*Panag-ipon*: Traditional Goby Fry Fishing Practices in Ilocos Sur Coastal Communities in Northern Philippines

ABSTRACT

This research ventured into the traditional *panag-ipon* (goby fry) fishing of Ilocos Sur coastal municipalities of Caoayan and Santa in the Philippines, highlighting fishing methods, economic contributions, and adaptive measures in the face of environmental, economic, and regulatory challenges. Utilizing an ethnographic thematic research design, data were gathered using participant observation and interviews with local fishermen. Findings indicate that *panag-ipon* is an integral part of Ilocano cultural traditions with fishing methods such as scooping and encircling using nets governed by the lunar calendar and collective beliefs. *Panag-ipon* economically sustains coastal livelihood through high market demand for *ipon* that sustains local income and food security within the community. However, threats to its sustainability come from climate change, declining fish resources, and conservative fishing regulations. Fishermen are countering this with diversified fishing techniques, emerging technologies like weather apps, compressors, and goggles, as well as community-initiated conservation practices. Despite such challenges, *panag-ipon* remains a strong element of Ilocano identity and calls for policies that support cultural conservation and environmental sustainability. The research highlights the need for enhanced fishing management and sustainable measures to ensure that *panag-ipon* remains a cultural and economic lifeline for Ilocos Sur coastal communities.

***Keywords:*** *economic sustainability, environmental adaptations, Ilocano fishermen, panag-ipon, traditional fishing*

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**INTRODUCTION**

Goby fry *(Sicyopterus lachrymosus)* fisheries are present in many places around the world. These are common in tropical regions, mainly in volcanic areas with fast-flowing streams. These are highly prized food fish in the Pacific, the Caribbean, Central America, and the Indian Ocean (Nelson, 1994).

In the Philippines, goby fry spawn in the sea but spend most of their lives in the freshwater streams of the interior. Gobies are small fishes, carnivorous bottom-dwellers living along the shores, lakes, rivers, and freshwater swamps. Some cling to rocky places or gravelly bottoms where the current is very swift and where few other fishes can withstand the rush of the water (Bell, 1999).

The goby fry, locally known as *ipon* among Ilocanos, is the largest group of fishes in oriental tropical waters, with more than 235 species known from the Philippines alone, especially in Northern Luzon (Herre,1953). It has one of the most complex *ipon* fisheries, involving diverse fishing methods, socio-economic structures, and biological factors. There were already impressive yields in Northern Luzon during the early 1930s. These are often used for fermentation and have been noted as the raw material for the costliest fish pastes in the country (Bell, 1999). Due to this, during its peak season, fishermen face challenges such as declining fish populations and fluctuating market prices, affecting their long-term economic stability.

*Ipon* fishing is both lunar and seasonally periodic lunar phasing seems to be similar within regions but may differ between regions. The migrations from the second to the ninth day following the full moon with some variation from place to place in the Philippines (Manacop, 1953). Therefore, their frequent occurrence makes *ipon* fishing an important economic activity, supporting livelihoods in coastal communities.

Despite its cultural and economic significance, the sustainability of goby fry fisheries is at risk due to overfishing, habitat destruction, and regulatory issues (Ramoran, 2023). The Philippine Fisheries Code of 1998 (Republic Act No. 8550), which has been amended by RA 10654, includes sustainable fishing mechanisms, such as fine mesh net provisions and juvenile fish stock conservation rules. These regulations permit the collection of fry for aquaculture and trade but are challenging to enforce, particularly in remote coastal municipalities (Bureau of Fisheries and Aquatic Resources, 2023). Conservation vs. economic pressures continue with community fisheries management and research-based conservation initiatives. Climate change, though, further exacerbates the sustainability of *ipon* fishing. Literature indicates that habitat loss of estuaries where *ipon* migrate can substantially decrease fish recruitment and survival levels (Ramoran, 2023). Moreover, climate change can modify water temperature and salinity, which might affect goby fry migration behaviors, making traditional fishing methods useless. While these obstacles prevail, *ipon* fishing continues to be part of coastal livelihood among Ilocanos.

*Panag-ipon* as a means of livelihood has been a long-standing tradition in Ilocos Sur and has already been utilized by generations. The fishermen use certain equipment and methods so that they may have the most harvest. These are considered essential products of Santa and Caoayan municipalities, and these young fish are highly sought after in Ilocano cuisines. Hence, this research focus on the traditional *panag-ipon* fishing practices in purposively selected barangays of Ilocos Sur coastal municipalities, namely Santa and Caoayan. The study would entail engaging fishermen to learn from their customary knowledge, economic contributions, and adaptive responses to counteract the issues that they face in contemporary times.

This paper sought answers to the following questions:

1. What are the traditional methods used in *panag-ipon* (goby fry fishing) by Ilocano fishermen in Ilocos Sur?

2. How do *panag-ipon* fishing practices contribute to the local economy and food security in coastal communities?

3. What are the challenges do *panag-ipon* fishermen face today, and how do they adapt to the advanced fishing practices and environmental changes?

**METHODOLOGY**

This study employed an ethnographic thematic research design to observe and document traditional *panag-ipon* (goby fry fishing) practices in selected coastal communities of Santa and Caoayan, Ilocos Sur. Ethnographic designs provide a deep understanding of cultural practices by immersing the researcher within the community and collecting detailed accounts of the participants’ lived experiences (Creswell et al., 2017).

The researcher immersed in these communities, collecting data through participant observation, field notes, and a structured questionnaire for interviews with two (2) experienced fishermen per barangay, totaling twelve (12 participants selected through purposive sampling based on their expertise in goby fry fishing or *panag-ipon*. Purposive sampling allows for the selection of participants who are particularly knowledgeable and experienced in the subject, ensuring the sample is highly relevant to the study (Etikan et al., 2016).

The specific barangays involved are Rancho, Pasungol, and Magsaysay in Santa, Ilocos Sur, and Fuerte, Puro, and Villamar in Caoayan, Ilocos Sur. Interviews were conducted in Iloko, transcribed, and translated into English for thematic analysis, categorizing findings into fishing methods, economic contributions, and challenges. As described, thematic analysis involves identifying, analyzing, and reporting patterns (themes) within qualitative data to provide a rich understanding of the data (Braun and Clarke, 2006). Also, ethical considerations, including informed consent and confidentiality, were upheld under research ethics.

**RESULTS AND DISCUSSION**

This section explains and provides meaning to the data gathered and was grouped into three themes: (1) the traditional methods used, (2) contribution to the local economy and food security, and (3) adaptation measures for withstanding the challenges.

The first theme addresses the fishing practices and equipment passed down from one generation to the next, detailing how these have impacted the livelihood of the Ilocano fishermen. The second theme addresses its role in ensuring the coastal communities' economic livelihood and guaranteeing a stable supply of food. The third theme addresses the difficulties faced by the fishermen, such as environmental, regulatory, and economic challenges, and how they have managed to deal with them during the contemporary era.

**Traditional methods used in *panag-ipon.*** The practice of *panag-ipon* in the coastal communities of Ilocos Sur is deeply rooted in tradition, with methods and tools passed down through generations. These methods, entwined with local knowledge and cultural values, continue to guide the fishermen in the contemporary period.

The traditional methods of determining the seasons when *ipon* will appear are deeply rooted in the fishermen's wisdom of lunar cycles, seasonal patterns, and local regulations. Historically, fishing for *ipon* can be done from August to February, but recent regulations imposed by the municipalities of Santa and Caoayan limit fishing to September to January. It is to allow the *ipon* to become larger fishes, to produce a variety of fishes in the bodies of water surrounding the Ilocos Region and the Abra River, yet some years, the municipal office allows the fishermen to harvest *ipon* especially if they harvest few or none at all on the previous months since *panag-ipon* depends on the weather conditions. Nevertheless, the months of September, October, November, December, and January were the most abundant seasons for *ipon* fishing, which lasts for three to four days per month.

A respondent shared the following insights:

“Iti ipon ket adda tiempo ti panagruar na. Paliiwen mi ti kasasaad ti danum-baybay, iti angin ken bulan. No nagkabusen, irugi min iti agbilang ti pito agingga sangapulo nga aldaw. No rumuar iti ipon ti nasapsapa, agipon kami ti maikapito nga aldaw kalpasan ti kabus, ngem no naladawen, ti panaguray ket agpleppas iti maikasangapulo nga aldaw. No nasayaat iti paniempo na, namnamaen nga adu iti ipon a rumuar”. (Ipon is a seasonal fish. We will observe the seawater, the wind, and the moon. If there is the appearance of the full moon, we will start to count seven to ten days. If ipon arrived early, we can do panag-ipon on the seventh day after the full moon, but if it is late, the waiting lasts until the tenth day. If the weather is fine during these days, definitely, ipon were abundant).

The fishermen also value the beliefs passed down by their elders, which continue to shape their fishing practices. Fishing is not merely a livelihood but also a spiritual endeavor.

A respondent also shared this idea:

“Sakbay a mangrugi ti tiempo ti panag-iipon, adda mapasamak a libot dagiti rebulto da Apo San Pedro, Apo Sto. Nino, Apo Lakay ken Apo Baket iti aglawlaw ti baybay babaen ti panaglugan mi ti rakit ken bilog. Kasta metten, dadiay panglakayen mi ket mangisayangkat ti rito ken kararag a panagdawat iti adu a makalap nga ipon, ken ti pannalaknib manipud ti peggad ken tapno agpakada kadagiti saan a makitkita nga Espiritu nga agdakdakiwas ti kabaybayan. Ti tunggal mausar a pagala ti ipon a kas ti sapyaw, sinamay, abel, wenno bubo, adda iti i-atang mi a dua a manok, maysa a botelya ti arak (gin) ken maysa a tabako. Liklikan mi a layawen dagiti mausar a pagala ti ipon a kas ti sapyaw, sinamay, abel wenno bubo ta maipapati a makaited ti malas”. (Before the fishing season begins, we will have a procession of San Pedro, Sto. Nino, Apo Lakay, and Apo Baket around the sea riding bamboo boat and motorboats. Also, our eldest will perform simple rituals or prayers asking for a bountiful catch and protection from the sea’s dangers and to seek permission from unseen spirits in the water. In every fishing net, we offer two chickens, a bottle of gin, and a tobacco. We also refrain from stepping over on the fishing net as they are believed to bring bad luck).

The acknowledgment of fishermen on the importance of the fishing ritual is a way of valuing the relationship with nature. It gives a clear understanding of determining what ritual is most effective and has impact on the fish production of fishermen. A reflection on how ancient and modern fishing are connected to each other (Torreon, 2021).

Another significant piece of knowledge from their ancestors is the understanding that when the fishermen see the *ipon* turned red in the sea, or called as *pangen* in Iloko, it is time to begin scooping the fish or *panagdaklis* in Iloko, or encircling using a net to catch *ipon* or *panagsapyaw* in Iloko. The fishermen use either of the two primary techniques. Each method is supported by specific tools designed to catch *ipon* efficiently.

A respondent narrated the methods in *panagdaklis*:

“Ti panagdaklis, kitaen mi a nalaing nga diay iket a mausar ket ti maaw-awagan a numero katurse ti mausar, awan iti dadael na ken nakasaganan a mausaren. Aglangoy kam a mapan sadiay narabaw a parte ti baybay, no dadduma ket sadiay asideg ti pampang wenno igid a sadino ket aguummong dagiti ipon. Iggaman mi a nalaing diay iket, ken iplastar mi tapno masaop mi amin dagiti aglanglangoy nga ipon. Ikaray mi diay iket iti patimbokel tapno makubong dagiti ipon. No nakaala iti adu nga iponen, innayaden mi a guyuden diay iket ken ipan mi idiay pampang wenno igid. Ikkaten minto dagiti ikanen wenno ipon ket saminto ipan diay uneg ti lata. Iti adu a daras ulit-uliten minto daytoy a proseso wenno wagas ket a kas mangngalap agturong kami kadagiti nagduduma a disso wenno paset ti baybay a narabaw”. (In panagdaklis, we ensure that the iket (number fourteen net) has no wear and is ready for use. We wade into shallow waters, often close to the shore, where ipon are known to gather. We hold the net, and position it in such a way that it will scoop up the fish as they swim by. We will swing the iket in the water, sweeping it in a circular motion to trap the fish. Once the net has scooped up a sufficient number of ipon, we carefully pull the net back toward the shore. The fish are then removed from the net and placed in a can. This process is repeated multiple times as the fisherman moves to different spots in the shallow waters).

 A respondent further narrated the systemic process of *panagsapyaw*:

“Iti panagsapyaw, isagana mi a umuna dagiti nasken a maaramat a banag akas iti landing/ sapyaw/sinamay/abel/ bubo a naaramid ito natitibker a nylon nga isu ti maywayat ti nalawa a paset iti baybay tapno makaala kami iti ipon, boli a mangpadagsen diay landing, gamaw a mangpatapaw iti landing ken buttong a naygalot diay landing tapno iso iti mangpatalinaed diay kasasaad wenno posisyon iti landing. Dua a bilog iti pagluganan mi a mapan diay disso a sadino ket masarakan dagiti adu nga ipon ken maysa kadakami iti agbatok ti nauneg a paset ti baybay. No makita na nga adu ti ipon ti dayta a lugar, ti kadwak a mangngalap ket agusar ti dua a bilog tapno maiwakwar a nalaing diay iket sadiay a naituding a disso. Kalpasanna, diay makunkuna a rakit ket usaren iti uppat wenno ad-adu pay a mangngalap nga iplastar diay iket ken katulungan ida nga ikubong wenno mangpalikaw dagiti ikan, ken siguradwen da a mapagtalinaed dagiti ikan kadagiti nagbeddengan na. Diay dua a bilog ket agtintinnulong a mangpalikawkaw diay mismo a paset a pagkalkalapan da. Apaman a palpalikawan da, guyuden danto a nalaing diay landing tapno makubong dagiti ipon sadanto in-inuten a guyuden tapno ibangkag. No nalpas a naybangkag diay landingen, innayaden da nga ikkaten dagiti ipon tapno maykabil diay uneg ti lata. Kitaen mi a nalaing dagiti nakalap mi ken no kasatno kaadu iti nakalap min. Uliten mi dagiti wagas a mangiwayat diay landing, a mangpalikawkaw dagiti ipon, ken mangibangkag diay landing”. (In panagsapyaw, we prepare the necessary tools, such as landing/ sapyaw/sinamay/abel/ bubo (large mosquito net) often made of strong nylons, that is spread out across a wide area to catch fish, boli (lead fish net sinkers), gamaw (ropes with rubber floats), and buttong (rectangular shaped cement) that is tied on the net that helps stabilize the net’s position. Two motorized boats are used to travel to a location where the fish are expected to be abundant and one of us will start diving on the deep part of the sea. If he saw lots of ipon in that location, my fellow fishermen would use the two motorboats to spread the landing across a chosen fishing area. Then, a traditional bamboo boat, called a rakit, is used by four or more fishermen to guide the net into place and assist in encircling the fish, ensuring they stay within the boundaries of the net. The motorboats work together in coordination to encircle a specific area. As the boats move in circles, they pull the landing tighter, trapping the fish inside. Once the net is in place and the fish have been enclosed, we will begin pulling the net toward the shore. After the net is fully pulled in, the fish are carefully removed from the net and placed into containers. We will inspect the catch and ensure they have gathered the desired amount of ipon. The process of spreading the net, encircling the fish, and pulling it in is repeated in different areas as we continue our daily fishing activities).

With all the differences in methods of *panagdaklis* and *panagsapsaw*, these also have similarities. All fishing gears are principally made of woven or knitted fabrics with openings or meshes of uniform, or almost uniform, sizes, at least in the individual parts of the net (Asia, et. Al., 2015). Additionally, *panag-ipon* fishing is a group effort, with groups and families working together. Also, there is an unspoken rule of equal sharing, so that everyone, even those who catch little, gets a share, and fishermen are humble when talking about their catch, as bragging is thought to enrage spirits or the sea, causing bad fishing in the future.

This traditional knowledge has been passed down carefully from one generation to another, for the fishermen sense the natural rhythms of the fish. The wisdom of the elders is central to sustaining the sustainability of *panag-ipon*, and their instructions mean that the next generations will keep on fishing well and in harmony with nature.

**Contributions to the local economy and food security.** In the context of coastal communities in Ilocos Sur, the practice of *panag-ipon*—the traditional method of goby fry fishing—plays a crucial role in supporting both the livelihood of local fishermen and food security for families.

For many fishermen, *panag-ipon* is a primary source of income. It sustains their families, especially during the season of *ipon*. Without *panag-ipon*, it would be difficult for them to survive. It is part of their local economy when the fishermen sell their catch into the city or town’s public market, and sometimes export it to Manila and Hawaii.

A respondent emphasized its contribution:

“No mairana ti panag-iipon, makaganar kami iti dakkel a gatad aglalo no kaadu na ket makaala kami iti 50 agpatingga 100 a lata nga adda ti 17 agpatingga 20 a kilo ti kada lata. Iti presyo kada lata ket 8,000 agpatingga ti 10,000. Ti mapastrek mi ti kadabulan ket dumanon iti 600,000 agpatingga 1,000,000 pesos. Diay napastrekan minto ket pagguguduwaan min to. Kaspangarigan, nakaganar kami iti 650,000 pesos, diay 50,000 pesos ket ilasin mi dagiti nagasto mi wenno puonan mi. Diay nabati a 600,000 pesos ket pagguduwaan to ti makingbagi diay landing/sapyaw ken diay mabati ket pagguguduwaan iti dose agpatingga katorse nga agkakadwa diay maysa a sapyaw. Diay gatad to iti panangilako da diay tiyendaan ket nakadepende diay klase ken kinaadu a nakalapan mi. No nalabbaga, napino ken sangapulo agpatingga kuwarenta a lata laeng, ilako mi daytoy iti 500-700 pesos kada kilo isu a balitok daytoy para kadagiti tattao. No kaadu iti ipon, ngumisit ti kulay na ken haan unay a napino, ilako mi ti 250-400 pesos kada kilo. (During ipon season, it is when we can generate a high income. If ipon is extremely abundant, we can catch 50-100 cans. Each can consist of 17-20 kilos and if we sell it, it costs 8,000-10,000 pesos per can. The overall income per month will reach 600,000 up to 1,000,000 pesos. The generated income will be subdivided. For example, if we generate 650,000 pesos, the 50,000 pesos will go to the money used for capital, then the remaining 600,000 will be divided into 2: the 300,000 pesos will go to the owner of the landing/sapyaw, and the remaining will be divided into 12-14 fishermen for one landing/sapyaw. Also, the prices in the city or town’s public market depend on the quantity and quality of our caught ipon. If newly harvested, and the ipon were reddish and very thin, and we only caught 10-40 cans, we sell it for 500-700 pesos per kilo. Some people called it “gold” because of its price. But if the volume of ipon caught is high and it is greyish and not so thin, we sell it for 250-400 pesos per kilo.)

The *panag-ipon* is also a source of food. Some fishermen eat the fish directly, and reserve some amount of it for fermentation purposes. A respondent added:

“Dadduma, kilawen mi lattan ken ikkan mi iti nakaad-adu a lasuna, suka ken laya, wenno itorta mi, paksiw, sinigang, adobo, wenno tamalis. No adu iti nakalapan mi ket pagbalinen mi a bagoong ken daing tapno uray haan to man nga tiyempo ti iponen ket adda latta pakakitkitaan ken mataraon. Ditoy Caoayan, adda iti Ipon Baggoong Association a mangpatpatalinaed dagiti ipon a binaggoong mi para iti ekonomiya ken seguridad ti taraon ditoy nanumo a lugar mi”. (At times, we eat raw with lots of onions, vinegar, and ginger, or do with scrambled egg, steamed in vinegar, broth, adobo, or grilled ipon wrapped in banana leaf. If we caught a high volume of ipon, we also make ipon paste, and dry ipon so that even if it not yet in its season, we can still consume it and sometimes generate income from it. Here in Caoayan, we have Ipon Bagoong Association, which ensures the sustainability of the fermented ipon for the local economy and food security).

The Ipon Bagoong Association, Inc. in Caoayan, Ilocos Sur, received financial support amounting to P126,650.00 from the Department of Science and Technology (DOST) Region 1-Provincial Science and Technology Center (PSTC) in Ilocos Sur, through its Grants-in-Aid Program (GIP) for the improvement of its product and production facility. With reports from the DOST-PSTC, CIBAI received various equipment such as fermentation drums, a stainless steel preparation table, and a chest freezer, and the provision of packaging and labeling assistance through GIA’s strategies to empower the community with technology innovations. To date, the association is producing approximately one thousand bottles of *ipon* bagoong at 200 grams and 400 grams per bottle, which is compliant with the Food and Drug Administration (FDA) (Quimoyog, 2021).

Therefore, *panag-ipon* tends to be a source of more income than other types of fishing. *Panag-ipon’s* economic contribution is extreme since it is not only for the sustenance of the families of fishermen but also for the market economy.

**Adaptation strategies to address the challenges.** *Panag-ipon* faces several challenges, such as environmental changes, economic concerns, and regulatory changes. Despite these challenges, the fishermen created various strategies to ensure their traditional way of fishing.

A respondent expressed this sentiment:

“Iti paniempo itan ket pabliwbaliwen a saan tay pay ammon no ania iti sumarunon, ken iti kabaybayan ket haan unay a naparaboren akas idin. Haan a mabalin a daytoy panagipon laeng iti mabalin a pangnamaan mi iti pangbiag mi. Gapo iti pabaliw-baliw ti paniempo, adda dagiti bulan a kabassit iti makalapan mi nga ipon wenno awan pay a pulos lalo no napigsa ti angin wenno bagyo kalpasan a nagkabos. No saan mi pay a naakas insigida diay landing/sapyaw mi no bigla a agpigsa iti angin ken bagyo ket mapisang ken mayyanod aglalo ket nangina ti gatad iti maysa a landing nga agarup 100,000-120,000 pesos ket dakkel a pukaw to kadakami daytoy. No bassit lang pay iti makalapan mi santo pay laeng agngina iti gasolina, bassit lang iti maganaran mi. Gapo ta agrigat to dataon, agkalap nak ton iti sabasabali nga ikan a kas yellow pin, buslogan, durado, taliktok, tirem, pasayan, ken pusit tapno la adda taraon ken pangalaan iti pangsuposop iti inaldaw aldaw, ngem awan duma na latta ti masapulan mi a kas kadakkel iti mapaspastrek mi no kaadu iti ipon. (The weather is becoming more unpredictable, and the waters are not as bountiful as before. We can no longer solely rely on panag-ipon alone to provide enough for our family. Due to the changes in weather conditions, there were months when we only caught a few ipon or none at all, especially if it was very windy or a strong typhoon after a full moon. Also, if we fail to get the landing/sapyaw immediately if there is a sudden strong wind or storm, it will be worn out and swept by the water and wind. Since one landing/sapysaw costs 100,000 to 120,000 pesos, it will be a big loss for us. Also, if we only catch a small volume of ipon, and the price of gasoline is costly, we will only generate a small income. Since we will face some financial crisis because of this, we will just try to catch other fish like yellow fin, skipjack tuna, mahi mahi, trevally, oyster, shrimp, and squid to have something to eat and generate an income, but it is not as high as the bountiful season of ipon).

Some fishermen said the changes in local fishing regulations involved restricted fishing zones and limited fishing months. The new regulations help preserve the fish population, but they also affect the fishermen’s income.

A respondent further expressed this:

“Ti naglabas a dekada, awan dagiti pagannuratan a mangiparparit iti panagkalap iti ipon ti bulan iti Agosto ken Pebrero. Uray no nagadu iti nakalap mi dagiti naglabas a bulan, no tiempo iti ipon ken uray dagitoy a bulan ket agkalap kami latta. Ngem itan, sakami lang makakalap iti Pebreron no ipalubos ti Munisipyo. Idi, mabalin palang diay bukatok tapno makakalap kami iti ipon ta adu palang iti ikan, ngem itan ket haan da inpalubosen tapno kano makapadakkel ken makapaitlog da iti adu nga ikan ditoy Ilocos Sur ken diay sursurong ti Abra”. (In previous decades, there is no regulation that prohibits us from catching ipon during August and February. Regardless of the volume caught in the previous months, if there were many ipon during these months, we can do ipon fishing. However, nowadays, we can only catch ipon during February if it is allowed by the municipal office. Also, before, we could use another method of panag-ipon called bukatok (we placed nets with bamboo to trap fish, and left it for months), but since fishes are not so abundant anymore compared to previous decades, we cannot practice this already since it will not propagate more fishes around the bodies of water in Ilocos region and even in the province of Abra).

The continuing decline of the *ipon* population calls for effective fisheries management and conservation (Asis et al., 2013). Also, fisheries, for which overfishing is not only a threat but already a common experience in many parts of the country, cannot afford to reduce recruitment through the systematic capture of postlarval, juvenile, and immature fish. A considerable reduction or phaseout of these activities should therefore be pursued (Department of Agriculture-Bureau of Fisheries and Aquatic Resources, 2004).

However, fishermen have started incorporating the latest technology to enhance their fishing activities, such as weather forecasting software and compressed air for diving.

A respondent noted:

“Agar aramat kami iti weather forecast application, dumngeg ti radyo wenno agbuya kami iti telebision tapno haan kami mapan agkalap no adda iti dumteng nga bagyo ta adda dagiti kanito a uray natalna palang diay danom no adda kami palang diay pampang, no adda kaminto diay tengnga taawen ket agbigla a agdawwel iti danum-baybay. Haan lang a dagiti kuwarta, banag, ken bannog mi iti mabalin a mapukaw, no di ket pati toy biag mi. Dadduma pay kaniami ket agar-aramat iti compressors ken goggles no agbatok kami iti naadalem a paset iti kabaybayan.” (We use weather forecast applications, listen to radio, or watch television to avoid fishing when there is bad weather approaching since there were instances that even if the weather is fine before going, the weather will turn drastically while on the middle of the sea. It will not only cost our money, materials, and efforts but also our lives. Additionally, some of us now use air compressors and goggles for diving on the deeper parts of the sea.)

These technological innovations are directed towards enhancing their efficiency in catching and making the practice safer and more sustainable.

In addition, some fishermen propose enhancing education and training for the next generation. A respondent added:

“Uray adda iti mapaspasaran a karit, kasapulan a surwan tayo dagiti agtutubo haan laeng no kasano iti wagas iti panagkalap iti ipon ken naduma duma a dingwen, no di ket pati no kasatno a aywanan toy kadanuman tayo”. (Despite the environmental and economic challenges that we are facing, we still need to teach the youth not just how to harvest ipon and various marine life but also how to take care of our waters).

Fishermen are adhering to sustainable fishing regulations and participating in community-based conservation efforts to ensure that *panag-ipon* continues to be a source of livelihood for future generations.

**CONCLUSIONS**

The traditional practices of *panag-ipon* in the coastal communities of Ilocos Sur embody the deep connection between fishermen, environment, and cultural heritage. Their understanding of lunar phases, cyclical patterns, and rituals makes their fishing a sustainable practice. Aside from tradition, *panag-ipon* also plays an important role in the local economy and food security as it generates income and sustenance for coastal residents. Despite contemporary challenges, fishermen are still able to adapt while retaining their ancestral wisdom. This research underscores the need to protect *panag-ipon* as a source of livelihood and cultural heritage, where future generations will continue its tradition while addressing economic needs and environmental sustainability.

**RECOMMENDATIONS**

It is recommended that in sustaining *panag-ipon*, the Bureau of Fisheries and Aquatic Resources and Department of Environment and Natural Resources must implement strict yet economically friendly conservation legislations, non-government organizations and local government units must provide financial and technological support, establish fishermen’s associations to encourage responsible fishing, and seminars for local communities and youths to safeguard marine resources and traditions.

**Consent:**

As per international standards or university standards, respondents’ written consent has been collected and preserved by the author(s).

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