Diversity of Macroalgae in Porok Beach and Ngrumput Beach

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Abstract. Macroalgae or seaweeds is one of the main feedstock of coastal area in Gunungkidul, Yogyakarta. Macroalgae has an important role as primary producer in the coastal ecosystem. Several species of macroalgae have been used by the local society around coastal area of Gunungkidul Yogyakarta, but the data of biodiversity about macroalgae in Porok Beach and Ngrumput beach is not available yet. This research aims to study the diversity of macroalgae in the intertidal zone of Porok Beach and Ngrumput Beach , Gunungkidul, DIY which is characterized by the rocky and sandy substrate. The study was conducted on September 9 , 2018. Data were collected using purposive random sampling method. The result of this research is analyzed using Sorensen's similarity index (S) based on both the number of common species in two communities of macroalgae in Porok Beach and Ngrumput Beach. The result of this research shows 26 species of macroalgae found in Porok Beach and 17 species of macroalge found in Ngrumput Beach. The similiarity index (S) was 69.76%.

Keywords: macroalgae, Gunungkidul, diversity, Porok Beach, Ngrumput Beach

Diversity and Abundance of Macroalgae in Intertidal Zone of Porok Beach, Gunungkidul, D.I Yogyakarta

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Abstract. Porok Beach is one of the beaches in Kemadang Village, Tanjungsari sub-district, Gunungkidul district, Yogyakarta, Java Island, Indonesia. Porok beach is dominated by the type of substrate in the form of rocky, this point that macroalgae need to attach to the substrate through their holdfast to survive the waves of seawater. So, the purpose of this study is to find out the diversity of Macroalgae that exist along with its Species important value index (indices) in Porok Beach. This research sampling method using line transects performed on intertidal areas using a 1mx1m plot and sampling environmental parameters are temperature, salinity, and pH. All data from observations, calculated to found density (Ds), frequency (F), dominance (D), relative density (DR), relative frequency (FR), relative dominance (DR) and Species important values index (NP). f macroalgae species in Porok Beach obtained 15 macroalgae species consisting of 8 Rhodophyta species, 5 Chlorophyta species and 2 Phaeophyta species. The highest species important values index is the species *Cladophora* sp. that is 41.92%, while the lowest important value is *Gracilaria edulis* which is 3.62%.

Key words: Abundance, Diversity, Macroalgae, Species Important Value Index, Porok Beach

Diversity of Macroalgae in Intertidal Zone of Ngrumput Beach, Gunung Kidul, D.I. Yogyakarta

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Abstract. Macroalgae or seaweeds are marine plants that play important roles in the marine ecosystem. They are the major food source for a wide variety of vertebrates and invertebrates in the marine ecosystem and beneficial for humans. Several species of macroalgae have been used by the local society around coastal area of Gunung Kidul Yogyakarta, but the data of biodiversity about macroalgae in Ngrumput beach is not available yet. This research aims to study the diversity of macroalgae in the intertidal zone of Ngrumput Beach Gunung Kidul, DIY which is characterized by the rocky substrate, while the zone close to shore has sandy substrate. The study was conducted on September 9, 2018. Data were collected using purposive random sampling method. Measurement of ecological parameters including water temperature, air temperature and pH. All of the three division of macroalgae were found there, the results showed that macroalgae were found consist of six species of Chlorophyta, two species of Phaeophyta, and nine species of Rhodophyta.

Key words: Diversity, Macroalgae, Marine Ecosystem, Ngrumput Beach, Systematic

Ecosystem Conservation Of Coral Reef in Taman Nasional Kepulauan Seribu

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Abstract. Coral reef ecosystem is a unique community among other marine communities that forms from biological activities. Coral reef ecosystem is a typical ecosystem of tropical waters as a habitat for various marine biota to grow and breed in a balance chain. The prominent characteristics of coral reefs is their high productivity and diversity in both species and numbers, and the morphology varies greatly. In 2014, coral reefs were degraded due to continuous heavy pressure and human activities both on land and sea. Based on previous research, we can determine the level of coral reef degradation each year, and it is necessary to identify the species of coral reefs in Taman Nasional Kepulauan Seribu. This study aims to determine the species of coral reefs in Taman Nasional Kepulauan Seribu and the percentage of degradation of coral reefs. Data were collected using purposive random sampling method by snorkeling at a depth of 3-5 m, and then identified. Based on this research, there were 28 species of coral found in Taman Nasional Kepulauan Seribu, but the percentage level of degradation was not yet understood.

Keywords: Degradation, Ecosystem, Rehabilitation, Taman Nasional Kepulauan Seribu, Coral Reef.

Seagrass Diversity in Intertidal Zone of Taman Nasional Laut Kepulaun Seribu

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Abstract. The territorial waters of the Taman Nasional Laut Kepulauan Seribu are ecosystems shallow marine waters compiled by several major ecosystems including coral reef ecosystems, seagrass beds and mangrove ecosystems. Seagrass population in Indonesia are known to be 12 species. So this study aims to determine the diversity of the number of species of seagrass in the Taman Nasional Laut Kepulauan Seribu. The method used is random sampling in the intertidal zone of the Taman Nasional Laut Kepulauan Seribu waters with sand substrate. This research was conducted on July 22, 2018. Based on the research that has been done, there were 7 species, *Cymodocea rotundata*, *Cymodocea serrulata*, *Halodule univervis*, *Halophila ovalis*, *Halophila spinulosa*, *Syringodium isoetifolium*,and *Thalassia hemprichii*.

Keywords: Diversity, Seagrass, Taman Nasional Kepulauan Seribu, Intertidal zone

Seaweed Abundance and Diversity in Intertidal Zone of Porok Beach Gunungkidul, Yogyakarta

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Abstract. Seaweed are marine plants that play important roles in marine ecosystem and beneficial for humans. Several species of seaweed have been used by local society around coastal area of Gunung Kidul Yogyakarta, but research about diversity and abundance information of seaweed in Porok Beach was not yet understood. The study was conducted on September 15th, 2018. This research aims to study diversity and abundance of seaweed in intertidal zone of Porok Beach. This research sampling method using line transects and stratified random sampling method were used quadrat plot 1x1 m which sub-plot 10 cm ×10 cm. Measurement of ecological parameters including water temperature, air temperature, pH, and salinity.The result showed that there are 15 species of seaweed found in Porok Beach .The diversity of Rhodophyceae consists of eight species they are *Chondrus crispus, Gelidium pusillum, Gigartina sp., Gracilaria gracilis, Gracilaria edulis, Gracilaria salicornia, Laurencia papillosa, Acanthopora spicifera*, Chlorophyceae consists of five species they are *Chaetomorpha crassa, Cladophora sp., Halicystis sp., Ulva intestinalis,* and *Ulva lactuca* , and Phaeophyceae consists of two species they are *Sargassum cristaefolium* and *Sargassum polycystum.*.The highest species coverage is *Ulva lactuca (9,07%)*

Key words : seaweed, Gunungkidul, abundance, diversity

Comparison of Macroalgae Abundance and Diversity at Intertidal Zone of Porok Beach, Gunungkidul in Dry and Rainy Seasons

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Abstract. Macroalgae is a formed of algae as a marine benthic organisms and multicellular. One limiting factor in seaweed cultivation is the planting season. The results show that the response of seaweed growth varies between times and seasons of the year. Samples of Algae were collected with random sampling method along the intertidal zone of Porok Beach by 100 m x 100 m quadrat plot with sub-plot 10 mx10 m. The samples are identified by morphological characters thallus. The taxonomical classification key was used as a guide for species identification. Based on the results of the study in 2017, it was found that species with the highest coverage value in the dry season of the Chlorophyta class were *Cladophora* sp. that is 19.44% / m^2, in the dry season the lowest macrolagae closure is in the Chlorophyta class, namely the *Boergesenia* sp. amounting to 0.002% / m^2 and in 2018 the highest coverage in the rainy season is *Ulva lactuca* of 9.07% / m^2, in the rainy season the lowest macrolagae closure is in the Rhodophyta class, namely the *Gigartina* sp. amounting to 0.10% / m^2

Keywords*:* Macroalgae; Abundance; Diversity; Intertidal Zone; Dry Seasons; Rainy Seasons

The Diversity Of Echinoderms (Echinoidea And Ophiuroidea) in Sarangan Beach, Gunung Kidul, Yogyakarta

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Abstract. Gunung Kidul is a district in Special Region of Yogyakarta, Indonesia which has a lot of beaches with diverse marine biota. Sarangan Beach is located in Gunung Kidul which dominated by sand and coral as its substrate. Echinoderms Fauna are divided into five classes: Asteroidea, Ophiuroidea, Echinoidea, Holothuroidea, and Crinoidea. This research aimed to monitored the diversity of Echinoidea and Ophiuroidea in Sarangan Beach, Gunung Kidul. Research was conducted on 31st March, 2018 and consisted of two stages, sampling and identification. Sampling was conducted using purposive sampling method. Collected samples were then preserved for diagnostic characters observation. In this study, we found four species belong to Echinoidea class, they are: *Stomopneustes variolaris*., and *Echinometra mathaei*. The species of Ophiuroidea Class found are: *Ophiomastix annulosa*, *Ophiocoma scolopendrina*, and *Macrophiotrix longipeda*.

Abundance and Distribution Pattern of Echinoderms in Sarangan Beach, Gunung Kidul, Yogyakarta

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Abstract. Indonesia as archipelago country has a wide sea and long coastal line, it have caused a high biodiversity. Gunung Kidul is one of many beach in Indonesia, which has echinoderms abundancely. The information about echinoderms especially in Sarangan beach, Gunung Kidul, Yogyakarta have not been known yet. There is no research about it yet. The purpose of this research is to get the data about abundance of echinoderms in Sarangan beach, Gunung Kidul, Yogyakarta. The research method was used quadrant plot. Sampling design of plot is baseline 45 meters which parallel to coastal line, then Main transect divided into three transect lines. Each of transect was put dawn 15 plots with size 1x1 meter, distance between plots and transects are 3 meters and 10 meters. The result of this research is analyzed with measure the Margalef index (D), Pielou index (e), and Shannon-Wiener index (H'). Then analyze the distribution pattern and habitat parameters. Echinoderms in Sarangan beach is abundance. Distribution pattern of *Echinometra mathei* is uniform, *Stomopneustes variolaris* is clumped, *Ophiomastix annulosa* is clumped, *Holothuria* sp. is clumped, and *Macrophiothrix longipeda* is clumped.

Keywords: abundance, distribution pattern, Sarangan beach, echinoderms

The Diversity of Echinoderms in Sarangan Beach, Gunung Kidul, Yogyakarta

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Abstract. Indonesia as an archipelago country has a wide sea and long coastal line, it have caused a high biodiversity. Gunung Kidul is one of the regencies in the Special Region of Yogyakarta which is famous for its many beaches which have high marine biodiversity. Sarangan Beach is one of the beaches located in Gunung Kidul which is dominated by the surface of the substrate in the form of sand, coral, and macroalgae, so that on this beach can be found various kinds of marine biota, one of which is Echinodermata. The variety of Echinoderms in the Indonesian coast, especially Sarangan Beach, is not widely known, so the purpose of this research is to determine the diversity of Echinoderms on that beach. This research was conducted on 2 October 2018 at 04.30 WIB. Sampling was carried out at Sarangan Beach using *purposive random sampling* method, then the sample was further preserved and identified. The results obtained from this study were the discovery of 1 species from the class Asteroidea namely *Anthenea* sp., found 3 species of Ophiuroidea class namely *Ophiocoma scolopendrina*, *Ophiomastix annulosa*, and *Ophiocoma erinaceus*, and found 4 species of Echinoidea class namely *Colobocentrotus atratus*, *Heterocentrotus trigonarius*, *Stomopneustes variolaris*, and *Echinometra* sp.

Keywords: diversity, Sarangan beach, echinoderms, Asteroidea, Ophiuroidea, Echinoidea.

Gastropod diversity in intertidal zone of Poganda Beach, Luk Panentang, Banggai Kepulauan, Central Sulawesi, Indonesia

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Abstract. Poganda beach is located in Luk Panenteng, Banggai Kepulauan, Central Sulawesi, Indonesia. The beach is still natural and the substrates are dominated by fine sands and coral reef, which is suitable as the habitats of Gastropods. Gastropods is one of the class in Molluscs, and the most highly diversified class. The aim of this research was to understand the diversity of Gastropods in intertidal zone of Poganda beach, Luk Panenteng, Banggai Kepulauan, Central Sulawesi. The research was conducted on July-August 2018. The research held when ecological parameter was ± 30ºC for water temperature and pH about 6.8-7.0 . The collection of the samples is conducted using purposive random sampling method. The result of this research shows 8 families of Gastropods. They were Angariidae, Cassidae, Cypraeidae, Olividae, Patellidae, Ranellidae, Strombidae, and Trochidae. The most diverse family in this research was Strombidae which consist of 3 Genera.

Keywords: Diversity, gastropods, Luk Panenteng

Abundance of Gastropods in Krakal Beach, Gunung Kidul, Yogyakarta

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Abstract. Krakal Beach is located in Gunung Kidul Regency, Yogyakarta Special Region. Krakal Beach is called the reef beach because it is built by a stretch of coral animals with various marine biota and stretches for 5 kilometers. The aim of this study was to determine the abundance of Mollusc in the intertidal zone of Krakal Beach. The study was conducted in April 2018 at night in the Krakal Coast intertidal zone using the quadrant plot method. The research held when ecological parameter was ± 270C for water temperature and 7 for pH. Twelve transects along the beach were made with four plots on every transect. So that, there were 40 plots data which were analyzed using Shannon-Wiener index of diversity (H'), evenness index (E), and dominancy index (D). The result of this research shows 48 species of classes Gastropods. The most abundant species in this study were *Cyprea* sp. (6 individuals). The diversity index (H') was 3.6948, the evenness (E) index was 1.28, and the dominance index (D) was 0.0306.

Keywords: Abundant, Gastropods, Krakal

Biodiversity of Mollusc in Intertidal Zone of Krakal Beach, Gunungkidul, Yogyakarta, Indonesia

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Abstract. Krakal beach is located in Ngestirejo, Tanjungsari, Gunungkidul, Yogyakarta, Indonesia. This tourism beach still natural and the substrates dominated by fine sand and coral. Mollusc is invertebrate which have three main parts of body, that is the legs, visceral mass, and mantle. Most mollusc live in the sea and some of this live in freshwater and land. This research aimed to understand the diversity of molluscs in intertidal zone of Krakal beach, Gunungkidul, Yogyakarta. The research was conducted on March 4th 2018 in Krakal Beach, Gunung Kidul, Yogyakarta Indonesia (S8°8'42.3" E110°36'8.9"). Data collection was carried out in intertidal zone of Krakal Beach and the ecological parameters includes ± 27°C for water temperature, ± 35.877 PPS for salinity, and ± 8 for pH. This research used purposive random sampling as method. The result of this research revealed 15 families of classes Gastropods and 3 families of classes Bivalves. The families of classes Gastropods that found were Volutidae, Buccinidae, Bursidae, Conidae, Ranellidae, Cypraeidae, Pisaniidae, Muricidae, Mitridae, Nassariidae, Neritidae, Columbellidae, Cerithiidae, Trochidae, and Rostellariidae. Meanwhile, families of classes Bivalves that found were Arcidae, Lucinidae, and Veneridae.

Key words: Biodiversity, Krakal, Mollusc

Biodiversity of Mollusc in Intertidal Zone at Sundak Beach, Gunungkidul, Yogyakarta, Indonesia

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Abstract.

Sundak Beach is located in Sidoharjo Village, Tepus District, Gunung Kidul Regency, Special Region of Yogyakarta, Indonesia. The beach is relatively untouched by commercial exploitation, so that the ecosystem is still well-maintained. Sundak beach is dominated by fine white sands and coral reefs, which is suitable for the habitat of Molluscs. The aim of this research is to study the diversity of molluscs in intertidal zone of Sundak Beach. This research was conducted on October 5th 2018. The research held when the ecological parameter was ±24oC for water temperature, ±25oC for air temperature, 36 ‰, and 7,9 for water pH. Samples were collected by using purposive random sampling method. The result of this research shows 10 families of molluscs. They were Mytilidae, Arcidae, Bullidae, Conidae, Cerithiidae, Naticidae, Mitridae, Cypraeidae, Nassariidae, and Fissurelidae.

Keywords *:* Diversity, Molluscs, Sundak Beach

Diversity of Crabs in the Intertidal Zone at Sundak Beach, Gunung Kidul Yogyakarta

Crabs are members of the subphylum Crustacea that can be found in various habitats, such as in the intertidal zone at sundak Beach. However, sundak Beach is a popular tourist attraction with tremendous trampling activities. This can cause habitat loss of crabs. Information on the diversity of crabs at sundak Beach is still limited. Characterized by rocky, seagrass and macroalgae substrate. Therefore, this study aims to provide you a systematic list of decapod crustaceans as a database of sea creature in Sundak Beach which survive since three year in the past. This research using purposive sampling method. The results showed that There were 10 species that we obtained from Sundak Beach on October 5th, 2018. The spesies such is *Calappa gallus, Calcinus laevimanus, Tiarinia corginera, Pilumnus verspertillio, Charybdis natator, Atergatis floridus, Portunus granulatus, Thalamita crenata, Actaeodes tomentosus, Etisus laevimanus.* The diversity of crabs found on the 3rd sampling can be affected by habitat parameters (such as water and air temperature, salinity and pH) , sampling method (purposive random sampling), and natural disaster that recently happen in Sundak Beach.

Diversity of Decapod Crustaceans on Intertidal Zone of Porok Beach in Gunungkidul, Special Region of Yogyakarta

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Absract. Decapod crustaceans are member of tropical benthic communities and have crucial ecological function on coastal area. Human activities in Porok Beach have increased gradually, due to Gunungkidul as new emerging popular tourist destination in Special Region of Yogyakarta. This condition may cause habitat loss of decapod crustaceans. However, there hasn't been any scientific report about the diversity of decapod crustaceans in Porok Beach. This study aims to provide systematic list of decapod crustaceans,as a preliminary study for further research and also a document base of marine area in Porok Beach, Gunungkidul. The study was conducted on intertidal zone and samples were collected using purposive random sampling method in August 2018. The result shown that 8 species from 4 families are recorded. These species consist of *Aniculus aniculus* (Diogenidae), *Calcinus laevimanus* (Diogenidae), *Clibanarius virescens* (Diogenidae), *Portunus* sp. (Portunidae), *Thalamita prymna* (Portunidae), *Thalamita* sp. (Portunidae), and the other 2 species from Majiidae and Plagusiidae are unidentified. They are all grouped in conservation status as least concern species.

Key words: *decapod, habitat loss, purposive random sampling, species inventory, tropical benthic community.*

Diversity of Fish Families in Intertidal Zone of Krakal Beach, Gunung Kidul, Yogyakarta

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Abstract. Intertidal zone is a transition area between sea and land. High tide and low tide happen periodically twice a day in intertidal zone of Krakal Beach. Krakal Beach has been known as one tourism object in Gunung Kidul, Yogyakarta for years. The intertidal zone of Krakal Beach consist of coral reefs with long coastline. The study about biodiversity of fish families in this beach become attractive. This research aims to determine the diversity of fish families in the intertidal zone of Krakal Beach. The research was conducted in March 2018. The method used is free sampling. The results show that there are 7 families and 9 species. The families are *Muraenidae*, *Scorpaenidae*, *Acanthuridae*, *Blenniidae*, *Apogonidae*, *Labridae*, *Pomacentridae*. These fish families were found in sveral kind of habitat, such as rock, sea grass, sea weed, and reef. This result has decreased compared to data in 2012 which has 10 families and 12 species. This is indicate that the intertidal zone of Krakal Beach has undergone a change. This change can be caused by the development of tourism on this beach for the past few years. Periodically research need to be done for better data and supervision.

Keyword: Intertidal Fish, Intertidal Zone of Krakal Beach, Fish Biodiversity.

Biodiversity Changes of Fish Families in Intertidal Zone of Kukup Beach, Gunung Kidul, Yogyakarta

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Abstract. Kukup Beach is increasingly becoming a popular tourist destination in Gunung Kidul, Yogyakarta. However, this may have impact on the biodiversity of the fish families in intertidal zone of the beach. This study aims to assess the biodiversity changes of fish families in intertidal zone of Kukup beach. Purposive random sampling was carried out in June 2018 in the morning during low tide. The obtained families were compared to 2014 and 2016 sampling data. The results showed that four families of Acanthuridae, Chaetodontidae, Gobiidae and Pomacentridae were found. Eleven families were found in 2014, while six families were found in 2016. There is a decline in the biodiversity of fish families in intertidal zone of Kukup beach. This can be caused by the increasing number of beach visitors everyyear. Periodic research is required for a more accurate assessment. Further study related to correlation between the increasing numbers of tourist in Kukup Beach and the biodiversity changes in the intertidal zone is also required.

Keywords: Acanthuridae, Gobiidae, Pomacentridae, *Biomonitoring*