DRAFT 11/13/2020

Goals for Maryland wetland adaptation plan

1. Revise and prioritize wetland adaptation areas (wetland migration corridors), noting that we are setting priorities based on biodiversity and risk reduction and not yet on other ecological services:

    a. New SLAMM run from Maryland EESLR project will result in revised wetland adaptation areas (new wetland extent identified for every 10 years into the future through 2100).

    b. Identify wetlands ***that could be protected in place*** (those most resilient to climate change) and then prioritize the most important of these to protect. Use the following prioritization criteria:

        i. criteria for protection in place from the Blackwater 2100 plan (see page 11 of the PDF; page 10 of the document): Greatest predicted longevity under sea level rise scenarios; most intact current condition, defined by lack of interior ponding; highest abundance of seven focal salt marsh birds (possible data sources include Nature's Network database and the Breeding Bird Atlas; possible proxy indicators include the Maryland BioNET score or green infrastructure ecological value score); extensive area of contiguous interior. Note: the new SLAMM run will provide us data to identify wetlands with the greatest predicted longevity.

        ii. ecological services criteria from the Maryland EESLR project: identify wetlands that are providing risk reduction benefits (i.e. wave attenuation) for communities and identify areas where interventions may be necessary to preserve those benefits as sea levels rise.

        iii. ecological services criteria from existing data sets such as: GreenPrint (and the Parcel Evaluation Tool), Watershed Resources Registry, etc.

        iv. wetland carbon sequestration and storage criteria based on the results of the U.S. Climate Alliance blue carbon grant.

        v. migratory bird habitat.

        vi. sediment dynamics, which impacts available sediment supply for existing wetlands.

    c. ***prioritize most important wetland adaptation areas to protect***. Use the following criteria:

        i. which wetland adaptation areas currently have or in the future are likely to have barriers to migration. If future barriers are likely (for example, due to current zoning for development), determine likelihood of being able to remove those barriers.

1. Use current land cover data to identify current land uses and barriers within wetland adaptation areas. Use forecasting tools, such as the Chesapeake Bay Land Change model (from the Bay Program) to forecast changes in land uses and possible new barriers within wetland adaptation areas.

ii. ecological services criteria from the Maryland EESLR project: identify future wetlands that will likely provide risk reduction benefits (i.e. wave attenuation) for communities and identify areas where interventions may be necessary to preserve those benefits as sea levels rise.

iii. ecological services criteria from existing data sets such as: GreenPrint (and the Parcel Evaluation Tool), Watershed Resources Registry, etc. (that said, not sure how predictive current ecosystem service value will be of future ecosystem service value).

iv. future wetland carbon sequestration and storage based on the results of the U.S. Climate Alliance blue carbon grant.

v. consider the value of the land uses that are forecasted to be lost to wetlands within particular wetland adaptation areas.

2. identify human community needs for wetlands to inform and modify the above efforts so that equity concerns are addressed. For example, identify at-risk communities and landowners and then prioritize technical responses and community engagement with them. At-risk communities and landowners include farmers (owners and t enants) with salt-impacted land. Partner with existing outreach and technical assistance organizations, including soil conservation districts and DNR Forest Service regional foresters.

3. acknowledge that the above efforts are missing an ability to analyze other important wetland ecological services, and have an imperfect ability to forecast what exactly will happen to the wetlands in the future (e.g., whether the wetlands will become saltmarsh or brackish wetlands due to altered precipitation patterns[1] and ongoing salinization, where the wetlands exactly will go); therefore, improve/modify the above efforts over time. Periodically revisit the state of the

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[1] As of October 2020, the Bay Program is trying to forecast future river inflows, which depends on forecasts of future precipitation: Lewis Linker said: “the 2017 Bay Model does estimate salinity slightly increasing up-estuary for the years 2025, 2035, 2045 and 2055 based on future estimated sea level rise and river inflows. Richard Tian will be able to provide information on that. Our VIMS colleagues Joseph and Marjy, using different model platforms, have found similar results that they may be able to share with you” and Marjy Friedrichs said “as part of our CHAMP (Chesapeake Hypoxia Analysis and Modeling Program) at VIMS we have indeed been working to better understand future changes in salinity in the Bay. We have published a report for the CBP that includes the impacts of sea level rise on salinity (see attached, specifically Figures 3 and 4). Sea level rise has a very strong impact on estuarine salinity, with some of the most significant impacts showing up in the far northern waters where salinity is typically quite low. In contrast, future changes in freshwater input due to future precipitation changes are generally expected to be much less than interannual differences in freshwater riverine input. In other words, the difference between an average flow year in the 2050s and an average flow year in the 2010s is expected to be much less than the difference between a wet year in the 2010s and a dry year in the 2010s.”

science regarding current and future wetland ecological services in Maryland to adjust our efforts through adaptive management. Facilitate academic research to add to the state of knowledge regarding this topic for Maryland wetlands.

4. update Maryland's greenhouse gas inventory based on the wetland carbon sequestration and storage research informing the wetland adaptation plan.

5. implement adaptive measures to protect priority wetlands and priority wetland adaptation areas, such as:

    a. coastal resiliency easements on salt-impacted farmland (to support wetland migration)
    b. consult with the Maryland Port Authority and others regarding the possibility of bringing in sediment (e.g., from channel dredging) to particular areas (to protect priority wetlands in place)
    c. work with the U.S. Army Corps of Engineers and other organizations on protective measures (for priority wetlands to protect in place)
    d. note: use the resist-accept-direct (RAD) approach, including the identification of pros and cons, to inform implementation choices.

6. inform fiscal needs to support implementation of adaptive measures:

    a. state fiscal needs for coastal wetland restoration and living shorelines
    b. possibly attract federal restoration funds (e.g., USFWS Coastal Wetland Conservation Grants)
    c. possibly attract private investment in ecosystem markets like carbon or nutrient credits
    d. identify incentives/funding for upgrades to water control structures on drainage ditches
    e. create easements for new wetlands
    f. consider buy-outs of land likely to be completely inundated