta "laor" fresh and processed products. *International Journal of ChemTech Research*, 9(1): 147-150.

Liline, S. and Corebima, A.D. (2017). Identification of Laor Worms (Polychaeta) from the Sea Region of Haria Village of Central Maluku, Indonesia. *Human Journals*, 7(1): 1-17.

Mahulette, F. (2020). Traditionally Catching and Processing of Laor in Moluccas Islands. *LOCAL WISDOM*, 12(2): 99-110.

Megumi, S.R. (2020). Getting to Know Sea Worms or Laor from Maluku. [Internet] [Accessed 18/01/2025]. https://www.greeners.co/flora-fauna/mengenal-cacing-laut-atau-laor-dari-maluku/.

Mouw, E.; Karlina, N.; Widianingsih, I. and Heru, N. (2022). Mapping Potential And Development Strategies Of Marine Tourism In The Morotai National Tourism Strategic Area. *Jurnal Politik, Keamanan dan Hubungan Internasional*, Special edition: 354-365.

Ndahawali, S. and Marabi, D.U. (2023). Amino Acid Profile of Sea Worm Nyale *Eunice fucata* from Wanokaka Waters, West Sumba Regency. *Jurnal Pengolahan Perikanan Tropis (JPPT)*, 2(2): 088-090.

Nurfahmiatunnisa; Hassan, M.S. and Erviani, A.E. (2019). Test of the Potential of Sea Worm *Eunice siciliensis* Extract on Blood Sugar Levels of Rats *Rattus novergicus*. *Jurnal Ilmu Alam dan Lingkungan*, 10(2): 39-47.

Nurhikma, N.; Nurhayati, T. and Purwaningsih, S. (2017). Amino acid, Fatty acid, and Mineral Content of Marine Worm From South East Sulawesi. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 20(1): 36.

Nurlela, E.; Pratama, A.; Ramadhanian; Purnama, S.M.; Mardiah, R.S.; Erick, N.Z.C.F.; Rachmad, B.; Alimudi, Y.S.; Jabbar, M.A.; Wardhana, U.S.A.S.J. and Dewi, P. (2025). *Introduction to Fishing Technology*. Yayasan Kita Menulis, Medan, 262pp.

Purna, I.M. (2018). Bau Nyale: A Tradition with Multiculturalism and Pluralism Values. *Patanjala*, 10(1): 99-114.

Rangkuti, F. (2013). *SWOT Analysis: Business Case Dissection Technique-Reorientation of Strategic Planning Concepts for Facing the 21st Century*. Gramedia Pustaka Utama. Jakarta.

Salim, M. (2016). Custom as a Local Wisdom Culture to Strengthen the Future Existence of Custom. *Al Daulah: Jurnal Hukum Pidana dan Ketatanegaraan*, 5(2): 244-255.

Sari, D.A. and Wibowo, A. (2021). Environmental parameters affecting the abundance of marine worms in coastal ecosystems. *Aquatic Ecosystem Health & Management*, 24(4): 389-398.

Schulze, A. and Tim, L. (2011). Palolo and un: Distinct clades in the genus Palola (Eunicidae, Polychaeta). *Marine Biodiversity*, 42(2).

Siahaya, G.C. and Rehena, Z. (2022). Substitution of Laor Worm (Polychaeta) Flour on Nutritional Content and Organoleptic Properties of Sagu Laor Crackers. *AGRIKAN - Jurnal Agribisnis Perikanan*, 15(1): 197-205.

Suhardatan, H. (2020). *Quantitative Test of Protein Content in Nyale Worms (Eunice Siciliensis)* [Diploma, Muhammadiyah Mataram]. https://repository.ummat.ac.id/1663/

Vertygo, S.; Reko, Y.K.; Agat, I.R.; Dewa, A.S.E.; Djani, I.A.D.; Making, L.L.K.L.; Lodiay, M.R.E.D.S. and Martins, S.C. (2022). Analysis of Nutritional Content of Sea Worm Nyale in Wanokaka Beach Waters, West Sumba, East Nusa Tenggara. *Indigenous Biologi Jurnal Pendidikan dan Sains Biolog*, 5(2): 84-96.

Wairata, J.; Ontje, F.W.; Tutupary, O.F.W. and Mangimbulude, J.C. (2020). Evaluation of Fatty Acid and Amino Acid in Laor Worms (Polychaetes) from

Tobelo, Indonesia Coastal Water. *Asian Journal of Biological Sciences*, 3(2): 127-133.

Windarto, S.; Elfitasari, T.; Dirgantara, I.M.B. and Herawati, V.E. (2023). Effect of enriching sea worms (*Nereis virens*) with DHA on the growth performance and body composition of cobia (*Rachycentron canadum*). *AACL Bioflux*, 16(6): 3275-3284.

Zanol, J.; Carrera-Parra, L.F.; Steiner, T.M.; Amaral, A.C.Z.; Wiklund, H.; Ravara, A. and Budaeva, N. (2021). The Current State of Eunicida (Annelida) Systematics and Biodiversity. *Diversity*, 13(74).

Zhang, W.; Wang, Z.; Ganesan, K.; Yuan, Y. and Xu, B. (2022). Antioxidant and activities of extracts and protein hydrolysates from marine worm Hechong (*Tylorrhynchus heterochaeta*). *Foods*, 11: 1837. https://doi.org/10.3390/foods11131837