



Xth International Conference on Marine Bioinvasions

16-18 October 2018

ABSTRACT eBOOK



Xth INTERNATIONAL CONFERENCE ON MARINE BIOINVASIONS

Puerto Madryn, Chubut, Patagonia, Argentina, October 16th-18th, 2018

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Green chemistry as a sustainable source of potential additives for marine antifouling paints

Angélica Escobar¹, Míriam Pérez^{2,3}, Ángel Sathicq⁴, Mónica García³, Analia Paola^{2,3}, Gustavo Romanelli^{4,5}, Guillermo Blustein^{3,6}

1: CINDECA, Departamento de Química, Facultad de Ciencias Exactas, UNLP-CCT-CONICET, Calle 47 N 257, 1900 La Plata, Argentina.

2: Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Calle 60 y 122, 1900 La Plata, Argentina.

3: Centro de Investigación y Desarrollo en Tecnología de Pinturas (CIDEPINT), CICPBA-CONICET, Calle 52 e/ 121 y 122, 1900 La Plata, Argentina.

4: Centro de Investigación y Desarrollo en Ciencias Aplicadas (CINDECA), Departamento de Química, Facultad de Ciencias Exactas, UNLP-CCT-CONICET, Calle 47 N 257, 1900 La Plata, Argentina.

5: Centro de Investigación en Sanidad Vegetal (CISaV), Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Calle 60 y 119, 1900 La Plata, Argentina.

6: Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Calle 60 y 119, 1900 La Plata, Argentina.

Biofouling can be defined as the undesirable accumulation of micro- and macroorganisms on artificial surfaces immersed in seawater. Biological fouling is a severe problem for the shipping industry and leads to an increase in weight, subsequent speed reduction and loss of maneuverability and as a consequence, higher fuel consumption is needed. Another consequence is the transport of species that could generate a significant negative impact on biodiversity. In this sense, some studies suggest that most of marine introduced species are found in Buenos Aires coast. Particularly, Mar del Plata harbor has strong recreational, commercial and international fishing activities. Besides, its growing urbanization generates new available substrates for organism settlement. All these conditions plus competition among fouling species promote exotic species dispersion. Therefore, Mar del Plata harbor is an adequate place to study and develop antifouling systems. In the search for new environmentally friendly alternatives to replace or reduce the use of metallic antifouling pigments in marine paints, three n-alkyl 2-furoates (butyl 2-furoate, hexyl 2-furoate and octyl 2-furoate) were prepared by green sustainable procedures. These compounds were characterized by current organic analysis and their antifouling properties were firstly evaluated on *Artemia salina* nauplii in the laboratory. Then, antifouling paints formulated with these compounds were exposed for 45 days in Mar del Plata harbor. Results indicated that furoate paints completely inhibited the settlement of conspicuous species of Mar del Plata harbor such as the calcareous tubeworm *Hydroides elegans*, colonial ascidians such as *Botryllus* sp., and the sandtube builder *Polydora* sp. Both laboratory and field tests indicate that n-alkyl 2-furoates have strong antifouling activity and are promising candidates for antifouling technology.

Presenting author: Analia Paola. E-mail: a.paola@cidepint.gov.ar