NARS Meeting and Workshop
March 25-29, 2019 – Denver, CO

Providing data to Partners and Landowners:

- Types of landowner materials presented by VA and TX could also be really great for management (to help them see the site specific)
- Growth of interest from landowners reflected in updates to state materials:
    - In Texas, landowners were asking simple questions such as what did you see, what are some results.
    - Now, Texas is also getting broader questions as landowners learn more and become more environmentally 'aware' – they are asking what does this mean for the future? For my property?
- Emma Jones, VA, working with Karen Blocksom to take the json files from apps and pull into more useable CSV or parsed excel files for crews/states/tribes.
- Also, working to create a tool that would pull data for landowners where crews could provide some selected information within a day or two. Some possible examples might be: compare field numbers to percentiles (perhaps from a previous survey?), provide fish, plant or other appropriate taxa names, identify what samples were sent to labs, when might results be back that can be shared, short description of indicators.
- Questions on landowner forms – have you been getting concerns from landowners on how data would be used?
-

Data Analysis or other workshops:

- Can partners request data analysis workshops or other training? YES
- A Data Analysis Academy is needed which would be similar to the proposed Training Academy for NARS.
- Cross-resource type data analyses are needed to help determine if similar stressors are affecting all resource types within ecoregions. NARS is sorely lacking the ability to address anti-degradation sections of the Clean Water Act. The lack of this analysis means we are rapidly losing our best waters. NARS should do a better job of connecting with the portion of the CWA.
- EPA should set up a clearing house of projects that could tap into the NARS data sets.
- We need to do a better job at recruiting and engaging college students in NARS. In the last round, only one student looking at lakes data was selected. Having students connect with state-scale analyses might work better than at the national scale.
- How do states use NARS in regulatory functions? VA: NARS data has been used in setting permit requirements as part of establishing background conditions. They also have used the data in TMDLs. 305(b) discrepancies between states is real and unlike air.
- It is important that NARS examine the interactions and relationships between the various indicators within a resource type.

Training –

- NAP discussed something like a google earth down the river virtual reality training.
- AVers need more experience
- Additional trainers at training

    - Question – how do we access and increase the number of suitable trainers?
- Auditor exchange program
- Important for us to better understand the barriers for regions, states, to doing training, AVs
- Suggestion: to help improve AVs, add some critical methods components to the shortened version .
- EPA produces all kinds of training presentations that have tests associated with them (e.g., ethics, field and lab safety training), and let you print a certificate of completion at the end!—perhaps we could talk to these folks about the ability to develop similar types of products. Since most folks have smartphones (or the ipads crews are using), it seems like crews or the Assistance Visitors could shoot short videos clips of interesting situations encountered or that raise questions for later use in training (or smackdowns!).
    a. Even if the quality is not "the best" they might serve to highlight some of the things we want to get additional videos of…..

  Assistance visits should be just that—primary purpose is to help crews get it right—I call it "white hat" QA. Auditors go out to purposely check for compliance (contractual or otherwise), which does nothing to improve data quality ("black hat" QA). Maybe we could develop a separate training presentation for Assistance visitors, where we would provide more background on why things are done the way they are, and provide some guidance on how to address those unanticipated situations that will forever be a part of NARS.
- Be clear about whether this is an assistance visit or an audit; and what the difference is.

Expanding data analysis

Steve Paulsen's presentation shows that rivers/streams a very small amount of the total area of water

Leslie Matthews

- When stoddard et al paper on oligotrophic waters came out, caused VT to look at their own phosphorus data again.
- 96% of their oligotrophic lakes (not probability) have increasing phosphorus.
- 22% of their eutrophic lakes have decreasing and 76% no change.
- Questions they have is why – could tipping point be changing? Browning? Shifting to moe cyanobacteria relative to green algae? (speculation)

Data Analysis discussion

- Stressors/Actions
    - move from the report on condition to identifying stressors so we can implement corrective actions/management actions to address.
    - Assessment methods to rank stressors. Share information and methods cross states and EPA. Help people rank stressors and take Actions -- maybe as part of the NARS academy the analysis sharing!
- Alan and Steve's presentation looking at cross survey information (like trophic state) – could we also do that from a watershed perspective? Wetlands comprise a lot of area and are the first to be hit with 'pollution'
- Analyzing data across resource types
    - Length makes more sense to report out for rivers & streams; others can be converted to area

    - Consider miles for lake perimeter, coastal length, edge of a wetland; maybe be more intuitive to people that experience the waterbodies for recreation
    - Percent area of lakes tells a different story than of number of lakes in VT (skewed by larger lakes)

- Looking at condition across resource types as percent area – i.e. make people aware that wetland condition is linked to all water resource type conditions
- Look at gamma diversity of fish and bugs. Difference in regional biodiversity, combining sites: could we look at richness in the combined areas. Could we do that for phab as well?
- Could we do additional spatial analysis where we look at sites across waterbody types ?
    - Alan Herlihy Response: might not have enough sites to do the analysis (population estimates) except maybe at ecoregion 3?
- Presentations of cross survey work and looking at items through time – seem to be connected to NARS 2.0? Meant to be?
    - Sarah Response - that wasn't intentional, but good connection
- CWA has done a good job addressing problems. Maybe we haven't done such a great job applying other portions of the CWA focused on protection – like anti-degradation. Can use use NARS data to draw attention to the fact that we are losing highest quality water and maybe energize use of anti-deg or other protection efforts. Help inform and push for better using antidegradation portion of the Act.
- as our R tool kits expands – EPA clearinghouse projects that could be done….look to grad students etc to help undertake those analyses.
- Provide tools a little guidance to grad students to encourage.
- Encourage analysis of state scale surveys and datasets. Work with state scale data and state universities Could EPA help with that?
- How do we look at the balance of regulatory requirements and monitoring needs vs. what probability surveys provide. Is there analysis of what data say about the Integrated Report, for example?
- Virginia is applying probabilistic data for TMDLs and for permitting. Background metals in waters helped support the permits and changed their policy of using zero as the background level – now use information from probability surveys.
    - (Sarah question – maybe to talk with Michelle about -- CAN WE DO a WEBSITE WRITE UP ON THIS?)
- Background for why NARS: Congress asked a question of whether the CWA act was improving things. William Reilley (EPA administrator) answered good news is yes, bad news is I can't prove it. In the 90s, we had a 305(b) Consistency Workgroup to try to improve consistency but went further with ability to use EMAP as a way to give an answer to Congress.
- In Florida, NARS providing a dataset that lets state look at interactions between the parameters chemi, physical, biology… NARS one of the few places where they have all those variables to look at relationships. That is important and should be emphasized.
- For Wisconsin, can leverage NARS to get state-scale answers that are paid for which frees up other resources to do TMDLs, etc.
    - (Note from Sarah, in NJ that is a problem for small states, they don't get enough sites to get the "free" state-scale.)
- Could we discuss having states stop doing report to congress and relying on NARS?
- How should state-scale assessments fit into Integrated Reports/303(d) lists… do they differ in terms of what you get?

Visioning:

- Alaska and Hawaii are integrated into NARS
- Use of Temperature Loggers in NARS
- Sample frame issue – rivers/streams needs to be consistent across the country
- Workshops on using NARS data: at these workshops, offer guidance on how to use, conduct analyses and brainstorm ideas for analysis
- Data back in a year with QC
- move toward more comparability for states to take ownership (or more ownership) of NARS
- Integrating sampling – multiple waterbody types at spatial scales AKA Katlyn King analysis/presentation at the workshop
- working group to tackle saving the best of what is left
- addressing different types of lakes. 10 types of lakes (in WI?) dichotomy. Seepage, stained
- Long term planning for continuation of the program; not one to one year only.
- NARS produces national report with state level estimate every month like national economic statistics
- IR – Trying to pull NRS data into it. ATTAINS Module.
    - Preserve distinction between IR, 303(d) and probability snapshop even though some states are investing more heavily in a link (more sampling at a random site than 1 time).
- Focus on the messages to show public and Congress importance. Why it matters.
- Wetlands: 9 ecoregions not achieved yet. Do at least that split out or more to improve the assessment. For example, there was lumping of ecoregions for first wetland report.
- If a state has a probability program – make NARS sites fit the state so addition, not competing.
- Tidal sites sampled differently from non-tidal sites for NRSA (are or should be ? Not sure from my notes)
- Work toward development of bio indicators useful for the regions and states to support states development of numeric bicriteria.
    - We are behind on that for many types of waters.
    - Advance this type of development. Working on what states need individually. Use NARS to screen and provide suggestions for what might be useful
    - Look at tie in to global weather patterns, changing atmospheric deposition, etc.
- Emphasis on states involvement– on how they can leverage and use NARS.
- Make (implement?) NARS 2.0 – do a probability based 305(b)
- Climate change; are our nation's waters getting warmer? Impact on biota.
- Reference waterbody built into regional monitoring networks. Looking at how our baseline is changing from climate change.
- Focus on all waterbodies including ephemeral systems
    - Now, waters excluded as non-target like borrow pits -- they serve as refuge for wildlife. What are the impacts on these waters?
- Extract information to talk about water quantity in headwater streams.
- NARS should still do add-ones; cutting edge science as well as the core/condition.
- Add-ons are good. Tech transfer. E.g., EDNA for fish, interesting to see what that shows. Add to state perhaps. Also PAHs in sediment.
- Opportunity to capitalize on status. Skeptical of trends from NARS.
    - USGS fixed network is where he sees trends.

    - Combine these two to leverage
- Avoid assessment for purpose of assessment. Instead, assessment for purpose of improving waters.
    - Worry for NARS – condition just to do condition. Dataset is so important for digging deeper.
- Likely that more and more people will see fish sampling as amoral. EDNA may be essential
- Untapped resources in students!
    - EPA funding to them or to states to bring undergrads, grads
- Produce actionable information
- Use NARS data to identify drivers .
    - R routines to the states. Let states take the lead
    - Id the problems so we can fix them
- Contaminants of concern
- qPCR – genetic markers for production of cyanobacteria (Laura Webb)
- Funding: fixed amount since inception. Could we increase it just to maintain. Advocate.
- Centralized github repository - post to place to search, see what others are doing.
- Google aquatic R tools – find a github site.
-

Sample frame and Target Population

Tony Olsen, presentation

Questions/Discussion points following Tony's presentation:

- Is reference adequate to represent the target population
- There has been significant clustering of wetlands in previous survey designs in some palces. If we move away from status and trends, would this go away?
- If there is drought, the locations shouldn't be removed from the sample frame.
- Do we go back to reference quality waters?
    - Not a concerted effort to do that.
    - Regions doing some
- Ecological sensitivity – give some sites a break? For wetlands, you could see some plot likes in imagery later.
- Stabilize thresholds
- Interest in having states review sample frames!
- NARS 2.0 – use same sample frame for all?
- Why canals and ditches? Why excluded?
- Regional monitoring networks – can we integrate them?
- Change pricing structure. Lots of recon.; more money
- How do we address trends with changes to sample frames
- Currency of sample frames – are the perennial, intermittent correct? Is the line work accurate?

Coastal Breakout

- TX added strata
- Do a state-level report with same indicators; different thresholds (?); better state assessment

Alaska: Coastline in Alaska is more than the rest of the country.; Not good mapping; No NHD+ type thing yet

Accurate mapping?

Great Lakes connection channels

Lakes

- OK broke lakes into surface area as well. They go out 4 times per year.
- Incorporated phab, zooplankton (full tow), phytoplankton, and integrated sampler for special projects
- How to get trends/condition.
- Question: Is one lacustrine site enough?

Mass – state design, NHD hi res
Target population 4 hectare and greater ???
Issue: Pieces of reservoirs are picking up as a "lake" not as part of the reservoir.
Publicly accessible lakes are important category
Orphan cross-over lakes, wetlands, lots of recon!