Modeling native oyster metabolism for aquaculture and restoration purposes

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With the acceptance of the Belgian Marine Spatial plan 2020-2026; new zones for commercial and industrial activities are drawn in the nearshore areas. These zones can possibly host offshore shellfish aquaculture infrastructure. Besides zones for commercial and industrial activities; new multi-use areas are allocated to the western offshore part of the Belgian part of the North Sea. These multi-use areas are excluded from bottom disturbing fisheries and can; therefore; host potential flat oyster restoration projects; offshore shellfish aquaculture and renewable energy generation.

Being able to model shellfish metabolism parameters is vital to aquaculture and restoration activities. The Dynamic Energy Budget (DEB) model is considered to be a suitable tool for evaluating the growth potential of shellfish. When combining remote sensing data (chlorophyll a; suspended particulate matter and sea surface temperature) with the DEB theory; aquaculture relevant Information can be retrieved; such as harvesting times; growth potential; interannual variation. Information on the timing of spawning events and reproduction intensity can be relevant to oyster restoration project. Therefore; linking the DEB model for flat oyster with remote sensing data results in a scientific tool that will influence aquaculture management or policy making.

Keywords: Shellfish aquaculture; Shellfish restoration; Population models