

Diversity and Density of Pleco (Pterygoplycthis sp) in Ciliwung River, Jakarta Indonesia

by Dewi Elfidasari

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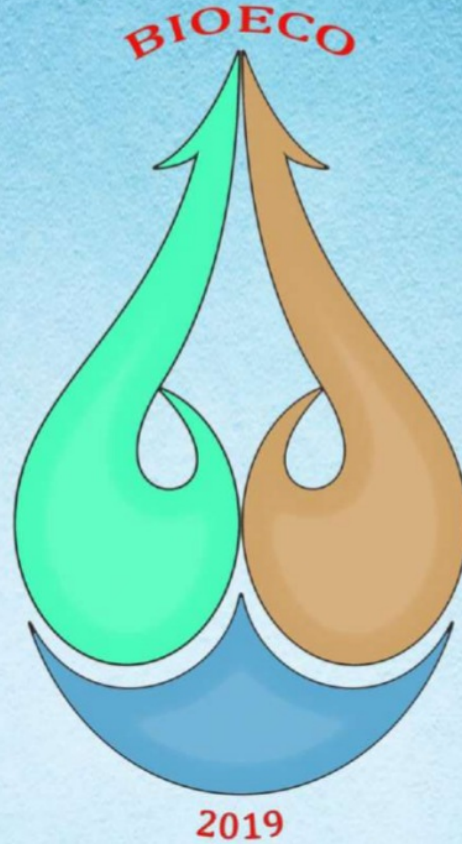
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SCIENCES SYMPOSIUM PROCEEDINGS
(BIOECO2019)**

**SEPTEMBER 26-28, 2019
İSTANBUL / TURKEY**

**Edited By
Dr. Tahir ÖZCAN**



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Day 1 - Thursday, 26 September 2019

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11:45-12:15	Climate-induced changes in population dynamics in the Mediterranean Sea
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15:00-15:15	Relationship of otolith size to standard length of the <i>Glyptocheilus trutta</i> (Heckel, 1843) in Tigris River, Şırnak, Turkey Muhammed Yazar DÖRTBUDAK, Gönaz ÖZCAN	15:00-15:15	Effect of environmental factors on biofilm formation by clinical and environmental <i>Vibrio vulnificans</i> strains Sedat Çam, Robin Brinkmeyer	15:00-15:15	The economic value analysis approach to conservation and sustainable use of Biological Diversity: <i>Triticum durum</i> as a case study Ayman Demir
15:15-15:30	The ancient Lake's Ohrid and Prospa ecological status- a comparative study Sasho Tadjinovski, Biljana B. Gjoni, Tanja Tadjinova, Konstantin Zdravetski	15:15-15:30		15:15-15:30	Securing the production of durum wheat (<i>Triticum durum</i> Desf.) by supplementary irrigation in the semi-arid zone (south of setif province, Algeria) Cherati Khalessa, Gaesoum Salma, Djouada Lyamine, Belhaouchet Zine Aveline, Mansour Lynda-Maya
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09:15-09:30	Mollusc and arthropod shells waste using as qualified materials Fatih Giridiz, Fatma Öztürk, Hatice Giridiz	09:15-09:30
09:30-09:45	Interaction of collagen and gelatine from invasive toxic puffballfish species <i>Lapostropheus secalatus</i> in Mediterranean sea (Iskender Bay) and their possible uses in different sectors Yasemin YILDIZ, Merve AKTAS	09:30-09:45
09:45-10:00	Is the Gediz River Basin Suitable for Breeding and Populating of the Red Head Slider, <i>Trachemys scripta elegans</i> ? Special emphasis to some Observations on the Overwintering Hatchlings of Terrapins at Western Turkey İnan Tasakavak, Rağıp Balıncı, Halil Filiz	09:45-10:00
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10:00-10:15	Beneficial Roles of Freshwater Mussels in the Ecosystem Hülya Şenelhan, İzzet Kılıç	10:00-10:15
10:15-10:30	Coffee Break	10:15-10:30
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11:45-12:00	Age and Growth of a Mullidae: <i>Mullus barbatus</i> (Linnaeus, 1758) caught in the Algerian West Coasts Hebba Chahiba, Chems Hamda	11:45-12:00
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11:30-11:45	Gill Histopathology in the Marine Fish <i>Parus maculatus</i> After Acute Exposure to Epinephrin Serhat Ergün	11:30-11:45
11:45-12:00	Ladgesocypsis sp. (Ladiges, 1900-complex) current status of knowledge and implications for conservation of these Cyprinids species Denizli Çimen, Somayeh Dostli, Ali Serhan Tarkan, Fevzi Yılmaz	11:45-12:00
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11:45-12:00	Tiger beetles in the Mediterranean Region - flagship bioindicators in perfect hot-spot area Radomir Jakubik	11:45-12:00
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Theme: Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Mediterranean Sea: Past, present and future changes of alien species Conference Hall- Bursa Chairman: Dr. Emrah E. Şakman		
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14:15-14:30	Adapted Seagrass Watch Protocol to evaluate <i>Posidonia oceanica</i> health, in the Eastern Aegean Sea Çiğdem Güneş, Saniye Melek, Uğur Hansen, Anastasia Miliou	14:15-14:30
14:30-14:45	The importance of <i>Sipuncula</i> species in marine ecosystems Semra Ayık	14:30-14:45
14:45-15:00	Sipunculans associated with <i>Posidonia oceanica</i> (L.) Delile 1813 in İmre Bay (Aegean Sea, Eastern Mediterranean) Semra Ayık	14:45-15:00
15:00-15:15	Marine Parasites <i>Gnathia</i> sp. (Gnathifidae) of the Libyan fishes along the western coast of Libya Sarrah ben Zeglan, Emrah E. Şakman	15:00-15:15
15:15-15:30	The role of constructed wetlands in conservation of biodiversity: A case study on birds diversity in A-Hadba treatment plant, Libya Aya ALGADEY, Emrah DÖRMAN, İsmail BOURNAS and Khalid	15:15-15:30
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16:15-16:30	Comparison of Turkish and EU legislation for fishing gear used in small-scale fishery Zafer Tosunoğlu, Harun Gökçeloğlu	16:15-16:30
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17:00-17:15	Analysis of the trawl landings in Foca (Turkey) for the second half of 1990s Harun Gökçeloğlu, Zafer Tosunoğlu	17:00-17:15
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17:30-18:00	Coffee Break	17:30-18:00
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Day 3 - Saturday, 28 September 2019 Istanbul Bosphorus Cruise Leaving Istanbul BioEco2019 2019 Istanbul / Turkey		



ORAL PRESENTATIONS

BIOECO



Diversity and Density of Pleco (*Pterygoplycthis* sp) in Ciliwung River, Jakarta Indonesia

Dewi Elfidasari^{1*}, Hurunin Fathonah Muthmainah², Fahma Wijayanti²

¹Department of Biology, Faculty of Science and Technology, University of Al Azhar Indonesia., Jl. Sisingamangaraja Kebayoran Baru, Jakarta Selatan 12110, Indonesia.

²Departement of Biology, Science and Technology Faculty Syarif Hidayatullah State Islamic University Jakarta, Jl Ir. H. Juanda No. 95 Cempaka Putih Ciputat Timur Tangerang Selatan

*Corresponding author: d_elfidasari@uai.ac.id Phone: +82 2172792753 ext 212

Abstract

There has been a lot of information about some species of fishes, plants, insects, planktons, river quality, including heavy metal concentrations from organisms, water and sediment, from some research in Ciliwung River since 2008. But, there is still very limited data that related to the diversity and density of pleco in the Ciliwung River. Pleco is a native species from Costarica, Panama and South America and it's known as an invasive species which is potentially to reduce local biodiversity by eliminating local species of fishes in Ciliwung rivers. The aims of this study is to analyzing the diversity and density of pleco from Ciliwung River in the Jakarta area. Purposive sampling was used with a consideration that the three points represent the presence of pleco. The location of sampling was the Ciliwung river in Jakarta which flows along the Cawang-Condut. Sampling has been done using 4x2 m² cast nets with a 2.5-inch mesh size. The sampling activity was carried out in 09.00-15.00 AM. The results showed that the index diversity of pleco in the Ciliwung river in Jakarta was low, which was equal to H'= 0 because there is only one species of pleco was found there, *Pterygoplichthys pardalis*. The population density of pleco in the Ciliwung river in Jakarta was 58 individuals/m².

Keywords: *Pterygoplichthys pardalis*, native species, index diversity, population density, Ciliwung river Jakarta

Introduction

Pleco is a suckermouth armored catfish that is found in Ciliwung River in large quantities. It is an introductory species from Costarica, Panama and South America as an object of commercial ornamental fishes in Indonesia (Zworykin & Budaev, 2013). Pleco is also known as invasive species, which can be predators and competitors of local species (Hill & Lodge, 1999), potentially spread parasites and pathogens in their habitats (Torchin, et al., 2003), can cause unexpected hybridization (Mallet, 2007), and potential to reduce local biodiversity by eliminating local species of fishes (Chapin, et al., 2000).

The decline in number of the fish species in Ciliwung River has been happening since 2009. It is noted that there were found 20 fish species in 1910 on the river. One of the main role factors towards the decline of the fish species in Ciliwung River is the existence of pleco that is relatively able to adapt to the river's condition that is polluted and no other predators that hunt them. Pleco in Ciliwung River is categorized as introduced fish that is able to dominate the river, this is supported by its body morphology structure. It has a flat body, all covered with hard scales but its abdomen, it has a wide head and jaw. The main characteristic of this *loricariidae* group is that they have a sucker mouth. The shape of its mouth and



lips enable them to feed, breathe, and be attached to an object through sucking. The sucker mouth in pleco enables them to adhere to an object surround them, even on swift stream rivers. Its mouth and lips are also adapted to any kinds of food such as algae, invertebrate, and detritus (Geerinckx, 2007). Pleco has spiky *adifose fin*, wide back fin, and brown or grey body with black spots on its entire body (Kottelat *et al.*, 1993).

Pleco has a high capability of adaptation in Ciliwung River that have high level of pollutin as it has two respiratory systems. Their main respiratory system is the gill that is used when they are in clean water. Another is a labyrinth that enables them to live in low oxygen and polluted water (Graham, 1997). The existence of pleco can be identified from holes in the form of cluster along the slopes of Ciliwung River. The holes are functioned as a place to lay their eggs (Nico *et al.*, 2012).

The diversity of pleco in Ciliwung River has been researched since 2016 using some methods, such as morphology, morphometric, meristic, and molecular analysis (Elfidasari *et al.* 2016a, Elfidasari *et al.* 2016b, Qoyyimah *et al.* 2016, Rosnaeni *et al.* 2017). From the aforementioned research, there has no data with regards to diversity and density index data of pleco in the areas. Therefore, there is a need to do research to calculate the diversity and density index of pleco in Ciliwung River Jakarta.

Material and Methods

Pleco Sampling at the Ciliwung River Stream Area

Sampling have been done along Cawang-Condut area of Ciliwung River and based on the planned stations. The samples were taken using three repetitions in different weeks. The sample collection used purposive sampling method, a technique to decide samples purposively based on certain considerations. The plecocos was collected using nets around 4x2 m² with the size of the eye nets is 2,5 inch. The nets were spread in the morning from 09.00-15.00 WIB which was referred by Nico (2010).

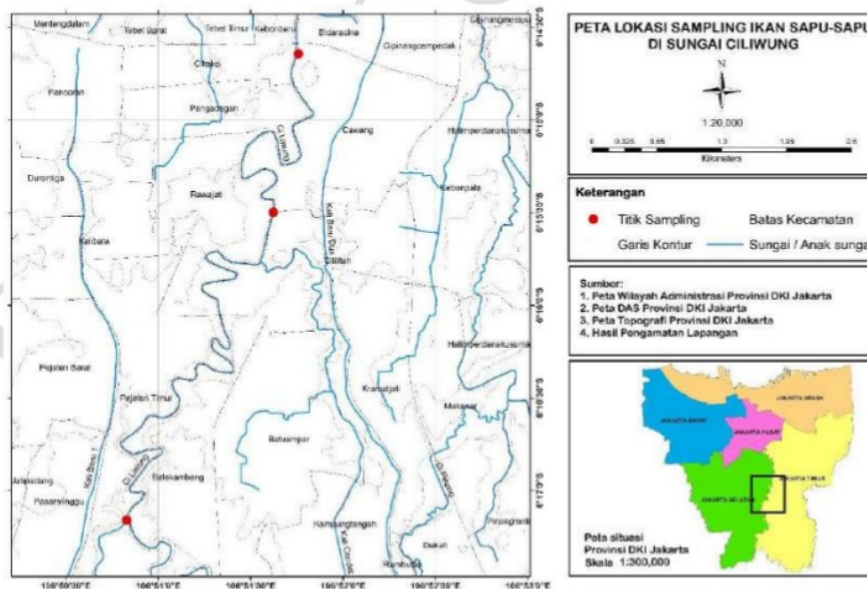


Figure 3. Three observation and sampling station along Cawang-Condut of Ciliwung River

The consideration from this method was the coordinate which represented the existence of pleco based on the information from pleco fishermen and local citizens. There were three observation stations



from each coordinate, namely S 06.244053°-E 106.862654° at the first station, S 06.25830°-E 106.86040° at the second station and S 06.28599°-E 106.84717° at the third station (Figure 3). The coordinates were determined using purposive sampling method in consideration that samples collection along Cawang-Condet of Ciliwung River is regarded as a highly polluted area. In every coordinate, samples were collected in consideration that the samples caught from the nets were placed in every coordinate.

The Identification of Pleco Species at the River Stream Area of Ciliwung

The identification has been done at the Center of Integrated Laboratory UIN Syarif Hidayatullah Jakarta by identifying morphology characteristics of pleco that have been caught by the nets. The specimen was preserved in an 70% alcohol solution. The specimen labels used its scientific names, its caught places, and its collection dates. The identification of pleco specimen at the River Stream Area of Ciliwung used some methods by looking at the patterns of head, lateral, and abdomen. This research was conducted by looking at the pattern of its abdomen which is the salient morphology characteristic of pleco. This happens because the samples have spots patterns or vermicularis on its ventral (Armbruster & Page, 2006). The pleco species identification refer to the book of fish identification from Kottelat *et al.*, (1993) and other secondary data from scientific journals.

The Diversity of Pleco Types at the River Stream Area of Ciliwung

The relationship between the number of types and individuals can be stated in Diversity Index. To determine the fish diversity, Shannon-Wiener index was employed (Ludwig dan Reynold, 1988):

$$H' = -\sum p_i \ln p_i$$

Notes:

H' = Shannon-Wiener Diversity Index

n = The number (i) of individual species

N = The number of individuals from all species

Scoring criterion based on diversity types is:

$H' < 1$ = Low diversity

$1 < H' < 3$ = Moderate diversity

$H' > 3$ = High diversity

The Density of Pleco at the River Stream Area of Ciliwung

The density of pleco is calculated using the following formula (Barus, 2004):

$$D_i = X_i / N_i$$

Notes:

D_i = Density (individual/m)

X_i = Total number of individual

N_i = Total number of area

Results

The diversity index calculation result towards 1.401 plecocs gained from the three locations at Ciliwung River, resulted in the value of H' equal to 0 (zero). It can be stated that the diversity of pleco in Ciliwung River is low. The Diversity Index (H') is categorized low if, based on the identification result, it is only found one species of pleco in the three locations along the river stream area of Ciliwung River in Jakarta, namely *Pterygoplichthys pardalis*.

Morphologically, pleco's abdomen has big white spots pattern with merged patterns that are attached together to its sucker-mouth beneath (Page & Robins, 2006). Rosnaeni, et al. (2017) research is a



DNA analysis of *barcodes* CO1 in the fragment's length of 650bp supports the identification result of *Pterygoplichthys pardalis*, that even though there are diverse abdomen patterns of the found plecos, all is from one species that is *P. pardalis*.

Identification result of the abdomen pattern on plecos from the three locations of Ciliwung River shows matched result with the research conducted by Wu *et al.* (2011). The pleco species in Indonesia has a different abdomen pattern. *P. pardalis* has black spots abdomen pattern (in the shape of commas or dots), *P. disjunctivus* has curved patterns, meanwhile the inter-grade species has a combination pattern between inter-grade or hybrid species. The three different patterns of the abdomen can be characterized as one type of pleco in the family of *Loricariidae* that is *P. Pardalis*.

Two different patterns on its head (geometrical light stripes pattern and spots and blotches patterns) that could be identified by Armbruster and Page (2006) show that the two characteristics are the morphological characteristics of *P. Pardalis* species. The difference in the two lateral patterns (merged patterns forming chevrons (<) and separated patterns and do not create *chevrons*) also shows the morphological characteristic of *P. Pardalis* species. The result is supported by a statement that the different patterns between the abdomen patterns on pleco are not the main characters to identify the type of pleco (Rosnaeni, et al., 2017).

Density of pleco population in Ciliwung River in the three locations results in different values. At the first station, it has the density value of 58 ind/m², at the second station it has the density value of 80 ind/m² and at the third station it has the density value of 36 ind/m². The average number of pleco density population in Ciliwung River is 58 individu/m². This shows that the density of pleco in this research is higher than the number of population that was found in Halwa's research (2016) that was 22 individuals.

The biggest density value was found at the second station that is around 80 ind/m², meanwhile the lowest is at the third station for only 36 ind/m². The biggest density value at the second station is caused by the number of individual species of *Poecilia reticulata* and *Mystacoleucus marginatus* is lower than the number of individuals at the first and the third stations. It is caused by the interaction between pleco and the species of *Poecilia reticulata* and *Mystacoleucus marginatus*. An interaction occurred in a population can be in the form of competition if among organisms from the same or different type use the same resource. If an organism uses the same resources, then every organism has to compete to feed themselves to survive and to grow.

The abundant number of pleco in Ciliwung River is probably due to an excellent interspecific competition in taking advantages of food resources with other fish in Ciliwung River such as *Poecilia reticulata* and *Mystacoleucus marginatus*. Supported with a statement coming from Josefsson and Andersson (2001), the aggressive characteristic to get food performed by *Pterygoplichthys pardalis* when they were present at certain locations so that they could change another community in a water area may cause the decline of fish and invertebrate populations.

According to De-Merona (2004), the fish population number is also affected by the number of food resources in the water. Pambudi et al (2016) states that there are 5.834 individuals of phytoplankton. This shows that the fish population in every station is influenced by the existence of phytoplankton in Ciliwung River. The biggest population number is gained at the second station for 80 ind/m² because the water condition is at its optimum point for the life of phytoplankton. The condition is influenced by the speed of the stream. At the second station, the speed of the stream is found lower than the first and third stations. According to (1988) a water area that is relatively placid is suitable for the habitat of phytoplankton. For the number of stream speed at the second station is 0,4 m/s lower than the first station for 1,5 m/s and the third for 2,1 m/s so that at the second station, it has a relatively placid stream. A research by Pambudi, et al. (2016) figures out that most phytoplanktons in Ciliwung River are highly-tolerated phytoplankton such as *Navicula*, *Nitzschia*, *Synedra*, *Cymbella*, and *Fragilaria*.



According to Krebs (1972), the existence of a fish in a water area is heavily influenced by the presence of predators. The pleco's body has several adaptations to predators that have hard bones and are able to regenerate its pectoral, so that pleco is not hunted by other fish living in Ciliwung River and become the competitor by original fish to get some food, additionally to its life cycle (Sinha, et al., 2010). The research results of Rice *et al.* (2007) and Power (1984) state that a predator from *P. pardalis* species is not from other fish type but from reptiles such as snakes and freshwater turtles, birds, and also human (Aguilar & Di-Beernardo, 2004) (Bonino *et al.*, 2009) (Nico, 2010).

The cause of the high density of pleco for 80 ind/m² in Ciliwung River at the second station is because few local people along the riverbank to do activities of fishing or catching fishes compared to the first and third stations. For instance, the act of catching fish commercially to invasive fish of *Pterois volitans* has proven to help inhibit the *Pterois volitans* fish population growth (Barbour *et al.*, 2011).

Cause of the high density of pleco in Ciliwung River at the third station is the low number of predator individuals. It is proven by a research by Rusmendero, et al (2009) that describes no finding of bird prey based on the composition analysis of bird types at Kalibata Station and at other stations in South Jakarta. The low number of pleco predators at the three stations enable pleco at the third station to have high density.

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Conservation of Biological Diversity Conference Hall- Ankara Conference Hall- Bodrum Chairman Dr. Muhammed Yaşar DÖRTBUDAK Chairman Dr. Yusuf Bozkurt 14:00-14:15 Freshwater ichthyodiversity in Iran: Past, present and future trends Hamid Reza Esmaeili 14:00-14:15 Cryobanks and their role in conservation of aquatic biodiversity Yusuf Bozkurt 14:15-14:30 Diversity and density of Pleco (*Pterygoplycthis* sp.) in Ciliwung River, Jakarta Indonesia Determination of genetic variations of *Carasobarbus luteus* populations 14:15-14:30 living in Euphrates River based on mitochondrial DNA cytb sequences Dewi Elfidasari, Hurunin Fathonah Muthmainah, Fahma Wijayanti Arif Parmaksız First occurrence of *Ligula* sp in endemic cyprinid *Ladigesocypris irideus* (*Ladiges*, 1960) From Isolation and 16S rRNA sequence analysis of six environmental 14:30-14:45 Ula Reservoir (Mugla, Turkey) 14:30-14:45 haloversatile bacteria from Çamaltı Saltern Somayeh Doosti, Fevzi Yılmaz Pınar Çağlayan [Relationship of otolith size to standard length of The Prussian Carp](#) *Carassius gibelio* (Bloch, 1782) in Tigris River, Şırnak, Turkey 14:45-15:00 virulence correlating gene Muhammed Yaşar DÖRTBUDAK, Gülnaz ÖZCAN Sedat Çam, Robin Brinkmeyer [Relationship of otolith size to standard length of the Capoeta trutta \(Heckel, 1843\) in Tigris River](#), Effect of environmental factors on biofilm formation by clinical and 15:00-15:15 Şırnak, Turkey 15:00-15:15 environmental *Vibrio vulnificus* strains Muhammed Yaşar DÖRTBUDAK, Gülnaz ÖZCAN Sedat Çam, Robin Brinkmeyer 15:15-15:30 The ancient Lake's Ohrid and Prespa ecological status- a comparative study [Sasho Trajanovski, Biljana B. Gjoreska, Sonja Trajanovska, Konstantin Zdraveski](#) 15:15-15:30 15:30-16:00 [Coffee Break 15:30-16:00 Coffee Break](#) Theme Section D: Bioindicators and Biomonitoring Theme Section E: Biological Diversity: its past and prospects Theme Section B: Biological and Ecological Aspects in Terrestrial Ecosystems Population Status, Life Histories, Ecology, Assessment, Conservation and Management of Terrestrial Species Conference Hall- Bursa Chairman Dr. Emire Elmas 14:00-14:15 How plant strategy types change in coastal wetland from dune to reeds? Emire Elmas, Sevda Türkış, Barış Bani 14:15-14:30 [Study of soil-vegetation relationships of the forest Ouled Bechih \(Souk Ahras\)](#), Algéria Ibtissem Samai, Nouha Menadjlia 14:30-14:45 Analysis of vegetal biodiversity under saline conditions Adda Ababou, Abdelkader Bouthiba 14:45-15:00 Biological strategy for the rehabilitation of saline soils in the perspective of sustainable agricultural development. Moulay Belkhdja, Nadia Soualmı 15:00-15:15 The economic value analysis approach to conservation and sustainable use of Biological Diversity: *Fritillaria* sp as a case study Aynur Demir 15:15-15:30 Securing the production of durum wheat (*Triticum durum* Desf.) by supplementary irrigation in the semi-arid zone (south of setif province, Algeria): case of the bousselem variety [Cheniti Khalissa, Guessoum Salima, Djouada Lyamine, Belhaouchet Zine Abidine](#), Mansour Lynda-Maya 15:30-16:00 Coffee Break Theme Section H: Environmental Management: Renewable Sources, Recycling and Environmental Management Environmental Management Conference Hall- Ankara Conference Hall- Bodrum Conference Hall- Bursa Chairmen Dr. Levent Bat Chairmen Dr. Nuri Başusta Chairmen Dr. Nurçin Killi Concentrations of toxic elements in mussels *Mytilus galloprovincialis* as bio-indicator of coastal [Predicting the impact of climate change on yield and water requirement of Stakeholder Analysis of The Artificial Reefs in Edremit Bay \(Northern](#) 16:00-16:15 pollution 16:00-16:15 rainfed crops in setif region (Algeria) 16:00-16:15 Aegean), Turkey: Contributions to management Levent Bat Tarek Bouregaa Sezgin Tunca, Vahdet Ünal, José Luis Sánchez Lizaso The Contents of Heavy Metals in *Plecostomus* (*Loricariidae*) from the Ciliwung River Jakarta, A Dileptid Ciliate Isolated From Tekirdağ Soils, *Rurikoplites armatus* Analysis of Biodiversity and Ecological Data by R Software Packages 16:15-16:30 Indonesia 16:15-16:30 (Foissner & Schade 2000) Ciliophora: *Litostomatea*, *Rhyncostomata*): Infraciliature and Morphometric Characterization 16:15-16:30 Laksmi Nurul Ismi, Dewi Elfidasari, Riris L. Puspitasari, Irawan Sugoro, Afina P. Sabira Hilal Ural, İsmail Yıldız, Naciye Gülkız Şenler Yusuf Kurt Variable glochidium prevalence on gills suggests different resistance potential in fish: a Diversity and distribution pattern of waterbirds in wetlands of Algerian Impact of production systems on salt lakes: Case of the complex Chott 16:30-16:45 preliminary evidence in the fish community of a temperate small stream (Tersakan, Muğla) 16:30-16:45 steppe

region 16:30-16:45 Merouane and Melghir (Algeria) Ertan Ercan, Neslihan Ađralı, Ali Serhan Tarkan Ettayib Bensacı, Asma Zoubıri, Yassine Noudjem, Fateh Mimeche, , Bilal Gasmı and Menouar Saheb Fatma Demnati, Farid Allache, Mounira Zouatine, Naima Mebrek 16:45-17:00 [Determination of some species of invertebrate on mussel culture units in Balıkliova, İzmir Bay](#) 16:45-17:00 Distribution of the Genus Garra Hamilton, 1822 in Anatolia 16:45-17:00 Study approach of a strategy with sustainable development of a Ramsar site: Case Lake Réghaia, Algeria 17:00-17:15 17:15-17:30 Serpil SERDAR, Ali ULAŞ, Şükrü YILDIRIM Fishing Competitions in Turkey and Focus on Alaçatı Big Fish Tournament Ali Ulaş, Zeynep Güleşci Dinner Cüneyt Kaya, Esra Bayçelebi 17:00-17:15 Review of the genus Gobio Cuvier, 1816 in Turkey Esra Bayçelebi, Cüneyt Kaya Biodiversity and Varietal Improvement of Drum Wheat (Triticum durum 17:15-17:30 Desf.) Yamina Bouatrous Dinner 17:00-17:15 17:15-17:30 Mounira Zouatine, Fatma Demnati, Farid Allache [The Rising Phenomenon in Turkish Marine Protected Areas: Charter Fishing](#) Sezgin Tunca, Vahdet Ünal First Record of the Starfish Asterina phylactica (Echinodermata: Asteroidea) from the Eastern Mediterranean Ayşenur UYSAL, Ertan DAĞLI, Alper DOĞAN Dinner Theme Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Protection and Management of Aquatic Species Conference Hall- Ankara Chairmen Dr. Halit Filiz What steps should be taken to ensure the protection of sandbar shark, Carcharhinus plumbeus , 09:00-09:15 in Turkey ? Halit Filiz, Ertan Taşkavak Mollusc and arthropod shells waste using as qualified materials 09:15-09:30 Fettah Gündüz, Fatma Öztürk, Hatice Gündüz Extraction of collagen and gelatine from invasive toxic pufferfish species Lagocephalus scolaratus 09:30-09:45 in Mediterranean sea (Iskenderun Bay) and their possible uses in different sectors Yasmin YILDIZ, Mevlüt AKTAŞ Is the Gediz River Basin Suitable for Breeding and Populating of the Red Eared Slider, Trachemys scripta elegans ? Special emphasis to some Observations on the Overwintering Hatchlings of 09:45-10:00 Terrapins at Western Turkey Ertan Taşkavak, Ragıp Balatlı, Halit Filiz 10:00-10:15 Attention please! Pinna nobilis in great danger Sefa Acarlı Citizen Science Approach in North Macedonia - Protect Rare Snails from Lake Ohrid - an 10:15-10:30 Innovative Approach to Biodiversity Conservation Konstantin Zdraveski, Sasho Trajanovski, Biljana B. Gjoreska, Sonja Trajanovska 10:30-11:00 Coffee Break Theme Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Population status, life histories, ecology of aquatic species Conference Hall- Ankara Chairmen Dr. Naime Arslan Levels of some trace elements (cadmium, lead, mercury and chromium) in water and planktonic 11:00-11:15 organisms in Abant Lake (Bolu, Turkey) Tahir Atıcı, Naime Arslan, Deniz Mercan [A preliminary Observation on Relationships of the Liver, Ovary and Body Weights for Short snouted seahorse, Hippocampus hippocampus at the Tirebolu Coasts \(Black Sea\)](#) Sule GURKAN, Ertan TASKAVAK, Burcu TAYLAN, Arzu AYDIN UNCUMUSA OGLU An investigation on the gravid females and embryos of Gymnura altavela from Yumurtalık Bight, 11:30-11:45 Iskenderun Bay (Turkey Nuri Başusta, Asiye Başusta Age and Growth of a Mullidae: Mullus barbatus (Linnaeus, 1758) caught in the Algerian West 11:45-12:00 Coasts Hebbar Chafika, Gherras Hamida Spatio-temporal variation in distribution and abundance of marine Cladocerans in relation to 12:00-12:15 environmental factors in Güllük Bay (Aegean Sea, SW Turkey) Nurçin Killi, Ali Serhan Tarkan The Nutritional Value of Smooth Scallop 12:15-12:30 Pervin Vural, Sefa Acarlı 12:30-14:00 Lunch Break Theme Section H: Environmental Management: Renewable Sources, Recycling and Environmental Management Environmental Management and Pollution Prevention Conference Hall- Ankara Chairman Dr. Banu Kutlu Investigation of Statistical Experimental Design Results of UV Absorbance Values of Aluminium 14:00-14:15 Nanoparticles of Different Sizes Mehmet Ateş, Banu Kutlu, Önder Aksu, Durali Danabaş, Işıl Canan Çiçek-Çimen, İlkay Ünal, Burcu Ertit Taştan Applied of a new bacterial species isolated from activated sludge in the denitrification 14:15-14:30 treatment of the wastewater Yassmina Angar, Salima Gana-Kebbouche, Nacer-Eddine Djelali, Souad Talbi-Khemili 14:30-14:45 The Effect of Remote Monitoring Methods in The Fight Against Marine Pollution Şebnem Erkebay, Cem Erkebay Analysis and Comparison of Risk Factors In The Installation And Design of Potable Water 14:45-15:00 Treatment Plants Şebnem Erkebay, Cem Erkebay, Arzu Morkoyunlu Yüce Investigation of the

effects of Giardia lamblia and Cryptosporidium parvum on environmental 15:00-15:15 pollution by real-time PCR in horse farms in Southeastern Anatolia Akın Yiğın, Mehmet Demirci, Hikmet Dinç 15:15-15:30 15:30-16:00 Coffee Break
Theme Section H: Environmental Management: Renewable Sources, Recycling and Environmental Management Environmental Management Conference Hall- Ankara Chairmen Dr. [Zafer Tosunoğlu](#) [The semi-electronic fish auction: an innovation, developed by Urla-Iskele \(Izmir, Turkey\) Fishery](#) 16:00-16:15
Cooperative Kaan Taşkan, Okan Akyol, Zafer Tosunoğlu 16:15-16:30
[Comparison of Turkish and EU legislation for fishing gear used in small-scale fishery](#) Zafer [Tosunoğlu](#), Harun [Güçlüsoy](#) Slipping practises in Turkish purse seine fishery 16:30-16:45 Zafer Tosunoğlu, Nazlı Kasapoğlu 16:45-17:00
[Analysis of the small-scale fisheries landings in the Foça MPA \(Turkey\) for the second half of](#) Harun Güçlüsoy [1990s](#) Zafer [Tosunoğlu](#) 17:00-17:15 [Analysis of the trawl landings in Foça \(Turkey\) for the second half of 1990s](#) Harun [Güçlüsoy](#), Zafer [Tosunoğlu](#) 17:15-17:30 17:30-18:00 Coffee Break Conference Hall- İstanbul Balo Salonu Day 2 - Friday, 27 September 2019 Theme Section B: Biological and Ecological Aspects in Terrestrial Ecosystems Terrestrial ecology and biodiversity in a changing Eurasia Conference Hall- Bodrum Chairmen Dr. Güley Kurt Plant Biodiversity of the Vark Watershed of Lorestan province, Iran 09:00-09:15 Hamed Khodayari, Khadijeh Shekari Floristic diversity and composition of the Roomeshkan county, Lorestan 09:15-09:30 province, Iran Hamed Khodayari, Zahra Farajollahi Characterization of new strains belonging to the defoliant pathotype of 09:30-09:45 Verticillium dahliae from the cultivated olive tree in Algeria. Benzina- Tihar F., Reghmit AB., Sahir-Halouane F., Oulebsir-Mohand Kaci H The species of the genus Calligonum L. in the Ustyurt 09:45-10:00 Tajetdinova Dilarom M Najatdinovna A Phytosociological research on the surroundings of Sürgü Dam (Sürgü / 10:00-10:15 Doğanşehir / Malatya) Hatice Tosyagülü Çelik, Ömer Faruk Kaya 10:15-10:30 10:30-11:00 Coffee Break Theme Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Population status, life histories, ecology of aquatic species Conference Hall- Bodrum Chairmen Dr. Ali Serkan Tarkan Annual variation in the abundance of prokaryotic picoplankton 11:00-11:15 (Synechococcus and Prochlorococcus) in the Northeastern Ece Kılıç, M Neebdiil Yürüacneel, a Znahit Uysal A new application of the Micronucleus Test on Zooplankton: from lab to 11:15-11:30 field Sabria Barka, Zouhour Ouanes-Ben Othmen, Abir Gharbi 1 Imen Gdara, Gill Histopathology in the Marine Fish Psetta maxima After Acute 11:30-11:45 Exposure to Cpermethrin Serhat Engin Ladigesocypris sp. (Ladiges, 1960= complex: current status of knowledge 11:45-12:00 and implications for conservation of these Cyprinids species Daniella Giannetto, Somayeh Doosti, Ali Serhan Tarkan, Fevzi Yılmaz 12:00-12:15 12:15-12:30 12:30-14:00 Lunch Break Theme Section E: Biological Diversity: its past and prospects Conference Hall- Bodrum Chairman Dr. Kerim Çiçek Preliminary Researches on Tardigrada Fauna of Meşelik Campus 14:00-14:15 (Eskişehir, Turkey) Naime Arslan, Akın Karahasan, Deniz Mercan Furan induces cytotoxicity, oxidative stress and apoptosis in Leydig cells 14:15-14:30 Yasemin Ülkü Dikbasan, Yasemin Aydın Nocturnal Activity of Anatololacerta pelasgiana (Mertens, 1959) from 14:30-14:45 Çiğlıkara Nature Reserve, Antalya, Turkey Batuhan Yaman YAKIN, Kerim Çiçek, Murat Afsar, Cemal Varol TOK Another Case of Piebaldism in Blanus strauchi (Bedriaga, 1884) from Kaş, 14:45-15:00 Turkey Batuhan Yaman Yakın, Ulvi Kerem Günay, Kerim Çiçek, Dincer Ayaz, Cemal Varol Tok An Investigation of How Aquatic Beetles (Arthropoda: Insecta) Effect on 15:00-15:15 Water Quality of Riva Stream (Istanbul) Nilay Dökümcü, Serap Koşal Şahin 15:15-15:30 15:30-16:00 Coffee Break Theme Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Tell the Black Sea: from individuals to Ecosystems Conference Hall- Bodrum Chairmen Dr. Derya Ürkmez The first Xenella Cobb, 1920 (Nematoda: Xenellidae) specimen from the 16:00-16:15 Black Sea Derya Ürkmez Effects of Astaxanthine, Canthaxanthin and Lycopene Containing Diets 16:15-16:30 on the Chemical Quality and Textural Properties of the Black Sea Trout (Salmo labrax) Fillets Ekrem Cem Çankırılıgil, Nermin Berik Pattern of Lingulodinium polyedra cyst distribution in the Black Sea 16:30-16:45 Nina Dzhembekova, Fernando Rubino, Snežana Moncheva, Nataliya Slabakova, Petya Ivanova, Elitsa Stefanova 16:45-17:00 Penetration of the Pacific Korean rockfish Sebastes schlegelii into

the Evgeniia Karpova, Igor BTLamckoySkeian, Vyacheslav Kuleshov 17:00-17:15 17:15-17:30 17:30-18:00 Coffee Break Conference Hall- İstanbul Balo Salonu Theme Section E: Biological Diversity: its past and prospects Conference Hall- Bursa Chairmen Dr. Tefvik Ceyhan [Active biomonitoring of mussels *Mytilus galloprovincialis* with integrated use of micronucleus assay and physiological indices to assess Hamida Gherras](#).

ChahfiakraboHrepboblalur,tiMonohammed Bouderbala Morphometric characteristics of patella species in Al-Hanya coast, 09:15-09:30 eastern Libya Mediterranean Sea Salleemah Hasan Hamad, Sayed Mohamed Ali, Ramadan A. S. Ali, Eman S. Alfergani Larval Helminths in *Helix lucorum* Linnaeus, 1758 in Some Regions of 09:30-09:45 Georgia Lela Arabuli, Lali Murvanidze ,Tsitsino Lomidze , Ketino Nikolaishvili, Temporal variation of Gastropoda and Scaphopoda (Mollusca) species 09:45-10:00 [along the Sugözü coast \(İskenderun Bay, Levantine Sea\)](#). Banu [Bitlis](#), Bilal [Öztürk](#) 10:00-10:15 Beneficial Roles of Freshwater Mussels in the Ecosystem Hülya Şereflisan, Ece Kılıç 10:15-10:30 10:30-11:00 Coffee Break Theme Section E: Biological Diversity: its past and prospects Conference Hall- Bursa Chairmen Dr.Łukasz Kaczmarek 11:00-11:15 Biodiversity and honey bee diseases in Algeria Wahida Loucif-Ayad Susceptibility of two whitefly (*Bemisia tabaci*) (Hemiptera: Aleyrodidae) 11:15-11:30 strains to insecticides from Oman Naser Nasser Hamoud Al-Rawah, Ismail Abdullah Al-Siyabi, Riaz Shah Diversity and host associations of aphid parasitoids (Hymenoptera: 11:30-11:45 Braconidae: Aphidiinae) in non-cultivated areas of Khenchela Province –East Algeria Hayet Aggoun, Laamari Malik, Tahar chaouche Souad Tiger beetles in the Mediterranean Region – flagship bioindicators in 11:45-12:00 perfect hot-spot area Radomir Jaskuła Population Dynamism Of Black Scorpion (*Androctonus Crassicauda* 12:00-12:15 (Olivier, 1807; Scorpiones: Buthidae) İn Şanlıurfa Province Nevin ASLAN, Şahin TOPRAK Study of the Insecticidal Activity of *Taxus baccata* of the Ifrane valley 12:15-12:30 on *Sitophilus oryzae* (L.) (Coleoptera: Curculionidae) Amechrouq Ali, Riffi Ouassima, Elhourri Mohammed, El idrissi Mostafa, Fliou Jamila 12:30-14:00 Lunch Break Theme Section A: Conservation of Biodiversity: Biological and Ecological Aspects in Aquatic Ecosystems Mediterranean Sea: Past, present and future changes of alien species Conference Hall- Bursa Chairman Dr. Esmail E. Shakman Dangers of Invasive Fish Species, Prevention and Control 14:00-14:15 Zehra Arzu BECER, Efafe ODIOKO Adapted Seagrass Watch Protocol to evaluate *Posidonia oceanica* 14:15-14:30 health, in the Eastern Aegean Sea Clara Gütte, Sarah Meek, Ute Hansen, Anastasia Miliou 14:30-14:45 The importance of *Sipuncula* species in marine ecosystems Şermin Açık *Sipunculans* associated with *Posidonia oceanica* (L.) Delile 1813 in Izmir 14:45-15:00 Bay (Aegean Sea, Eastern Mediterranean) Şermin Açık Marine Parasites *Gnathia* sp (*Gnathiidae*) of the Libyan fishes along the 15:00-15:15 western coast of Libya Sarah ben Zeglam, Esmail A. Shakman The role of constructed wetlands in conservation of biodiversity; A case 15:15-15:30 study on birds diversity in Al-Hadba treatment plant, Libya Aya ALGADRY, Esra'a DORMAN, EssamBOURASS and Khaled 15:30-16:00 CoEFTfeAeYBErBeak Chairmen 16:00-16:15 16:15-16:30 16:30-16:45 16:45-17:00 17:00-17:15 17:15-17:30 17:30-18:00 Coffee Break 18:00-19:00 Conclusion Meeting 18:00-19:00 Conclusion Meeting 18:00-19:00 Conclusion Meeting Dinner Dinner Dinner 9:30-14:00 BioEco2019 Day 3 - SatuIrsdtaanyb,u2l8BSoespptheo1mubr7eurs 2C0r1u9ise 2019 Istanbul / Turkey Leaving Istanbul ORAL PRESENTATIONS ORAL PRESENTATION Diversity and Density of Pleco (*Pterygoplycthis* sp) in Ciliwung River, Jakarta Indonesia Dewi Elfidasari1*, Hurunin Fathonah Muthmainah2, Fahma Wijayanti2 1Department of Biology, Faculty of Science and Technology, University of Al Azhar Indonesia., Jl. Sisingamangaraja Kebayoran Baru, Jakarta Selatan 12110, Indonesia. 2Departement of Biology, Science and Technology Faculty Syarif Hidayatullah State Islamic University Jakarta, Jl Ir. H. Juanda No. 95 Cempaka Putih [Ciputat](#) Timur Tangerang [Selatan](#) *Corresponding author: d_elfidasari@uai.ac.id Phone: +82 2172792753 ext 212 Abstract There has been a lot of information about some species of fishes, plants, insects, planktons, river quality, including heavy metal concentrations from organisms, water and sediment, from some research in Ciliwung River since 2008. But, there is still very limited data that related to the diversity and density of pleco in the Ciliwung River. Pleco is a native species from Costa Rica, Panama and

South America and it's known as an invasive species which is potentially to reduce local biodiversity by eliminating local species of fishes in Ciliwung rivers. The aims of this study is to analyzing the diversity and density of pleco from Ciliwung River in the Jakarta area. Purposive sampling was used with a consideration that the three points represent the presence of pleco. The location of sampling was the Ciliwung river in Jakarta which flows along the Cawang-Condet. Sampling has been done using 4x2 m2 cast nets with a 2.5-inch mesh size. The sampling activity was carried out in 09.00-15.00 AM. The results showed that the index diversity of pleco in the Ciliwung river in Jakarta was low, which was equal to $H' = 0$ because there is only one species of pleco was found there, *Pterygoplichthys pardalis*. The population density of pleco in the Ciliwung river in Jakarta was 58 individuals/m2. Keywords: *Pterygoplichthys pardalis*, native species, index diversity, population density, Ciliwung river Jakarta

Introduction Pleco is a suckermouth armored catfish that is found in Ciliwung River in large quantities. It is an introductory species from Costa Rica, Panama and South America as an object of commercial ornamental fishes in Indonesia (Zworykin & Budaev, 2013). Pleco is also known as invasive species, which can be predators and [competitors of local species \(Hill & Lodge, 1999\)](#), potentially [spread parasites](#) and [pathogens](#) in their habitats ([Torchin, et al., 2003](#)), can cause unexpected hybridization (Mallet, 2007), and potential to reduce [local biodiversity by eliminating local species](#) of fishes ([Chapin, et al., 2000](#)). The decline in number of the fish species in Ciliwung River has been happening since 2009. It is noted that there were found 20 fish species in 1910 on the river. One of the main role factors towards the decline of the fish species in Ciliwung River is the existence of pleco that is relatively able to adapt to the river's condition that is polluted and no other predators that hunt them. Pleco in Ciliwung River is categorized as introduced fish that is able to dominate the river, this is supported by its body morphology structure. It has a flat body, all covered with hard scales but its abdomen, it has a wide head and jaw. The main characteristic of this loricariidae group is that they have a sucker mouth. The shape of its mouth and lips enable them to feed, breathe, and be attached to an object through sucking. The sucker mouth in pleco enables them to adhere to an object surround them, even on swift stream rivers. Its mouth and lips are also adapted to any kinds of food such as algae, invertebrate, and detritus (Geerinckx, 2007). Pleco has spiky adifose fin, wide back fin, and brown or grey body with black spots on its entire body (Kottelat et al., 1993). Pleco has a high capability of adaptation in Ciliwung River that have high level of pollutin as it has two respiratory systems. Their main respiratory system is the gill that is used when they are in clean water. Another is a labyrinth that enables them to live in low oxygen and polluted water (Graham, 1997). The existence of pleco can be identified from holes in the form of cluster along the slopes of Ciliwung River. The holes are functioned as a place to lay their eggs (Nico et al., 2012). The diversity of pleco in Ciliwung River has been researched since 2016 using some methods, such as morphology, morphometric, meristic, and molecular analysis (Elfidasari et al. 2016a, Elfidasari et al. 2016b, Qoyyimah et al. 2016, Rosnaeni et al. 2017). From the aforementioned research, there has no data with regards to diversity and density index data of pleco in the areas. Therefore, there is a need to do research to calculate the diversity and density index of pleco in Ciliwung River Jakarta. Material and Methods Pleco Sampling at the Ciliwung River Stream Area Sampling have been done along Cawang-Condet area of Ciliwung River and based on the planned stations. The samples were taken using three repetitions in different weeks. The sample collection used purposive sampling method, a technique to decide samples purposively based on certain considerations. The plecos was collected using nets around 4x2 m2 with the size of the eye nets is 2,5 inch. The nets were spread in the morning from 09.00-15.00 WIB which was refered by Nico (2010). Figure 3. Three observation and sampling station along Cawang-Condet of Ciliwung River The consideration from this method was the coordinate which represented the existence of pleco based on the information from pleco fishermen and local citizens. There were three observation stations from each coordinate, namely S 06.244053°-E 106.862654° at the first station, S 06.25830°-E 106.86040° at the second station and S 06.28599°-E 106.84717° at the third station (Figure 3). The coordinates were determined using purposive sampling method in consideration that samples collection along

Cawang- Condet of Ciliwung River is regarded as a highly polluted area. In every coordinate, samples were collected in consideration that the samples caught from the nets were placed in every coordinate. The identification of Pleco Species at the River Stream Area of Ciliwung The identification has been done at the Center of Integrated Laboratory UIN Syarif Hidayatullah Jakarta by identifying morphology characteristics of pleco that have been caught by the nets. The specimen was preserved in an 70% alcohol solution. The specimen labels used its scientific names, its caught places, and its collection dates. The identification of pleco specimen at the River Stream Area of Ciliwung used some methods by looking at the patterns of head, lateral, and abdomen. This research was conducted by looking at the pattern of its abdomen which is the salient morphology characteristic of pleco. This happens because the samples have spots patterns or vermicularis on its ventral (Armbruster & Page, 2006). The pleco species identification refer to the book of fish identification from Kottelat et al., (1993) and other secondary data from scientific journals. The Diversity of Pleco Types at the River Stream Area of Ciliwung The relationship between the number of types and individuals can be stated in Diversity Index. To determine the fish diversity, Shannon-Wiener index was employed (Ludwig dan Reynold, 1988): $H' = -\sum p_i \ln p_i$ Notes: $H' = \text{Shannon-Wiener Diversity Index}$ $n = \text{The number (i) of individual species}$ $N = \text{The number of individuals from all species}$ The scoring criterion based on diversity types is: $H' < 1 = \text{Low diversity}$ $1 < H' < 3 = \text{Moderate diversity}$ $H' > 3 = \text{High diversity}$ The Density of Pleco at the River Stream Area of Ciliwung The density of pleco is calculated using the following formula (Barus, 2004): $D_i = X_i / N_i$ Notes: $D_i = \text{Density (individual/m)}$ $X_i = \text{Total number of individual}$ $N_i = \text{Total number of area}$ Results The diversity index calculation result towards 1.401 plecos gained from the three locations at Ciliwung River, resulted in the value of H' equal to 0 (zero). It can be stated that the diversity of pleco in Ciliwung River is low. The Diversity Index (H') is categorized low if, based on the identification result, it is only found one species of pleco in the three locations along the river stream area of Ciliwung River in Jakarta, namely *Pterygoplichthys pardalis*. Morphologically, pleco's abdomen has big white spots pattern with merged patterns that are attached together to its sucker-mouth beneath (Page & Robins, 2006). Rosnaeni, et al. (2017) research is a DNA analysis of barcodes CO1 in the fragment's length of 650bp supports the identification result of *Pterygoplichthys pardalis*, that even though there are diverse abdomen patterns of the found plecos, all is from one species that is *P. pardalis*. Identification result of the abdomen pattern on plecos from the three locations of Ciliwung River shows matched result with the research conducted by Wu et al. (2011). The pleco species in Indonesia has a different abdomen pattern. *P. pardalis* has black spots abdomen pattern (in the shape of commas or dots), *P. disjunctivus* has curved patterns, meanwhile the inter-grade species has a combination pattern between inter-grade or hybrid species. The three different patterns of the abdomen can be characterized as one type of pleco in the family of Loricariidae that is *P. Pardalis*. Two different patterns on its head (geometrical light stripes pattern and spots and blotches patterns) that could be identified by Armbruster and Page (2006) show that the two characteristics are the morphological characteristics of *P. Pardalis* species. The difference in the two lateral patterns (merged patterns forming chevrons (<)) and separated patterns and do not create chevrons) also shows the morphological characteristic of *P. Pardalis* species. The result is supported by a statement that the different patterns between the abdomen patterns on pleco are not the main characters to identify the type of pleco (Rosnaeni, et al., 2017). Density of pleco population in Ciliwung River in the three locations results in different values. At the first station, it has the density value of 58 ind/m², at the second station it has the density value of 80 ind/m² and at the third station it has the density value of 36 ind/m². The average number of pleco density population in Ciliwung River is 58 individu/m². This shows that the density of pleco in this research is higher than the number of population that was found in Halwa's research (2016) that was 22 individuals. The biggest density value was found at the second station that is around 80 ind/m², meanwhile the lowest is at the third station for only 36 ind/m². The biggest density value at the second station is caused by the number of individual species of *Poecilia reticulata* and *Mystacoleucus marginatus* is lower than the number of individuals at the first

and the third stations. It is caused by the interaction between pleco and the species of *Poecilia reticulata* and *Mystacoleucus marginatus*. An interaction occurred in a population can be in the form of competition if among organisms from the same or different type use the same resource. If an organism uses the same resources, then every organism has to compete to feed themselves to survive and to grow. The abundant number of pleco in Ciliwung River is probably due to an excellent interspecific competition in taking advantages of food resources with other fish in Ciliwung River such as *Poecilia reticulata* and *Mystacoleucus marginatus*. Supported with a statement coming from Josefsson and Andersson (2001), the aggressive characteristic to get food performed by *Pterygoplichthys pardalis* when they were present at certain locations so that they could change another community in a water area may cause the decline of fish and invertebrate populations. According to De-Merona (2004), the fish population number is also affected by the number of food resources in the water. Pambudi et al (2016) states that there are 5.834 individuals of phytoplankton. This shows that the fish population in every station is influenced by the existence of phytoplankton in Ciliwung River. The biggest population number is gained at the second station for 80 ind/m² because the water condition is at its optimum point for the life of phytoplankton. The condition is influenced by the speed of the stream. At the second station, the speed of the stream is found lower than the first and third stations. According to (1988) a water area that is relatively placid is suitable for the habitat of phytoplankton. For the number of stream speed at the second station is 0,4 m/s lower than the first station for 1,5 m/s and the third for 2,1 m/s so that at the second station, it has a relatively placid stream. A research by Pambudi, et al. (2016) figures out that most phytoplanktons in Ciliwung River are highly- tolerated phytoplankton such as *Navicula*, *Nitzschia*, *Synedra*, *Cymbella*, and *Fragilaria*. According to Krebs (1972), the existence of a fish in a water area is heavily influenced by the presence of predators. The pleco's body has several adaptations to predators that have hard bones and are able to regenerate its pectoral, so that pleco is not hunted by other fish living in Ciliwung River and become the competitor by original fish to get some food, additionally to its life cycle (Sinha, et al., 2010). The research results of Rice et al. (2007) and Power (1984) state that a predator from *P. pardalis* species is not from other fish type but from reptiles such as snakes and freshwater turtles, birds, and also human (Aguiar & Di-Beernardo, 2004) (Bonino et al., 2009) (Nico, 2010). The cause of the high density of pleco for 80 ind/m² in Ciliwung River at the second station is because few local people along the riverbank to do activities of fishing or catching fishes compared to the first and third stations. For instance, the act of catching fish commercially to invasive fish of *Pterois volitans* has proven to help inhibit the *Pterois volitans* fish population growth (Barbour et al., 2011). Cause of the high density of pleco in Ciliwung River at the third station is the low number of predator individuals. It is proven by a research by Rusmendero, et al (2009) that describes no finding of bird prey based on the composition analysis of bird types at Kalibata Station and at other stations in South Jakarta. The low number of pleco predators at the three stations enable pleco at the third station to have high density. Acknowledgements Thank you to the Ministry of Research and Higher Education that has funded the University Excellent Applied Research in the year of 2018 and University of Al Azhar Indonesia Grant International Seminar 2019 that has funded to become presenter in BioEco 2019 Symposium in Istanbul Turki. Thank you to all parties that have helped out the research from the beginning of the research until the sampling activity and also this paper writing. References Barbour A B, Allen S M, Frazer K T, Sherman D K. 2011. Evaluating the Potential Efficacy of Invasive Lionfish (*Pterois volitans*) Removals. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0019666> Bonino M, Lescano N J, Haro G J & Leynaud C G. 2009. Diet of *Hydromedusa tectifera* (Testudines- Chelidae) in a mountain stream of Córdoba province, Argentina. *Amphibia-Reptilia* 30(4):545-554 Armbruster, J.W., Page, L.M. (2006):Redescription of *Pterygoplichthys punctatus* and description of a new species of *Pterygoplichthys* (Siluriformes: Loricariidae). *Neotropical Ichthyology*.4(4): 401-409 Barus, T. A. 2004. Pengantar Limnologi Studi Tentang Ekosistem Air Daratan. Medan: USU Press. Chapin F S, Sala O. E, Bruke C I & Roy J. 2000. Ecosystem Consequences of Changing Biodiversity. *BioScience* 48(1). Elfidasari

