Name	**Phosphate in pore waters**
DPSIR class	Impact
ECASA sub-group	Sediment
ECASA code	PHOSPW
Proposed by participant	14 – Venice University
Definition, computation,	A "relative" rank can be obtained by considering the ratio between the value of the measure at the impacted and reference site. The calculation of this ratio, implies the application of a control or multi-control sampling strategy (Danovaro et al., 2004; Chamberlain, 2002; Porrello et al., in press).
Data required	Data expressed in *µM*, measured on the surficial sediment layer (top 1.5 cm).
Summary, scientific meaning, implementation	$P\text{-}PO_4^{3-}$ concentration in sediment pore water is usually higher than in the water column, since $P\text{-}PO_4^{3-}$ concentration is released by remineralization processes. The results of a recent study (Aleffi et al., submitted), concerning the impacts of mussel culture in the Gulf of Trieste (Italy), indicated that reactive phosporous concentrations in pore waters beneath the mussel culture site were significantly higher than those at a
Range of validity	

	Mean pore water concentration (1.5-2 cm)	ratio to reference [imp.]/[ref.]	References
PO4 reference Stat. [microM]	3,65		Aleffi et al.,submitted
PO4 impacted Stat. [microM]	8,52	2,34	
PO4 reference Stat. [microg/ml]	7		Chamberlain, 2002
PO4 impacted Stat. [microg/ml]	85	12,14	

Table 1. PO_4^{3-} pore water concentrations in sediment surficial layer, measured in recent EI studies.

Species concerned (fishes/molluscs)	All
Related type of aquaculture	Mussel culture: - Longlines (Aleffi et al., submitted; Martincic 1998; Chamberlain, 2002); - Rafts (Chamberlain, 2002). finfish culture: Marine cages (Porrello et al., in press).
Relevant environments for this indicator	Sheltered areas (Chamberlain, 2002). Coastal waters not protected by bays (Aleffi et al., submitted; Martincic, 1998).
Geographic scale	Local
Direct relevance to objectives	B
Clarity in design.	A
Realistic collection or development costs	B
High quality and reliability	
Appropriate spatial and temporal scale	
Obvious significance	B

advantages	
disadvantages	
references	Aleffi, I.F., Bettoso, N., Solis-Weiss, V., Tamberlich, F., Predonzani, S., Fonda-Umani, S., submitted to ICES – Journal of Marine Science. Effects of suspended mussel culture on the macrozoobenthos in the Gulf of Trieste (Northern Adriatic Sea, Italy). Chamberlain, J., 2002. Modelling the environmental Impacts of Suspended Mussel (Mytilus edulis L.) Farming. Ph-D Thesis, Napier Univeristy, Edimburgh. Danovaro et al., 2004. Sustainable impact of mussel farming in the Adriatic Sea (Mediterranean Sea): evidence from biochemical, microbial and meiofaunal indicators. Marine Pollution Bulletin 49: 325-333. Porrello, S., Tomassetti, P., Manzueto, L., Finoia, M.G., Persia, E., Mercatali, I., Stipa, P., in press. The influence of marine cages on the sediment chemistry in the Western Mediterranean Sea. Aquac. Regnier, P., O'Kane, J.P., Steefel, C.I., Vanderborght, J.P., 2002. Modeling complex multi-component reactive-transport systems: towards a simulation environment based on the concept of a Knowledge Base. Applied Mathematical Modelling 26: 913-927.
State of validation	
recommendations	