List of potential project ideas for FY2020 GIT funding project by Peter Tango
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1) Quantifying uncertainty in the spatial boundaries of hypoxia in the VIMS hypoxia model.
2) Forage Outcome Indicator Decision Workshop.
3) Stewardship "Indicator" Financing Decision Workshop.
4) Stream Health Assessment Field and Lab Support Project
5) Decision workshop on the black duck outcome: Transition to Community based index assessment.
6) Brook Trout Indicator Decision Workshop

Quantifying uncertainty in the spatial boundaries of hypoxia in the VIMS hypoxia model.

Why? I believe this tool is a key tool for use in the future of multiple outcomes - e.g., the issue of spatial distribution accuracy on hypoxia distribution is relevant to impact area on organisms that live on the bottom of the bay, e.g., the cumulative impact of hypoxia distribution is a key measure of fish habitat assessment and change through time, e.g., we need to move our water quality monitoring program into improving its ability to actually measure water quality standards and the VIMS model is another interpolator of conditions, that, with no realtime monitors is outstanding in tracking mainstem hypoxia and, coupled with small numbers of realtime sensors anticipated in the future should improve accuracy on volume through time. There are folks that are not yet invested in its ability to define the spatial boundaries of hypoxia to support water quality standards attainment assessments. For all these reasons, quantifying the uncertainty in spatial distribution on the boundaries of hypoxia in the VIMS model outputs represents a very high value targeted analysis. It needs a report to reference. I/we should probably consult with Marjy F and Aaron B to see if this is something they could do or could need help doing.

Forage Outcome Indicator Decision Workshop.

Why? There have been years of meetings, reports, publications and recommendations as this group goes around and around on what their tracking indicators should be. Specifically, macrobenthos are fish food. The Estuarine Benthic Index of Biotic Integrity has been repeatedly proven as the most robust assessment of estuarine benthos in the world. It has a 20+ year history of condition tracking in the bay on multiple scales. Folks have cautioned they need shallow water data - analyses have been done demonstrating offshore and nearshore BIBI results tell the same story, plus, VADEQ collects shallow water data complementing offshore water assessments. MD uses the BIBI results for characterizing forage. All this, and yet, the Forage Outcome team has not committed to it as an indicator. My warning - any element of our monitoring work that does not have a committed use for tracking outcomes or factors affecting outcomes will be on the chopping block as decisions are needed to adjust to level and reduced funding conditions. My suggestion - the Forage Action Team put together a meeting focused on DECISIONS. Delaying decisions all these years is costing them options for data availability and continuity. No more reports and no more recommendations. If they are not committed to using the BIBI program and its data it will go away. This happened to zooplankton, and for 15 years people have clamored for zooplankton data but no one has come forward with funding. Once a program element disappears (e.g., zooplankton, species composition for phytoplankton, nutrient limitation, silica in the bay, sediment oxygen demand monitoring) it is nearly impossible to re-establish it. If they think they will create something better, try to name me a new indicator that has dedicated funding as a result of its creation? It is time for the forage team to decide - use it or lose it. Thinking about using a data stream will not be enough to save a program. Better yet, make this one decision of 5-7 decisions that they need to establish tracking metrics in time to implement an assessment of change through time

before 2025 is here. I have repeatedly provided strong suggestions for indicators that have significance to ecosystem monitoring of the bay, e.g., sure striped bass, crabs and oysters are nice, good historically valuable resources. However, the biggest change in the food web that they have waffled on deciding to make an indicator is blue catfish, Blue cats have gone from non-existent in the Chesapeake Bay watershed in the 1970s, to a targeted harvest fish of commercial scale netting 2x the harvest annually of striped bass. I suggest that there is no greater change in our lifetimes impacting the ecology of the bay than a super-predator that now dominates the predator biomass and commercial fishery and recreational fishery of the bay. Doesn't that scream "indicator"? What could possibly be the hold up on adopting blue catfish as a ecosystem change indicator impacting the forage base. Therefore, this group needs a DECISION WORKSHOP...ASAP.

Stewardship "Indicator" Financing Decision Workshop.

Linked to this last idea, I have a new rule. An indicator is not an indicator in the CBP partnership unless you can show that it has financial support for repeated assessment. To date, the Stewardship "Indicator" received a lot of fanfare, rightly so for establishing a vision of behavior change targets. However, the only assessment was the original assessment. In publishing world you might get something into peer review with n=4 points. If we are to make truly report on behavior change, we can't base it on one baseline evaluation. I suggest at least 2 more points from the first assessment to suggest direction of behavior change. I don't believe there is any evidence that repeated assessment are viable. I suggest that if this is to remain an indicator in Chesapeake Progress, it needs to demonstrate a funding stream in place and a timeline for reassessment and commitment to reassessment for reporting on change through time in response to management activities. A group needs to get together and establish the funding and timeline or else choose another method that has funding as an appropriate reporting mechanism. They need DECISIONS, implementable decisions, not recommendations but decisions that will show change through time based on repeated assessments.

Stream Health Assessment Field and Lab Support Project

This effort needs 1) purchase of a set of D-nets for loan, sample bottles, preservative by CMC to groups wanting to assist in the Stream Health bug collections and 2) funding for a USGS team project that will take raw samples and pick the bugs to create a lab sample for EPA Wheeling lab assessment. This is an effort to support 10-20 samples per year for starters but sets the stage for probably 50-ish samples per year being processed if we can produce the work stream that is: Citizen scientist sample collection to fill spatial gaps in data needs - USGS picks raw samples to create the clean subsample of 100-200 bugs (need to get that detail) followed by EPA Wheeling lab folks doing taxonomy on the samples. There is an option here to spin us taxonomy on the USGS side. I found that in the Baltimore office there are serious macrobenthic id skillsets in hiding amongst staff and a willingness to cut it loose on picking and possibly id'ing samples to help the cause.

Decision workshop on the black duck outcome: Transition to Community based index assessment.

Single species assessments are rarely as valuable as the need for a more holistic view of the communities they are part of. Since 2004 there has been available the Community Waterbird Index (there are 3 peer-reviewed publications that support this with DeLuca et al 2004, 2008 and Prosser et al 2016) that is informative about shoreline development, riparian zone development on not just one species in one season but for an entire community of waterbirds dependent on the nearshore habitat interface and its management. Besides, by my calculations black duck may have already achieved its goal when you understand that the black duck count index that existed for many years only assessed about 40% of available habitat. With 50,000 birds in the final years of counting, if 50K birds = 40% habitat available, then 2.5x 50K = 125,000 birds in 100% of habitat. Yes, quite possibly the goal was achieved before it was committed to when you understand where the index came from. And it only focuses on one wetland habitat where the community index reflects the diversity of habitats that impact the other 98% of the waterbirds around the bay. Suggestion - revise this goal and adopt new targets that have broadscale management and policy implications common to many outcome concerns (e.g. shoreline development is relevant to water quality, SAV, forage fish, crabs, healthy habitats, and on and on and on).

Brook Trout Indicator Decision Workshop

Get these folks together, review the Hudy 2008 recommendation on the sampling plan proposed for tracking brook trout in a much more affordable way than full watershed census every 5 years. Tweak the plan if you wish but get an MOU signed if necessary at the end of the workshop that commits watershed partners to the subsampling program necessary to track brook trout change through time. I have said before, over 100 years on the order of 90% of the population area is gone. Let's get something in place to monitor and affect change now before the final 10% is gone and we are once again left without information that could have been used to improve the survivorship of brook trout populations in the watershed. If states don't want to commit to augmenting something in their funding world, this is totally achievable in my view with annual summer sets of interns. Include pilot assessments of eDNA work while the first few years of standard sampling takes place.

6a) Just propose A **pilot assessment and reporting of eDNA assessment for brook trout** in a few catchments with and without brook trout. Report on its ability to produce viable results for management