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## Species composition of marine food fishes at Palanan, Isabela as influenced by seasonal variation

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### Abstract

The present study was conducted to document the species composition of marine food fishes caught along the coastal waters of Palanan, Isabela at the onset of summer and rainy seasons. Ocular visits and personal interviews were conducted along the four landing sites at Palanan, Isabela namely; Dicotcotan, Sabang, Culasi and Dimolid. A total of seventy four (74) fish species belonging to 37 families and 9 orders were documented during the study periods. The families with the highest number of species identified were Acanthuridae and Carangidae with both eight species documented. *Acanthurus lineatus* (Blue-lined Surgeonfish) and *Atule mate* (Yellow-tailed Scad) were the most predominant species along the family Acanthuridae and Carangidae, respectively for both summer and rainy seasons. However, pelagic fish that belongs to the family Carangidae, Scombridae, Coryphaenidae, Synodontidae, Sphyrnidae, and Istiophoridae were very rare during rainy season. There were 19 species distributed to 8 families which are considered as by-catch and low-valued fish along the 4 landing sites of Palanan, Isabela.

**Keywords:** Marine fish species composition, seasonal variation, Palanan, Isabela.

### 1. Introduction

The coastal waters of the Cagayan Valley Region, located along the flow of the Kuroshio Current have been known to contain some of the country's most diverse ecosystems enriched by nutrients leached from the land. Its waters are characterized by extensive seaweed and sea grass beds and coral reefs which support highly diverse aquatic organisms. The Province of Isabela is the biggest province of the region and the second largest province in the Philippines. It has four coastal municipalities namely: Divilacan, Maconacon, Dinapigue, and Palanan<sup>[1]</sup>. Fishing is a primary source of livelihood of the people inhabiting the town of Palanan, one of the four coastal municipalities of Isabela. There may be a diversity of species caught along the fishing ground of Palanan, but information on the species identification of all fish species caught during the different season is not evident and the composition and volume of "by-catch and low valued fish" are not recorded and properly identified. There is a dearth of research conducted documenting the species composition, diversity, abundance and influence of seasonal variation, and the extent of dissemination of the results of these studies is poor. Similarly, the reef fishes of Pulau, Banggi, Sabah, Malaysia which not been actively managed or monitored before, are in situation where information about their seasonality and historical trends are required for assessing the fisheries status, and for making decisions for their sustainable management<sup>[2]</sup>. Furthermore, understanding such seasonal changes is important to the policy makers to conduct a program which can attain the different fisheries management strategies. Seasonal changes provide insights into the drivers of different fishing practices and fisher behavior, some of which are likely to have negative impacts on exploited fisheries (e.g., targeting spawning aggregations). Knowledge of seasonal effects on fisher behavior is valuable for evaluating alternative management policies like limiting fishing effort, or closing fishing zones<sup>[3]</sup>. The study was conducted primarily to identify the species composition caught and determine the influenced of seasonal variation on catch composition at the onset of summer (April) and rainy (October) seasons.

### 2. Materials and Methods

**2.1 Study area:** The Province of Isabela lies along the Northeastern Luzon of the Philippine archipelago. It is one of the five Provinces of Region II, which comprises 35 Municipalities, two Cities, and four Coastal towns. It lies with the geographical coordinates of 7°3'32" North, and 122°25'47" East.

Four (4) stations were established along the study area (Fig. 1) namely: Station I (Dicotcotan),

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Station II (Sabang), Station III (Culasi), Station IV (Dimolid). These Stations were chosen as the study area

since these are the fish landing stations at Palanan, Isabela.

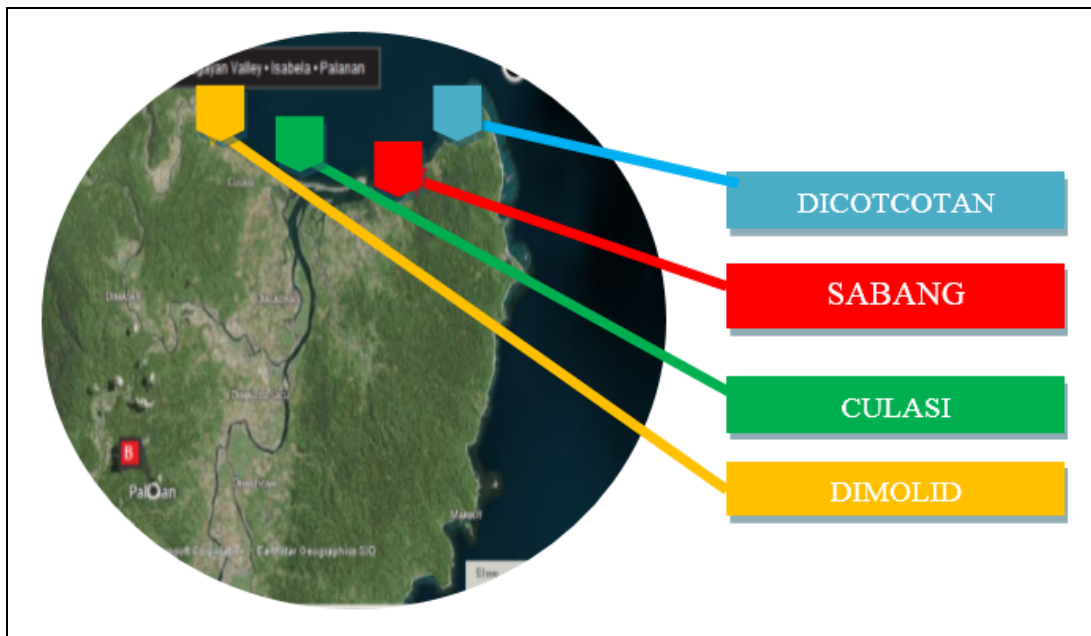


Fig 1: Distribution of stations along the study area

**2.2 Ocular Inspection and Interview** The interviews were conducted to 40 fishermen and/or vendors (10 persons per landing area) at the onset of summer (April) and rainy (October) season. Photo documentation of fish identified was also gathered.

**2.3 Species Identification** Fish species were initially identified using the following field guide and books: Atlas of Common Fishes of Tayabas Bay, Quezon Province, Philippines [4]. Field Guide to Fishes of Palawan was also used for further identification of marine fishes [5]. Final verification of species identified was conducted using the Fishbase website [6]. Aside from the taxonomic data (order, family, genus and species), English Name (EN), Tagalog Name (TG) and Paranan Name (PR) of fish species were also included in the documentation.

**3. Results**

**3.1 Species composition.** A total number of 74 species were identified along the study areas, distributed to 52 genera, 37 families, and 9 orders. The summary of identified fish species classified according to their family name, Scientific Name, English Name, Tagalog Name and Paranan Names is shown in Table 1.

The species distributed to families include: Acanthuridae, Ariidae, Caesionidae, Carangidae, Clupeidae, Congridae, Coryphaenidae, Cynoglossidae, Engraulidae, Ehippidae, Exocoetidae, Gerridae, Haemulidae, Hemiramphidae, Holocentridae, Istiophoridae, Kyphosidae, Labridae, Leiognathidae, Lutjanidae, Lethrinidae, Menidae, Mugilidae, Mullidae, Nemipteridae, Pempheridae, Polynemidae, Pomacentridae, Priacanthidae, Scaridae, Sciaenidae, Scombridae, Serranidae, Siganidae, Sphyracidae, Syndontidae, and Trichiuridae.

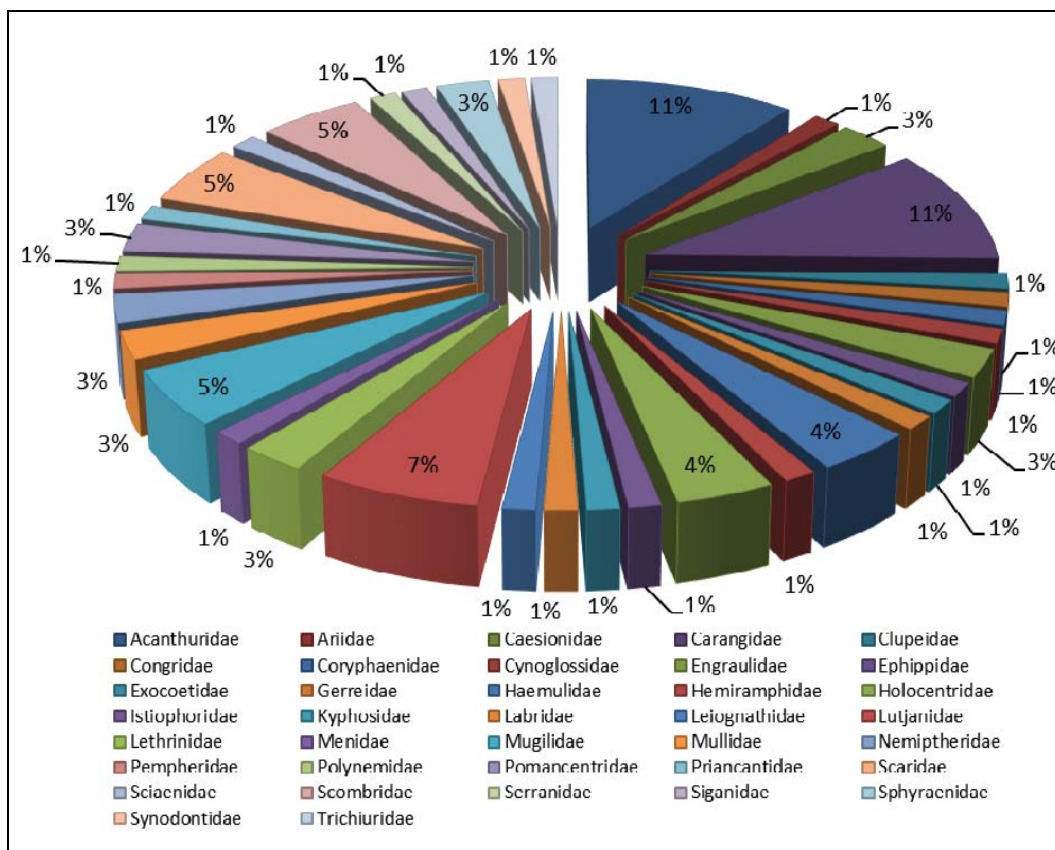
Table 1: Summary of Identified fish species classified by Family Name- Local Name (Paranan)

Family Name	Scientific Name	English Name	Tagalog (Filipino) Name	Paranan Name
Acanthuridae	<i>Acanthurus lineatus</i>	Blue-Lined Surgeonfish	Labahita	Mungit
	<i>Acanthurus nigrofuscus</i>	Brown Surgeonfish	Labahita	Mungit
	<i>Acanthurus barience</i>	Eye-Spot Surgeonfish	Labahita	Mungit
	<i>Acanthurus xanthopterus</i>	Yellowfin Surgeonfish	Labahita	Mungit
	<i>Acanthurus olivaceus</i>	Olive Tang; Shoulder Tang	Labahita	Mungit
	<i>Naso fageni</i>	Horseface Unicornfish	Surahan	Sarunguan
	<i>Naso tuberosus</i>	Humpnose Unicornfish	Surahan	Sarunguan
	<i>Naso annulatus</i>	White- Margin Unicornfish	Surahan	Sarunguan
Ariidae	<i>Arius maculatus</i>	Sea Catfish	Kanduli; Bunguan	Hito; Maranito
Caesionidae	<i>Caeso cuning</i>	Redbelly Yellow-Tail Fusilier	Dalagang- Bukid	Dalagang- Bukid
	<i>Pterocaesio pisang</i>	Slender Fusilier	Dalagang- Bukid	Dalagang- Bukid
Carangidae	<i>Atule mate</i>	Yellowtail Scad	Galonggong	Galonggong
	<i>Decapterus macarellus</i>	Mackerel Scad	Galonggong	Galonggong Bilog
	<i>Caranx papuensis</i>	Brassy Trevally	Galonggong	Talakitok; Malapundo
	<i>Caragoides chrysopterys</i>	Trevally	Talakitok	Talakitok
	<i>Trachinotus falcatus</i>	Permit	Pompano	Lapi's
	<i>Carangoides hedlandensis</i>	Bumpnose Trevally	Talakitok	Talakitok; Dalupani
	<i>Scombroides lysan</i>	Doublespotted Queenfish	Lapis	Lapi's
	<i>Scombroides tol</i>	Needleskin Queenfish	Lapis; Talang-Talang	Lapi's

Clupeidae	<i>Sardinella albella</i>	White Sardinella	<i>Tamban; Tabagak</i>	<i>Tamban-Hubad</i>
Congridae	<i>Conger cinereus</i>	Ashen Conger Eel	<i>Palos</i>	<i>Agmang</i>
Coryphaenidae	<i>Coryphaena hippuros</i>	Common Dolphinfish	<i>Dorado</i>	<i>Dorado; Lamarang</i>
Cynoglossidae	<i>Cynoglossus abbreviatus</i>	Flatfish	<i>Palad; Tampal-Puki</i>	<i>Palad; Tampal-Puki</i>
Engraulidae	<i>Anchoa mundeola</i> <i>Anchoa nasus</i>	False Panama Anchovy Longnose Anchovy	<i>Dilis-Puti; Dilis-Palad</i> <i>Dilis</i>	<i>Bolinao</i> <i>Dilis</i>
Ephippidae	<i>Platax teira</i>	Long- Finned Batfish	<i>Bayang; Katsir</i>	<i>Alibangbaang;</i> <i>Bayang- Bayang</i>
Exocoetidae	<i>Cheilopogon melanurus</i>	Atlantic Flyingfish	<i>Isdang- Lawin</i>	<i>Isdang- Lawin</i>
Gerridae	<i>Gerres oyena</i>	Common Mojarra	<i>Amorok</i>	<i>Salesi</i>
Haemulidae	<i>Plectorhincus lessoni</i>	Striped Sweetlips	<i>Lepti; Lambian</i>	<i>Bibiran</i>
	<i>Plectorhincus vittatus</i>	Indian Ocean Oriental Sweetlips	<i>Lepti; Lambian</i>	<i>Bibiran</i>
	<i>Pomadasyus argyreus</i>	Bluecheek Silver Grunt	<i>Aguot</i>	<i>Agut</i>
Hemiramphidae	<i>Hemiramphus far</i>	Black Barred Halfbeak	<i>Baritus</i>	<i>Barasut</i>
Holocentridae	<i>Myripristis murdjan</i>	Pinecone Soldierfish	<i>Siga-Siga; Baga- Baga</i>	<i>Tirtir; Siga-Siga</i>
	<i>Myripristis kumtee</i>	Shoulderbar Soldierfish	<i>Siga-Siga; Baga- Baga</i>	<i>Tirtir; Siga-Siga</i>
	<i>Myripristis violacea</i>	Lattice Soldierfish	<i>Siga-Siga; Baga- Baga</i>	<i>Tirtir; Siga-Siga</i>
Istiophoridae	<i>Istiophorus albicans</i>	Atlantic Sailfish	<i>Malasugi</i>	<i>Malasugi</i>
Kyphosidae	<i>Kyphosus vaigiensis</i>	Brassy Drummer	<i>Lupak;Elak</i>	<i>Umipos</i>
Labridae	<i>Thalassoma purpurum</i>	Surge Wrasse	<i>Mulmol</i>	<i>Molmol</i>
Leiognathidae	<i>Leiognathus equulus</i>	Common Ponyfish	<i>Sapsap</i>	<i>Sapsap</i>
Lutjanidae	<i>Lutjanus gibbus</i>	Hump-Back Red Snapper	<i>Maya-Maya</i>	<i>Maya-Maya</i>
	<i>Lutjanus decussates</i>	Checkered Snapper	<i>Maya-Maya; Mayang-Mayangbalang</i>	<i>Tagpian</i>
	<i>Lutjanus erythropterus</i>	Crimson Snapper	<i>Saging- Saging; Manila- Manila</i>	<i>Maya-Maya</i>
	<i>Lutjanus dodecakanthoides</i>	Sunbeam Snapper	<i>Saging-Saging</i>	<i>Dayangdang</i>
	<i>Lutjanus decussates</i>	Checkered Snapper	<i>Dolesan</i>	
Lethrinidae	<i>Lethrinus genivittatus</i>	Long-Spine Emperor	<i>Kanuping</i>	<i>Dugso</i>
	<i>Lethrinus obsolitus</i>	Orange-Striped Emperor	<i>Kanuping</i>	<i>Dugso</i>
Menidae	<i>Mene maculata</i>	Moonfish	<i>Bilong-Bilong</i>	<i>Tiyad-Tiyad</i>
Mugilidae	<i>Mugil bananensis</i>	Banana Mullet	<i>Banak</i>	<i>Gassak</i>
	<i>Moolgarda pedaraki</i>	Longfin Mullet	<i>Banak</i>	<i>Gassak</i>
	<i>Moolgarda perusii</i>	Longfinned Mullet	<i>Banak</i>	<i>Gassak</i>
	<i>Ellochelon vaigiensis</i>	Diamond-Scaled Mullet	<i>Banak; Ugapang</i>	<i>Gassak</i>
Mullidae	<i>Parupeneus indicus</i>	Yellow-Spot Goatfish	<i>Saramulyete</i>	<i>Kudong</i>
	<i>Upeneus vittatus</i>	Yellow-Striped Goatfish	<i>Saramulyete</i>	<i>Kudong</i>
Nemipteridae	<i>Nemipterus nematopus</i>	Yellow- Tipped Threadfin Bream	<i>Bisugo</i>	<i>Bisugo</i>
	<i>Scopelogadus maculatus</i>	Green Lined Spinecheek	<i>Silay</i>	<i>Silay</i>
Pempheridae	<i>Pempheris otaitensis</i>	Copper Sweetener	<i>Baga-Baga</i>	<i>Tabas-Tabas</i>
Polynemidae	<i>Filimanus similis</i>	Indian Sevenfinger Threadfin	<i>Mapwao, Murangilong,</i> <i>Murangungos</i>	<i>Dipulog</i>
Pomacentridae	<i>Abudefduf vaigeinensis</i>	Five-Banded Sergeant Major	<i>Puyong- Dagat, Palata</i>	<i>Pal-Lata</i>
	<i>Abudefduf luridus</i>	Canary Damsel	<i>Puyong- Dagat, Palata</i>	<i>Pal-Lata</i>
Priacanthidae	<i>Priacanthus hamrur</i>	Lunar- Tailed Big-Eye	<i>Buwan- Buwan</i>	<i>Bulan-Bulan</i>
Scaridae	<i>Scarus rivulatus</i>	Surf Parrotfish	<i>Mul-Mol</i>	<i>Molmol</i>
	<i>Chlorurus bleekeri</i>	Bleeker's Parrotfish	<i>Mul-Mol</i>	<i>Molmol</i>
	<i>Scarus niger</i>	Swarthy Parrotfish	<i>Mul-Mol</i>	<i>Molmol</i>
Scianidae	<i>Pennahia argentata</i>	Silver Croaker	<i>Abo; Alakaak</i>	<i>Tutu</i>
Scombridae	<i>Katsuwonus pelamis</i>	Skip Jack Tuna	<i>Tulingan; Tambakol</i>	<i>Dulyasan</i>
	<i>Auxis thazard</i>	Frigate Tuna	<i>Tulingan</i>	<i>Tulingan</i>
	<i>Scomberomorus commerson</i>	Narrow-Barred Spanish Mackerel	<i>Tangigui, Maladyong</i>	<i>Tangigui</i>
	<i>Rastrilliger kanagurta</i>	Indian-Mackerel	<i>Alumahan</i>	<i>Alumahan</i>
Serranidae	<i>Variola albimarginata</i>	White Edge Lyre Tail Cod	<i>Lapulapu; Lawihan</i>	<i>Lapu-Lapu</i>
Siganidae	<i>Siganus sphenus</i>	Scribbled Rabbitfish	<i>Samaral</i>	<i>Magerabu</i>
Sphyrnidae	<i>Sphyrna novaehollandiae</i>	Australian Barracuda	<i>Torsilyo, Tunggao</i>	<i>Batag</i>
	<i>Sphyrna jello</i>	Pickhandle Barracuda	<i>Rumpi, Torsilyo, Tunggao</i>	<i>Batag</i>
Syndontidae	<i>Saurida undosquamis</i>	Brush-Tooth Lizardfish	<i>Karaho; Pugot</i>	<i>Buttar</i>
Trichiuridae	<i>Eupleurogrammus muticus</i>	Malayan Hairtail	<i>Langkoy, Espada</i>	<i>Espada</i>

The families with the highest number of species identified are Acanthuridae and Carangidae with both eight species documented (Fig. 2). Species documented under family Acanthuridae includes *A. lineatus*, *A. nigrofuscus*, *A.*

*bariense*, *xanthopterus*, *A. olivaceus*, *N. fageni*, *N. tuberosus*, *N. annulatus* while *A. mate*, *D. macarellus*, *C. papuensis*, *C. chrysophrys*, *T. falcatus*, *C. hedlandensis*, *S. lysan*, *S. tol* under family Carangidae.



**Fig 2:** Percentage of identified fish (according to family) along the landing sites of Palanan, Isabela

**3.2 Influence of Seasonal variation on Catch composition**

The summary of species caught during the two seasons is presented in Table 2. It has been observed that some species under family: Ariidae, Carangidae, Clupeidae, Coryphaenidae, Engraulidae, Exocoetidae, Istiophoridae,

Labridae, Leiognathidae, Menidae, Mugilidae, Mullidae, Nemipteridae, Polynemidae, Scombridae, Sciaenidae, Serranidae, Sphyraenidae, Trichiuridae, were present at the onset of summer (April) but not documented at the onset of rainy (October) season.

**Table 2:** Comparison of species composition caught during summer and rainy seasons

Species Composition	Summer Season	Rainy Season
Acanthuridae		
<i>Acanthurus lineatus</i>	✓	✓
<i>Acanthurus nigrofuscus</i>	✓	✓
<i>Naso fageni</i>	✓	✓
<i>Naso tuberosus</i>	✓	X
<i>Naso annulatus</i>	✓	✓
<i>Acanthurus barience</i>	✓	✓
<i>Acanthurus xanthopterus</i>	✓	✓
<i>Acanthurus olivaceus</i>	✓	✓
Ariidae		
<i>Arius maculatus</i>	✓	X
Caesionidae		
<i>Caeso cuning</i>	✓	✓
<i>Pterocaesio pisang</i>	✓	✓
Carangidae		
<i>Atule mate</i>	✓	X
<i>Decapterus macarellus</i>	✓	X
<i>Caranx papuensis</i>	✓	✓
<i>Caragoides chrysophrys</i>	✓	✓
<i>Carangoides hedlandensis</i>	✓	✓
<i>Trachinotus falcatus</i>	✓	X
<i>Scomberoides lysan</i>	✓	X
<i>Scombroides tol</i>	✓	X
Clupeidae		
<i>Sardinella albella</i>	✓	X
Congridae		

<i>Conger cinereus</i>	✓	✓
Coryphaenidae		
<i>Coryphaena hippurus</i>	✓	X
Cynoglossidae		
<i>Cynoglossus abbreviatus</i>	✓	✓
Engraulidae		
<i>Anchoa mundeola</i>	✓	X
<i>Anchoa nasus</i>	✓	X
Ephippidae		
<i>Platax teira</i>	✓	✓
Exocoetidae		
<i>Cheilopogon melanurus</i>	✓	X
Gerreidae		
<i>Gerres oyena</i>	✓	✓
Haemulidae		
<i>Plectorhincus lessoni</i>	✓	✓
<i>Plectorhincus orientalis</i>	✓	✓
<i>Pomadasys argyreus</i>	✓	✓
Hemiramphidae		
<i>Hemiramphus far</i>	✓	✓
Holocentridae		
<i>Myripristis murdjan</i>	✓	✓
<i>Myripristis kuntee</i>	✓	✓
<i>Myripristis violacea</i>	✓	✓
Istiophoridae		
<i>Istiophorus albicans</i>	✓	X
Kyphosidae		
<i>Kyphosus vaigiensis</i>	✓	✓
Labridae		
<i>Thalassoma purpurum</i>	✓	X
Leiognathidae		
<i>Leiognathus equulus</i>	✓	X
Lutjanidae		
<i>Lutjanus gibbus</i>	✓	✓
<i>Lutjanus decussates</i>	✓	✓
<i>Lutjanus erythropterus</i>	✓	✓
<i>Lutjanus dodecacanthoides</i>	✓	✓
<i>Lutjanus decussates</i>	✓	✓
Lethrinidae		
<i>Lethrinus genivittatus</i>	✓	✓
<i>Lethrinus obsolitus</i>	✓	✓
Menidae		
<i>Mene maculata</i>	✓	X
Mugilidae		
<i>Mugil bananensis</i>	✓	✓
<i>Moolgarda pedaraki</i>	✓	✓
<i>Moolgarda perusii</i>	✓	✓
<i>Ellochelon vaigiensis</i>	✓	X
Mullidae		
<i>Parupeneus indicus</i>	✓	X
<i>Upeneus vittatus</i>	✓	X
Nemiptheridae		
<i>Scolopsis cacellatus</i>	✓	X
<i>Nemipterus nematopus</i>	✓	✓
Pemppheridae		
<i>Pempheris otaitensis</i>	✓	✓
Polynemidae		
<i>Filimanus similis</i>	✓	X
Pomacentridae		
<i>Abudefduf vaigeinsis</i>	✓	✓
<i>Abudefduf luridus</i>	✓	✓
Priacanthidae		
<i>Priacanthus hamrur</i>	✓	✓
Scaridae		
<i>Scarus rivulatus</i>	✓	✓
<i>Chlorurus bleekeri</i>	✓	✓
<i>Scarus niger</i>	✓	✓
<i>Thalassoma purpurum</i>	✓	✓

Sciaenidae		
<i>Pennahia argentata</i>	✓	X
Scombridae		
<i>Katsuwonus pelamis</i>	✓	✓
<i>Auxis thazard</i>	✓	✓
<i>Scomberomorus commerson</i>	✓	X
<i>Rastrilliger kanagurta</i>	✓	X
Serranidae		
<i>Variola albimarginata</i>	✓	X
Siganidae		
<i>Siganus sphenus</i>	✓	✓
Sphyraenidae		
<i>Sphyraena novaehollandiae</i>	✓	X
<i>Sphyraena jello</i>	✓	X
Synodontidae		
<i>Saurida undosquamis</i>	✓	✓
Trichiuridae		
<i>Eupleurogrammus muticus</i>	✓	X

Note: ✓ - present X - absent

Results showed that Acanthuridae and Carangidae are the most predominant fish family at the onset of summer (April), while Acanthuridae and Lutjanidae for the rainy (October)

season. In general, species under family Acanthuridae are considered to be most predominant family for summer and rainy seasons (Fig. 3).

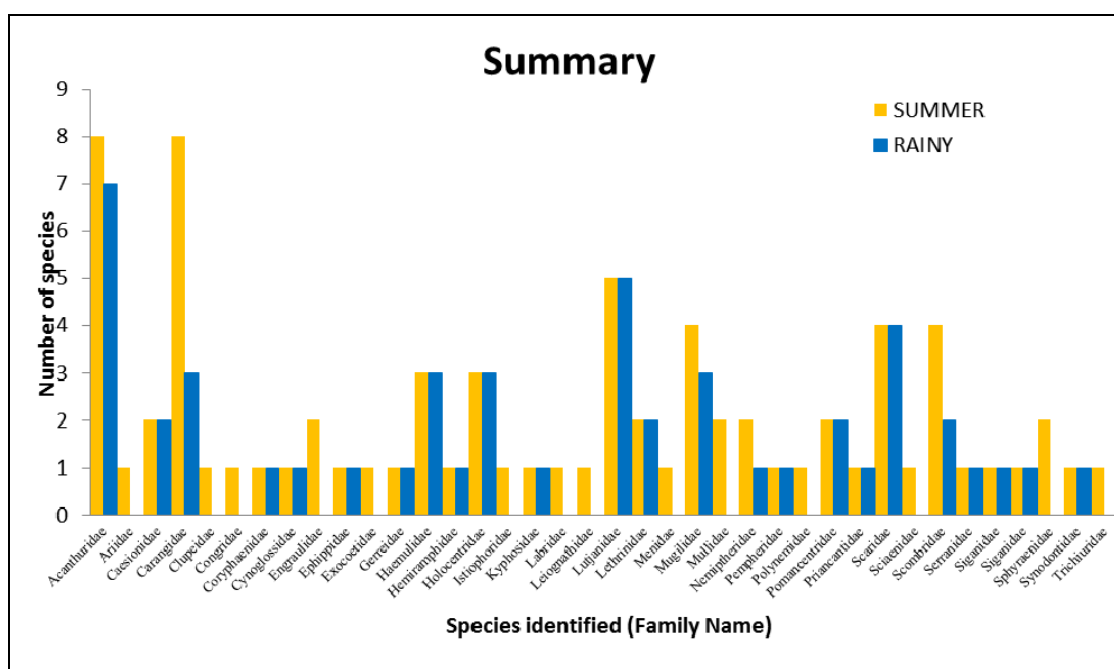


Fig 3: Comparison on the number of species caught at the onset of summer (April) and rainy (October) seasons

**4. Discussion**

Fish diversity, abundance and distribution in the bodies of water plays a significant role in the development, management and conservation programs. In addition, studies of diversity, distribution and species composition of fishes are important to observe the factors affecting the community structure of the fishes [7].

Throughout the two seasons, most of species were found at the coralline portion from Stations 1 and 2 that belongs to the following families: Acanthuridae (Surgeon and Unicornfish), Caesionidae, Congridae, Epiplatidae, Gerridae, Haemulidae, Hemiramphidae, Holocentridae, Kyphosidae, Labridae, Lutjanidae, Lethrinidae, Mullidae, Nemipteridae, Pempheridae, Pomacentridae, Priacanthidae, Scaridae, Serranidae, Siganidae ). For Stations 3 and 4, forage fishes that were found along the sandy portion of the fishing ground

belongs to family Clupeidae (Sardines), Exocoetidae (Flying fishes), Engraulidae (Anchovies), Carangidae (Scads), and Caesionidae (Fusiliers). Moreover, *Acanthurus lineatus* (bluelined- surgeonfish) a coralline fish and *Atule mate* (Yellow- tailed scad) a forage fish that belongs to family Acanthuridae and Carangidae were the most predominant species along the landing sites of Palanan. On the other hand, the least abundant species was *T. purpureum* (Surge Wrasse). Pelagic fish that belongs to family Carangidae, Scombridae, Coryphaenidae, Synodontidae, Sphyraenidae, and Istiophoridae were found to be rare during rainy season. However, species belonging to family Acanthuridae, Pempheridae, Pomacentridae, Holocentridae, were considered as by-catch while *Atule mate* (Carangidae) and *C. melanurus* (Exocoetidae) were considered as low-valued fish due to excessive catch rate during summer season.



The findings of the present study was more or less similar to the findings of Ayson and Encarnacion (2008), which reported that the major species caught in the commercial sector are round scad, anchovy, tuna and other tuna-like species along the coastal areas at Cagayan valley, Philippines [8].

There were more fish species caught during April-June (summer) than in September - December (rainy season) which are found at selected landing areas of Northern Samar. Galenzoga and Quiñones (2014) stated that during the second quarter of the year, i.e. April-June when the fishes are on their most abundant periods, juveniles, young adult fishes and all stages fish go out on their abode areas. However, on the fourth quarter of the year, i.e. October-December, some species of marine organisms were not found or few in number on the landing areas in some reasons either they are dormant or hibernating; or were resting due to their gestation period [9]. It was proven that there were more species of fin-fishes caught during summer rather than rainy season and this is possibly due to some environmental factors such as: relatively stable condition, water- flow and increased of photosynthetic activities from that allows greater production of phytoplankton's a rich food source for many fish species [10]. In addition, migration by means of spawning, in which the overall migration pattern typically follows a triangular pattern, also affects the abundance of fishes. The adults migrate in a direction opposite that of surface currents, toward areas suitable for spawning and close to waters that support the high concentrations of plankton needed by the larval fish. The adults then return to feeding area, while the larvae drift in the surface currents to a nursery area. As they grow, the juvenile fish actively migrate to the adult areas [11].

## 5. Conclusion

It is evident that Palanan, Isabela is abundant on the fish species composition based on the number of species documented. Migration due to source of food and spawning of large pelagic species were really affected by seasonal variation.

## 6. References

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