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Working Group on the State of the Environment and Nature Conservation

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Background

The HELCOM MPA pressure evaluation guidelines drafted by Finland have been discussed at previous State & Conservation meetings. Based on the comments Finland received at e.g. S&C 11-2019, as well as TG MPA-meetings and based on new insights into making the process more generally applicable, Finland has drafted a new version to be discussed at S&C 13-2020.

Action requested

The Meeting is invited to agree on the MPA rankings, and the general principles presented in this document, as well as the grouping of pressures and approve the guidelines for publication. The layout, as well as the language and references for the pressure descriptions and the introduction will be finalized during the editing process. If the Meeting cannot agree on approval, the Meeting is invited to discuss on possible ways forward.

Parks & Wildlife Finland: Guidelines for MPA pressure evaluation

DRAFT (UPDATE 2020)

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Introduction

These guidelines have been developed in order to harmonize the pressure evaluations for HELCOM MPAs, as filled in the HELCOM MPA database. The idea of these guidelines was conceived in Finland while updating the database, in order to harmonize the national evaluations. Later a need for a Baltic wide harmonization was noted and work towards further develop the guidelines started.

The guidelines are meant be used as directional guide. Some of the pressure rankings are possible to calculate by GIS-methods, while some need more expert opinions. Data-availability and quality also needs to be considered, when making the evaluations. It is recommended to use local data (e.g. in situ measurements) if available and if such data is not available to use Baltic wide data (e.g. HELCOM Holas data) or if no data is available, using expert evaluation is recommended. Where possible, it is recommended to use defined threshold values to identify acceptable pressure levels.

As the database and these guidelines deal with pressures and not impacts, the evaluations are made without consideration of the presence of specific species or habitats, which could be affected by these pressures.

This document should be viewed as a living document, as it is recommended to use the most up to date data and threshold values.

1. Eutrophication

Activities: from point and diffuse sources, including agriculture, aquaculture, harbour loading facilities for fertilisers, atmospheric deposition, commercial and recreational vessels, sewers, mariculture, riverine inputs

General description: Eutrophication caused by increased availability of nutrients and reduction of oxygen levels or hypoxia, are common problems the Baltic Sea (e.g. Howarth et al. 2000). Eutrophication can have a direct impact on the ecosystems by changing structures of species hierarchy (Emery et al. 2001). The most severe impact of eutrophication is environmental hypoxia caused by decomposing algal matter (Crain et al. 2009). An increased amount of nutrients means an increase in algal growth. When these algae die, the decomposition process consumes large amounts of oxygen, hence the seabed under the decomposing algae becomes hypoxic. Other negative effects caused by eutrophication include reduced light conditions in the water and increased growth of epiphytic algae. Eutrophication is especially harmful in areas, where water exchange is limited (Crain et al. 2009). Sessile organisms are affected the most, because they cannot move from hypoxic areas (Altieri & Witman 2006).

Ranking the pressure for MPA:

High: Concentrations for phosphorus or nitrogen exceeds local or regional thresholds by 100% OR water transparency has been reduced by more than 50% compared to local or regional thresholds.

Medium: Concentrations for phosphorus or nitrogen exceeds local or regional thresholds by 50-100% OR water transparency has been reduced by 25-50% compared to local or regional thresholds.

Low: Concentrations for phosphorus or nitrogen exceeds local or regional thresholds by 0-50% OR water transparency has been reduced by 0-25% compared to local or regional thresholds.

Note: Local thresholds are recommended for use if available. Optionally regional thresholds can be found in HELCOM BSEP156, table2

2. Contaminants

Activities: Coastal industry, energy production, oil terminals, refineries and platforms, ship accidents, wrecks, munitions (UXO and dumpsites)

General description: Contaminants can include several different types of harmful substances such as synthetic substances, non-synthetic substances or radionuclides. Pollution of coastal waters can be caused by direct discharges into the water, as runoff from the drainage areas or from atmospheric deposit (e.g. Crain et al. 2009). Especially harmful are long lasting and slowly decomposing substances such as heavy metals and persistent organic pollutants (POP). Adverse effects of oil spills on fish, mammals and birds are relatively well studied. Oil from spills and accidents have been noted to cause physical changes, blindness, cancer and increased mortality in marine organisms (Crain et al. 2009). Accumulation of persistent contaminants or their metabolites through the food chain is a serious threat for animals at high trophic levels such as marine predators as it affects health and reproduction. Introduction of contaminants into the marine environment can lead to severe habitat degradation.

Docks have been a source for many pollutants such as copper and organic tin compounds. Even though the amount of contaminant discharges and general use has been reduced by national and multinational laws and treaties, the pollutants might still be found in the sediments (e.g. Lilley etal. 2012). From where they may be released into the environment again by bottom trawling and dredging activities or currents caused by ships.

Waste incineration contributes to the distribution of e.g., flame retardants and heavy metals. Also cooling water from power plants might increase the amount of pollutants in the water, if the system uses anti-fouling chemicals or chlorine (Choi et al. 2002).

Ranking the pressure for MPA:

High: If any locally measured hazardous substance concentrations (in water, sediment or biota) exceed the threshold value of HELCOM Thematic assessment of hazardous substances 2011-2016* OR the MPA is located in an area with values exceeding 0.5 in the aggregated Hazardous substances assessment in Holas2.

Medium: Known discharges of contaminants have occurred in or near the MPA and are potentially stored in the sediments OR the MPA is located in an area with values ranging between 0.25-0.5 in the aggregated Hazardous substances assessment in Holas2.

Low: Potential sources of contaminants are present in or near the MPA, but no reported spills have occurred OR the MPA is located in an area with values less than 0.25 in the aggregated Hazardous substances assessment in Holas2.

** HELCOM (2018b). Thematic assessment of hazardous substances 2011-2016. Supplementary report to the HELCOM 'State of the Baltic Sea'-report.*

Original Concentration score; contamination status; classified pressure value in the aggregated Hazardous substances layer.
=0.5; Low contamination; 0
0.5 < CS =1.0: Low contamination; 0
1.0 < CS =5.0; High contamination score; 0,25
5.0 < CS =10.0; High contamination score; 0,5
>10.0; High contamination score; 0,75

3. Marine litter

Activities: Disposal of household, Disposal of industrial waste, Disposal of recreational facility waste

General description: Marine litter is defined as "any solid material discarded into the marine and coastal environment" (UNEP, 2009). This includes different size classes, even micro litter (< 5 mm). It is ubiquitous and it is estimated that around 5 trillion plastic particles are floating in the world's oceans (Eriksen et al., 2014). Marine litter harms a variety of marine organisms to various extents (Kühn et al., 2015). Lost fishing gear, such as nets, are drifting while still able to catch marine biota (Tschernij & Larsson 2003). Marine litter degrades the marine environment not only due to its risks it posed to marine wildlife but also diminishes the value for tourists visiting those regions.

Ranking the pressure for MPA:

High: Visible litter is frequent on the shores and in the water OR micro-size litter is present in high concentrations.

Medium: Visible litter is occasional on the shores and in the water OR micro-size litter is present.

Low: Visible litter is uncommon on the shores and in the water AND micro-size litter is not present.

Note: Regional beach litter information is available from HELCOM SPICE -project: https://portal.helcom.fi/meetings/HELCOM%20SPICE%20ML%20WS%201-2017-459/MeetingDocuments/Document%201_Report%20on%20the%20analysis%20of%20compiled%20beach%20litter%20data.pdf

When the HELCOM work on the beach litter indicator has agreed on threshold values, the guidelines should be aligned with them.

4. Input of energy

4.1 Underwater noise

4.1.1 Continuous noise

Activities: Wind farms, bridges, Oil platforms, Shipping (coastal and offshore), recreational boating and sports.

Ship traffic and various activities can increase background noise levels in the marine environments. Continuous noise can cause masking effects, where surrounding sound lowers the ability for animals to navigate, hunt or communicate. Continuous sound decreases the communication distance of fish and marine mammals. In the BIAS project it could be shown that considerable noise levels at a frequency within the one third octave frequency band centered at 2 kHz are also measured in areas with high shipping activity. Recreational boating noise has not been measured specifically and due to missing AIS-data not been included in BIAS modelling of background noise levels. Especially in some coastal MPAs, noise emissions from recreational boating might exceed those of commercial ships with AIS (Hermannsen et al 2019).

Besides effects on the background noise levels, continuous noise emissions can alter the behaviour and activity budget of mammals and fish and cause (chronic) stress which –if repeated or long lasting- might have an impact on the fitness on individuals and –as a consequence- on populations of protected species.

Continuous noise can also induce hearing damage if the individuals are exposed for an extended period of time over a certain threshold.

Ranking the pressure for MPA:

High: Known sound sources are frequent or measured sound levels exceeds 118db in the MPA OR the MPA is located in an area with values exceeding 0.75 in the aggregated continuous sound assessment in Holas2.

Medium: Known sound sources are frequent or measured sound levels are 110-118db in the MPA OR the MPA is located in an area with values ranging between 0.5-0.75 in the aggregated continuous sound assessment in Holas2.

Low: Known sound sources are frequent or measured sound levels are 92-110db in the MPA OR the MPA is located in an area with values below 0.5 in the aggregated continuous sound assessment in Holas2.

Note: Decibel levels are derived from the range of 92-127db to set the ranking to match the Holas 2 GIS -layer (0,75 = 118db, 0,5 = 110db). Additional information: http://metadata.helcom.fi/geonetwork/srv/eng/catalog.search#/metadata/8e73d7ab-d683-41f5-87ad-e97445e8eee5

When the HELCOM work on the noise indicator has agreed on threshold values, the guidelines should be aligned with them.

4.1.2 Impulsive noise and seismic waves

Activities: Construction (pile driving etc.), explosions from military activities, munitions clearing and dredging/construction, seismic surveys and some sonars

Impulsive underwater noise is typically generated by activities such as pile driving, detonation of explosives, seismic surveys or certain sonars. These activities can also generate seismic waves (sound waves propagating through the bottom). In the case of explosions shock waves occur which have a very steep wave front and radiate at supersonic speeds. Impulsive noise is often defined by intense short noise signals emitted at a broad frequency spectrum (Southall et al. 2007). However, also signals with a narrower spectrum can have characteristics of impulsive noise. (http://stateofthebalticsea.helcom.fi/pressures-and-their-status/underwater-sound/) Impulsive noise can cause temporary or permanent hearing damage, physical injury or even death. For predator species using echolocation (e.g. harbour porpoise) hearing impairment can cause mortality.

Ranking the pressure for MPA:

High: High intensity impulsive sound has occurred within 10km distance from the MPA OR the MPA is located in an area with values exceeding 0.75 in the aggregated impulsive sound assessment in Holas2.

Medium: Medium intensity impulsive sound has occurred within 10km distance from the MPA OR the MPA is located in an area with values ranging between 0.5-0.75 in the aggregated impulsive sound assessment in Holas2.

Low: Low intensity impulsive sound has occurred within 10km distance from the MPA OR the MPA is located in an area with values below 0.5 in the aggregated impulsive sound assessment in Holas2.

4.2 Electromagnetic waves including light

Activities: Constructions causing electromagnetic changes, sources of artificial light

General description: Cables on the sea floor can change the electromagnetic fields within their proximity. The field strength depends on the type of cable. Although there is, no indication that they would have an effect on the mortality of organisms, there is some indication for behavioural changes in diadromous fish species. Also sharks and rays may be sensitive for electromagnetic fields. Currently, an impact on the orientation and migration behaviour of eel cannot be excluded (Gill et al. 2005, Westerberg & Langenfelt 2008, Gill & Bartlett 2010). Thus it can be assumed that, cables can have at least a minor influence for the ability of fish to navigate. The pressures on the environment from installed cables has been considered minimal (e.g Gill et al. 2012) but this may depend on the type of cable.

Globally, artificial light affecting MPAs is widespread and increasing (Davies et al. 2015a). Even though the effects of artificial light are less well known in the marine than in the terrestrial environment, the negative effects can include e.g. collisions of birds with vessels, bridges or offshore wind farms, which seems to be season and weather dependent with an increased number of strike incidents during the darkest months of November, December and January (Merkel 2010). A high number of collisions may have an impact on a species or population level (Davies et al. 2015b).

Ranking the pressure for MPA:

High: High density of pressure sources such as cables, wind farms, platforms or frequent ship traffic occur inside or close to the MPA.

Medium: Medium density of pressure sources such as cables, wind farms, platforms or occasional ship traffic occur inside or close to the MPA.

Low: Low density of pressure sources such as cables, wind farms, platforms or infrequent ship traffic may occur inside or close to the MPA.

5. Introduction of species

5.1 Introduction or spread of non-indigenous species

Activities: Transport, Fisheries, Aquaculture

General description: Non-indigenous species (NIS) can affect the natural state of marine areas e.g. trough changes in competition, causing habitat change, acting as food supply, by predation/ herbivory, spreading diseases or acting as parasites (e.g. Ruiz et al. 1999). New species can replace native species and change the composition of food webs (Crain et al. 2009). In coastal areas frequent ship traffic is a common anthropogenic vector for non-indigenous species.

A few examples of harmful non-indigenous species in the Finnish waters are the fish *Neogobius melanostomus*, the mussel *Mytilopsis leucophaeta* and the planktonic crustacean *Cercopagis pengoi*. *N. melanostomus* is very effective in reproducing and an aggressive competitor for resources. *M. leucophaeta* clogs pipes and competes for space with native species. *C. pengoi* competes for zooplankton with fishes and when occurring in great numbers can damage fish nets, causing economical losses to fisheries (Finnish Museum of Natural History 2015).

Commented [KL2]: A few general sentences on NIS in the Baltic to be added as well as land based invasive species.

Ranking the pressure for MPA:

High: Populations of NIS have been increasing AND new NIS have been observed within the last 6-year period.

***Medium*:** Populations of NIS have been increasing OR new NIS have been observed within the last 6-year period.

Low: NIS have been observed.

5.2 Introduction of genetically modified species

Activities: Marine and freshwater aquaculture

General description: Introduction of genetically modified species can have serious effects on native species populations (e.g. Wolfenbarger & Phifer 2000). Genetically modified species can have traits that improve their abilities to survive. This can lead to extinction of competing natural populations. Mixing the genetically modified populations with natural ones can in some cases eliminate genetic diversity or uniqueness of native species. For example, fish escaping from fish farms can affect the genetic variance of local populations of native species.

Ranking the pressure for MPA:

High: Genetically modified species are occurring in the area.

Medium: There are potential sources for introduction of genetically modified species in or near the MPA.

Low: No sources near the MPA, but possible infrequent visits of mobile genetically modified species.

5.3 Introduction of microbial pathogens

Activities: Coastal wastewater treatment plants, Aquaculture, Passenger shipping

General description: This pressure concerns natural populations of species in the Baltic Sea and the human population is not in focus in this case. Human activities might spread pathogens among marine organisms (Crain et al. 2009). For example, in aquaculture fish populations are artificially kept very dense. In these conditions diseases can emerge and they can then spread to natural populations. Pathogens might also be transported from other areas by ballast waters or introduced by raw sewage, e.g. from ships.

Ranking the pressure for MPA:

***High*:** Microbial pathogens are observed in the MPA.

***Medium*:** Sources of microbial pathogens are located in the MPA.

***Low*:** There are potential sources of microbial pathogens near the MPA.

6. Disturbance or mortality to species by human activities

6.1 Disturbance of species by human activities

Activities: Tourism and Recreational activities, Maritime transportation, Marine and freshwater aquaculture

General description: Noise and movement caused by human activities can cause fish, birds, mammals and other marine animals to translocate and it can also disturb their breeding, nesting or spawning. Translocation of native species can occur, when human activities drive the species into new areas (Andrews et al. 2012), but translocation can also be intentional (***reference to be added***). Disturbance of birds can have a negative effect on breeding success, especially early in the breeding season (Bouldac & Guillemette 2003) and activity budget or possibility to find enough prey. Seasonality also needs to be considered when assessing the disturbance on e.g. seals. Ringed seal (*Phoca hispida*) need a breeding area with a solid ice sheet while the grey seal (*Halichoerus grypus*) prefers to breed in the drift ice zone but can also successfully breed on remote beaches. Both maritime traffic and recreational activities cause the most harm to seals during their breeding season. Another sensitive time for seals is during moulting season when seals need to be hauled out (Ministry of Agriculture and Forestry 2007).

Maritime transportation, recreational boating and other recreational activities can pose a serious threat in areas where the activities are frequent. Noise, waves and propeller thrusts can disturb species reproduction and foraging. Near marinas recreational boating is more frequent than in other areas. Recreational boating can cause significant changes to the composition of species in a specific habitat and it may also decrease species richness (Eriksson 2004; Davis & McAdory 2007). Ship traffic can influence birds when flocks a flushed to flight. The flush distances seem to be species and flock size dependent (Schwemmer et al. 2011, Dehnhard et al. 2020). Also, the presence of recreational boating causes a decrease in foraging activity (Velando & Munilla 2011).

Ranking the pressure for MPA:

High: Disturbance or translocation caused by human presence or activities are frequent in the MPA. Pressure can be evaluated with the aggregated disturbance to species due to human presence -layer (Holas2) with values exceeding 0.75.

Medium: Disturbance or translocation caused by human presence or activities is occasional in the MPA. Pressure can be evaluated with the aggregated disturbance to species due to human presence -layer (Holas2) with values from 0.5 to 0.75.

Low: Disturbance or translocation caused by human presence or activities is infrequent in the MPA. Pressure can be evaluated with the aggregated disturbance to species due to human presence -layer (Holas2) with values under 0.5.

6.2 Human induced mortality to species including incidental by-catch

Activities: Commercial and recreational fishing, hunting of birds, Hunting of seals

General description: Overexploitation is presumably the greatest individual threat for declining marine species (Kappel 2005). Globally about half of the threatened marine species are caught as a bycatch. Fishing can cause extensive damage to target species, non-target species and the habitats. Overexploitation has in many cases lead to a reduction of populations and to local and even global extinctions. The impact of fishing on e.g. benthic habitats (Grabowksi et al. 2014), birds and marine mammals (ICES WGBYC 2020) is dependent on the gear used, which should be taken into account when assessing this pressure. In the Baltic Sea, static gear such as gillnets, trammel nets, semi-driftnets, fyke nets and traps pose the largest threat to marine mammals and birds (ICES WGBYC 2020, Vanhatalo et al. 2014), and bottom trawling damages benthic habitats, with heavy trawls it can even cause habitat loss.

Hunting is also a major pressure in the Baltic Sea region. In Europe about 7- 9 million ducks and geese are shot annually (Ermala 2006). In parts of the Baltic Sea Grey seal and Baltic ringed seal may be hunted with a license during their species-specific hunting seasons. Hunting of seals might disturb other species, e.g. nesting and migrating waterfowl.

Ranking the pressure for MPA:

High: Commercial or recreational fishing is frequent/ hunting of birds or seals occurs on the area. Pressure can be evaluated by summing the extraction of fish -layers from Holas2. Areas with values exceeding 0.75 in the summed layer are evaluated as high.

Medium: Commercial or recreational fishing is occasional. No hunting occurs. Pressure can be evaluated with extraction of fish -layers from Holas2. Areas with values ranging between 0.5-0.75 in the summed layer are evaluated as medium.

Low: Commercial or recreational fishing is infrequent. No hunting occurs. Pressure can be evaluated with extraction of fish -layers from Holas2. Areas with values below 0.5 in the summed layer are evaluated as low.

7. Loss and disturbance to seabed

7.1 Loss of seabed

Activities: Man-made structures, Permanent constructions, Disposal of dredge spoil, Dredging; sand, gravel or boulder extraction

General description: When the seafloor is permanently covered, or the top layer of seabed is extracted the areas are lost from the biological cycle. The pressure entails direct habitat loss. Habitat loss can be treated as one of the greatest threats to marine ecosystems as it causes disappearance to the whole ecosystem and it´s ecosystem services (Lotze et al. 2006; Crain et al.2009). However, in the long run species might return, or the area could be filled by completely new biological structures. For example, after the placement of dredged material new species might emerge from the new substrate. Manmade permanent structures might also allow new kinds of species to attach to the artificial substrate (Blanchard & Feder 2003; Connel & Glasby 1999). In the Baltic it has been estimated, that in the high intensity areas physical loss covers 1-5%, whereas the average for the whole Baltic is 1% (Helcom 2018a).

In seabed extraction the top layer of the seabed is removed, which causes destruction of benthic habitats (Lotze et al. 2006; Crain et al. 2009). These activities also mobilize material, reducing light availability and increasing sedimentation in the surrounding areas. Dredging and material extraction can also mobilize sedimented pollutants (especially in harbour and dock areas) and cause noise pollution (Fitzpatric et al. 2009; Schoellhamer 1996; Cooper et al. 2007).

Ranking the pressure for MPA:

High: The pressure affects more than 1‰ of the MPA´s seabed assessed using local data or Holas2 aggregated pressure layer.

Medium: Pressure affects 0-1‰ of the MPA´s seabed assessed using local data or Holas2 aggregated pressure layer.

Low: Pressure occurs in very limited locations.

7.2 Disturbance to seabed

Activities: Commercial fishing, boating, anchoring, bottom trawling, dredging, sand; gravel or boulder extraction, shipping (coastal), bathing sites, beaches and beach replenishment

General description: Disturbance to the seafloor might have notable impacts on the marine environment. Disturbance is dependent on the type of activity occurring in the area. For example, ship traffic can disturb the seafloor, since the ships create strong underwater currents. These underwater currents move the sediment around, increasing the turbidity, siltation and sedimentation, which can lead to gradual degradation of habitats. Dredging and disposing of the dredging spoils can lead to an increase in turbidity and sedimentation. When mobilized, the sediments can be suspended in the water column for long periods of time and recently sedimented material is likely to be mobilized again with the next disturbance (Schoellhamer 1996). Decreased algae/plant growth due to increased sedimentation can be a serious problem for hard bottom reef communities as well as soft bottom communities (Trush et al. 2004; Airoldi 2003).

Seabed quality, amount of the dredged (or extracted) material, currents and the dredging/extraction methods determine, how much the surrounding environment is affected by the increased sedimentation (Fitzpatric et al. 2009). In very large (harbor scale) dredging operations, the direct influence can extend to over 10 km. In large dredging operations sedimented material can be detected clearly at up to 1 to 2 km from the dredging site (Cooper et al. 2007; Stoddart & Stoddart 2005).In the Baltic Sea, it is estimated that this pressure covers on average 40% of the seabed, including high intensity areas outside MPAs (HELCOM 2018a).

Ranking the pressure for MPA:

High: Areas with high intensity disturbance occurs in more than 5% of the MPA´s area calculated using local data or disturbance values exceeding 0.75 exists within the MPA in Holas2 aggregated pressure layer on physical disturbance.

Medium: Areas with high intensity disturbance occurs in 1-5% of the MPA´s area calculated using local data or disturbance values 0.5 to 0.75 exists within the MPA in Holas2 aggregated pressure layer on physical disturbance.

Low: Areas with high intensity disturbance occurs in less than 1% of the MPA´s area calculated using local data or disturbance values under 0.5 exists within the MPA in Holas2 aggregated pressure layer on physical disturbance.

Note: When the HELCOM work on the indicator on cumulative impact on benthic biotopes has agreed on threshold values, the guidelines could be aligned with them.

8. Changes of hydrological conditions

Includes: Changes in water movement, Changes in salinity, Changes in temperature, Changes in Sea level.

Activities: Construction of bridges, dams, wave breakers, dredging, water discharges from energy production, waste water treatment, mining or food processing activities.

General description:
Changes of hydrological condition refers to a vast variety of shifts in physiochemical conditions in the marine area. Changes in water quality parameters may cause negative effects in the marine environment. For some species changes e.g. in salinity can be lethal, or it can cause considerable stress to the organism. Most of coastal species can cope with small temporary changes but long-term changes can alter the competition settings and ecological structures notably (e. g. Crain et al. 2009).

One common example of the pressure would be constructions such as bridges or dams altering the water exchange leading into changes in temperature, salinity or exposure conditions. Structures limiting water exchange will often lower the salinity and cause a rise in the temperatures. Dams and bridges can also cause local change in the water level and oxygen conditions. Opening closed bays in contrast can lead into lowering temperatures, increasing salinity and increased water circulation. Changes in water movement conditions may alter the species composition in the area.

Water discharges might also lead into harmful changes. Discharges can originate from water treatment plants, food processing facilities, mining and power production facilities. Input of water can affect the ecology of the area especially if water exchange is restricted. Warm water outflow is most often caused by nuclear power plants, coal power plants and industrial cooling systems. Warm water outflow from power plants has been shown to affect the diversity of the species present in the surrounding area (Teixeira et al. 2009).

Ranking the pressure for MPA:

High: Constructions or frequent water discharges have altered the hydrological conditions in more than 5% of the MPA´s area calculated using local data or Holas2 aggregated pressure layer. Pressure should be assessed for the whole water body affected by the construction or water discharge.

Medium: Constructions or frequent water discharges have altered the hydrological conditions in 1-5% of the MPA´s area calculated using local data or Holas2 aggregated pressure layer. Pressure should be assessed for the whole water body affected by the construction or water discharge.

Low: Constructions or frequent water discharges have altered the hydrological conditions in less than 1% of the MPA´s area calculated using local data or Holas2 aggregated pressure layer. Pressure should be assessed for the whole water body affected by the construction or water discharge.

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Commented [KL3]: References listing will be checked.

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