Economically Important Marine Mollusks in Ilocos Sur

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Abstract

The study generated benchmark information on the economically important marine mollusks in Ilocos Sur. Specifically, it tried to classify each of the organisms in terms of the local name, English name, and scientific name; identify the importance of these organisms; and determine the index of similarity of the data gathered per coastal municipality.

Data collectors were assigned to gather. the needed data from the different coastal areas of Ilocos Sur.

The study revealed that there were one hundred twenty (120) commercially important mollusks found in Ilocos Sur. San Esteban has the highest species diversity as indicated by the total number of identified mollusks species which is sixty five (65) and the least number of species are found in Sta. Lucia which is two (2). From these 120 species of mollusks, seventy two (72) belong to Class Gastropoda and forty eight (48) belong to Class Bivalvia. Most of the mollusks are utilized as human food.

The similarity indices among the gathered data varied from 0%-95.24%. The highest Index of Similarity exists between Sto. Domingo and Sta. Catalina, while the lowest is between Sinait and Sta. Lucia, Cabugao and Sta. Lucia, Sto. Domingo and Sta. Lucia, San Vicente and Candon, San Vicente and Sta. Lucia, San Vicente and Tagudin, San Vicente and Sta. Cruz, Sta. Catalina and Sta. Lucia, Wigan and Santa, Wigan and Narvacan, Wigan and Candon, and Wigan and Sta. Lucia with 0%.

Introduction

Background of the Study

Mollusks live in all the seas of the world and even appear on land and in fresh water. Remains from this group of animals, their shells, can be found almost everywhere. Shells captivate and fascinate people with their magnificent display of color and wealth of forms. They wash up on all the coasts of the world, where they are easy to collect, or are fished up out of deeper waters and sold, bartered, or given away. One comes across them in buildings of antiquity – they were used as sacred objects and status symbols and in past ages also had value as currency or as a means of exchange (Bruyne, 2003).

The mollusks belong to the invertebrate group of animals which are considered important resources. These organisms can be utilized as food and raw materials for cottage industries which eventually provide a source of livelihood for many people.

Most studies on mollusks are on taxonomy and inventory of species. Among the economically important bivalves, only the oysters and mussels are being cultured commercially in certain areas of the country. The seashells, the greatest variety of which is found in the Philippines, constitute a significant export commodity. The window pane shells, formerly found throughout the marine waters of the country, command high commercial export value and are used as local materials for home construction, decoration and manufacture of shell craft products like lampshades, lanterns, picture frames, and other novelty items. While these economically important resources abound in our waters, little has been done to assess the status of the resource to provide an integrated comprehensive study (PCAFNRRD, BFAR, 1986).

Today, man's interest in mollusks has broadened significantly from mere collection of shells for food and ornaments to scientific studies. The collection of organisms for identification and the study of their ecology and distribution, and pharmaceutical applications utilize modern approaches. (Gomez and Chavez, 1986)

Mollusk resources abound in Ilocos waters. Aside from the edible mollusks collected from the marine waters which provide a source of livelihood to many people along the coastal areas, decorative shells of varied colors and forms are washed up the shores. Since no listings have been made on the economically important marine mollusks resources in the province of Ilocos Sur, this study is deemed necessary. Considering the growing needs of the country for molluscan resources, it is important to assess the present status of these resources in terms of their diversity and importance.

Objectives of the Study

The study generated benchmark information on the economically important marine mollusks in !locos Sur.

Specifically, it tried to:

1. Identify the different species of commercially important mollusks in the different coastal areas of Ilocos Sur in terms of the following:

   a. scientific name,
   b. English name,
   c. local name,
   d. class, and
   e. importance

2. Determine the index of similarity of the organisms among the different coastal areas of Ilocos Sur.

Limitation of the Study

The study dealt only with the marine univalves and bivalves under Phylum Mollusca. Data gathered were collected from the shores, from the shallow parts of the waters, and from the shell vendors.

Review of Literature and Studies

Mollusks constitute a significant part of the world's fauna. These are among the most abundant organisms which can be found in all habitats except aerial. The distribution is, therefore, not limited in space and even in time for fossils which date back to the Cambrian period. Hardly is there a coastline, freshwater habitat, or a moist land area that has no molluscan life in it. Interestingly, the most diverse forms of mollusks can be found in the tropics (Gomez and Chavez, 1986).

Mollusks play an important role in the ecological balance of the different ecosystems of which these are a part These organisms act as scavengers to help restore the nutrients into the nutrient sinks, as grazers that regulate the spread of encroaching plant life, as predators to control other grazers, and other roles which man has not yet determined.

Man's interest on mollusks dates back to his early beginnings. Gastropod shells strung into necklaces were found among the relics of Cro-magnon man. (Howell, 1976) Mounds of shells of clams and other bivalves were unearthed in sites that used to be the dwelling places of ancient people. These archaeological findings show that ancient people utilized the mollusks primarily as food and the shell to make tools and omaments.

Mollusks are utilized for various purposes. These are supplemental sources of protein and a primary source in areas where large animal sources of meat are limited. Some kinds of shells like the Mother of Pearl are collected from their nacre for button making and decoration in wood inlays. The *Placuna placenta* shells (kapis) are used for window making, a craft which is uniquely indigenous. Moreover, with the growing trend towards the use of natural products in several industries and in medicine, mollusks are investigated as potential sources of drugs against virus, cancer, and neurological disorders.

Shells are also used as status symbols in some cultures (Bruyne, 2003). A famous example of this is the golden cowrie, *Cyprea aurantius* which, in the Fiji Islands, is worn only by important people and tribal chiefs. Shells like those coming from the genus *Mikadotrochus* were intended exclusively for the emperor and anyone else discovered with them in their possession was beheaded. Some shells are also used as sacred objects, serving as implements in rituals.

Scallop shapes are still used a great deal in architecture to decorate houses or placed on facades, postage stamps, municipal coats or arms, etc. Even the logo of a famous oil company is based on the scallop. A footnote to this is that the founder of the company concerned, Marcus Samuel, originally began as a trader in antiques, curiosities, and exotic shells.

Nowadays, apart from used as food and for trading, shells are mostly collected for the tourism industry. Anyone entering a typical tourist shop in a seaside resort will soon stumble across all kinds of shell art and shell kitsch imaginable.

A study by Cabrera, (1984) on the Taxonomy and Geographic Distribution of Philippine Mollusks mentioned that approximately 22,000 species of mollusks are found in the Philippines. These include marine, fresh water, and land snails. The marine forms constitute the largest number with the gastropods representing about 68%, followed by the bivalves with 27%, and the rest are the scaphopods, amphineurans and cephalopods.

The mollusks are well represented and evenly distributed throughout the archipelago. Almost all marine environments support a number of varied species.

Results of the study of Aionuevo and Zaragoza (1982) entitled "Marketing Practices for Raw Shells, Ornamentals and Shellcraf?" showed that shell gatherers sell their products to either of the following: directly to consumers, to the manufacturers, processors and cleaners, or to government and other institutional users. Sometimes along this flow, local and retail outlets and export trading firms act as middlemen in the buying process.

Different pricing strategies were used by the producers. There were no fluctuations in price levels of finished shell products. However, highly noticeable were the differences in prices of the same materials from one area to another.

The local use of advertisements in the seashell industry was not widely practised. Promotion was done in foreign markets.

An assessment on the marine bivalves in the selected municipalities of Ilocos Sur was done by Tubera et al. in (2003). Findings of the study revealed that there were twenty species of bivalves found in Sinait, Cabugao, and San Juan.

Methodology

The study used the descriptive research design.

Eighteen stations were considered in the study. They are as follows: Sinait, Cabugao, San Juan, Magsingal, Sto. Domingo, San Vicente, Sta. Catalina, Vigan, Caoayan, Santa, Narvacan, Sta. Maria, San Esteban, Santiago, Candon, Sta. Lucia, Sta. Cruz, and Tagudin.

Data collectors were assigned for each station to gather the needed data. The data gathered was supplemented with personal interviews with fishermen and vendors of mollusks. Data collection was done from August 2005 to July 2006.

The identification of the mollusks was taken care of by the researchers based on the complete encyclopedia of Shells as suggested by the Malacology Section of the National Museum.

The Sorensen's Index of Similarity was used to find out the percentage value of the common species found among the different coastal municipalities, with the formula:

$$IS = \frac{2C}{A+B} \quad X\ 100\%$$

Where:

A = number of species in one station
B = number of species in another station
C = number of species common to both stations

The importance of knowing the Index of Similarity is to determine the extent of diversity of the organisms within the areas in terms of its total population which species can survive.

Results and Discussion

This portion presents the different species of commercially important mollusks in the different coastal areas of Ilocos Sur and the Index of Similarity.

As presented on the table, there are one hundred twenty (120) species of economically important marine mollusks in the different coastal areas of Ilocos Sur; namely, Sinait, Cabugao, San Juan, Magsingal, Sto. Domingo, San Vicente, Sta. Catalina, Vigan, Caoayan, Santa, Narvacan, Santa Maria, San Esteban, Santiago, Candon, Sta. Lucia, Tagudin and Sta. Cruz. From these 120 species of mollusks, seventy two (72) belong to Class Gastropoda and forty eight (48) belong to Class Bivalvia. San Esteban has the highest number of species of mollusks with sixty five (65) and Sta. Lucia has the least number of species with two (2). This data implies that among the eigthteen (18) coastal areas, San Esteban has the highest species diversity of mollusks.

As to its economic importance, one hundred one (101) species are utilized as food for humans and nineteen (19) species are for aesthetic purposes.

The table also reveals that *Nerita squamulata* (subol), *Gari fervensis* (unnok) and *Hyotissa hyotis* (tirem) are found in twelve (12) coastal areas of Ilocos Sur while *Comus sp.I, Natica stellata, Oliva sp.I, Parametaria dupontii, Polinices lacteus, Vitta virginea, Anodonta sp.1, Anodonta sp. 2, Artica islandica, Codakia sp.2, Katelysia sp.2Tinoclea sp. 2 and Tinoclea sp.4* are found in one coastal area.

Table 1. The different species of economically important marine mollusks in Ilocos Sur

Species Scientific Name	English Name	Local Name	Class	TAL AREAS OF ILOCOS SUR																		
												9	10	11	12							
1. *Acmaea sp.* **	Limpet	Kalkallugong	Gastropoda												+	+	+					
2. *Angaria delphinus* **	Common delphinula	Sulek	Gastropoda	+	+								+	+	+	+	+					
3. *Bufonaria rana* *	Common frog shell		Gastropoda												+	+	+					
4. *Canarium urceus**	Little bear conch	Kiflauit/ Lussi-it	Gastropoda		+	+									+	+	+	+				
5. *Cassis cornuta* *	Horned helmet	Okinnaya/ Rarang	Gastropoda													+						
6. *Cerithium nodulosum***	Giant knobbed cerith	Suso																				
7. *Conomurex luhuanus**	Strawberry conch	Marumpi		[illegible]	[illegible]	+	+						+	+	+	+	+	+				
8. *Conus cedonulli mappa**	Spiral cone	Marumpi					+	+														
9. *Conus dalli**	Dall's cone	Marumpi													+	+						
10. *Conus ebraeus**	Hebrew cone	Marumpi		+	+										+							
11. *Conus imperialis**	Imperial cone	Marumpi		+		+																
12. *Conus pulcher**	Butterfly cone	Marumpi		+									+	+	+	+						
13. *Conus sp. 1**	Cone shell	Marumpi				+																
14. *Conus sp. 2**	Cone shell	Marumpi														+						
15. *Conus sp. 3**	Cone shell	Marumpi												[illegible]								
16. *Cymatium hepaticum***	Black-striped triton	Duriken		+	+									+								
17. *Cymatium loterium***	Black-spotted triton	Duriken												[illegible]								
18. *Cymatium sp. 1***	Triton shell	Duriken													[illegible]	+						
19. *Cypraea annulus**	Gold-ringer cowrie	Balliki		+	+	+								[illegible]		+						
20. *Cypraea arabica**	Arabian cowrie	Baboy-baboy						+	+	+				+	+	+	+					
21. *Cypraea asellus**	Asellus cowrie	Balliki											+		+	+	+					
22. *Cypraea camelopardalis**	Giraffe cowrie	Baboy-baboy		[illegible]	+	+	+											+				
23. *Cypraea caputserpentis**	Serpent's head cowrie	Balliki													+	+	+					
24. *Cypraea camelopardalis**	Giraffe cowrie	Baboy-baboy		[illegible]	+	+	+															

Table 1 continued

Table 1 continued .

Species Scientific Name	English Name	Local Name	Class	COASTAL AREAS OF ILOCOS SUR																		
				1	2						8	9	10	11	12							
*49. Nerita sp. 1**	Nerite shell	Subol	Gastropoda	+	+																	
*50. Nerita squamulata**	Pacific scaled nerite	Subol	Gastropoda	+	+								+	+	+	+	+					
*51. Nerita versicolor**	Four-toothed nerite	Subol	Gastropoda	+	+													+				
*52. Neverita albumen**	Egg-white moon snail		Gastropoda												+	+						
*53. Oliva hirasei**	Hirase's olive	Batiki	Gastropoda				+						+	+	+	+	+					
*54. Oliva reticulata**	Blood olive	Batiki	Gastropoda	+	+									+				+				
*55. Oliva sp. 1**	Olive shell	Batiki	Gastropoda												+	+						
*56. Oliva sp.2**	Olive shell	Batiki	Gastropoda	+																		
*57. Parametaria dupontii**	Dupont's dove shell		Gastropoda																			
*58. Phalium areola**	Checkerboard bonnet		Gastropoda												+	+	+					
*59. Phalium glaucum**	Gray bonnet	Bisi-bisucol	Gastropoda										+	+								
*60. Polinices lacteus**	Milk moon snail		Gastropoda													+						
*61. Rhinoclavis sp. **	Vertagus	Bayungon	Gastropoda				+	+	+	+					+	+						
*62. Rhinoclavis vertagus**	Common vertagus	Suso	Gastropoda												+	+	+					
*63. Semicassis saburon**	Saburon bonnet		Gastropoda												+	+						
*64. Terebra areolata**	Fly-spotted auger		Gastropoda	+	+																	
*65. Terebra crenulata**	Crenulate auger		Gastropoda													+						
*66. Tonna dolium**	Costate tun	Birabid	Gastropoda	+	+											+	+					
*67. Tonna galea**	Giant tun	Birabid	Gastropoda													+						
*68. Tonna perdix**	Pacific partridge tun	Birabid	Gastropoda	+	+								+	+		+						
*69. rochus niloticus**	Commercial trochus	Balligot	Gastropoda	+	+										+	+	+					
*70. Turbo cinereus**	Smooth moon turban	Sangyan / Daligdeg	Gastropoda													+	+					
*71. Turbo petholatus**	Tapestry turban	Billad	Gastropoda	+	+		+															
*72. Turbo sp. 1**	Turban shell	Billad/Bulan-bulan	Gastropoda	+	+		+															
*73. Turritella terebra**	Screw turritella	Turitella/Suso	Gastropoda					+	+	+												
*74. Vitta virginea**	Lagoon nerite	Kuskusilong	Gastropoda																			+

Table 1 continued

Species Scientific Name	English Name	Local Name	Class	AREAS OF ILOCOS SUR: 1	d		gr	o		tu	I	9	10	11	12				9		oo e	J
75. *Anadara scapha**	Ark shell	Singitan	Bivalvia	+	+		}	+						+	+							met
76. *Anadara grandis**	Grand ark	Kabagyak	Bivalvia				+															ei
77. *Anodonta sp. 1**	Swan mussel	Bildat	Bivalvia									+										
78. *Anodonta sp. 2**	Swan mussel	Bildat	Bivalvia									+										<<
79. *Artica islandica**	Ocean quahog	Kabibo	Bivalvia																		+	m
80. *Asaphis deflorata**	Gaudy asaphis	Ticlay/Ambabakal	Bivalvia	+	+							+			+	+	+					»
81. *Asaphis sp. 1**	Asaphis	Ticlay/Ambabakal	Bivalvia	+	+	]+	+					+			+	+	+					we
82. *Asaphis sp. 2**	Asaphis	Ticlay/Ambabakal	Bivalvia	+			+															«V
83. *Asaphis violascens**	Pacific asaphis	Ticlay	Bivalvia	+	+																	V
84. *Barbatia barbata**	Bearded ark	Singitan	Bivalvia	+	+								+	+	+	+	+				+	e
85. *Barbatia sp. 1**	Ark shell	Ilokkel	Bivalvia			+	+															V
86. *Circe scripta**		Kamkamaulaw	Bivalvia	+	+	+	+	+		+								+				t»
87. *Codakia sp. 1**	Lucina shell	Malmalukong	Bivalvia	+	+																	V,
88. *Codakia sp. 2**	Lucina shell	Solalla	Bivalvia			+																«
89. *Codakia tigerina**	Pacific tiger lucina	Malmalukong	Bivalvia	+	+																	S
90. *Crassadoma gigantea**	Giant rock scallop	Paid-paid	Bivalvia												+	+						SV
91. *Dosinia sp.**	Artemis	Dalman	Bivalvia	+	+		+	+	+	+	+	+										e/
92. *Gafrarium pectinatum**		Kappa	Bivalvia	+	+								+	+	+	+	+					«
93. *Gari fervensis**	Faeroe gari	Unnok	Bivalvia	+	+		+	+		+	+	+			+	+	+			+	+	
94. *Gloripallium speciosum**	Specious scallop	Pokka	Bivalvia			+	+															et
95. *Hyotissa hyotis**	Honeycomb oyster	Tirem	Bivalvia				+					+	+	+	+	+	+	+	+	+	+	[}
96. *Isognomon perna**	Rayed tree oyster	Kulintipay	Bivalvia	+	+	]#	+						+	+								es
97. *Katelysia sp. 1**			Bivalvia	+											+	+						+
98. *Katelysia sp. 2**			Bivalvia					+		E												V
99. *Katelysia sp. 3**			Bivalvia					+														«
100. *Paphia aurea*	Carpet shell		Bivalvia	+	+																	«V

Table 1 continued

Species Scientific Name	English Name	Local Name	Class
*101. Paphia rhombeides**	Banded carpet shell	Kappo	Bivalvia
*102. Perna viridis**	Green mussel	Tahong	Bivalvia
*103. Peryglypta puerpera**		Kappo	Bivalvia
*104. Peryglypta sp.1**		Kappo	Bivalvia
*105. Pinctada fucata**	Pearl oyster	Kapis	Bivalvia
*106. Pinna muricata**	Prickly pen shell	Badong-badong	Bivalvia
*107. Pinna sp. 1***	Pen shell	Badong-badong	Bivalvia
*108. Siliqua radiata**	Sunset siliqua	Balinggasa	Bivalvia
*109. Spisula subtruncata**	Subtruncate mactra	Bennek	Bivalvia
*110. Spondylus sp. 1**	Thorny oyster	Paid-paid	Bivalvia
*111. Spondylus sp. 2**	Thorny oyster	Kappa-kappa	Bivalvia
*112. Tachyeardium flavum**	Cockle	Keraid	Bivalvia
*113. Tellina scobinata**	Rasp tellin	Peniwis	Bivalvia
*114. Tellina sp. **	Tellin shell	Peniwis	Bivalvia
*115. Tinoclea sp. 1**	Oval pygmy venus	Kappa/Taburkit	Bivalvia
*116. Tinoclea sp. 2**	Oval pygmy venus	Kappa/Taburkit	Bivalvia
*117. Tinoclea sp. 3**	Oval pygmy venus	Kappa/Taburkit	Bivalvia
*118. Tinoclea sp. 4**	Oval pygmy venus	Kappa/Taburkit	Bivalvia
*119. Tivela ponderosa**	Ponderous tivola		Bivalvia
*120. Tridacna sp. 1**	Giant clam		Bivalvia
*121. Tridacna sp. 2**	Giant clam		Bivalvia
	TOTAL		

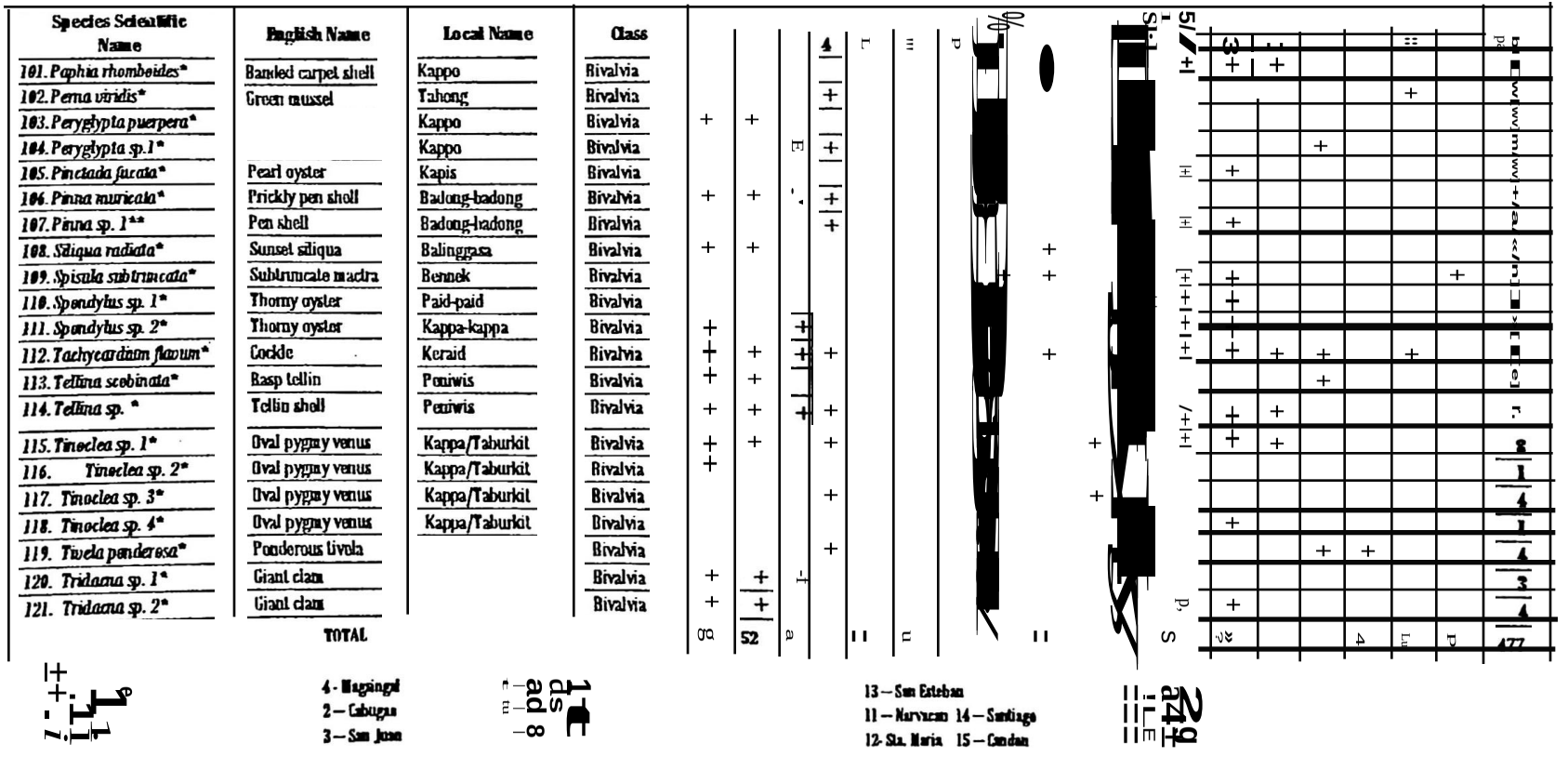

Table 2. Index of similarity of the economically important marine mollusks in Ilocos Sur

Number of Species				Number ot Common 8peclee	Index of Similarity
Sinait	63	Cebugeo	52	52	90.44%
Sinelt	63	Sen Juan	39	25	49.02%
Slnait	63	Megsingal	34	22	45.36%
Sinait	63	Sto. Domingo	11	5	13.51%
Sinait	63	San Vicente	5	2	5.88%
Sinait	63	Sta. Catalina	10	5	13.70%
Sinai!	63	Vigan	3	2	6.06%
Sinait	63	Caayan	11	6	2.63%
Sinai!	63	Santa	22	13	30.59%
Sineit	63	Narvacan	27	18	40%
Sinait	63	Sta. Maria	61	28	45.16%
Sinait	63	San Esteban	65	30	46.88%
Sinait	63	Santiago	46	25	45.87%
Slnalt	63	Candon	14	11	15.71%
Sinait	63	Sta. Lucia	2	0	0%
Sinait	63	Tagudin	5	3	8.82%
Sinait	63	Sta. Cruz	7	2	5.71%
Cabugao	52	San Juan	39	22	48.35%
Cabugao	52	Megsingal	34	18	41.86%
Cabugao	52	Sto. Domingo	11	5	15.87%
Cabugao	52	San Vicente	5	2	7.02%
Cabugao	52	Sta. Catalina	10	5	16.13%
Cabugao	52	Vigan	3	2	7.27%
Cabugao	52	Cacayan	11	6	19.05%
Cabugao	52	Santa	22	12	32.43%
Cabugao	52	Narvacan	27	17	43.03%
Cabugao	52	Sta. Maria	61	25	44.25%
Cabugao	52	San Esteban	65	25	42.74%
Cabugao	52	Santiago	46	23	46.94%
Cabugao	52	Candon	14	9	27.27%
Cabugao	52	Sta. Lucia	2	0	0%
Cabugao	52	Tagudin	5	3	10.53%
Cabugao	52	Sta. Cruz	7	2	6.78%

Table 2 continued,....

Number of Species				Number of Common Species	Index of similarity
San Juan	39	Meagsingal	34	29	79.45%
San Juan	39	Sto. Domingo	11	5	20%
San Juan	39	San Vicente	5	3	13.64%
San Juan	39	Sta. Catalina	10	5	20.41%
San Juan	39	Vigan	3	1	4.76%
San Juan	39	Cacayan	11	6	24%
San Juan	39	Santa	22	8	26.23%
San Juan	39	Narvacan	27	11	33.33%
San Juan	39	Sta. Maria	61	16	32%
San Juan	39	San Esteban	65	15	28.85%
San Juan	39	Sartiego	46	13	30.59%
San Juan	39	Candon	14	10	37.74%
San Juan	39	Sta. Lucia	2	2	9.76%
San Juan	39	Tagudin	5	4	18.18%
San Juan	39	Sta. Cruz	7	2	8.70%
Magsingal	34	Sto. Domingo	11	6	26.67%
Magsingal	34	San Vicente	5	3	15.38%
Magsingal	34	Sta. Catalina	10	6	27.27%
Magsingal	34	Vigan	3	2	10.81%
Magsingal	34	Cacayan	11	6	26.67%
Magsingal	34	Santa	22	8	28.57%
Magsingal	34	Narvacan	27	10	31.25%
Magsingal	34	Sta. Maria	61	17	35.79%
Magsingal	34	San Esteban	**65**	17	**34.34%**
Magsingal	34	Santiago	46	14	35%
Magsingal	34	Candon	14	9	**37.50%**
Megsingal	34	Sta. Lucia	2	2	11.11%
Magsingal	34	Tagudin	5	5	**25.64%**
Magsingal	34	Sta. Cruz	7	1	4.88%
Sto. Domingo	11	San Vicente	5	5	62.5%
Sto. Domingo	11	Sta. Catalina	10	10	95.24%
Sto. Domingo	11	Vigan	3	2	28.57%
Sto. Domingo	11	Caoayan	11	2	18.18%
Sto. Domingo	11	Santa	22	2	12.12%
Sto. Domingo	11	Narvacan	27	3	15.79%

Table 2 continued.....

Number ot Species				Number of Common 8pecies	Index of Similarity
Sto. Domingo	11	Sta. Maria	61	5	13.89%
Sto. Domingo	11	San Esteban	65	5	13.16%
St0. Domingo	11	Sto. Domingo	11	4	14.04%
Sto. Domingo	11	Candon	14	1	8%
Sto. Dmingo	11	Sta. Lucia	2	0	0%
Sto. Domingo	11	Tagudin	5	1	15.38%
Sto. Dcmingo	11	ta. Cruz	7	1	12.5%
San Vicente	5	Sta. Catalina	10	5	66.67%
San Vicente	5	Vigan	3	1	25%
San Vicante	5	Cacayan	11	1	12.5%
San Vicente	5	Santa	22	2	14.81%
San Vicente	5	Nanracan	27	2	12.5%
San Vicerte	5	Sta. Mata	61	3	9.10%
San Vicerte	5	San Esteban	65	5	14.28%
Sar. 'fcerte	5	Santiago	46	2	7.84%
Sar/certs	5	Ca&on	14	0	0%
Sar Vcate	5	Sa.La	2	0	0%
ar'/cerie	5	Tg	5	0	0%
ar1▾rte	5	Sa.Cg	7	0	0%
±. aaira	10	Vgan	3	2	30.77%
a. 'baira	10	Cacayan	11	2	17.$%
3a. araira	K	' Sara	22	2	12.5%
2. aaira	43	avaan	27	2	10.8f%
3 aira	9	S2.Vara	61	5	14.1%
3z.2zdrz	$2	Sans!etan	65	5	13.33%
S2.zara	$	' Sar▾ago	46	4	14.2$%
3a. aaira	1	' Cayo	14	1	8.53%
S2. Caira	1	Sa.Lca	2	0	0%
S2. Crarz	(0	Tag	5	1	13.33%
S2. Czara	10	Sa.Cruz	7	1	11.76%
Va	3	Caayan	11	3	42.66%
Yga	3	Santa	22	0	0%
Van	3	Narvacan	27	0	0%
Vgan	3	Sta. Mera	61	2	6.25%
Wigan	3	San Esteban	65	2	5.88%

Table 2 continued.....

Number ot Specles				Number of Common Speclees	Index of SImllarity
Vigan	3	Santiago	46	f	4.08%
Vigan	3	Candon	14	0	0%
Vigan	3	Sta. Lucia	2	0	0%
Vigan	3	Tagudin	5	1	12.5%
Vigan	3	Sta. Cruz	7	2	40%
Caoayan	11	Santa	22	1	6.06%
Ca0ayan	11	Narvacan	27	2	10.53%
Caoayan	11	Sta. Maria	61	6	16.67%
Caoayan	11	San Esteban	65	6	15.79%
Caoayan	11	Santiago	46	5	17.54%
Cacayan	11	Candon	14	2	16%
Cacayan	11	Sta. Lucia	2	1	15.38%
Cacayan	11	Tagudin	5	4	50%
Ca0ayan	11	Sta. Cruz	7	4	22.22%
Santa	22	Narvacan	27	22	89.80%
Santa	22	Sta. Maria	61	15	36.14%
Santa	22	San Esteban	65	15	34.48%
Santa	22	Santiago	46	14	41.18%
Santa	22	Candon	14	3	18.67%
Santa	22	Sta. Lucia	2	f	8.33%
Santa	22	Tagudin	5	2	14.81%
Santa	22	Sta. Cruz	7	2	13.79%
Narvacan	27	Sta. Maria	61	18	40.91%
Narvacan	27	San Esteban	65	18	39.13%
Narvacan	27	Santiago	46	17	46.58%
Nlarvacan	27	Candon	14	5	24.39%
arvacan	27	Sta. Lucia	2	1	6.90%
Narvacan	27	Tagudin	5	3	18.75%
Manvacan	27	Sta. Cruz	7	2	11.76%
Sta. Maria	61	San Esteban	65	59	93.65%
Sta. Maria	61	Santlago	46	45	84.11%
Sta. Maria	61	Candon	14	6	16%
Sta. Maria	61	Sta. Lucia	2	1	3.17%
Sta. Maria	61	Tagudin	5	4	12.12%

Table 2 continued.....

Number of Species				Number of Common Species	Index of Similarity
Sta. Maria	61	Sta. Cruz	7	4	11.76%
San Esteban	65	Santiago	46	44	79.28%
San Esteban	65	Candon	14	6	15.19%
San Esteban	65	Sta. Lucia	2	1	2.96%
San Esteban	65	Tagudin	5	4	11.43%
San Esteban	65	Sta. Cruz	7	4	11.11%
Santiago	46	Candon	14	6	20%
Santiago	46	Sta. Lucia	2	1	4.17%
Santiago	46	Tagudin	5	4	15.69%
Santiago	46	Sta. Cruz	7	3	11.32%
Candon	14	Sta. Lucia	2	2	25%
Candon	14	Tagudin	5	2	21.05%
Candon	14	Sta. Cruz	7	1	9.52%
Sta. Luca	2	Tagudin	5	1	28.51%
Sta. Lucia	2	Sta. Cuz	7	1	2222%
Tagudin	5	Sta. Cruz	7	3	50%

Table 2 shows the Index of Similarity of the economically important marine mollusks in Ilocos Sur. The similarity indices ranged from 0-95.24%. The highest IS value is 95.24% between Sto. Domingo and Sta. Catalina and the lowest is 0% between Sinait and Sta. Lucia, Cabugao and Sta. Lucia, Sto. Domingo and Sta. Lucia, San Vicente and Candon, San Vicente and Sta. Lucia, San Vicente and Tagudin, San Vicente and Sta. Cruz, Sta. Catalina and Sta. Lucia, Vigan and Santa, Vigan and Narvacan, Vigan and Candon and Vigan and Sta. Lucia. The data implies that the higher the index of similarity, the higher the number of common species of mollusks found in the two compared areas in terms of its total population. This further implies that the two compared areas have more or less the same environmental conditions such as water temperature, pH, salinity, and substrate.

Conclusions and Recommendations

There is a high diversity of economically important marine mollusks in Ilocos Sur. Most of the species belong to Class Gastropoda and are utilized for human consumption. Considering the high diversity of mollusks in Ilocos Sur, proper conservation and management of these resources as well as information dissemination of its biodiversity should be conducted.

A more thorough study on the abundance of the marine mollusks should be conducted to include biomass production and the effects of ecological factors such as illegal fishing method causing habitat destruction.

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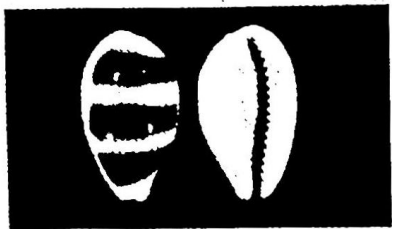
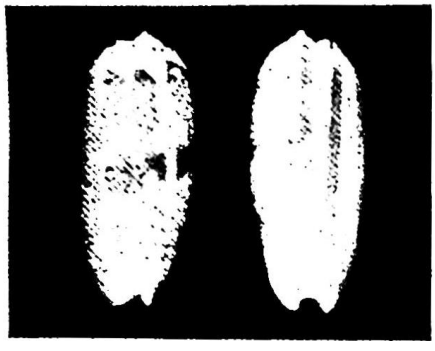
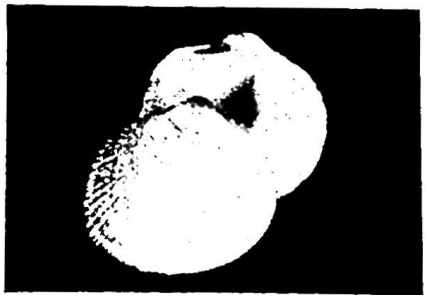
Lambis lambis

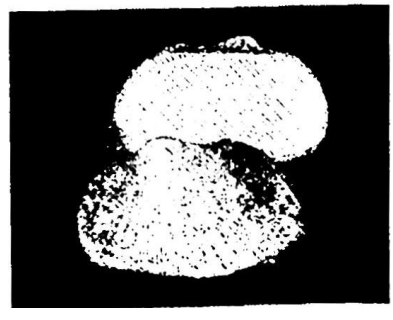
Angaria delphimus







Oliva hirasei



Pinna muricata