



Abstract Book

SETAC Latin America 14th Biennial Meeting
Latin America, Diversity of Knowledge for a Sustainable Future

26-29 SEPTEMBER 2021 • VIRTUAL

Abstract Book

SETAC Latin America 14th Biennial Meeting

Table of Contents

Abstracts by Session

01A. Effects and Risks of Pesticide Used in Agriculture I	4
01B. Effects and Risks of Pesticide Used in Agriculture II	9
02. Micro- and Macroplastics Pollution	13
03. Chemistry and Exposure Assessment	19
04. Contaminants of Emerging Concern	27
05. Traditional Knowledge, Policy, Management and Communication	36
06A. Aquatic Toxicology, Ecology and Stress Response I	40
06B. Aquatic Toxicology, Ecology and Stress Response II	52
07. Ecotoxicology of Birds and Mammals: Novelty and Challenges	63
08. Endocrine Disruptors Compounds: Environmental Presence and Effects	67
09. Behavioral Ecotoxicology: Where Organism and Population-level Effects Meet	71
10. Engineering, Remediation and Restoration	75
11. Sources, Fate and Effects of Pollutants in Marine Ecosystems	79
12. Environmental Toxicology and Stress Response	82
13. Terrestrial Ecotoxicology and Ecosystem Services	87
14. Environmental Impact of Mining and Other Industrial Activities	94
15. Alternative Approaches to Animal Testing in Ecotoxicity and Risk Assessment	97
16. Occurrence and Risks of Pollutants in Latin America	102

Indices

Keyword Index	109
Author Index	113

This book comprises the abstracts of the presentations for the platform and poster sessions of the Society of Environmental Toxicology and Chemistry (SETAC) Latin America 14th Biennial Meeting, conducted virtually from 26–29 September 2021. The abstracts are reproduced as accepted by the Scientific Program Committee and appear in numerical order. In each abstract, the presenting author’s name is underlined. The author index cross-references the corresponding abstract numbers.

No part of this publication may be reproduced, distributed, stored, or transmitted in any form or by any means, including photocopying, recording or other electronic or mechanical methods, without permission in writing from the copyright holder.

All rights reserved. Authorization to photocopy items for internal or personal use, or for the purpose or internal use of specific clients, may be granted by the Society of Environmental Toxicology and Chemistry (SETAC), provided that the appropriate fee is paid directly to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923 USA (+1 978 750 8400) or to SETAC. Before photocopying items for educational classroom use, please contact the Copyright Clearance Center (www.copyright.com) or the SETAC Office in North America (+1 850 469 1500, setac@setac.org).

SETAC's consent does not extend to copying for general distribution, promotion, creating new works or resale. Specific permission must be obtained in writing from SETAC for such copying. Direct inquiries to SETAC, PO Box 12804 Pensacola, Florida, 32591-2804 USA.

© 2021 Society of Environmental Toxicology and Chemistry (SETAC)

About SETAC

The Society of Environmental Toxicology and Chemistry (SETAC), with offices in North America and Europe, is a nonprofit, professional society established to provide a forum for individuals and institutions engaged in the study, analysis and solution of environmental problems, the management and regulation of natural resources, environmental education, and research and development.

Specific goals of the society are:

- Promote research, education and training in the environmental sciences
- Promote the systematic application of all relevant scientific disciplines to the evaluation of chemical hazards
- Participate in the scientific interpretation of issues concerned with hazard assessment and risk analysis
- Support the development of ecologically acceptable practices and principles
- Provide a forum (meetings and publications) for communication among professionals in government, business, academia and other segments of society involved in the use, protection and management of our environment

These goals are pursued through the conduct of numerous activities, which include:

- Conduct meetings with study and workshop sessions, platform and poster presentations, and achievement and merit awards
- Publish scientific journals, a newsletter and special technical publications
- Provide funds for education and training through the SETAC Scholarship/Fellowship Program
- Organize and sponsor chapters and branches to provide a forum for the presentation of scientific data and for the interchange and study of information about local and regional concerns
- Provide advice and counsel to technical and nontechnical persons through a number of standing and ad hoc committees

SETAC membership currently comprises about 5,300 individuals from government, academia, business and nongovernmental organizations with backgrounds in chemistry, toxicology, biology, ecology, atmospheric sciences, health sciences, earth sciences, environmental engineering, hazard and risk assessment, and life cycle assessment.

If you have training in these or related disciplines and are engaged in the study, use or management of environmental resources, SETAC can fulfill your professional affiliation needs.

All members receive the SETAC Globe newsletter highlighting environmental topics and SETAC activities, reduced fees for meetings and discounts on SETAC books. All members receive online access to *Environmental Toxicology and Chemistry* (ET&C) and *Integrated Environmental Assessment and Management* (IEAM), the peer-reviewed journals of the society. Members may hold office and, with the Emeritus Members, constitute the voting membership.

For further information, contact the Pensacola office if you are in Latin America, Asia-Pacific or North America, or the Brussels office if you are in Europe or Africa.

PO Box 12804
Pensacola, Florida, 32591-2804 USA
T +1 850 469 1500
E setac@setac.org

Avenue des Arts, 53
B-1000 Brussels, Belgium
T +32 2 772 72 81
E setaceu@setac.org

www.setac.org

Environmental Quality Through Science

7. Ecotoxicology of Birds and Mammals: Novelty and Challenges

7.01 Assessment of Erythrocyte Nuclear Abnormalities in Oiled *Spheniscus Magellanicus* As a Suitable Biomarker of Genotoxicity. New Tools for Rehabilitation Centers

M. Romero, Instituto de Investigaciones Marinas y Costeras (IIMYC) CONICET, UNMDP. / Laboratorio de Toxicología Ambiental; P.S. Polizzi, IIMyC, CONICET-UNMDP / Laboratorio de Toxicología Ambiental; J. Bauer, Universidad Nacional de Mar del Plata / Facultad de Ciencias Exactas y Naturales; A. Dolagaratz, Instituto de Investigaciones Marinas y Costeras (IIMYC) CONICET, UNMDP.; L.N. Chiodi Boudet, Instituto de Investigaciones Marinas y Costeras (IIMYC) CONICET, UNMDP; RSA-CONICET / Laboratorio de Toxicología Ambiental; M. Gerpe, CONICET - UNMDP / Department of Marine Science - IIMYC

Genome stability could be influenced by environmental factors; therefore, it can be used as index for an individual's response on environmental impact and stress, such as pollutants. When birds are exposed to less than acutely lethal dosages, oil can cause a wide range of adverse effects, including hemolytic anemia, decreased nutrient absorption and decreased immune function. Evaluation of gene and cytotoxicity is an interesting field and valuable tool in environmental toxicology, although few studies have been conducted in wild birds. Among the methods for the estimation of genome instability is the evaluation of erythrocyte nuclear abnormalities (ENAs), which may be useful in field research of birds. The aim was to evaluate ENAs frequency in oiled Magellanic penguin (*Spheniscus magellanicus*) as biomarkers of genotoxicity. In addition, we assessed levels of ENAs in penguins during rehabilitation process. Peripheral blood samples of oiled (n=29) and rehabilitation (n=21) Magellanic penguins were taken during 2011 and 2013 in Buenos Aires Province, Argentina. The number of ENAs was scored for each blood smear in relation to 1000 mature erythrocytes. Considering the total of ENAs, oiled penguins (25.38 ± 12.16) presented significantly higher levels than rehabilitation animals (9.43 ± 5.71). In particular, oiled penguins presented higher values of the following ENAs: tailed nucleus, budding nucleus, kidney-shaped nucleus, nucleus with cavity and unknown nuclear malformation. No significant differences ($p > 0.05$) were found between groups for micronucleus and lobed nucleus. The present study represents the first approach on assessing not only the frequency of MN but also other ENAs in *S. magellanicus*. The micronucleus is the most widely used genotoxicity marker in birds. However, micronuclei were found in low frequency (range: 0-4) in all Magellanic penguins, indicating that the evaluation of other ENAs is a better biomarker to evaluate genotoxicity for the species. The results show that oiling below lethal dosages produces genotoxicity in Magellanic penguin, and that the rehabilitation process is adequate to reverse this damage. However, although the number of ENAs decreases during rehabilitation, it is not known what the long-term damage could be. Therefore, it is important to record the effects of stressors such as oil for long-term comparisons.

7.02 Behavioral and Physiological Response of the Wild Grayish Baywing (*Agelaioides badius*) After Chronic Exposure to Imidacloprid Treated Seeds

M.B. Poliserpi, Instituto Nacional de Tecnología Agropecuaria (INTA) / Biodiversidad Ecología y gestión ambiental; J. Brodeur, CONICET - INTA

The imidacloprid (IMI) is a neonicotinoid insecticide largely used in seed treatment in many countries, including the Argentinean Pampa Region. The consumption of IMI treated seeds is a hazard for farmland birds, even if only a part of the bird's diet is composed of treated seeds. In this context, the objective of the present study was to characterize the effects of IMI in the wild grayish baywing (*Agelaioides badius*) in a realistic scenario in which birds feed chronically on treated seeds as a portion of their daily diet. To address this issue, baywings were fed for 32 days with IMI treated seeds with 2.5 and 15 % of a regularly used concentration (3 g IMI/ kg seed), simulating the consumption of the 2.5 or 15% of their daily diet as treated seeds. Seeds were sprayed with the product Confidor® OD, and treatment concentrations were 0.075 g IMI/kg seed (Low dose) and 0.45 g IMI/kg seed (High dose). The effects exerted by IMI on birds were evaluated in a variety of behavioral, physiological, hematological, genotoxic, and biochemical parameters during and after exposure. In both treatments, delayed mortality was observed: 60% (N=7) of individuals died in the High-dose group within 15 days, and 8% (N=1) in the Low-dose group after 30 days. The mean survival time for the High-dose group was 12.5 days. High-dose birds significantly decreased their feed intake rate by 20% the first three days, compared to the other groups. High-dose birds also decreased their body weight the first week ($p < 0.05$). Birds treated with the High dose had lower escape reactions and lower response to a predator's sound ($p < 0.05$). Birds exposed to the higher IMI treatment, experienced reduced mobility in the cage the first two weeks, while the Lower-dose group experienced reduced mobility in the fourth week of exposure ($p < 0.05$). No alterations in the hematological or genotoxicity parameters were observed in treated birds after 32 days of exposure. After the 32 days of exposure, glutathione S transferase activity in the plasma of treated birds decreased, and the cholinesterases activity increased in the liver of treated birds ($p < 0.05$). This study highlights that consumption of only 2.5% of bird's daily diet as IMI treated seeds, is sufficient to generate sublethal effects and death. In the field, these effects may have consequences on wild birds affecting their capacity to search for refuge or escape from a predator, representing a risk to farmland bird populations.

7.03 Bottlenose Dolphins, Galapagos Sea Lions and Galapagos Fur Seals As Sentinels of Mercury Contamination in the Southeastern Tropical Pacific

K. Calle Delgado, Escuela Superior Politecnica del Litoral / Life Sciences; J. Alava, University of British Columbia / School of Resource and Environmental Management; D. Paez, Universidad San Francisco de Quito / Galapagos Science Centre; O. Alvarado, Escuela Superior Politecnica del Litoral / Facultad de Ciencias de la Vida; A. Tirape Bajaña, ESPOL / Facultad de Ciencias de la Vida; P.A. Fair, NOAA / Northwest Fisheries Science Center

Anthropogenic mercury is a global pollutant of great concern and highly toxic to top predators, including marine mammals. It can biomagnify in foodwebs reaching exposure concentrations above threshold health effects. Bottlenose dolphins (*Tursiops truncatus*) are the most common cetacean found in the coastal waters, estuaries and mangroves of Ecuador. Galapagos sea lions (GSL, *Zalophus wollebaeki*), and Galapagos fur seal (GFS, *Arctocephalus galapagoensis*) are endemic and endangered marine mammals of the Galapagos islands. These species serve as sentinels of ecosystem health to assess and monitor the exposure to and impact of pollutants in tropical marine and estuarine environments. This research aimed to investigate total mercury (THg) bioaccumulation in marine mammals and assess these species as