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

Papers

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

OPEN ACCESS 012016

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)

I A Lumbi, B S Rahardja and A A Abdillah

+ 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

Information for organizers

Information for authors

Contact us

Reprint services from Curran Associates

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

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

E D Masithah[1]*, D D Nindarwi[2], A L A Suyoso[3], D Husin[3]

[1]Department of Marine, Faculty of Fisheries and Marine, Airlangga University, Surabaya 60115, Indonesia
[2]Department of Aquaculture, Faculty of Fisheries and Marine, Airlangga University, Surabaya 60115, Indonesia
[3]Program study of Aquaculture, Faculty of Fisheries and Marine, Airlangga University, Surabaya 60115, Indonesia

*Corresponding author : endang_dm@fpk.unair.ac.id

Abstract. Phytoplankton in an intensive system of white shrimp cultivation is useful as an indicator of the water quality. Blue-green algae are a group of phytoplankton that has an important role, although there are several disserve species. Blue-green algae are an abundant primary producer and can be found a lot both in freshwater and in the sea. Blue-green algae are also a potential bio-indicator to designate how good or bad the water condition is. This research aimed to determine the correlation of the ratio dynamic of N:P toward the abundance of Blue-green algae within the system of a Vaname (*Litopenaeus vannamei*) shrimp pond. The main parameters observed were ammonium, nitric, nitrate, phosphate and the abundance of blue-green algae, as well as the supporting parameters of pH and the clarity of the intensive system of the Vaname shrimp pond in Banyuwangi. Based on the data analysis and study of the dynamic ratio correlation of N:P toward the abundance of Blue-green algae, it can be concluded that ratio of N:P influences the level composition of phytoplankton in water cultivation. The difference in the levels of ammonium, nitric and phosphate influence the abundance of Blue-green algae in the water. A high level of ammonium and low level of nitric causes a high level of abundance of Blue-green algae.

1. Introduction

Vaname shrimp can be cultivated using the intensive system method. One of the characteristics of intensive system cultivation is the high density involved. High density affects the feed needed, the space for movement, and the oxygen level, which will influence the quality of the caring media, growth and the viability of the Vaname shrimp [1].

An excess of feed will increase the organic waste in the water. Leftover feed contains the necessary nutrient for plants in order to survive and grow, including phytoplankton. The growth of phytoplankton in the water is influenced by the availability of nitrogen and phosphor. Nitrogen and phosphor are more needed than carbon, hydrogen and oxygen, because nitrogen and phosphor can be utilized by phytoplankton in small quantities [2].

Nitrogen and phosphor levels in nature are limited, so this affects the growth of the phytoplankton. The usage of organic and inorganic fertilizer in cultivation ponds is one way to develop water fertility. Fertile water is indicated by the abundance of phytoplankton [3]. The usage of fertilizer with a certain ratio of N:P can determine the abundance of phytoplankton in an aquatic system. A ratio value for N:P

of 10:1 or less can bring up the domination of Blue-green algae. This potentially happens because Blue-green algae can survive in extreme conditions, including conditions where there is a low level of nitrate. The ideal ratio for N:P within a cultivation pond is 16:1 [4].

Blue-green algae often experience a population explosion (blooming algae). The phytoplankton explosion of population is caused by excess nutrients in the water. Too many nutrients in the water is known as eutrophication. Eutrophication is caused by natural processes or by contamination due to too many nutrients being dissolved in the water, or it can be from the waste stream that is being discarded into the water or contaminating the cultivation water source. Water with excess nutrients causes the phytoplankton to grow too fast or in an uncontrollable manner, including Blue-green algae [5].

Blue-green algae are also known to able to produce toxins, which lead to disrupted productivity in the Vaname shrimp. Blue-green algae can also be a competitor with other plankton. Vaname shrimp cultivation ponds that contain a lot of harmful Blue-green algae will experience productivity disruption. This will lead to the potential death of the cultivation organisms. Blue-green algae often dominate water when the population blooms, which occurs commonly in harmful genus' [5].

The blooming population of Blue green algae is mostly avoided by vaname shrimp cultivators. Therefore this research into the "Correlation of Dynamic Ratio N:P Towards the Abundance of Blue-green algae in The Intensive System of white Shrimp (Litopenaeus vannamei)" needed to be done in order to discover the influence of the dynamic ratio of N:P toward the dynamic of Blue-green algae in relation to the nature of white shrimp pond cultivation.

2. Methodology

2.1 Tools and materials

The tools used in this research included pH paper, a secchi disk, a plankton net, bailer, hand counter, hemocytometer, drop pipette, microscope, object glass, cover glass, test kit, and sample bottle. The materials used in the research included sample water from the intensive system pond and lugol related to the deactivated plankton movement.

2.2 Research methods

The method used in this research was a survey. We prepared the necessary tools and materials, i.e. the pH paper, secchi disk, plankton net, bailer, hand counter, hemocytometer, drop pipette, microscope, object glass, cover glass, test kit, sample bottle and lugol. The water samples were taken at 3 stations, which consisted of 4 points at the pond plots in each corner of the intensive system to improve the data clarification. The samples were taken using a plankton net, and we then calculated the density. The samples had to be directly brought to the laboratory in order to be observed and analyzed. The samples were observed in 100 and 400 times of enlargement under a binocular microscope with direct calculation using hemocytometer. The samples needed to be directly observed in order to maintain the quality of the phytoplankton. The samples observed were ammonium, nitrite, nitrate and phosphate taken in the morning at 5 AM, while the water samples to observe the plankton and water quality were taken in the afternoon at 4 PM.

2.3 Calculation and observation of diatom

The diatom observation consisted of identifying abundance in the pond. The observation was applied in 3 plots of the pond, and taken at 4 points in the corners for each plot. The samples were taken using a plankton net with a mesh size of 20 microns. A plankton net with a mesh size of 20 microns is able to filter the phytoplankton class of diatom, as well as enabling the water to come out through the micro holes of the plankton net.

The method used in the identification and observation of the phytoplankton was a direct calculation using a hemocytometer. It was applied by taking a 1 ml water sample from the sample bottle, and then covering it with a glass cover. The observation was done by identifying the phytoplankton and calculating its density in the hemocytometer. The sum of the phytoplankton was calculated using the method suitable for the particular size of plankton. The samples had to be directly calculated in order

to maintain the quality of the observed phytoplankton, to make them easier to identify and to improve the accuracy of the density calculation when observing them under the microscope.

3. Results and discussion

3.1 Results

The results of this research used the data on the ratio of N:P taken from the accumulation data of ammonium, nitrite, nitrate to be N and the phosphor in order to getting the ratio of N:P itself. The results of the measurement of the ratio for N:P can be seen in Figure 1.

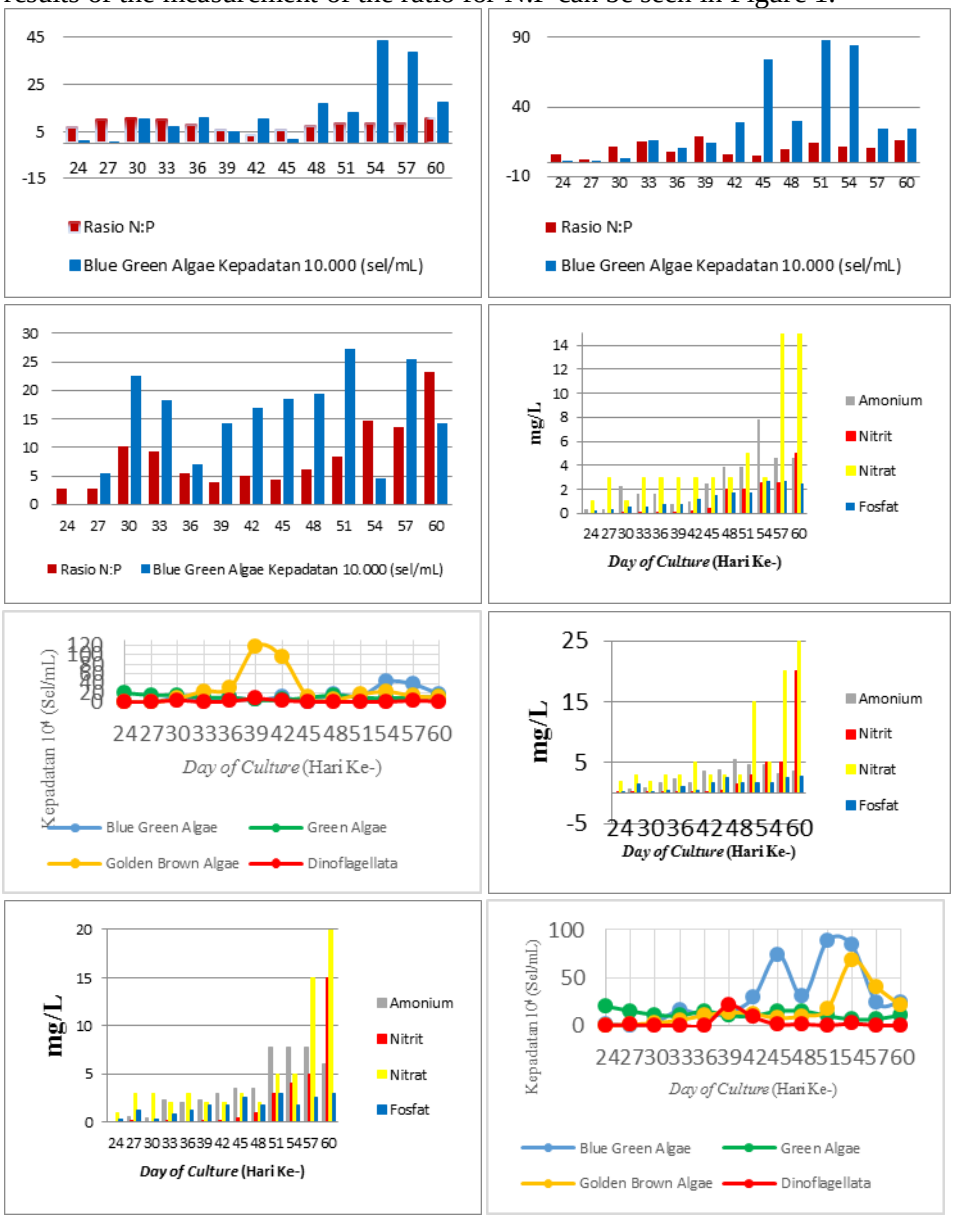

Figure 1. 1) Comparison of the N:P ratio with Blue-green algae density in plot 1; 2) Comparison of the N:P ratio with Blue-green algae density in plot 4; 3) Comparison of the N:P ratio with the density of the Blue-green algae in plot 7; 4) the dynamics of ammonium, nitrite, nitrate, and phosphate (Plot 1); 5) the dynamics of ammonium, nitrite, nitrate, and phosphate (Plot 4); 6) the dynamics of ammonium, nitrite, nitrate, and phosphate (Plot 7); 7) total phytoplankton dynamics (Plot 1); 8) Charts of the total phytoplankton dynamics (Plots 4) and 9) total phytoplankton dynamics (Plot 7).

For the results of the N:P ratio in plot 1 on day 24 of the Vaname shrimp cultivation, there was an increase in day 27, and then less of an increase on day 30. Furthermore, the ratio of N:P was gradually decreasing until day 42. The ratio and dynamic of N:P in plot 1 increased until day 60 of the cultivation. The lowest ratio for N:P in plot 1 was on day 42, while the highest value was on day 60.

The results of the N:P ratio in plot 4 had more fluctuating values. From day 24 to day 27 of cultivation, the ratio decreased and then increased until day 33. N:P decreased at day 36 and then increased until day 39. The decrease occurred again at day 45, and then increased on day 51. The N:P ratio decreased on day 57 and increased on day 60. The dynamics of the ratio of N:P in plot 4 were the most unstable compared to plots 1 and 7. The lowest ratio for N:P in plot 4 was on day 27, while the highest ratio was on day 39.

The results of the ratio in plot 7 decreased on day 27 and increased on day 30. The ratio of N:P decreased until day 39, and then increased until day 45. N:P increased until day 54 and then decreased at day 57, then increased at day 60. The lowest ratio for N:P in plot 7 was on day 27, while the highest value was on day 60.

The lowest ammonium level in plot 1 was on days 24 and 27, while the highest ammonium level was on day 54. The ammonium level increased on day 54 and then decreased on day 57. The nitrite level remained stable between the 24^{th} to 45^{th} day, then increased on day 48. It then remained stable until day 57. The nitrite level doubly increased on day 60^{th}. The lowest nitrite level was on day 24 and 30, while highest level was on days 57 and 30. Nitrate underwent a dynamic condition from day 24 to day 33, and then remained stable until day 4^{h}, increased on day 51 and significantly increased on days 57 and 60^{t}. Meanwhile, phosphate remained stable. The level of phosphate did not decrease until day 57 but then decreased on day 60. The highest level was on day 57.

The lowest ammonium level in plot 4 was on day 24, which then increased until day 36 and then decreased on day 39. The level of ammonium achieved the highest level on day 48, and then decreased until day 57. It then slightly increased on day 60. The level of nitrite remained stable until day 45, and then increased until day 54. The lower level of nitrite was on day 45, and the highest level was on day 60. Meanwhile, nitrate was in a dynamic condition from day 24 to day 48, and then significantly increased on day 51 and decreased on day 54. The nitrate level increased again on day 57, and achieved the highest level on day 60. The lowest level of phosphate was on day 24. The phosphate was in a dynamic condition until day 48, and then remained stable until day 54. The phosphate level increased until day 60. The highest level of phosphate was on day 60.

The lowest ammonium level in plot 7 was on day 24. The level of ammonium underwent a dynamic condition until day 45, and then became stable on day 48. It then increased until the highest level on day 51 and then became stable until day 57. The level of ammonium decreased on day 60. Meanwhile, the nitrite achieved the lowest level on days 24, 30 and 36. The nitrite level tended to remain stable until day 45, and then increased until day 60. The highest level of nitrite was on day 60 and lowest level was on day 24. Moreover, the nitrate didn't undergo a substantial dynamic condition until day 57. The nitrate level rapidly increased and achieved the highest level on day 60. Meanwhile, the lowest level of phosphate was on day 24^{t}. The phosphate level didn't undergo any substantial dynamic situations. The highest levels of phosphate were on days 51 and 60.

The lowest density of Blue-green algae in plot 1 was on day 27. The Blue-green algae decreased from day 24 to day 27 and then increased on day 30. The Blue-green algae decreased again on day 33 and then increased on day 3^{9}. Once more, the Blue green algae decreased until day 51 and then significantly increased until its highest density on day 54. Then the Blue-green algae decreased until day 60.

The lowest density of Blue-green algae in plot 4 was on day 27. The Blue-green algae decreased on day 36 and then increased until day 45. The Blue-green algae decreased again on day 48^{th}, and then increased until its highest density on day 51. Once more, the Blue-green algae decreased until day 57 and then slightly increased on day 60.

The Blue-green algae in plot seven couldn't be discovered on day 24. The Blue-green algae started to develop from day 27 through to day 33. The Blue-green algae decreased on day 36 and increased on day 39. From day 39 until day 51, the Blue-green algae was growing. The Blue-green algae then decreased on day 54 and increased again on day 57. Afterward, it decreased again on day 60. The highest density of Blue-green algae was on day 5^{1}.

3.2 Discussion

The Diatom ratio of N:P in the intensive system in plot 1 was about 3.7 – 10.4. This number can be categorized as low regarding the activities of fish cultivation, because the highest number for N:P was 10. This phenomena can be reviewed according to the statement that [6] mentioned, where the threshold on the contents of the N:P ratio in adequate cultivation water was 16:1. The ratio for N:P in plot 4 was about 2.3 – 18.3, which met the standard for cultivation. Meanwhile plot 7 showed a ratio of about 2.6 – 23.2, in which the upper point surpasses the standard of cultivation but remains normal because the N:P ratio of 20:1 will support the growth of diatoms. All of the plots showed that the ratio was dynamic, however plots 4 and 7 are the most ideal conditions according to [4]. This is because the most ideal ratio for N:P in aquatic cultivation is 16:1. The level of N:P is influenced by organic compounds. Organic compounds in the water come from the microorganisms' bodies, plants, and the result of the organisms' metabolism processes [7]. The organic compounds in water are decomposed by bacteria into N and P, and they can then be utilized by the organisms. The enhancement of the nitrogen level in the water can also be influenced by the derivation of total plankton density [8].

The increase in the ammonium level in plot 1 occurred on days 30, 42, 45, 48 and 54. Meanwhile, the level in plot 4 increased on day 27, 30, 33, 36, 42, 45, 48 and 60. The plot 7 increases occurred on day 27, 33, 39, 42, 45 and 51. Significant increases in plot 1 were on day 54 to 3.9 mg/L, in plot 4 on day 42 to 1.9 mg/L and in plot 7 on day 51 to 4.3 mg/L. The deprivation of the ammonium in plot 1 occurred on day 33, 39 and 57; in plot 4 on day 39, 51 and 57 and in plot 7 on day 30, 36 and 60. A significant deprivation in plot 1 occurred on day 57 down to 3.2 mg/L, in plot 4 on day 57 down to 1.4 mg/L and in plot 7 on day 60 down to 1.8 mg/L.

According to [9], the enhancement and deprivation of ammonium is caused by the factor of the the bacteria's nitrification process. The enhancement of ammonium is caused when the ammonium can't be oxidized into nitrite. This possibly happens because the Nitrosomonas bacteria are not properly working to recast the ammonium. Ammonium deprivation is caused by the Nitrosomonas working properly to recast the ammonium. Dead organisms that cause an accumulation of organic compounds is also the cause of high-level ammonium in the water.

Nitrite enhancement in plot 1 occurred on day 30, 33, 42, 45, 48, 54 and 60. Enhancement in plot 4 occurred on day 27, 42, 45, 48, 51, 54 and 60. The enhancement in plot 7 occurred on day 27, 33, 39, 42, 45, 48, 51, 54, 57 and 60. A significant deprivation in plot 1 occurred on day 60 down to 2.5 mg/L; in plot 4 on day 60 down to 15 mg/L and in plot 7 on day 60^{t} down to 10 mg/L. The nitrite deprivation in plot 1 occurred on day 33, 39 and 57; in plot 4 on day 39, 51 and 57^{th}; and in plot 7 on day 30, 36 and 60. Significant deprivation occurred in plot 4 on day 30 down to be 1.4 mg/L and in plot 7 on day 30 and 36 down to 1.8 mg/L.

The enhancement of nitrate in plot 1 occurred on day 27, 33, 51 and 57. Meanwhile, in plot 4, the increases occurred on day 27, 33, 39, 51, 57 and 60. Furthermore, in plot 7, the increases occurred on day 27, 36, 45, 51, 57 and 60. A significant increase in plot 1 occurred on day 57 up to 12 mg/L; in plot 4 on day 51 and on 60 to 12 mg/L and 15 mg/L respectively and in plot 7, the increase occurred on day 60 to 45 mg/L. The deprivation of nitrate in plot 1 occurred on day 30 and 54. In plot 4, the decreases occurred on day 30, 42 and 54. In plot 7, the deprivation occurred on day 33, 39 and 48. The significant deprivation of nitrate only occurred in plot 4 on day 54 down to 10 mg/L.

Nitrate is the final product of the biochemistry oxidization process in the water. Nitrate concentrations in an aquatic system are controlled in the nitrification process. Nitrate comes from fertilizer residual, leftover feed and free nitrogen binding from the air by microorganisms, as well

where streams enter the sea. The nitrate formation will be smooth when the bacteria work to recast the nitrite [10].

The enhancement of phosphate in plot 1 occurred on day 27, 30, 36, 42, 45, 48 and 54. Meanwhile, in plot 4, it occurred on day 27, 33, 36, 42, 45, 57 and 60. Then in plot 7, it occurred on day 27, 33, 36, 39, 45, 51, 57^t and 60^t. The significant enhancement in plot 1 occurred on day 54 to 1 mg/L; in plot 4 on day 42 to 1.35 mg/L and in plot 7 on day 51 to 1.75 mg/L. The phosphate deprivation in plot 1 occurred on day 60; in plot 4 on day 30, 39 and 48^t and in plot 7 on day 30, 48 and 54. Significant deprivation occurred in plot 4 on day 30^{th} to 1.2 mg/L and in plot 7 on day 57 to 1.75 mg/L.

Phosphor is in the dissolved inorganic form (orthophosphate), dissolved organic and phosphate particles. [11] mentioned that normally, phytoplanktons are able to directly assimilate dissolved inorganic material, and sometimes use dissolved organic phosphor. The phosphor is applied in energy transfer in the phytoplankton's cells from ADP to ATP.

The identification of the Blue-green algae during the research resulted in discovering Anabaena sp., Chroccocus sp., Gomphosphaeria sp., Microcystis sp., Oscillatoria sp., and Spirulina sp. The quantity of identifying the phytoplankton based on genus resulted in one class of Cyanophyceae.

The density enhancement of Blue-green algae in plot 1 occurred on day 30, 36, 42, 48 and 54. The most significant increase in plot 1 occurred on day 54 up to 30.5 X 104 cells/ml. In plot 4, the increase in density occurred on day 30, 33, 39, 42, 45, 51 and 60, with the most significant increase on day 51th up to 58.25 X 10^4 cells/ml. Meanwhile, in plot 7 the density increase occurred on day 27, 30, 39, 42, 45, 48, 51 and 57. The most significant increase in plot 7 occurred on day 57 up to 21 X 10^4 cells/ml.

The decrease in the Blue-green algae density in plot 1 occurred on day 27, 33, 39^t, 45, 51, 57 and 60. The most significant decrease in plot 1 occurred on day 60 down to 21 X 10^4 cells/ml. Meanwhile, plot 4 underwent a density decrease on day 27, 36, 48, 54 and 57, with the most significant decrease occurring on day 57 down to 60 X 10^4 cells/ml. Furthermore, in plot 7, the density decrease occurred on day 33, 36, 54 and 60. The most significant decrease in plot 7 occurred on day 54 down to 22.75 X 10^4 cells/ml.

[12] mentioned that the enhancement of nitrate can bring up the domination of diatoms because diatoms need nitrate for cell division. Blue-green algae are more suitable to be in a condition where there is a high level of ammonium and a low level of nitrate. Nitrate is the substance that is used by the diatoms, so if the nitrate is abundant, then the diatoms will be abundant as well. The condition of the limited level of nitrate means that there will be less domination of diatoms because there is less nitrate to be utilized. [5] mentioned that Blue green algae have an important role as a producer of nitrogen in water; Blue green algae are able to survive in conditions where there is a low level of nitrate.

4. Conclusion

Based on the results of the data analysis and the discussion of the dynamic relationship of the N: P ratio on the abundance of green blue algae, it can be concluded that the value of the N: P ratio affects the composition of the phytoplankton classes in the aquaculture water. The N:P ratio affects the abundance of phytoplankton, but the levels and dynamics of ammonium, nitrite, nitrate and phosphate specifically influence the abundance of Blue green algae. High ammonium conditions and low nitrate can cause an abundance of Blue green algae to increase. Water quality parameters are a supporting factor that also affect the life of Blue Green Algae.

5. References

[1] Budiardi D, Muzaki A and Utomo N B P 2000 *JIA*, **4** 109-113.
[2] Garno Y S 2008 *IHJ* 87-94
[3] Aziz R, Nirmala K, Affandi R and Prihadi T 2015 *JIA* **14** 58-68
[4] Lagus A 2009 *Role of Nutrients in Regulation of the Phytoplankton Community in theArchipelago Sea, Northern Baltic Sea*. Dropped Yliopiston Julkaisuja Annales Universitatis Turkuensis: 5-43

[5] Prihantini N B,Wardhana W,Hendrayanti D,Widyawan A,Ariyani Y and Rianto R 2008 *IMSci* **12,** 44-54
[6] Widigdo B and Wardiatno Y 2013 *JTroB* **13** 160-184
[7] Yuningsih H D P, Soedarsono and S Anggoro 2014 *MAQUARES* **3** 37 - 43
[8] Astuti R P, Imanto P T and Sumiarsa G S 2012 *JTMST* **4** 97-106.
[9] NurlitaH and Sudarno U 2011 *JP* **8** 187-198.
[10] Darjamuni 2003 *Nitrogen Cycle in the Sea*. Term Paper Bogor Agricultural Institution: 2-10.
[11] Risamasu F J L and Prayitno H B 2011 *MarSci* **16** 135-142.
[12] Johnson M, Sanders R,Avgoustidi V, Lucas M, Brown L,Hansell D, Moore M, Gibb S, Liss P and Jickells T 2007 *MarChe,* **106** 63-75.
[13] Satyantini W H, E D Masithah, M A Alamsjah and S Andriyono 2015 *Dictate Guide to Natural Feed Cultivation Practicum*. Surabaya :Airlangga University: 27
[14] Sukmadinata N S 2012 *Educational Research Methods*. Bandung: PT Remaja Rosdakarya
[15] Salmin 2005 *Oseana,* **30** 21-26.
[16] KharismaA and Manan A 2012 *JFMR*, **4** 129-134.