

**LEMBAR  
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW  
KARYA ILMIAH : JURNAL ILMIAH**

Judul Jurnal Ilmiah (Artikel) : Growth of shrimp infected by *Vibrio*, fed with formulated feed with inclusions of *Dunaliella salina* and *Tetraselmis chuii* extracts

Penulis Jurnal Ilmiah/ Jumlah penulis : Ita Widowati, Muhammad Zainuri, Hermin P. Kusumaningrum, Yann Hardivillier, Vincent Leignel, Nathalie Bourgougnon, Jean-Luc Mouget/7 org

Status Pengusul : Penulis anggota

Identitas Jurnal Ilmiah :

a. Nama Jurnal : AACL Bioflux

b. Nomor ISSN : 18448143, 18449166

c. Volume, nomor, bulan, tahun : 14(2): 981-987

d. Penerbit : Bioflux Publ. House

e. DOI artikel (jika ada) :

f. Alamat web jurnal : <http://bioflux.com.ro/docs/2021.981-987.pdf>

Kategori Publikasi Karya Ilmiah/buku (beri v pada kategori yang tepat) :

Jurnal ilmiah internasional/Internasional bereputasi\*\*

Jurnal ilmiah nasional Terakreditasi

Jurnal ilmiah nasional/nas. terindeks di DOAJ,CABI, Copernicus\*\*

Jurnal ilmiah nasional tidak terakreditasi

Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Yang Diperoleh
	Jurnal internasional bereputasi	Nasional Terakreditasi	Nasional Tidak Terakreditasi	
a. Kelengkapan unsur isi (10%)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	4,00			11.92
c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%)	12,00			12,00
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			12,00
<b>Total = (100%)</b>	<b>40,00</b>			<b>39.32</b>
<b>Nilai pengusul = (40% x 39.32)/6 = 2.621</b>				<b>2.621</b>

Catatan Penilaian oleh Reviewer :

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- Kecukupan dan kemutakhiran data/informasi dan metodologi: Data-data hasil penelitian cukup menunjukkan ada kebaruan informasi. Terdapat 9 buah pustaka dari 22 yang kurang dari 10 th terakhir. Sebanyak 18 dari 22 pustaka berupa Jurnal (ini menunjukkan proses review dan kecukupan pustakanya memenuhi). Ada unsur novelty dalam methodology yang memperlihatkan adanya inovasi dalam menghasilkan invensi dengan digunakannya paten sebagai salah satu rujukan. (skor= 12.00)
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Semarang, 27 April 2023  
Reviewer I



Prof Dr. Endah Dwi Hastuti, MSi.  
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a. Kelengkapan unsur isi (10%)	4,00			3,75
b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00			10,24
c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%)	12,00			10,62
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			10,38
<b>Total = (100%)</b>	<b>40,00</b>			<b>34,99</b>
<b>Nilai pengusul = (40% x 34,99)/6 = 2.332</b>				<b>2,332</b>

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Semarang, 28 April 2023

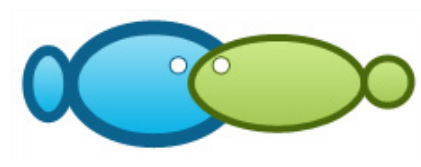
Reviewer II



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The manuscripts should be submitted to [zoobiomag2004@yahoo.com](mailto:zoobiomag2004@yahoo.com)

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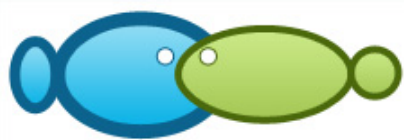
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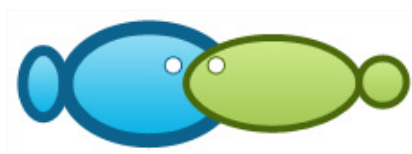
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## Species diversity of Odonata in Bolyok Falls, Naawan, Misamis Oriental, Philippines

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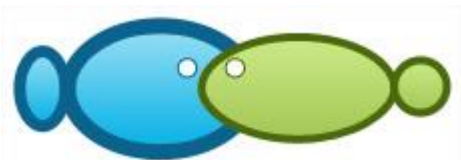
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**Abstract.** Odonata (dragonfly and damselfly) are important predators of disease vectors and agricultural pests. They are also useful as bioindicators of freshwater ecosystems due to their sensitivity to anthropogenic change. This study was conducted to assess the species composition of Odonata in the vicinity of Bolyok Falls in Brgy. Lubilan, Naawan, Misamis Oriental, Philippines. Field sampling was conducted in three sampling sites on March 9, 2019, using sweep netting and hand-picking methods. A total of nine species were identified belonging to seven families and seven genera of Odonata. *Risioecnemis appendiculata* was the most abundant Odonata species. The endemism is high at 77.78% with six species endemic to the Philippines and one endemic to Mindanao. The overall species diversity index of Bolyok Falls is very low at  $H' = 1.59$ . Identified threats of odonates include land clearing for agriculture and expansion of resort facilities near the sampling sites. The high levels of endemism indicate that the area is vital for odonates. Thus, the formulation of mitigation measures for conservation and preservation of species is needed in the area.

**Key Words:** anthropogenic, bioindicator, damselfly, dragonfly, endemic.

**Introduction.** Odonata play a vital role in the ecosystems. They are good bioindicator of freshwater habitats due to their ecophysiological adaptations that enable them to occupy different aquatic ecosystems (Benazzouz et al 2009; Mendes et al 2015; Vincy et al 2016; Abdul et al 2017). The species assemblages of dragonflies are also useful indicator of habitat degradation as a result of anthropogenic activities (Corbet 1993). For instance, generalist species of Odonata dominated in human-altered habitats with wide habitat preference and distribution. In contrast, specialist species were found in undisturbed riparian vegetation with a narrow distribution. Moreover, they also act as an important biocontrol agent of harmful insects, such as mosquitoes and other blood-sucking flies (Subramanian 2005; Seidu et al 2018).

At present, there are about 6400 species of Odonata described worldwide (Shah & Khan 2020). In the Philippines, there are about 300 known species of Odonata with a high percentage of endemic species, especially in Zygoptera which have a very limited range (Hämäläinen 2004). Moreover, several ecological studies have been conducted on Odonata in different areas of Mindanao that generates voluminous inventory and diversity data: in Mt. Hamiguitan Wildlife Sanctuary, Davao Oriental with 31 species (Villanueva & Mohagan 2010; Medina et al 2018); in Diomabok Lake, Davao Oriental with 56 species (Villanueva 2011); in Buru-un, Iligan City and in Plaridel, Misamis Occidental with 26 species (Aspacio et al 2013); in Sinacaban, Oroquieta, and Ozamiz in the province of Misamis Occidental with 22 species (Mapi-ot et al 2013); in freshwater systems of Aurora, Tukuran, and Lakewood in Zamboanga del Sur with 36 species (Cayasan et al 2013); in Lanuza and San Agustin, Surigao del Sur with 49 species (Quisil et al 2013); in Wato Balindong and Pualas, Lanao del Sur with 46 species (Malawani et al 2014); in four barangays of Samal island with 31 species (Medina et al 2015a); in Mainit Hot Spring Protected Landscape in Compostela Valley Province with 41 species (Medina et



# Environmental state of the Merja Zerga lagoon in Moulay Bouselham, Morocco: Metallic contamination levels and origins in sediments

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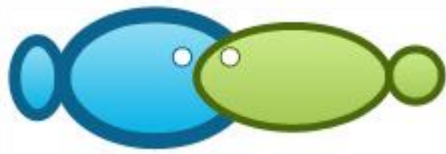
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**Abstract.** The objective of this study is to contribute to the knowledge of the environmental status of the "Merja Zerga" lagoon in Moulay Bouselham by studying the level of metallic contamination (Cd, Pb, Hg, Cr, Ni, Cu, Zn and Fe) and the assessment of the sediment quality based on the enrichment factor (EF) and the two-sediment quality criteria TEC (Threshold Effect Concentration) and PEC (Probable Effect Concentration). To perform this work, 11 sampling stations were selected to cover the entire lagoon during the two seasons, summer 2016 and winter 2017. The granulometry of the sediments shows the predominance of a sandy facies downstream, with more than 93% arenites at the pass, while the upstream part is characterized by lutites with more than 98%. The organic matter contents show an almost homogeneous gradient, and they vary between 1.01% and 10.59% in summer and 1.02% and 11.39% in winter. The concentrations of Cd, Pb, Hg and Cu do not exceed the TEC threshold and do not show any noticeable effect for biota while the contents of Cr, Ni and Zn are moderate. Sediments can be considered as medium to poor quality. The results of this study show that the Merja Zerga Lagoon is an environment under anthropogenic pressure that can have an impact on the quality of its sediments and jeopardize its equilibrium and sustainability.

**Key Words:** metal contamination, sediments, enrichment factor, TEC, PEC, Merja Zerga.

**Introduction.** The "Merja Zerga" lagoon in Moulay Bouselham is considered among the most important protected areas of the Moroccan Atlantic coast, classified in 1978 as a "Permanent Biological Reserve" and in 1980 as a Ramsar site. This lagoon is a wetland with high biodiversity, consisting of a remarkable flora and fauna population of international value (Le Grusse et al 2014). The floristic potentialities are essentially phragmites, halophiles and submerged vegetation (Qninba et al 2006). The hydrological regime of the lagoon is influenced by the marine waters conditioned, by the tidal rhythm and the contributions of fresh water from Canal Nador and Ouad Drader. According to Bazairi (1999), the water level in the lagoon during low spring tide is higher than that of low neap tide. Furthermore, Labardi (2006) pointed out that the functioning of this ecosystem is complex, and experiences temporal instability governed by climatic factors and the permanent supply of continental waters.

The metallic trace elements known for their toxicity are derived from the geochemical bottom background and anthropogenic inputs. They are present in all compartments of the environment and 80% are resulted from the physical and chemical alterations of the rocks (Gouzy & Ducos 2008). The granulometry is one of the most important descriptive parameters that allow the interpretation of contaminant concentrations in the sediment to be refined. It helps to explain the natural variability of trace elements in sediments. Indeed, the greater the percentage of fine particle size fractions in the sediment (<63 µm), the greater the sediment's capacity to adsorb contaminants (Jaffé & Walters 1977). Agricultural practices, industrial and urban activities are at the origin of



# Anesthetic efficiency of *Spilanthes acmella* on anesthesia, haematocrit and histopathology of Nile tilapia *Oreochromis niloticus*

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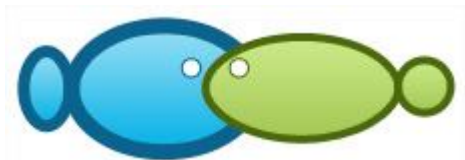
**Abstract.** The anesthetic effects of *Spilanthes acmella* in Nile tilapia *Oreochromis niloticus* were determined. Nile tilapia with average  $34.62 \pm 15.11$  g were used in this study. Fishes were exposed to the extracts 1.0, 2.0, 3.0 and 4.0 mL L<sup>-1</sup> compared with control group without the extracts. The results showed that the optimum concentration of the extracts were 2.0 mL L<sup>-1</sup> which had the best effects in all parameters including induced anesthesia for 6 hours and could recover fish within  $3.56 \pm 0.60$  min, an average daily growth of  $0.686 \pm 0.055$  g day<sup>-1</sup>, the percentage of haematocrit of  $23.83 \pm 0.66$  and no observed any abnormalities on histopathological finding of gills and liver tissues of Nile tilapia after exposed to the extracts. From these results, it can be concluded that *S. acmella* extracts had a high potential as a new anesthetics in Nile tilapia.

**Key Words:** anesthetic, extracts, *Oreochromis niloticus*, *Spilanthes acmella*.

**Introduction.** Aquaculture industries commonly induce stress condition in aquatic animals such as over stocking density, transportation and handling (Rehman et al 2017) or restraint due to vaccination. These can cause several problems to fish namely; slow growth, retardation and pathogen invasion (Ross & Ross 2008). Therefore, anesthetics play an important role to decrease these stress from aquaculture activities. The usage of anesthetics are dependent on the type of aquatic animals and anesthetics effectiveness (Rose 2002; Sneddon 2003; Chandroo et al 2004; Huntingford et al 2006; Sneddon 2012). The benefits of anesthetics are reduced injury, reduced oxygen demand during metabolism and reduced waste production (CO<sub>2</sub> and NH<sub>3</sub>) (Cooke et al 2004; Hoskonen & Pirhonen 2004; Crosby et al 2006). The considered factor in inducing anesthesia was dependent on fish species and fish size, such as; the concentration of anesthetic was higher in larger fish than small fish. However, the larger fish showed quick response to anesthesia than smaller fish. Then, the duration for anesthesia was longer in larger or spawning fish as well as the duration of recovery. Moreover, the sick or weak fish during treatment was susceptible to anesthetics (Coyle et al 2004; Fernandes et al 2017).

Chemical anesthetics have been commonly used worldwide for example, MS-222 (TMS, tricaine methanesulfonate), benzocaine, metomidate, quinaldine and phenoxyethanol (Ross & Ross 2008). However, chemical anesthetics can induce side effects to the user after application such as; irritation after exposure, headache after ventilation, stagnant blood circulation and effects on the central nervous system (Durve 1966; Bell 1987). The residues of these chemicals are accumulated in fish tissues preventing these fish from human consumption. Thus, the alternative ways to use medicinal plants as anesthetics for reducing the usage of chemical agents were studied (Amani & James 2007).

Active ingredients from medicinal plants that have anesthetic effects have been reported as follows: clove (*Syzygium aromaticum*) as eugenol (Pirhonen & Schreck 2003; Mylonas et al 2005; Pattanasiri et al 2017), coca leaf (*Erythroxylum coca*) as cocaine, para cress (*Spilanthes acmella*) as spilanthol which is a N-isobutylamide compound



# Sharks and rays (Chondrichthyes) around Banggai Island, Banggai MPA, Indonesia: biodiversity data from an environmental DNA pilot study

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**Abstract.** The Banggai Archipelago is one of six major island groups around Sulawesi Island in Indonesia, within the Wallacea region. Initiated after two district level marine protected areas (MPAs) in the Banggai Archipelago became obsolete under the revised regional autonomy Act (UU 23/2014) before they had become operational, the more extensive provincial level Banggai MPA was formally established under national legislation in 2019. Comprehensive and up-to-date biodiversity data for this MPA are needed; however taxonomic expertise and funding are limited. Furthermore, many taxa are likely to be missed using visual census methods. This study applied molecular biology methods to evaluate biodiversity of the Class Chondrichthyes (sharks and rays) at four sites around Banggai Island, in Banggai Laut District, within the Banggai MPA. Environmental DNA (eDNA) seawater samples were collected in October 2018 (3 replicates per site). The eDNA was extracted at Bionesia in Bali. Metabarcoding (using both standard MiFish 12S primer pairs) and sequence library preparation were conducted at the Barber Lab, University of California Los Angeles (UCLA). High-throughput sequencing was performed on a Nextseq. Generated sequences were processed using the *Anacapa Toolkit*; elasmobranch sequences were analysed by site and aggregated into amplicon sequence variants (ASVs) using the 60% Bayesian confidence score. Across all sites we identified 11 ASVs belonging to 2 Orders, 2 Families, and 7 genera. Nine ASVs were resolved to species level, while over two fifths of sequences were only assigned to genus level. BLAST search of the NCBI GenBank database and phylogenetic analysis of the ASVs in MEGA 10 produced similar results. Taxa identified included endangered species protected under Indonesian law. The results can inform elasmobranch management in the Banggai MPA. They also highlight a need for further efforts to barcode elasmobranchs in Wallacea.

**Key Words:** elasmobranchs, eDNA, Banggai Archipelago, Wallacea, Anacapa Toolkit, 12S mtDNA.

**Introduction.** The Banggai Archipelago is one of six major island groups around Sulawesi Island in eastern Indonesia, within the Wallacea Region and Coral Triangle (Ambo-Rappe & Moore 2018). Once part of the Australasian plaque (Hall 2012), the complex geological history is just one of several factors contributing to the rich biodiversity of this region (Stelbrink et al 2012). The seas around and between the many islands to the east of Sulawesi Island in the Gulf of Tolo, Banda, Seram and Molucca Seas provide important habitat for resident and migratory marine megafauna including marine mammals, sea turtles and elasmobranchs (sharks and rays) (Allen & McKenna 2001; Ndobe et al 2005; Dermawan et al 2013; Moore et al 2017).

At national and international levels, the Banggai Archipelago is perhaps most widely known as the home of the Banggai cardinalfish (*Pterapogon kauderni* Koumans,