VIVALDI, A H2020 EUROPEAN PROJECT AIMING AT PREVENTING AND MITIGATING FARMED BIVALVE DISEASES

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The context

The European shellfish industry enjoys a privileged position on the global scene. Its social dimension is essential, as it employs a high number of people in more than 8000 companies, mostly micro-companies. Shellfish production in Europe is little diversified and mainly relies on the industrially produced mussels, oysters and clams.
Over the recent years, this sector has grown more slowly than other fish farming sectors, notably because it depends a great deal on the environmental quality and the emergence of diseases. Mortality events, linked to pathogen organisms such as viruses, bacteria and parasites (protozoa), tend to weaken the production's sustainability.
In this context, the European project VIVALDI (PreVenting and mItigating farmed biVALve DIseases) aims at increasing the sustainability and competitiveness of the shellfish industry in Europe, developing tools and approaches with a view to better preventing and controlling marine bivalve diseases.
VIVALDI is a 4-years European Horizon 2020 project coordinated by Ifremer (2016-2020): 21 mostly European, public and private partners are involved, representing the diversity of the European shellfish industry landscape.

The objectives

To increase the sustainability and competitiveness of the shellfish industry in Europe, VIVALDI will not only bring new knowledge on the complex interactions between shellfishes, environment and pathogens, but it will also develop practical tools and approaches aiming at better preventing and controlling major pathogens affecting the main European farmed shellfish species: Pacific oyster (*Crassostrea gigas*), mussels (*Mytilus edulis* and *M. galloprovincialis*), European flat oyster (*Ostrea edulis*), clams (*Venerupis philippinarum*) and scallops (*Pecten maximus*). The project addresses the most harmful pathogens affecting either one or more of these shellfish species: the virus *Ostreid herpesvirus 1 (OsHV-1)*, *Vibrio* species including *V. aestuarianus*, *V. splendidus*, *V. harveyi* and *V. tapetis*, as well as micro- eukaryotes such as the parasites *Perkinsus olseni* and *Bonamia ostreae*.

VIVALDI is organised in 7 working groups including one dedicated to management (Figure 1):
- WP1 will develop tools for the assessment of diversity and activity of pathogens in bivalve populations, alternative hosts and environmental samples in order to better identify and characterise pathogens that affect bivalves and elucidate their life-cycles.
- WP2 will advance and consolidate the available knowledge on the identification and characterization of gene and gene networks mediating the interaction between bivalves and pathogens as well as determining the virulence mechanisms used by pathogens, in

controlled conditions.
- WP3 will deal with selective breeding for disease resistance and tolerance which represents an alternative that can secure a sustainable, long-term reduction of production losses.
- The effects of environmental parameters and different stressors will be explored in WP4 as well as associated alterations on pathogens and host metabolism. WP4 will also focus on the development of bivalve pathogen dissemination and disease transmission models.
- WP5 will define and propose practical methods and general recommendations drawn from knowledge acquired from previous WPs for infectious disease control. This WP will include experimental work in order to evaluate pathogen inactivation and water decontamination.
- WP6 will establish communication networks to facilitate development of a strategic approach to risk governance and will ensure that relevant stakeholders of VIVALDI are adequately informed about project outputs and use.

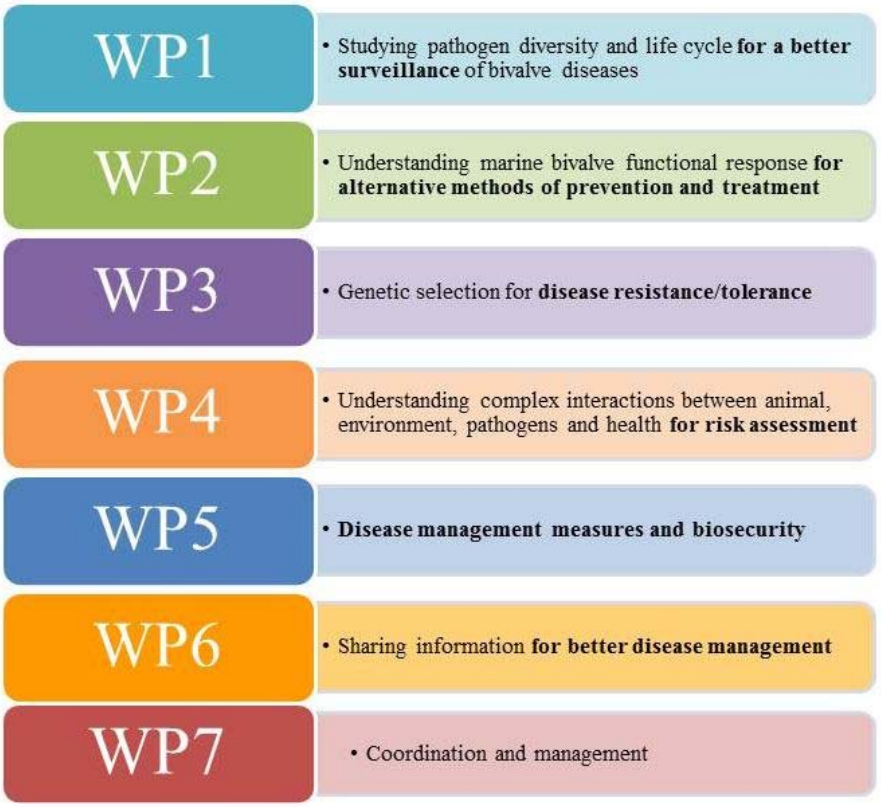

Figure 1- Objectives of the working groups in the project VIVALDI