THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

Abstract Book

5th Annual International Symposium on Animal Science & Zoology
12-15 July 2021, Athens, Greece

Edited by
Gregory T. Papanikos

2021

Abstracts
5th Annual International Symposium on Animal Science & Zoology

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(In Alphabetical Order by Author's Family Name)

Preface

This book includes the abstracts of all the papers presented at the *5th Annual International Symposium on Animal Science & Zoology* (12-15 July 2021), organized by the Athens Institute for Education and Research (ATINER).

A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

Gregory T. Papanikos
President

**5th Annual International Symposium on Animal Science &
Zoology, 12-15 July 2021, Athens, Greece**

Organizing & Scientific Committee

All ATINER's conferences are organized by the Academic Council. This conference has been organized with the assistance of the following academic members of ATINER, who contributed by reviewing the submitted abstracts and papers.

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, U.K.
2. Panos Petratos, Vice-President of Information Communications Technology, ATINER & Fellow, Institution of Engineering and Technology & Professor, Department of Computer Information Systems, California State University, Stanislaus, USA.
3. Saif Uddin, Director, Center for Environmental Pollution, Climate & Ecology (CEPCE) & Senior Research Scientist, Kuwait Institute for Scientific Research, Kuwait.
4. Salim Hiziroglu, Academic Member, ATINER & Professor, Natural Resource Ecology and Management, Oklahoma State University, Stillwater, Oklahoma, USA.
5. Sezen Ocak, Visiting Research Associate, ATINER.

FINAL CONFERENCE PROGRAM
5th Annual International Symposium on Animal Science & Zoology, 12-15 July 2021, Athens, Greece

PROGRAM

Monday 12 July 2021

10.00-10.30
Registration

10.30-11.00
Opening and Welcoming Remarks:
o   **Gregory T. Papanikos**, President, ATINER.

11:00-11:45
Saif Uddin, Director, Center for Environmental Pollution, Climate & Ecology (CEPCE) & Senior Research Scientist, Kuwait Institute for Scientific Research, Kuwait.
Title: Microplastic Inputs from Wastewater Streams

11:45-12:00 Break

12:00-12:45
Presentation canceled due to unavailability of the presenter

12:45-13:00 Break

13:00-13:45
Filiz Dadaser-Celik, Professor, Erciyes University, Turkey.
Title: Modelling Hydrological Processes in the Altinapa Reservoir Watershed by SWAT.

13:45-14:00 Break

14:00-14:45
Remus Pravalie, Lecturer University of Bucharest, Romania.
Title: Analysis of Forest Ecological Changes in Romania Based on Detecting Recent Trends in Normalized Difference Vegetation Index.

14:45-15:00 Break

15:00-15:45
Edyta Rycio, PhD Student, Polish Geological Institute National Research Institute, Poland.
Title: Landslide Susceptibility Map in the Przemysl Region in the Eastern part of The Carpathians in Poland.

15:45-16:00 Break

16:00-16:45
Vsevolod Yutsis, Professor, Instituto Potosino de Investigación Científica y Tecnológica, Mexico.

Title: Geophysics of the Intraplate Volcanic Fields: Los Encinos and Santo Domingo Case, Central Mexico.

Tuesday 13 July 2021

10:00-10:45
Yassine Et-Tayea, PhD Student, Hassan First University of Settat, Morocco.
Title: *Mineralogical and Physico-Chemical Characterization of Bentonite from Iboughardain Area (North-Eastern Rif, Morroco).*

10:45-11:00 Break

11:00-11:45
Mattia Fragola, PhD Student, University of Salento, Italy.
Title: *Back-Trajectory Impact on Airborne Bacterial Pathogenic and Non-Pathogenic Species at a Central Mediterranean Coastal Site.*

11:45-12:00 Break

12:00-12:45
Anastasia Nikologianni, Research Fellow, Birmingham City University, UK.
Title: *Urban Farming, Ecosystems and Climate Change Mitigation in Urban Environments. The Case of SATURN Pan European Programme.*

12:45-13:00 Break

13:00-13:45
Majid Asadnabizadeh, PhD Candidate, Maria Curie-Skłodowska University, Poland.
Title: *UN Climate Change Summit: What's at Stake in COP26?*

13:45-14:00 Break

14:00-14:45
Jesus Jose Soriano Bermudez, PhD Student, University of Huelva, Spain.
Title: *Drought After a Fire, the Survival of the Genus Quercus in Extreme Conditions.*

14:45-15:00 Break

15:00-15:45
Ivar Zekker, PhD Student, University of Estonian Life Sciences, Estonia.
Title: *Deammonification Nitrogen Removal and Anodic Biofilms Use in Microbial Fuel Cell Technology.*

15:45-16:00 Break

16:00-16:45
Dominika Szoldrowska, Researcher, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland.
Title: *Sewage Sludge as a Source of the Key Nutrients for Plant Growth.*

Majid Asadnabizadeh

PhD Candidate, Maria Curie-Skłodowska University, Poland

UN Climate Change Summit: What's at Stake in COP26?

This research addresses the issue of carbon market within UN Climate change summit (COP26). I am carrying out the systemic review of literatures based on Qualitative meta-synthesis (QMS) for analysis. The search identified some published qualitative Research studies on the topic of carbon market and COP26. All studies are considered and showing 4 main themes such as Article 6, Market mechanisms, Funding for Loss and damage and etc. The finding themes were related to Inter-state level orientation that caused the importance of carbon market for COP26.

Filiz Dadaser-Celik
Professor, Erciyes University, Turkey
Dilibaier Aibaidula
PhD Candidate, Erciyes University, Turkey
&
Nuray Ates
Professor, Erciyes University, Turkey

Modelling Hydrological Processes in the Altinapa Reservoir Watershed by SWAT

In this study, we used the Soil and Water Assessment Tool (SWAT) to model hydrological processes in the Altınapa Reservoir Watershed in the Konya province, Turkey. Altınapa Reservoir Watershed is a small semi-arid watershed, which discharges into Altınapa Reservoir, that supplies drinking water to Konya, a city of about 2 million. The modelling process was challenging due to the unavailability of high-resolution data about basin characteristics and uncertainties in climatic and hydrologic data. The model was setup using digital elevation model, soil, land use/cover and slope data obtained from global datasets and meteorological data obtained from a local station. The watershed was delineated into 18 subbasins and 159 hydrological response units. The model was run on the monthly time step from 2000 to 2016. Data from the 2000-2004 period was used for model warm-up. The model was calibrated for streamflow for the 2005-2010 period and the 2011-2016 period was used for model validation. For model calibration, we used SWAT-CUP program with the built-in SUFI-2 algorithm and 24 parameters were included in the calibration process. The model performance during the calibration period was satisfactory with Nash-Sutcliffe Efficiency (NSE) value of 0.56 and determination coefficient (R^2) of 0.56. During model validation, NSE was calculated as 0.51 and R^2 was calculated as 0.54. The physically-based model, SWAT, successfully represented hydrological processes in the Altınapa Reservoir Watershed with scarce data input. The model can be used for simulating water quality and impacts of land use and climatic changes in the future.

Yassine Et-Tayea
PhD Student, Hassan First University of Settat, Morocco

Mineralogical and Physico-Chemical Characterization of Bentonite from Iboughardain Area (North-Eastern Rif, Morroco)

The Iboughardain deposit is located in the Kert basin (North-eastern Rif, Morocco). The outcrop of bentonite appears in the form of alteration of subhorizontal layers of trachy-andesitic tuffs and cinerites. This alteration is in contact with the greenish marls of the Miocene. Analyses and studies carried out on samples collected in the study area demonstrated a qualitative and semi-quantitative mineralogy mainly composed of variable contents of montmorillonite and associated minerals. Indeed, the chemical composition mostly consist of aluminosilicates which reflects high rates of SiO_2 and Al_2O_3 and relatively sodic than calcic (dominance of albite over anorthite) based on the high percentages of Na_2O. However, the other oxides express medium percentages of Fe_2O_3 (2.58%), K_2O (1.63%), MgO (3.526), and MnO (0.04). The bentonites show significant swelling properties based on the calculation of swelling index. The results obtained from the chemical and mineralogical composition, and the swelling index allowed us to characterize the bentonite of Iboughardain area.

Mattia Fragola
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Adelfia Talà
Associate Professor, University of Salento, Italy
&
Salvatore Romano
Researcher, University of Salento, Italy

Back-Trajectory Impact on Airborne Bacterial Pathogenic and Non-Pathogenic Species at a Central Mediterranean Coastal Site

The 16SrRNA gene metabarcoding approach has been applied to the DNA extracted from PM10 samples collected at the Mathematics and Physics Department of the University of Salento in Lecce, a coastal site of South-eastern Italy, to characterize the main structure of the airborne bacterial community. In more detail, the main goal of this study has been to identify bacterial pathogenic and non-pathogenic species and investigate their relationships with the long-range transported air masses. The monitoring coastal site of this study can be considered representative of the Central Mediterranean, being located on a narrow peninsular area in the Central Mediterranean basin. Therefore, it is affected by a large variety of aerosol sources of different type and origin because of its geographical location. More specifically, mineral dust from the Sahara Desert and surrounding arid regions, polluted particles from urban and industrial areas of Northern and Eastern Europe, sea spray from the Mediterranean Sea itself or from the Atlantic Ocean, and biomass-burning particles produced mostly in summer by forest fires are commonly advected at the study site (e.g., Perrone et al., 2014). The HYbrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model version 4.8 from NOAA/ARL (https://www.ready.noaa.gov/) has been used to calculate analytical back-trajectories and detect the low altitude air masses that reached the study site.

A new approach based on the integration of different analytical techniques has been used to investigate the role of air mass back-trajectories on the bacterial community shaping in different seasons. In particular, PCA (Principal Component Analysis), CCA (Canonical Correspondence Analysis), and NMDS (Non-metric MultiDimensional Scaling) have been applied to the bacterial phyla and genera relative-

abundance data. Then, these techniques have allowed identifying the relationships between pathogenic and non-pathogenic bacteria and the samples affected by continental, desert dust, and marine particles (e.g., Romano et al., 2019). The relationships between the bacterial community structure and the main chemical tracers of pollution sources have also been investigated to understand and support our main experimental findings.

In conclusion, this work has highlighted that changes of long-range-transported air masses, in addition to other variables like meteorological parameters and seasonal variations, have likely been responsible for the shape of the airborne bacterial community of PM10 samples, pointing out the fundamental role of the atmosphere in the airborne bacteria transport.

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Sustainability Strategist, PE, Sweden
&
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Urban Farming, Ecosystems and Climate Change Mitigation in Urban Environments: The Case of SATURN Pan European Programme

The 'System and sustainable Approach to virTuous interaction of Urban and Rural LaNdscapes' (SATURN) project is exploring how resilience at a city scale might be achieved and how the issues of landscape fragmentation, governance and land management can be addressed resulting to a sustainable future. The EIT Climate-KIC SATURN project is based on a collaboration between three cities of very different scales and contexts, those of Gothenburg in western Sweden, Trento in northern Italy, and Birmingham in the United Kingdom.

This paper focuses on the ways in which urban farming can become an important tool to mitigate or adapt to climate change in urban environments by exploring how the three major cities of SATURN deal with these concepts. Using the experience gained throughout the SATURN project as well as the strong communication developed within the consortium, the paper introduces the reasons why urban farming is not just an agricultural activity, but it relates to climate awareness, health and an element of community. With the examples of different urban farming models, this research presents the fully entrepreneurial model of Gothenburg, where public underutilized land is matched with farmers in order for them to scale up their businesses and provide sustainable food, by limiting the shipping distance of the produce. In the Trento case, a land lease scheme named 'banca della terra' has been introduced into a national law, aiming to provide support to farmers and make use of both public and private underutilised land with the creation of a matchmaking platform. Issues of land fragmentation create challenges for sustainable use and successful entrepreneurial activity in agriculture in the Trentino region. The case of Birmingham presents a different model where farming in an urban environment is mostly seen as a support to communities, mental health and awareness, rather than an entrepreneurial activity. The innovation in this paper comes in the form of different European models related to urban agriculture and best practices, demonstrating how abandoned and underutilised public and private land can be regenerated and become an active part of the urban realm. SATURN aims to create a framework presenting sustainable farming models where different examples are tested across the three core cities and other European and global countries (e.g., Slovenia, Greece, Spain, New Zealand) focusing on new ways of sustainable agriculture and a viable scheme for public and private underutilised land.

The goal behind this project is for the three cities to exchange knowledge and identify innovative characteristics from each model that can work in their own region, providing a new concept for urban farming that can relate and support the fight against climate crisis while at the same time, supporting its community, business and economy. Insights on the ways in which the three different models operate, as well as results on how farming in an urban environment can enhance resilient cities are discussed in this paper.

Remus Pravalie
Lecturer, University of Bucharest, Romania
&
Georgeta Bandoc
Professor, University of Bucharest, Romania

Analysis of Forest Ecological Changes in Romania Based on Detecting Recent Trends in Normalized Difference Vegetation Index

Forests are essential for the environment and human communities across the world. However, the health and productivity of forest ecosystems undergo constant changes in the current age dominated by environmental changes, which is why it is necessary to monitor forest ecological changes from global to national scales. This paper analyses the ecological dynamics of forest vegetation in Romania after 1987, assuming that the country's forests have experienced certain changes in productivity over the past decades. In order to test this hypothesis, remote sensing (Landsat) data was downloaded and processed for Romania's entire territory, in order to compute certain annual NDVI (Normalized Difference Vegetation Index) datasets across the forestlands of the country. NDVI was chosen in this paper as it is a reliable ecological indicator that is known for the fact it highlights the vegetation cover and state, but also forest density and productivity on various spatial and temporal scales. After obtaining a multiannual NDVI series, the non-parametric Mann-Kendall test and Sen's slope estimator were applied in order to investigate the ecological trends (in terms of their direction, magnitude and statistical significance) within the forest boundaries of Romania. The results, obtained for the first time for the entire Romanian territory, showed greening trends (NDVI positive changes) of forests especially in the Carpathians regions of Romania, which indicates a possible increase in their productivity over the past decades in the country's high-altitude areas. Regionally, the results indicated browning trends (NDVI negative changes) mainly in the Extra-Carpathians regions, which suggests that forests may have degraded (e.g., via withering) or were at least slightly disturbed (e.g., via devitalization) in the lowland areas of Romania. The results obtained in this study may have practical implications for national governmental policies that are oriented towards forest management in Romania.

Edyta Rycio
PhD Student, Polish Geological Institute National Research Institute, Poland

Landslide Susceptibility Map in the Przemysl Region in the Eastern Part of the Carpathians in Poland

The Polish Carpathians are built by overthrust of flysch nappes. There are two nappes in the Przemyśl region: Skole Unit and Zglobice-Stebnic Unit, which during orogeny overlapped the autochthonous Miocene of the Carpathian Foredeep. These formations during the Pleistocene and the Hollocene were covered by thicker layers of loess, glacial till and river sediments of the San and Wiar valleys.

In general, landslide is one type of mass movement tiggered by gravity. Describes type of movement and type of material moved. Landslide is also the landform that results from such movement. Landslides are a very common occurrence in the Polish part of the Carpathians and their role in slope shaping is great. There are generally caused by climatic conditions like humidity and precipitation under specific lithological and tectonic conditions.

In the world literature, there are many publications from different regions of the world, in which attempts were made to prepare maps of landslide susceptibility: Bonham-Carter et al. (1989), Thurston I Degg (1996), Derbyshire et al. (2000), Pandey and Sharma (2017). There are just a few publications. In Poland, there is also a growing interest in this issue, to mention only such names as: Długosz (2011), Kamiński (2007, 2012), Mrozek (2013), Małka (2015). There are many effective methods of calculating landslide susceptibility maps using GIS tools and software. The most popular are: weithts of evidence, neural network method, frequensy ratio method or statistical index method. The last method was used for the calculations. Counting landslide susceptibility maps consists in crossing several thematic maps with a landslide map. The author of this work, limited herself to only 3 thematic maps, defining the passive factors of landslide formation, i.e., geological structure (geology layer), slope inclination (slope layer) and slope exposure (exposure layer). Landslides from the Przemyśl region were selected for the research. The assumption of the presented method of calculating the landslide susceptibility is "crossing" the landslide map with individual thematic maps. It is possible to calculate the surface landslide index for each selected class of the thematic map and compare it with the surface landslide index for the study area. In this way, we obtain the so-called index maps, i.e., we assign the calculated indexes to

the appropriate classes of thematic maps. For each pixel, the index values were summed and a landslide susceptibility map was obtained for the Przemyśl region. The susceptibility to landslides was determined on a 5-point probability scale and the map separates areas with: very low, low, medium, high and very high susceptibility. It is a simplified map. The aim of the work was to understand the philosophy of the chosen method.

During the calculations, it was proved that the areas most susceptible to landslides are: areas with sandstone and shaless under loess, areas with slope angle is 7-11 degrees and slopes with western exposure.

Jesus Jose Soriano Bermudez
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Professor, University of Huelva, Spain

Drought after a Fire:
The Survival of the Genus Quercus in Extreme Conditions

Mediterranean vegetation as we know it is the result of selective processes that occurred in the Pliocene, the frequent fires of the Tertiary and a process of drying out the climate that occurred after the last ice age. The presence of fire in the ecosystem favours the appearance of xerophilic species, due to the alterations it produces on the hydrological cycle. In a context of global warming where we see an increase of more than 0.5ºC in the average temperature in the Iberian Peninsula in the last 50 years. Consequently, an increase in the effects of the summer drought, typical of Mediterranean climates, is expected under these conditions. In this context, is necessary to know the characteristics of the Mediterranean forests in order to react and improve the plans for conservation and repopulation of this ecosystem.

Forest management is framed within the principles of conservation of biological biodiversity, environmental protection and sustainability. In order to achieve these principles it is necessary consider different aspects related to the estimation, maintenance or increase of the genetic variability of forest species, as they largely determine the future evolution of populations, their adaptation to the environment and their conservation. In this study, we have focused on two of these typical and emblematic xerophilous species of Mediterranean forests such us *Quercus ilex* and *Quercus suber*. The existence of genetic variation in forest species linked to their geographical distribution and the different environmental conditions of the different populations is a known fact, and the *Quercus* genus is no exception. That is why in this research a series of populations of *Q. ilex* and *Q. suber* from different environmental conditions of Huelva of have been selected, in order to

carry out a deep characterization of the phenotypic characteristics that gives them a better adaptation to extreme drought after a fire.

To highlight the differences of the different populations were subjected to stress conditions due to drought, with a previous hardering. After that, some morphological parameters such as plant size, stem diameter and the number of leaves of each individual were analyzed over time in order to see the effects of drought on the development of individuals of the different populations in stages of juvenile development. On the other hand, we analyze the water content of the different populations in order to find which individual is the one that best manages water resources in a drought situation.

This essay aims to better understand the *Q. ilex* and *Q. suber* populations, due to its importance in forest management tasks. This biodiversity search task is vital to select "elite" individuals from populations with respect to their ability to resist drought. This will facilitate better management of the Mediterranean forest.

Dominika Szoldrowska
Researcher, Mineral and Energy Economy Research Institute, Polish Academy of Sciences, Poland
&
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Assistant Professor, Mineral and Energy Economy Research Institute, Polish Academy of Sciences, Poland

Sewage Sludge as a Source of the Key Nutrients for Plant Growth

Paper presents an importance of sewage sludge as a source of key nutrients for plant growth. Sewage sludge is a waste that has to be disposed according to the waste directive in the European countries. An amount of sewage sludge increases every year due to construction of new wastewater treatment plants (WWTPs) and modernization of the existing ones. In the previous years, the most popular method of sewage sludge management was dewatering and landfilling. As a consequence of growing awareness of natural environment protection and developing concept of a circular economy (CE), many innovative solutions enabling sewage sludge use were developed. Sewage sludge may contain significant amounts of phosphorus (P), indicated by the European Commission (EC) as one of the critical raw materials (CRMs) for the European economy. This CRM is necessary for the proper growth and development of plants. Due to the fact that in Europe P raw materials (in the form of phosphate rock) are mined only in Finland and Russia, P recovery from sewage sludge may be an alternative option for primary sources. It is the main nutrient of plants, apart from nitrogen (N) and potassium (K), the content of which determines the fertilizing value of the sludge. The content of these elements may vary depending on the composition of the sewage flowing into the WWTPs and the place of their formation. Sewage sludge, due to its composition, which is similar to the soil organic substance, which is humus, can be used directly as a fertilizer. However, its use depends on the chemical composition, because it may contain heavy metals harmful to plants, which limits the possibility of its use in agriculture. The concentration of heavy metals in sediments depends mainly on the applied wastewater treatment process. Sewage sludge can be composted to reduce mass and hydration, destroy pathogenic organisms and stabilize the sludge. The substances contained in the compost mass from sewage sludge improve soil nutrient abundance, water-air relations, and have a good effect on the physical and chemical properties of the soil. In recent

years, there has been a growing interest in the use of sewage sludge in agriculture, but also its granulation or incineration and the use of ash as a fertilizer, fertilizer additive or soil conditioner.

Vsevolod Yutsis

Professor, Instituto Potosino de Investigación Científica y Tecnológica, Mexico

Geophysics of the Intraplate Volcanic Fields Los Encinos and Santo Domingo Case, Central Mexico

The volcanic fields of Los Encinos (CVLE) and Santo Domingo (CVSD), located northwest of San Luis Potosí - northeast of Zacatecas, and northeast of San Luis Potosí respectively, are located on the trace of an apparent regional line whose origin has been suggested as a possible basement fault. This structure has an approximate N50W orientation whose distribution appears to extend more than 200 km from the northeast of Zacatecas to the central part of San Luis Potosí. Both fields are made up of intraplate mafic rocks with alkaline affinity, although in the case of Campo Santo Domingo they are more recent products presenting Middle Pleistocene ages (0.35 to 0.45 Ma.), while the Los Encinos rocks span Medium to Late Miocene (13.6 to 10.6 Ma.). On the trace of this lineament there is also more recent volcanism (Eocene-Oligocene) with a calco-alkaline composition, which suggests a repeated influence on the rise of magmas at least since the Paleogene.

The hypothesis of this study is the presence of a basement fault that has favored the ascent of intraplate magmas in these volcanic fields. This is still controversial since no evidence has been presented to prove the presence of a deep structure in the lithosphere that could have channeled the magmatism.

To fill this gap we carry out an integrate study of geophysical methods (gravimetric, geomagnetic, electromagnetic (TEM and MT/AMT soundings), as well as gamma ray spectrometry and radon concentration measurement) in combination with a structural geological study and the application of some remote sensing tools that allowed obtaining information on the geological-structural configuration of both the surface and the subsoil of the region.

Preliminary results of this study are presented in this work.

Ivar Zekker

PhD Student, University of Estonian Life Sciences, Estonia

Deammonification Nitrogen Removal and Anodic Biofilms Use in Microbial Fuel Cell Technology

Earlier calculations of the modified Nernst–Monod model have shown the increase of the maximum specific utilization rate (0.30 to 0.38 mmol g^{-1}VSS h^{-1}) in the anammox microbial electrolysis cell being 60% higher than ordinary anammox specific utilization rate (0.18 to 0.20 mmol g^{-1}VSS h^{-1}) (Li et al., 2016). Autotrophic nitrogen removal from wastewater was studied during 2 years in mobile pilot-scale (3 m^3 process tank) reactor configuration -deammonification in biofilm. Biofilms were developed with inoculation of biomass using undiluted liquid effluent of municipal wastewater treatment plant biogas facility. Microbial consortia determined in MBBR biomass by pyrosequencing consisted mostly of anammox *Brocadia* species as well as denitrifiers (*Pseudomonas caeni* <0.1%), both of the organisms have cytochromes on the outer membraane having potential for electron transfer in microbial fuel cell (MFC). Anammox species abundance achieved in deammonification biofilm reactor was 4 % (0.9% out of them being *Brocadia* species). Among ammonia oxidizers 2.4% belonged to *Nitrosomonas europaea* and 0.5% to *Nitrosomonas eutropha* being absent in the *inoculum*. The highest total nitrogen removal rate (TNRR) was achieved in the deammonification biofilm reactor (0.33 kg-N m^{-3} d^{-1}). The biofilm from deammonification biofilm reactor was then tested in MFC technology in order to understand the electrogenic behavior of it. Two MFCs with carbon felt electrodes with the anammox biofilm (Test) and another one with septic tank mix consortia as a reference (Control) were observed to be capable of generating continuous bio-energy with operating voltage of 262 ± 17 mV and 163 ± 18 mV for Test and Control, respectively. Test anode with anammox biofilm showed almost two times higher (9.5 W.m^{-3}) volumetric power density than Control (4.9 W.m-3) with lower internal resistance of 161 Ω than that of Control (386 Ω). The coulombic efficiency was also found to be higher in case of Test (27.5 ± 1.7%) than Control (17.7 ± 1.9%), demonstrating the applicability of anammox in MFC to achieve efficient wastewater treatment as well as higher energy recovery from MFC.