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## Linking life traits and Dynamic Energy Budget parameters to better understand domoic acid contamination in five pectinid species

**Eline Le Moan**[1], Laure Pecquerie[1], Hélène Hégaret[1], Paulo Lagos[1], Léo Heyer[1], Fred Jean[1], Jonathan Flye-Sainte-Marie[1], Laure Régnier-Brisson[2]and Salvador Lluch-Cota[3]

[1]*Univ. Brest, CNRS, Ifremer, IRD, IUEM, 6539 LEMAR, F-29280 Plouzané, France*
[2]*Ifremer, Dyneco, LEBCO, F-29280 Plouzané, France*
[3]*CIBNOR, La Paz, Baja California Sur, 23000, Mexico*

Species of the Pectinidae family are among the most fished and cultured molluscs species worldwide. By their filtration activity, pectinid species can accumulate toxins produced by their prey. Particularly, domoic acid (DA), the amnesic shellfish toxin produced by diatoms of the genus *Pseudo-nitzschia*. However, levels of contamination and depuration rates are species-specific. Species can be placed on a gradient from "slow depurator" to "fast depurator". Processes to explain these differences are not yet known. Here, five socio-economically important species for which life traits data is available were compared. The king scallop, *Pecten maximus*, accumulates the highest concentrations and when contaminated retains the toxin for a very long time. The Atlantic deep-sea scallop, *Placopecten magellanicus*, also bioaccumulates and relatively slowly decontaminates DA. They are known as "slow depurators". In contrast, the variegated scallop, *Mimachlamys varia*, the Chilean scallop, *Argopecten purpuratus* and the giant lion's paw, *Nodipecten subnodosus* are known as "fast depurators" with lower DA concentrations accumulated and faster depuration. While some hypotheses have been made to explain the long retention of *P. maximus* and the differences between species, processes are not yet established. This is why, comparing "slow depurators" and "fast depurators" may help understanding these processes. Toxin kinetics are linked to the organism metabolism, and it is hypothesised that differences in the toxin retention between species can be explained by physiological differences. To investigate physiological differences, species were compared within the same conceptual and quantitative framework provided by a bioenergetic model based on Dynamic Energy Budget (DEB) theory. DEB models already exist for *P. maximus*, *A. purpuratus* and *P. magellanicus* and two new species were added to the DEB species collection: *M. varia* and *N. subnodosus*. One of the strengths of DEB theory, is the possibility to compare species based on parameter values which are linked to physiological traits. In this study, we want to see if it is possible to identify one or several DEB parameters that could drive the "slow" and "fast depurators" traits of pectinid species. The originality of our method is to compare how different are DEB parameters when estimated for a single species and for several species at the same time. After a comparison of life traits, particularly age and length at life cycle transitions and reproduction strategy, physiological hypotheses were defined to base the estimation of DEB parameters. Then, emphasis was made on specific assimilation and maintenance costs parameters for toxin kinetic. Species comparison and hypothesis on parameters that could explained the differences between "slow" and "fast depurators" will be presented in this communication.

**Keywords**: Pectinidae, life traits, Dynamic Energy Budget theory, Amnesic Shellfish Poisoning

Eline Le Moan, Univ. Brest 6539 LEMAR, rue Dumont d'Urville, 29280 Plouzané, France, email: eline.lemoan@univ-brest.fr

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