Table of contents

Volume 236

2019

◂ Previous issue Next issue ▸

The 1st International Conference on Fisheries and Marine Science 6 October 2018, East Java, Indonesia

Accepted papers received: 16 January 2019

Published online: 01 March 2019

Open all abstracts

Preface

OPEN ACCESS 011001

The 1st International Conference on Fisheries and Marine Science

+ Open abstract View article PDF

OPEN ACCESS 011002

Organizing Committee

+ Open abstract View article PDF

OPEN ACCESS 011003

Conference Photos

+ Open abstract View article PDF

OPEN ACCESS 011004

Peer review statement

+ Open abstract View article PDF

Papers

OPEN ACCESS 012001

The Increase in β-carotene Content in *Dunaliella salina* from the Application of Different Light Intensities

N Sugiati, E D Masithah, W Tjahjaningsih and A A Abdillah

+ Open abstract View article PDF

OPEN ACCESS 012002

Ammonia-eliminating potential of *Gracilaria* sp. And zeolite: a preliminary study of the efficient ammonia eliminator in aquatic environment

M R Royan, M H Solim and M B Santanumurti

+ Open abstract View article PDF

OPEN ACCESS 012003

Identification of extracellular enzyme-producing bacteria (proteolytic, cellulolytic, and amylolytic) in the sediment of extensive ponds in Tanggulrejo, Gresik

OA Artha, Sudarno, H Pramono and LA Sari

+ Open abstract View article PDF

OPEN ACCESS 012004

Addition of water from the treatment pond of pangasius fillet waste (*Pangasius* sp.) with different concentrations in the cultivation medium due to the population growth of *Daphnia* sp.

H P Alvian, E D Masithah and M H Azhar

+ Open abstract View article PDF

OPEN ACCESS 012005

The growth and survival rate in lettuce aquaponic systems (*Latuca sativa*) of eels in various stocking densities of eel (*Monopterus albus*)

N K Portalia, L Sulmartiwi and B S Rahardja

+ Open abstract View article PDF

OPEN ACCESS 012006

The prevalence of benedeniasis in humpback grouper (*Cromileptes altivelis*) in floating net cages in Situbondo Regency, East Java, Indonesia

S O Wijaya, S Subekti and Kismiyati

+ Open abstract View article PDF

OPEN ACCESS 012007

The prevalence of fungi on groupers (*Epinephelus* sp.) in cage mariculture systems of the northern coast of Surabaya, East Java

E Yuliastuti, R Kusdawarti and Sudarno

+ Open abstract View article PDF

OPEN ACCESS 012008

The spectrum of light and nutrients required to increase the production of phycocyanin *Spirulina platensis*

H A Wicaksono, W H Satyantini and E D Masithah

+ Open abstract View article PDF

OPEN ACCESS 012009

The growth and survival rate of the larvae of the sunu grouper (*Plectropomus leopardus*) in different temperatures

L Lutfiyah, D S Budi and M F Ulkhaq

+ Open abstract View article PDF

OPEN ACCESS 012010

Preservation of common carp (*Cyprinus carpio*) sperm using 0.9% NaCl and ringer's lactate solution

D S Budi, L A Adawiyah and L Lutfiyah

+ Open abstract View article PDF

OPEN ACCESS 012011

Comparison of the efficiency (flash point, freezing point, and viscosity test) of biodiesels from *Sargassum* sp.

M B Santanumurti, M R Royan, S H Samara, S Sigit and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012012

Study of patterns in the relationship of ecdysis with the age of freshwater crayfish *Cherax quadricarinatus* aged 76 Days

A H Fasya

+ Open abstract View article PDF

OPEN ACCESS 012013

Maximum density in the *Moina macrocopa* culture able to produce parthenogenesis in female offspring

A S Mubarak, D Jusadi, M Z Junior and M A Suprayudi

+ Open abstract View article PDF

OPEN ACCESS 012014

The oxygen content and dissolved oxygen consumption level of white shrimp *Litopenaeus vannamei* in the nanobubble cultivation system

D P Galang, A K Ashari, L Sulmatiwi, G Mahasri, Prayogo and LA Sari

+ Open abstract View article PDF

OPEN ACCESS 012015

The effect of the epiphytes of *Chaetomorpha crassa* on the total chlorophyll-a and growth of *Gracilaria verrucosa*

A L L Handayani, R J Triastuti and L Sulmartiwi

+ Open abstract View article PDF

0120[16]

Growth monitoring of koi fish (*Cypri nus carpio*) in natural hatchery techniques in Umbulan, Pasuruan, East Java

F P Putri and N N Dewi

+ Open abstract View article PDF

OPEN ACCESS 012017

Dynamic Ratio Correlation of N:P in relation to the Diatom Abundance in the Intensive System of the Vannamei (*Litopenaeus vannamei*) Shrimp Pond

E D Masithah, D D Nindarwi, T Rahma and dan R R Satrya P I

+ Open abstract View article PDF

OPEN ACCESS 012018

Dynamic ratio correlation of N:P on the abundance of Bluegreen algae in an intensive system in a white shrimp (*Litopenaeous vannamei*) pond

E D Masithah, D D Nindarwi, A L A Suyoso and D Husin

+ Open abstract View article PDF

OPEN ACCESS 012019

Dynamic ratio correlation of N:P toward phytoplankton explosions in intensive systems of white shrimp pond

E D Masithah, D D Nindarwi, D Husin and T Rahma

+ Open abstract View article PDF

OPEN ACCESS 012020

Development of water and nutrient management models to improve multitrophic seafarming productivity

J A Surbakti, I A L Dewi, M A Alamsjah and M Lamid

+ Open abstract View article PDF

OPEN ACCESS 012021

Pond soil characteristic in reclaimed tidal lowlands and its correlation with the water quality for aquaculture

M Fitrani, I Wudtisin, M Kaewnern and R H Susanto

+ Open abstract View article PDF

OPEN ACCESS 012022

The dynamics of total organic matter (tom) on sangkuriang catfish (*clarias gariepinus*) farming at upt ptpbp2kp and the effectiveness of freshwater bivalve (*anodonta woodiana*) in reducing the total organic matter with varying density

D Arfiati, C D G Putra, A H Tullah, S W A Permanasari and A W Puspitasari

+ Open abstract View article PDF

OPEN ACCESS 012023
Growth and morphological changes in relation to the maturation of male Japanese eel, *Anguilla japonica* injected with human chorionic gonadotrophin (HCG) in the different interval in the tropical region

Y T Hee, F F Ching and S Senoo

+ Open abstract View article PDF

OPEN ACCESS 012024
Genetic diversity of the endangered species *Sphyrna lewini* (Griffith and Smith 1834) in Lombok based on mitochondrial DNA

S Hadi, N P Anggraini, E Muttaqin, B M Simeon, B Subhan and H Madduppa

+ Open abstract View article PDF

OPEN ACCESS 012025
Sex ratio and size at first maturity of razor clam *Solen* sp. in Pamekasan and Surabaya coastal area, East Java, Indonesia

N Trisyani, N I Wijaya and I Yuniar

+ Open abstract View article PDF

OPEN ACCESS 012026
Improving productivity and water quality of catfish, *Clarias* sp. cultured in an aquaponic ebb-tide system using different filtration

E Setiadi, I Taufik, Y R Widyastuti, I Ardi and D Puspaningsih

+ Open abstract View article PDF

OPEN ACCESS 012027
Different substrate of trickling filter on growth, survival rate, and water quality of common carp (*Cyprinus carpio*) cultivation by using an intensive recirculation system

E Setiadi, I Taufik, Y R Widyastuti, I Ardi and A Saputra

+ Open abstract View article PDF

OPEN ACCESS 012028
Water quality dynamic, production and profitability of catfish, *Clarias* sp. cultured at different design construction of aquaponic

Y R Widyastuti, E Setiadi, I Taufik and L Setijaningsih

+ Open abstract View article PDF

OPEN ACCESS 012029
Effect of C:N ratio on the spore production of *Bacillus* sp. indigenous shrimp pond

A Yuniarti, N B Arifin, M Fakhri and A M Hariati

+ Open abstract View article PDF

OPEN ACCESS 012030
Comparative Test on Bacteria in the Digestive Tract of Vannamei Shrimp (*Litopenaeus vannamei*) at Intensive and Extensive Ponds in Ujungpangkah, Gresik

D Ningrum, M Arief and dan K T Pursetyo

+ Open abstract View article PDF

OPEN ACCESS 012031
Growth Performance of Laboratory-Scale *Chaetoceros calcitrans* in Different Containers

M Jannah, M F Ulkhaq, M H Azhar, Suciyono and dan W Soemarjati

+ Open abstract View article PDF

OPEN ACCESS 012032
Study of the Dynamic Density and Diversity of Plankton at Different Brackishwater Pond Managements in Gresik, East Java

O Tilahwatih, E D Masithah and dan B S Rahardja

+ Open abstract View article PDF

OPEN ACCESS 012033
The Effect of Demineralization Stage of Agar's Solid Waste on the Characterization of Activated Carbon

R Febrianto, Sudarno and R Kusdarwati

+ Open abstract View article PDF

OPEN ACCESS 012034
The Dynamic of Density and Diversity of Cyanophyta in Different Pond Bases in Educational Pond of Faculty of Fisheries and Marine Universitas Airlangga

S Z Cahyani, E D Masithah and Prayogo

+ Open abstract View article PDF

OPEN ACCESS 012035
Effect of Different Salinity Level within Water Against Growth Rate, Survival Rate (FCR) of Catfish (*Clarias* sp.)

D Prananingtyas, Prayogo and S Rahardja

+ Open abstract View article PDF

OPEN ACCESS 012036
Molecular identification and phylogenetic reconstruction of two fiddler crabs (*Uca forcipata* and *Uca triangularis*)

S Andriyono, H Pramono and H W Kim

+ Open abstract View article PDF

OPEN ACCESS 012037

The molecular identification and phylogenetic reconstruction of Palaemonid and Penaeid shrimp from the southern part of Bangladesh

M J Alam, S Andriyono, A T M Eunus and H W Kim

+ Open abstract View article PDF

OPEN ACCESS 012038

Morphometric characteristics of Fur Cockles (*Anadara spp.*) in Wonokromo and Juanda Estuary, Surabaya

P B Pamungkas, K T Pursetyo, J Triastuti and N N Dewi

+ Open abstract View article PDF

OPEN ACCESS 012039

Stock status of ark clams (*Anadara spp.*) based on dredge fishing of the east coast of Surabaya, Indonesia

N N Dewi, K T Pursetyo, O P Darmono, F R Fachri, F S Puspitasari and A Damora

+ Open abstract View article PDF

OPEN ACCESS 012040

The distribution patterns and biomass of bivalves in Segoro Tambak estuary, Sedati, Sidoarjo, East Java

S H Liyana, L A Sari, N N Dewi, E D Masithah, A M Sahidu and K T Pursetyo

+ Open abstract View article PDF

OPEN ACCESS 012041

Inventorization of reef fish on Tabuhan Island, Banyuwangi, East Java, Indonesia

Suciyono, M A Azhar, M F Ulkhaq and H Kenconojati

+ Open abstract View article PDF

OPEN ACCESS 012042

Dynamic study on the effect of calcium hydroxide and sodium bicarbonate treatment on the N/P ratio and plankton abundance

M R N Tsany, E D Masithah, B S Rahardjo and D D Nindarwi

+ Open abstract View article PDF

OPEN ACCESS 012043

Distribution patterns and the biomass of bivalves at Segoro Tambak estuary, Sedati, Sidoarjo, East Java

S H Liyana, L A Sari, N N Dewi, E D Masithah, A M Sahidu and K T Pursetyo

+ Open abstract View article PDF

OPEN ACCESS 012044

Optimization of diatom *Haslea ostrearia* cultivation in different mediums and nutrients

S Arsad, C Stavrakakis, V Turpin, P Rossa, Y Risjani, L A Sari, F S Prasetiya and J-L Mouget

+ Open abstract View article PDF

OPEN ACCESS 012045

Coastal ecosystem model based on environmental suitability and carrying capacity of the fishpond in Banyuwangi Region, East Java, Indonesia

E W Setyaningrum, Maghdalena, A T K Dewi, M. Yuniartik and E D Masithah

+ Open abstract View article PDF

OPEN ACCESS 012046

Development and succession of sessile macrofouling organisms on the artificial structure in the Shallow Coastal Waters of Sabah, Malaysia

M A M Affandy, J Madin, K P Jakobsen and M Auluck

+ Open abstract View article PDF

OPEN ACCESS 012047

Fish species difference around the light of metal halide lamps and LED lamps with mini purse seine operation

M A Sofijanto, D Arfiati, T D Lelono and A Muntaha

+ Open abstract View article PDF

OPEN ACCESS 012048

Status of coral diseases and compromised health syndromes on Pemuteran shallow reefs, North Bali island

W Karim

+ Open abstract View article PDF

OPEN ACCESS 012049

Management options for restoring artificial coral reefs in Indonesia: strengthening in institutional approach

Rudianto and Ahmad Zainul

+ Open abstract View article PDF

OPEN ACCESS 012050

Growth of salt-secretor and non-salt secretor mangrove seedlings with varying salinity and their relations to habitat zonation

M Basyuni, Ramayani, A Hayullah, Prayunita, M Hamka, L A Putri and S Baba

+ Open abstract View article PDF

OPEN ACCESS 012051

Distribution of *Ctenactic Echinata* and *Fungia Consinna* coral on Mamburit island, Sumenep regency, East Java

Sawiya, D Arfiati, Guntur and U Zakiyah

+ Open abstract View article PDF

OPEN ACCESS 012052

Diversity species and condition of seagrass ecosystem in Teluk Awur and Prawean Jepara

I Riniatsih, A Ambariyanto, E Yudiati, R Hartati, W Widianingsih and R T Mahendrajaya

+ Open abstract View article PDF

OPEN ACCESS 012053

Copper (Cu) and Cadmium (Cd) toxicity on growth, chlorophyll-a and carotenoid content of phytoplankton *Nitzschia* sp

D Hindarti and A.W. Larasati

+ Open abstract View article PDF

OPEN ACCESS 012054

Vegetation Characteristic and Micro Environment of Mangrove Rehabilitation Forest at Coastal Areas of East Sinjai, South Sulawesi

H Setiawan

+ Open abstract View article PDF

OPEN ACCESS 012055

The Use of Water Lettuce (*Pistia stratiotesas*) as Phytoremediator for Concentration and Deposits of Heavy Metal Lead (Pb) Tilapia (*Oreochromis niloticus*) Gills

A A D Amalia, B S Rahardja and Rr J Triastuti

+ Open abstract View article PDF

OPEN ACCESS 012056

The Effectiveness of Heavy Metals Pb, Cd and Zn Reduction in NPK Fertilizer Waste Combined with Biofilters of Seaweed (*Gracillaria* sp.), Blood Clam (*Anadara* sp.), and Zeolite

A R K Sari, R K Harryes, F A Anggraini, M A Alamsyah and dan A Ahadi

+ Open abstract View article PDF

OPEN ACCESS 012057

The Effectiveness of Combining *Gracilaria* Sp. Seaweed Biofilter and *Anadara granosa* Shell with Zeolite in the Decrease in the Level of Mercury (Hg) Heavy Metal

J A Spespatri, B S Rahardja and A A Abdillah

+ Open abstract View article PDF

OPEN ACCESS 012058

The Effectiveness of Combination of Seaweed (*Gracillaria* sp.), Blood Clamp (*Anadara granosa*), and Zeolite as Biofilter in the Reduction of Heavy Metal Copper (Cu)

[illegible]

+ Open abstract View article PDF

OPEN ACCESS 012059

Bioaccumulation of Cadmium (Cd) Heavy Metal on Seaweed (*Gracilaria* sp.) in Traditional Fishpond of Jabon Subdistrict, Sidoarjo District

O Ardiyansyah, Sudarno and Rosmanida

+ Open abstract View article PDF

OPEN ACCESS 012060

Identification of Proteolytic Bacterial Isolates in Sediment Ecosystem of Gunung Anyar Mangrove Forest, Surabaya

P B Utomo, Sudarno and B S Rahardja

+ Open abstract View article PDF

OPEN ACCESS 012061

The Analysis of Cockle (Anadara inaequivalvis) Gonad Maturity Level in the Estuary of Banjar Kemuning River, Sedati, Sidoarjo

R F Saputra, E D Masithah and P D Wulansari

+ Open abstract View article PDF

OPEN ACCESS 012062

Spatial and Temporal Variation of Biomass Blood Cockle (*Anadara* sp.) in Estuaries Dadapan, Sedati Sub-District, Sidoarjo, East Java

M R Ramadhan, K T Pursetyo, Prayogo and N N Dewi

+ Open abstract View article PDF

OPEN ACCESS 012063

Distribution Patterns and Biomass of Bivalve in Juanda and Segoro Tambak Estuary in Sedati, Sidoarjo, East Java

S H Liyana, E D Masithah and A M Sahidu

+ Open abstract View article PDF

OPEN ACCESS 012064

Analysis of Cadmium (Cd) Heavy Metal on Sediment and Mangrove Leaves *Avicennia marina* at Mangrove Ecotourism Wonorejo, Surabaya

W C Dermawan, Prayogo and B S Rahardja

+ Open abstract View article PDF

OPEN ACCESS 012065

Analysis of Lead (Pb) Value Comparison on Seaweed (*Eucheuma cottonii*) in Bluto and Saronggi Sumenep Marine, Madura, East Java

N L Komariyah, K T Pursetyo and S A Sudjarwo

+ Open abstract View article PDF

OPEN ACCESS 012066

The potential addition of lemuru oil to commercial feed to increase the content of EPA and DHA in eels (*Monopterus albus*)

A Imanisa, M B Santanumurti, M Lamid and Agustono

+ Open abstract View article PDF

OPEN ACCESS 012067

Effect of lysine in addition to commercial feed on crude protein and the energy digestibility of gourami (*Osphronemus gouramy*)

D Setiyawan, S H Samara, Agustono and M A A Arif

+ Open abstract View article PDF

OPEN ACCESS 012068

Addition of the papain enzyme to commercial feed against protein retention and feed efficiency in eels (*Anguilla bicolor*)

DA Liono, M Arief, Prayogo and W Isroni

+ Open abstract View article PDF

OPEN ACCESS 012069

Combination of papain enzyme and phytase enzyme in commercial feed and the protein and energy retention of tilapia *Oreochromis niloticus*

A Saifulloh, M B Santanumurti, M Lamid and W P Lokapirnasari

+ Open abstract View article PDF

OPEN ACCESS 012070

The effect of giving cake artificial feed on the survival rate, and growth of Common carp (*Cyprinus carpio*) larva in an Installation of Freshwater Culture (IBAT) in Punten, Batu.

I P Zainiyah, Rozi, W H Satyantini and A M Sahidu

+ Open abstract View article PDF

OPEN ACCESS 012071

The Utilization of Phytase Enzymes and SEM Analysis in order to increase the Quality of Rice Bran as a Layer and Fish Feed

M Lamid, Anam Al-Arif and S H Warsito

+ Open abstract View article PDF

OPEN ACCESS 012072

The dynamic relationship of phytoplankton abundance and diversity in relation to white shrimp (*Litopenaeus vannamei*) feed consumption in intensive ponds

D D Nindarwi, E D Masithah, D Zulian and A LA Suyoso

+ Open abstract View article PDF

OPEN ACCESS 012073

Effect of partial replacement of fish meal with *Spirulina platensis* meal in practical diets and culture location on growth, survival, and color enhancement of percula clownfish *Amphiprion percula*

S Hudaidah, B Putri, S H Samara and Y T Adiputra

+ Open abstract View article PDF

OPEN ACCESS 012074

The Effect of Different level of Probiotic Addition on Commercial Feed against Digestibility and Efficiency of Nile Tilapia Feed (*Oreochromis Niloticus*)

D Taufik, M Arief and H Kenconojati

+ Open abstract View article PDF

OPEN ACCESS 012075

The Effect of Adding Synbiotics Into Commercial Feed Towards Protein Retention and Fat Retention of Dumbo Catfish (*Clarias* sp.)

H Syevidiana, M Arief and I S Hamid

+ Open abstract View article PDF

OPEN ACCESS 012076

The Effect of Adding Lysine in Commercial Feed on Growth Rate, Feed Efficiency, and Feed Convertion Ratio to Tambaqui (*Colossoma Macropomum*)

L V D Putra, U Agustono and S H Kenconojati

+ Open abstract View article PDF

OPEN ACCESS 012077

The Effect of Coconut Shell Liquid Smoke in Commercial Feed on Total Bacteria of *Pseudomonas Aeruginosa* in the Tilapia's Kidney (*Orechromis niloticus*)

M Rahmawati, Sudarno and S Subekti

+ Open abstract View article PDF

OPEN ACCESS 012078

The Effect of Coconut Shell Liquid Smoke in Commercial Feed Towards Total *Pseudomonasaeruginosa* Bacteria on Gastrointestinal Tract Tilapia (*Oreochromis Niloticus*)

S Rahmadini, Sudarno and S Subekti

+ Open abstract View article PDF

OPEN ACCESS 012079

Antibacterial activity of honey in preserving high-pressure cooked milkfish stored at room temperature

D A Hakim, W Tjahjaningsih and Sudarno

+ Open abstract View article PDF

OPEN ACCESS 012080

Bacterial composition in the gastrointestinal tract of *Uca* spp crabs fed on *Avicennia marina* leaf litter

M A B Kareho, E D Masithah and W Tjahjaningsih

+ Open abstract View article PDF

OPEN ACCESS 012081

The correlation between ectoparasite infestation and the total plate count of *Vibrio* sp. in pacific white shrimp (*Litopenaeus vannamei*) in ponds

G Mahasri, Rozi, A T Mukti, W H Satyantini and N M Usuman

+ Open abstract View article PDF

OPEN ACCESS 012082

In vitro study of an ethanolic extract of coffea leaves to inhibit freshwater pathogenic bacteria

H Kenconojati, MF Ulkhaq, DS Budi and MH Azhar

+ Open abstract View article PDF

OPEN ACCESS 012083

The effect of noni fruits (*Morinda citrifolia*) with different ripeness stages against the total erythrocytes and leukocytes of comet goldfish (*Carassius auratus*) infested by *Argulus*

E Setyaningsih, Kismiyati and S Subekti

+ Open abstract View article PDF

OPEN ACCESS 012084

The protection capacity of the crude and whole protein spores of *Myxobolus koi* as an immunostimulant material development in goldfish (*Cyprinus carpio*) for preventing Myxobolusis

G Mahasri, M Yusuf, R Woro and M B Santanumurti

+ Open abstract View article PDF

OPEN ACCESS 012085

Identification of white spot syndrome virus (WSSV) in pacific white shrimps (*Litopenaeus vannamei*) from ponds postexposure to immunogenic membrane proteins (*Zoothamnium penaei*)

P A Wiradana, G Mahasri, R E R Sari, U C Marwiyah and R Prihadhana

+ Open abstract View article PDF

OPEN ACCESS 012086

Gills and swimming leg histopathologies in pacific white shrimp (*Lithopenaeus vannamei*) from ponds exposed to the immunogenic membrane proteins of *Zoothamnium penaei*

R E R Sari, G Mahasri, P A Wiradana and U C Marwiyah

+ Open abstract View article PDF

OPEN ACCESS 012087

Total plate count and identification of vibrio in pacific white shrimp (*Litophenaeus vannamei*) from ponds and in those exposed to immunogenic protein membrane *Zoothamnium penaei*

U C Marwiyah, G Mahasri, R E Ratnasari and P A Wiradana

+ Open abstract View article PDF

OPEN ACCESS 012088

Effectiveness of *Nitrobacter* on the specific growth rate, survival rate and feed conversion ratio of dumbo catfish *Clarias* sp. with density differences in the aquaponic system

A S Taragusti, M B Santanumurti, B S Rahardja and Prayogo

+ Open abstract View article PDF

OPEN ACCESS 012089

The erythrocyte and leucocyte profile of saline tilapia (*Oreochromis Niloticus*) in a cultivation system with nanobubbles

M Gunanti, P D Wulansari and K Kinzella

+ Open abstract View article PDF

OPEN ACCESS 012090

The prevalence and intensity of ectoparasites infecting vanname shrimp (*Litopenaeus vannamei*) reared in different ponds

N Nurlatiffah, Kismiyati and MF Ulkhaq

+ Open abstract View article PDF

OPEN ACCESS 012091

Protozoan parasites of Vannamei Shrimp (*Litopenaeus vannamei*) in farmed fish from Pasuruan, Indonesia

U Hafidloh and P D W Sari

+ Open abstract View article PDF

OPEN ACCESS 012092

Growth of *Bacillus* sp. and *Flavobacterium* sp. in culture media with the addition of liquid whey tofu waste

W H Satyantini, R M Pratiwi, A M Sahidu and D D Nindarwi

+ Open abstract View article PDF

OPEN ACCESS 012093

The effect of noni *Morinda citrifolia* L. fruit extracts on the gill histopathological changes of Nile tilapia *Oreochromis niloticus*

A T Mukti, E Dewi, W H Satyantini, L Sulmartiwi, Sudarno and M Hassan

+ Open abstract View article PDF

OPEN ACCESS 012094

Prevalence and intensity of ectoparasites in Pacific white shrimp (*Litopenaeus vannamei*) seeds from a pond and hatchery

G Mahasri, T Hidayat and Sudarno

+ Open abstract View article PDF

OPEN ACCESS 012095

Prevalence and intensity of ectoparasites in gabus fish (*Channa striata*) at Cangkringan Fishery Cultivation Technology Development Center, Sleman, Yogyakarta

E N Fitriani, Rozi, M Arief and H Suprapto

+ Open abstract View article PDF

OPEN ACCESS 012096

Antibacterial activity of bitter gourd (*Momordica charantia l.*) leaf extract against *Aeromonas hydrophila*

D A Masithoh, R Kusdarwati and D Handijatno

+ Open abstract View article PDF

OPEN ACCESS 012097

Determination of the *aerolysin* gene in *Aeromonas hydrophila* using the polymerase chain reaction (pcr) technique

G Christy, R Kusdawarti and D Handijatno

+ Open abstract View article PDF

OPEN ACCESS 012098

Bioaccumulation and histopathological effect on the gills and liver of silver barb (*Barbonymus gonionotus*) exposed to the heavy metal nickel

I Purwanti, W Arroisi, B S Rahardja and L Sulmartiwi

+ Open abstract View article PDF

OPEN ACCESS 012099

Identification and prevalence of the ectoparasite *Octolasmis* in sand lobster (*Panulirus homarus*) and bamboo lobster (*Panulirus versicolor*) in Floating Net Cages in Sape, Bima Regency, West Nusa Tenggara Province, Indonesia

L. Yusgita, Kismiyati, S. Subekti, P D Wulansari and M K Amiin

+ Open abstract View article PDF

OPEN ACCESS 012100

Treatment of *Chlorella sp*. extract on heat shock cluster (HSC) response from the tissue and bloodcells proliferation of *Epinephelus fuscoguttatus-lanceolatus* infected by *Viral Nervous Necrosis*

U Yanuhar, I Al-Hamidy and N R Caesar

+ Open abstract View article PDF

OPEN ACCESS 012101

Superdioxide dismutase (SOD) and metallothionein (MT) *Tubifex tubifex* at the acute mercury exposure

I M Widiastuti, A M S Hertika, M Musa and D Arfiati

+ Open abstract View article PDF

OPEN ACCESS 012102

Antifungal activity of marine sponges (Class Demospongiae) collected from Biak, Indonesia

R D Kasitowati, K Wittriansyah, A Trianto, D C Pratiwi and M A P Panjaitan

+ Open abstract View article PDF

OPEN ACCESS 012103

Antibacterial activities of *Physalis angulata* herb extract on white feces diseases (WFD) in *Litopenaeus* shrimp *vannamei*

E Saraswati and AS Wijaya

+ Open abstract View article PDF

OPEN ACCESS 012104

The Effects of Mercury Chloride (Hgcl2) on the Changes in Hematology and Blood Sugar Level in Carps (*Cyprinus carpio*)

I Setiyowati, H Suprapto and G Mahasri

+ Open abstract View article PDF

OPEN ACCESS 012105

Change in Two-Spot Catfish Histopathological Liver (Mystus nigriceps) Accumulated with Heavy Metal Cadmium (Cd) in Ketingan Estuary, Sidoarjo - East Java, Indonesia

L Anggitasari, H Suprapto and dan D D Nindarwi

+ Open abstract View article PDF

OPEN ACCESS 012106

Effectiveness of Pepaya Leaf Extract (*Carica Papaya* L.) to Control Ectoparasite *Argulus* on Common Carp (*Cyprinus Carpio*)

L S Azizah, Kismiyati and A H Fasya

+ Open abstract View article PDF

OPEN ACCESS 012107

Bacterial Identification from Marine Ornamental Fish in Fish Quarantine, Quality Control and Fishery Products Safety Class I Denpasar, Bali

N R Rukmana, G Mahasri, S N Hidayah, M F Ulkhaq and H Kenconojati

+ Open abstract View article PDF

OPEN ACCESS 012108

Prevalence and Intensity of Ectoparasites of Tilapia (*Oreochromis niloticus*) in Ponds with Low, Medium and High Stocking Density

M Indahsari, Kismiyati and M F Ulkhaq

+ Open abstract View article PDF

OPEN ACCESS 012109

Texture profile of the bread produced from composite flour *Bruguiera gymnorrhiza* flour (BGF) and wheat flour

M N G Amin, M N Hasan, Zakariya, S A Pralebda, H Pramono, E Saputra, S Subekti and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012110

The potential of seaweed waste (*gracilaria* sp. and *eucheuma cottonii*) as a medium density fiberboard (mdf)-based pot material for better water use efficiency in tomato plants

H Kurnia, R R Rifadi, Agustono, M N G Amin, S A Sudjarwo and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012111

Characterization of edible coating based on surimi fillet catfish as biodegradable packaging

E Saputra

+ Open abstract View article PDF

OPEN ACCESS 012112

Characteristics of the fish protein isolate recovered from Sardine by-products using the Isoelectric Solubilization- Precipitation method

H. Pramono, N T Irawan and M R A Firdaus

+ Open abstract View article PDF

OPEN ACCESS 012113

The potential of peptides derived from the chymotrypsin hydrolysate of soft shelled turtle yolk against the Angiotensin I Converting Enzyme

D Y Pujiastuti and J L Hsu

+ Open abstract View article PDF

OPEN ACCESS 012114

Kappa and iota carrageenan combination of *Kappaphycus alvarezii* and *Eucheuma spinosum* as a gelatin substitute in ice cream raw material product

I Suryani, D I Permata Sari, D M Astutik and A Abdillah

+ Open abstract View article PDF

OPEN ACCESS 012115

Detection of antibiotic-resistant *Salmonella* sp. in the seafood products of Surabaya local market

H Pramono, A Kurniawan, N Andika, T F Putra, M A R Hazwin, S Utari, A P Kurniawan, E D Masithah and A M Sahidu

+ Open abstract View article PDF

OPEN ACCESS 012116

The effect of kappa-carrageenan fortification on the physicochemical and organoleptic properties of milkfish galantin

D Darmawan, L Sulmartiwi and A A Abdillah

+ Open abstract View article PDF

OPEN ACCESS 012117

The application of a high voltage electric field (HVEF) to reduce *Escherichia coli* and *Salmonella thyphimurium* bacteria in red snapper (*Lutjanus* sp.) fillets

D J Subakti, H Pramono and J Triastuti

+ Open abstract View article PDF

OPEN ACCESS 012118

Isolation and identification of fish import consumption bacteria in a fish quarantine center, focusing on the quality control and safety of fishery products at Tanjung Priok, Jakarta

H S Farizky and W H Satyantini

+ Open abstract View article PDF

OPEN ACCESS 012119

Replacement of gum arabic by dry *Spirullina* sp. biomass as a food emulsifier in bread making

D Wulandari, M N G Amin, E D Masithah, M Lamid and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012120

Nutrient improvement of *Bruguiera gymnorrhiza* peel fruit through fermentation using commercial tempeh (Indonesian fermented soybean) mold

M N G Amin, R A Prastiya, M N Hasan, Zakariya and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012121

DPPH scavenging property of bioactives from soft corals origin palu bay, Central Sulawesi, Indonesia

W A Tanod, U Yanuhar, Maftuch, D Wahyudi and Y Risjani

+ Open abstract View article PDF

OPEN ACCESS 012122

Extraction of bioactive compounds fruit from *Rhizophora mucronata* using sonication method

Ernawati, E Suprayitno, Hardoko and U Yanuhar

+ Open abstract View article PDF

OPEN ACCESS 012123

Harvesting *Chaetoceros gracilis* by flocculation using Chitosan

W AA Yamin, S R M Shaleh, F F Ching, R Othman, M Manjaji-Matsumoto, S Mustafa, S Shigeharu and G Kandasamy

+ Open abstract View article PDF

OPEN ACCESS 012124

The Use of Rajungan (*Portunus Pelagicus*) Shells as Flour in Wet Noodles Ingredient

A Rahma, A A Abdillah and E Saputra

+ Open abstract View article PDF

OPEN ACCESS 012125

The Potential of Lindur Fruit Flour (*Bruguiera Gymnorrhiza*) in Reducing Oil Absorption of Milkfish Nugget during the Deep Frying Process

A Widyastuti, AA Abdillah and Laksmi Sulmartiwi

+ Open abstract View article PDF

OPEN ACCESS 012126

Chemical and Sensory Characteristics of Flakes Made from Seaweed (*Eucheuma cottonii*) and Soybean (*Glycine max* (L.) Merill)

I R Firdarini, Kismiyati and A Manan

+ Open abstract View article PDF

OPEN ACCESS 012127

The Effect of Maltodextrin Concentration on the Characteristics of Snappers' (*Lutjanus* sp.) Peptone

R Ningsih, Sudarno and Agustono

+ Open abstract View article PDF

OPEN ACCESS 012128

Physics and Chemical Characteristics of Sargassum Sp. Seaweed with Addition of Sodium Alginate Stabilizer to Different Concentrations

M Via, A A Abdillah and M A Alamsjah

+ Open abstract View article PDF

OPEN ACCESS 012129

The Effect of Sorbitol Addition on the Characteristic of Carrageenan Edible Film

M Rahmawati, M Arief and W H Satyantini

+ Open abstract View article PDF

OPEN ACCESS 012130

The Utilization of Flower Crab (*Portunus Pelagicus*) Shell as Pasta Flavor

R Rahmawati, E Saputra and A A Abdillah

+ Open abstract View article PDF

OPEN ACCESS 012131

Income analysis of catching fish using dogol (demersal danish seine) in the sub-district of Brondong, Lamongan

A Aulia, A M Sahidu and Agustono

+ Open abstract View article PDF

OPEN ACCESS 012132

Area development based on conservation and ecotourism on the Cemara Beach (Pine Trees Beach), Pakis, Banyuwangi, East Java Province, Indonesia

E W Setyaningrum, A T K Dewi, K P Prapti, Z Erwanto and H D Susanti

+ Open abstract View article PDF

OPEN ACCESS 012133

Socioeconomic and institutional factors affecting the sustainable development for fisheries in Bontang City, Indonesia

B I Gunawan

+ Open abstract View article PDF

OPEN ACCESS 012134

Factors influencing the market requirements fulfillment in small medium enterprise fish processors in East Java

W Sulistyowati, Soemarno, A Efani and M Primyastanto

+ Open abstract View article PDF

JOURNAL LINKS

Journal home

Journal scope

PAPER • **OPEN ACCESS**

Distribution Patterns and Biomass of Bivalve in Juanda and Segoro Tambak Estuary in Sedati, Sidoarjo, East Java

To cite this article: S H Liyana *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **236** 012063

Distribution Patterns and Biomass of Bivalve in Juanda and Segoro Tambak Estuary in Sedati, Sidoarjo, East Java

S H Liyana, E D Masithah, A M Sahidu

Fisheries and Marine Faculty, Universitas Airlangga, Surabaya, Indonesia

Abstract. Indonesian waters have a variety of flora and fauna species that live and associate therein. According to Yunus (2008) and Zarkasyi et al. (2016), the bivalvia group as an organism is generally found in marine waters, especially coastal areas or intertidal areas and is widely used by most people. This research used an observation method with descriptive analysis. The results show that the bivalvia distribution pattern in Juanda and Segoro Tambak rivers' estuaries looks consistent with a distribution index value of <1, which is in the range of 0.3-0.5. The highest average bivalve biomass is temporally at 2.02 ton/km^2 in March at Segoro Tambak station and the average biomass value of the lowest bivalves is temporally at 0.65 ton/km^2 in January at Juanda station. The highest total average density is temporally at 6 ind/10m^2 in March at Segoro Tambak station and the lowest density value is 3 ind/10m^2 in February at Segoro Tambak station.
Keywords. Bivalvie, distribution pattern, biomass, organic matter, water quality, oceanographis condition.

1. Introduction

According to Zarkasyi et al. (2016), Indonesian marine waters have a variety of flora and fauna species that live and are associated inside. Approximately 80% or about 8,000 species live in various depths of sea water and the rest in freshwater (Khalil, 2016). Bivalvia is a type of mollusk that lives in fresh and marine waters and generally as a microfagus. According to Yunus (2008) and Zarkasyi et al. (2016), bivalve groups as organisms are generally found in marine waters, especially coastal areas or intertidal areas which are widely used by most people.

According to Khalil (2016) and Junaidi et al. (2010), the bivalve class includes a variety of shells, gravestones and mussels as a component of the food chain, as well as an indicator of monitoring water quality. Many types of bivalves have economic meanings, namely food sources such as Anadara granosa, Anadara antiquate, Anadara gubernaculum and Anadara inaequivalvis, as handicrafts and others (Ambarwati and Trijoko, 2011).

The spread of bivalves in a waters is determined by the abiotic, biotic and bivalve tolerance of each of these environmental factors. Abiotic factors include the physics of water chemistry, substrate type, food availability and biotic factors such as life cycle patterns associated with the pattern of bivalve distribution (Mardatilla, 2016). Distribution or distribution patterns can be defined as patterns of distance between individuals within a population boundary (Campbell & Reece, 2008). According to Odum (1994), random distribution is rare in nature. Uniform spread can occur when competition between individuals is so intense that there is an interaction of positive antagonism that encourages the sharing of the same space. However Campbell & Reece (2008), states that the most common spread pattern is grouping.

The river estuary is a closed waters located in the downstream part of the river that is still in contact with the sea and is very likely to occur between the two (Taqwa et al., 2014). Mixing these two water masses can result in physical changes such as sedimentation. These physical changes can have a major influence on biota to adapt to their environment. The estuary area of the river is a habitat for various kinds of benthic animal organisms, one of which is bivalvia (Yunus, 2008). The Juanda River and Segoro Tambak estuaries are locations for shellfish capture by local communities (Sukandar et al., 2016). The seashell business is carried out in a traditional way, but the exploitation of these resources tends to override the principles of the preservation of natural resources. Pressure on the sustainability of shellfish resources in the Juanda River estuary and the Segoro Tambak area has increased with increasing community activities in the region.

So far there is no research that has specifically examined the patterns of distribution and biomass of bivalve at the estuary of the Juanda and Segoro Tambak River. The purpose of this research was to determine the distribution pattern and bivalve biomass at the estuary of the Juanda River and Segoro Tambak, Sedati, Sidoarjo, East Java.

2. Methodology

2.1 Place and time of research

This research was carried out at the estuary of the Juanda River and Segoro Tambak, Sedati, Sidoarjo, East Java from January to March 2018. Sampling was carried out at the Anatomy and Cultivation Laboratory of the Faculty of Fisheries and Marine Universitas Airlangga, Surabaya Industrial Research and Standardization Laboratory (BARISTAND), Nutrition Laboratory, Faculty of Public Health, Universitas Airlangga and Soil Mechanics Laboratory, Sepuluh November Institute of Technology, Surabaya.

2.2 Equipment and materials

The equipment used included boats, fishing gear, baskets, water samplers, cool boxes, plastic bags, refractometers, thermometers, Secci Disk, pH pens, paper labels, permanent markers, Ekman and GPS take, bivalve samples, seawater, sediments, HNO3 solvents, and ice cubes.

2.3 Methods

This research used the observation method with descriptive analysis, carried out by describing or describing the data that has been collected because of existence without intending to make conclusions that apply to the general or generalizations.

2.4 Work Procedure for bivalve sampling

Bivalve sampling was carried out using a garit catcher. Garit was a fishing device made of a semicircular iron chain with its side parts having a limiting net and in one ship using a maximum of three berries (World Wide Fund for Nature Indonesia, 2015). Garit that had been equipped with a rope was lowered to the bottom of the water and pulled by the boat for one minute at a speed of 3-4 m/minute at a predetermined point. Garit could be removed after three minutes. Bivalves that had been cleared of mud and rubbish were put into plastic clips that have been labeled and differentiated based on the test. The bivalve sample that was already inside the plastic was then put into the cool box which was already filled with ice cubes. Samples of bivalves that had been labeled were transported by vehicle to the Anatomy and Cultivation Laboratory of the Faculty of Fisheries and Marine Universitas Airlangga to conduct the biomass observation.

2.5 Sediment sampling

Sediment samples were taken using an Ekman grab at the same point as bivalve sampling. According to Blackwell (2013), Ekman grab was suitable for soft sediment sampling from small vessels. This sampling was only done at each point and does not need to be repeated. The Ekman grab was sunk into the bottom of the water, then the ballast iron was pushed into the water so the Ekman grab could be closed. The closed Ekman grab could be lifted onto a boat for handling sediments. The sediment samples were then put into the Cool box tightly closed and taken to the Ten Mechanics Laboratory of the Ten November Institute of Technology Surabaya and the Nutrition Laboratory of the Public Health Faculty of Universitas Airlangga Surabaya to test the substrate and organic material in the sediment.

2.6 Water sampling

Seawater sampling was carried out to obtain water quality data. Water samples were taken from the boat using a water sampler at a depth of 30 cm below the surface of the water and inserted in a bottle (Zhang, 2007). Those samples were immediately stored in a cool box filled with ice cubes at a temperature of ± 4^{o}C. Storage at ± 4^{o}C can preserve samples for a storage period of 1-2 days. The collected water samples were immediately taken to the Surabaya Research and Standardization Laboratory (BARISTAND) Laboratory to test the content of ammonia, nitrite, nitrate and COD.

2.7 Data analysis

Data analysis was carried out descriptively, namely describing the data obtained. The research data was processed using calculation parameters with identification data as a reference. Calculation parameters used included distribution index (Id), density index (Q), and biomass index (B).

Distribution Index

$$\frac{n\sum Xi^{2} \quad N}{N(N-1)}$$

Id=
Remark:
Id = Morisita distribution index
n = Number of sampling points
N = Total number of individuals obtained
Xi = Number of individuals in each point the results of the Morisita index were grouped as follows:
Id<1: Pattern of similar distribution
Id = 1: The pattern of individual random distribution
Id>1: grouped Individual distribution pattern

Density Index

D = v x t
Description :
D : Length/Distance of sweep area (m)
v : Pull Speed (Km/ jam)
t : Pull Time (jam)

Biomass Index

a = D x h
Description:
a : sweep area unit (m^2)
D : Length/Distance of sweep area (m)
h : Length of garit (m)

$$Q = \frac{Cw/a}{Cf}$$

Description:

Q	:	Density per area of sweep (ind/m^2)
Cw	:	Capture Results (ind)
a	:	sweep area (m2)
Cf	:	Passing factor (0.4)

3. Results and discussion

3.1 Results

The Juanda and Segoro Tambak river estuary have different environmental conditions. The Juanda river estuary is the location of the entry and exit of fishing boats and as the port of fishing boats. Meanwhile, Segoro Tambak River estuary is a seashell fishing area and is a meeting of several rivers with a more varied mix of water and organic materials.

Bivalves that predominantly live in the estuary of the Juanda and Segoro Tambak rivers are *Anadara granosa*, *Anadara inequivalvis*, *Anadara gubernaculum*, *Mactra* sp. and *Paphia undulate* with a length of 3-6 cm and width of 4-5 cm. The most common bivalve species is *Anadara inequivalvis* and the least found is *Mactra* sp. The result of bivalvia identification of the dominant catch in Juanda River and Segoro Tambak estuaries can be seen in Figure 1.

Figure 1. The bivalve identification results of dominant catches in Juanda River and Segoro Tambak estuaries. (a) *Mactra* sp., (b) *Anadara granosa,* (c) *Anadara gubernaculum* (d) *Anadara inaequivalvis* dan (e) *Paphia undulata.*

The results of the research in Juanda River and Segoro Tambak estuaries, Sedati, Sidoarjo, East Java for three months of observation show that the pattern of bivalve distribution in Juanda River and Segoro Tambak estuaries looks consisten with <1 distribution index value, which is in the range of 0.3-0.5. Data on bivalve distribution patterns can be seen in Table 1.

Table 1. Pattern of bivalve distribution in Juanda River and Segoro Tambak estuaries during January-March 2018.

Station	Period	Distribution Index Value	Distribution Pattern
Juanda	January	0.33	Uniform
	February	0.5	Uniform
	March	0.47	Uniform
Segoro Tambak	January	0.35	Uniform
	February	0.38	Uniform
	March	0.4	Uniform

Note: Results of primary data processing

The highest average bivalve biomass value is temporally at 2.02 tons/km^2 in March at Segoro Tambak station and the lowest average biomass value is temporally at 0.65 ton/km^2 in January at Juanda station. The average bivalve biomass data for each station temporally in Juanda River and Segoro Tambak estuaries can be seen in Figure 2.

The Temporal Average of Bivalvia Biomass in Juanda and Segoro Tambak River Estuaries

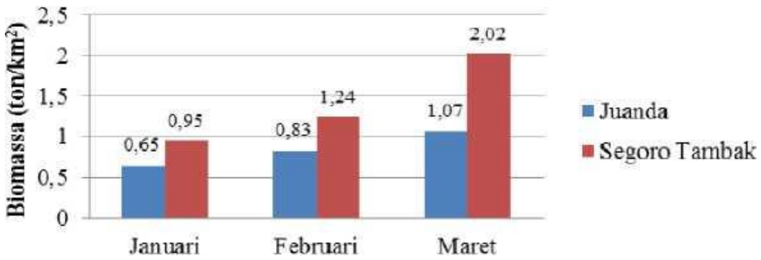

Figure 2. The temporal average of bivalvia biomass in each station in Juanda and Segoro Tambak river estuaries.

The highest average value of the total temporal density is 6 ind/10m^2 in March at Segoro Tambak station and the lowest density value is 3 ind/10m^2 in February at Segoro Tambak station (Figure 3).

The Temporal Average of Bivalvia Density in Juanda and Segoro Tambak River Estuaries

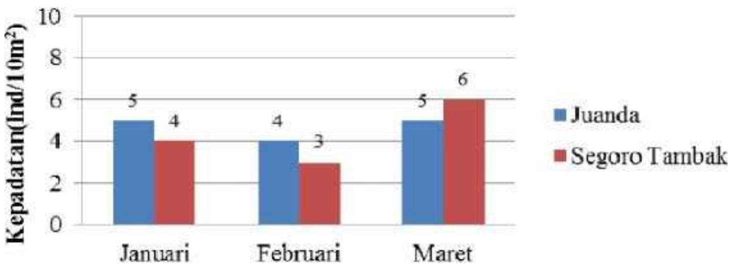

Figure 3. The temporal average of bivalvia density in each station in Juanda and Segoro Tambak river estuaries.

The test results of the sedimentary fraction of the Juanda River and Segoro Tambak at the Soil Mechanics Laboratory of the Ten November Institute of Technology in Surabaya show that the two stations are dominated by mud but with different percentages. Results of the Juanda and Segoro Tambak estuary sediment test for January-March period can be seen in Table 2.

Table 2. Results of the Juanda and Segoro Tambak estuary sediment test for January-March period

	Parameter	**Unit**	**Station**	
			Juanda	Segoro Tambak
Organic Material	C	%	25.05-31.58	24.76-31.25
	N	%	8.93-10.46	9.25-10.73
	P	%	0.73-1.03	0.74-0.98
	COD	-	50.28-67.09	49.79-58.64
Fraction	Gravel	%	0.00	1.91'
	Sand	%	4.34	9.43
	Mud	%	95.66	88.67
	Particle Size	Mm	<0.075	<0.075
	Substrate type	-	Muddy	Muddy

Note: Results of primary data processing

The results of water quality measurement are obtained from direct measurements in the field and laboratory. Data on the water quality of Juanda and Segoro Tambak estuaries in the field from January to March can be seen in the Table 3.

Table 3. Results of water quality measurements in Juanda and Segoro Tambak river estuaries for January-March period

Parameter	Unit	Testing Result: Juanda	Testing Result: Segoro Tambak	Quality Standard
Temperature	°C	27.8-31	27.7-30.8	28-32
pH	-	7.7-8.4	7.9-8.4	6.5-8.5
DO	Ppm	6.09-6.95	5.16-6.53	>5
Salinity	Ppt	24-38	28-36	-
Bright	M	0.75-2.5	0.8-2	>3
Suspended Solids (TSS)	mg/l	5-27	8-48	80
Free Ammonia (NH3-N)	mg/l	<0.0113	<0.0113	0,016
Nitrate (NO3-N)	mg/l	<0.011-1.089	<0.011-<0.030	0.008
Nitrite (NO2-N)	mg/l	0.008-0.03	0.012-0.03	0.06
BOD	mg/l	37.85-62.18	33,38-53,89	<20
COD	mg/l	257.91-1112.5	242.6-643.11	80

Note: Results of primary data processing
Quality standards are based on Ministerial Decree of LH No. 51 of 2004

Data of oceanographic condition that include current speed and wind speed are collected from Maritime Meteorology Station, Tanjung Perak, Surabaya. Data on current speed and wind speed of Juanda and Segoro Tambak river estuaries can be seen in Table 4.

Table 4. Data on current speed and wind speed of Juanda and Segoro Tambak river estuaries

Station	Month	Wind speed (knot)	Current speed (cm/second)
Juanda	January	3.43	1.84
	February	3.41	1.65
	March	2.00	0.67
Segoro Tambak	January	3.70	1.81
	February	3.72	1.51
	March	2.12	0.68

Note: Secondary Data (Maritime Meteorology Station, Tanjung Perak, Surabaya
Perak, Surabaya, 2018)

3.2 Discussion

Biomass and the spread of bivalves in the waters are determined by the abiotic, biotic and bivalve environment of each of these environmental factors (Mardatilla, 2016). The difference in the input of water originating from the river flow at the Juanda and Segoro Tambak River estuaries would also affect the life of the biota in it. The Segoro Tambak river estuary has more than one flowing river, so it hads a high organic content compared to the Juanda River estuary which only has one (Dewi et al., 2017)

The pattern of bivalve distribution looks consistent at each station with a temporal observation at <1 distribution value. This is supported by Brower's statement (1977) that the morisita index value (Id<1) shows that the pattern of distribution of biota in the waters is uniform. The pattern of uniform distribution can occur because bivalve larvae do not settle on existing waters or substrates when it is time to metamorphose into adult form. Larvae react to certain physical chemical factors; if the substrate is not good, this biota is not settled and no metamorphosis occurrs (Lindawaty et al., 2016).

Oceanographic conditions also influence the pattern of bivalve distribution in waters. This is related to current speed and wind speed. According to Pancawati et al. (2014), flow is a limiting factor because it can affect the life of bivalves where strong currents will knock down the organism, so only certain species can survive.

Bivalve biomass in Juanda and Segoro Tambak River estuary can be influenced by environmental quality factors and oceanographic conditions (Dewi et al., 2016). The value of bivalve biomass at Segoro Tambak station is greater than the value of bivalve biomass at Juanda station with the highest value being in March and the lowest value in January.

The Juanda and Segoro Tambak River estuaries are waters directly related to the mangrove area; this is the main cause of the high content of organic materials in these waters.

Juanda station has higher BOD and COD value compared to Segoro Tambak station. This is because the Juanda station is directly connected with the mangrove area while the Segoro Tambak station is not.

The temporal average of bivalve density in Juanda Station is higher than that of Segoro Tambak station. This is due to the higher content of BOD and COD in Juanda Station than that of Segoro Tambak station, but the biomass in Juanda Station is lower. This condition is attributed to the nature of bivalves as a bio indicator, which enables it to survive with high level BOD and COD conditions. However, bivalves carry out osmoregulation more than digest food, which leads to low value of biomass. This is in accordance with Lantu's statement (2010) that osmoregulation of mollusks is a special adaptation technique that will make them survive in a new environment, where there is a balance in the amount of water to maintain their body fluids wherever they live.

4. Conclusions and suggestions

4.1 Conclusions

Research on the pattern of bivalve distribution in Juanda and Segoro Tambak River estuaries, Sedati, Sidoarjo, East Java from January to March 2018 found that the bivalve distribution pattern in Juanda and Segoro Tambak river estuaries appears to be consistent. The highest bivalve biomass is found in March at Segoro Tambak station. The highest density of bivalves is found in Segoro Tambak station in March. The pattern of distribution and bivalve biomass in Juanda and Segoro Tambak river estuaries is influenced by environmental conditions, oceanographic conditions and fishing activities by local fishermen.

4.2 Suggestion

Juanda and Segoro Tambak River Estuaries are fishing areas, but it is recommended for the community as well as future researchers to continue to preserve nature in the catchment area by using only environmentally friendly boats and making capture selections so as to have a sustainable presence of bivalves in these waters. The results of this research can be used as an overview and data for further researches.

References

[1] Ambarwati, R dan Trijoko. 2011. Kekayaan Jenis Anadara (Bivalvia: Arcidae) di Perairan Pantai Sidoarjo. Journal of Biological Research. 4(2): 1-7.

[2] Blackwell, W. 2013. Methods for the Research of Marine Benthos. 4th edition. John Wiley and Sons, Ltd. Oxford. USA. Page 195-203.

[3] Brower, J. E., Zar, J. H. 1977. Field and Laboratory Method for General Ecology. Wm C Brown Publihsing Dubuque. Iowa. Page 28,151 and 159.

[4] Campbell, Neil A. & J.B. Reece. (2008). Biologi, Edisi Kedelapan Jilid 3. Terjemahan: Damaring Tyas Wulandari. Jakarta: Erlangga. hal 354-355.

[5] Dewi, N. N., K.T. Pursetyo., L Aprilianitasari1, M. H. Zakaria3., M.R Ramadhan and R.A. Triatmaja. 2017. The biomass, abundance, and distribution pattern of starfish *Asterias* sp. (Echinodermata: Asteroidea) in East Coast of Surabaya. IOP Conf. Series: Earth and Environmental Science 137. 4-6.

[6] Junaidi, E. Effendi, P., Sagala dan Joko. 2010. Kelimpahan Populasi dan Pola Distribusi Remis *(Corbicula* sp.) di Sungai Borang Kabupaten Banyuasin. Jurnal Penelitian Sains. 13 (3). 1-4.

[7] KepMen-LH No. 2. 1988. Baku Mutu Air Limbah. Kementerian Lingkungan Hidup Republik Indonesia. Jakarta. 16-18 hal.
[8] Khalil, M. 2016. Bioekologi Kerang Genus Anadara (Bivalvia : Archidae). Sefa Bumi Persada. Medan. Hal 1-22.
[9] Lantu, S., 2010. Osmoregulation in Aquatic Animals. Jurnal Perikanan dan Kelautan. Vol VI (1): 46-50.
[10] Mardatila, S., Izmiarti Dan Nurdin, J. 2016. Kepadatan, Keanekaragaman Dan Pola Distribusi Gastropoda di Danau di Atas, Kabupaten Solok, Provinsi Sumatera Barat. Biocelebes. 10 (2): 25-31.
[11] Odum E.P. 1994. Dasar-Dasar Ekologi. Edisi Ketiga. Terjemahan: Tjahjono Samingan. Yogyakarta: Gadjah Mada University Press. Hal 255.
[12] Pancawati, D. N., Suprapto, D Dan Pumomo, P. W. 2014. Karakteristik Fisika Kimia Perairan Habitat Bivalvia di Sungai Wiso Jepara. Management Of Aquatic Resources. 3 (4): 141-146.
[13] Sukandar., Chuldyah, J., Harsindhi., Dewi, C. S. U., Handayani, M., Maulana, A. W., Supriyadi Dan Bahrono, A. 2016. Profil Desa Pesisir Provinsi Jawa Timur. Bidang Kelautan, Pesisir, dan Pengawasan. Dinas Perikanan dan Kelautan Provinsi Jawa Timur. Surabaya.
[14] Taqwa, R. N., Muskananfola, M. R dan Ruswahyuni. 2014. Studi Hubungan Substrat Dasar dan Kandungan Bahan Organik dalam Sedimen dengan Kelimpahan Hewan Makrobenthos di Muara Sungai Sayung Kabupaten Demak. Diponegoro Journal of Maquares. 3 (1) : 126.
[15] World Wide Fund for Nature Indonesia. Seri Panduan Penanganan Perikanan Sekala Kecil. 2015. World Wide Fund for Nature Indonesia. 15-20.
[16] Yunus, A. 2015. Struktur Komunitas Bivalvia di Perairan Muara Sungai Kawal. Skripsi. Fakultas Ilmu Kelautan dan Perikanan. Universitas Maritim Raja Ali Haji. Kepulauan Riau. 4 hal.
[17] Zarkasyi, M. M., Zayadi, H dan Laili, S. 2016. Diversitas Dan Pola Distribusi Bivalvia Di Zona Intertidal Daerah Pesisir Kecamatan Ujung Pangkah Kabupaten Gresik. e-Jurnal Ilmiah Biosaintropis (Bioscience-Tropic). 2 (1) : 1-10.