

# National Aquatic Resource Surveys Workshop

in conjunction with the National Water Quality Monitoring Conference (NWQMC)

May 2-6, 2016, Tampa, FL

## Compiled Participant Evaluations

	<b>YES</b>	<b>NO</b>
Was the NARS workshop worth your time?	51 98%	1 2%
Did the NARS workshop meet your needs? <i>Maybe: 6*</i>	43 93%	3 7%
Was the length of the workshop appropriate? <i>If not, was it too short or too long?</i> <i>Maybe: 1, Blank: 3</i>	36 75%	12 25%
Do you believe the coordination of the NARS workshop with NWQMC was beneficial? <i>Comments: Maybe: 2, Blank: 1</i>	48 98%	1 2%
Would you recommend we coordinate with NWQMC in the future? <i>Comments: Maybe: 3, Blank: 3</i>	45 98%	1 2%
Would you recommend we consider a cross-survey meeting separate from NWQMC to discuss NARS issues? <i>Comments: Maybe: 4, Blank: 6</i>	35 83%	7 17%

\*NOTE: The "Maybe" comments were those who checked the line between YES and NO. I did not include these in the percent calculations.

	Excellent	Good	Fair	Poor	Why did you give this rating?
Pre-workshop Information & Registration	22 42%	24 46%	4 8%	2 4%	
Written Materials	16 32%	28 56%	6 12%		
Room Set-up	18 35%	25 48%	9 17%		
Overall Workshop Content	21 40%	29 56%	2 4%		
Workshop Organization/Flow	18 35%	26 51%	7 14%		
<i>If you received a scholarship, please rate CTIC on the following:</i>					
- Communications	29 94%	2 6%			
- Travel Arrangements	31 100%				
- Responsiveness	26 84%	5 16%			

## **Responses to questions 1 – 6** (top section page 1)

### **Was the NARS workshop worth your time?**

- Except that EPA or NARS done the weighting – we cannot adjust. EPA selects the sites, weights them, we have no control over site selection, however, it is interesting to know the process.
- I'm not the best person from my state to take this class.

### **Did the NARS workshop meet your needs?**

- If we do state level surveys in the future – yes.
- That I hadn't recognized were needed.
- For basic conceptual understanding of topic.
- A bit overwhelmed at speed of material covered.
- Partially.
- A lot to cover but succinct and comprehensive enough in 4 hours, follow-up materials.

### **Was the length of the workshop appropriate?**

- Too short.
- Long – I would do on a Monday instead of Friday.
- Could have been longer.
- It was interesting but not applicable to my position.
- Could be longer and I wouldn't mind.
- I could have used a little more time.
- Too short.
- Too short.
- Too short.
- Too short, could have spent a day more.
- I'd be happy with a full day workshop!
- Too short – suggest a full day.
- Too short.
- It was okay – could be longer.
- A pity about the set-up delay.
- Too short for the variety of participant's previous knowledge.
- Neither – just would prefer it on the first day.
- Too short.
- Too short!!

### **Do you believe the coordination of the NARS workshop with NWQMC was beneficial?**

- Many people didn't know about this workshop until we arrived at the conference.
- Absolutely, access to current monitoring strategies, technology and results is extremely valuable.
- Would prefer separate meeting with more time.
- Works well with budget constraints.
- Yes, NARS-WS drilled down its issues I need better understanding of.
- It (NWQMC) set framework for NARS relevance and had me more in tune with concepts/applications.
- Good to take advantage of travel funds so participants could go to both, but need augment with additional training.
- It reduced travel costs coordinating it together.
- Yes, maybe at beginning though instead of end.
- Need to leave more time for all of the questions.
- Would prefer NARS workshop alone, although interesting talks on NWQMC were interesting.
- I really like the idea of streaming the workshop online and recording it so the information can be widely shared.

- Was useful, but if not held in conjunction would be able to have longer NARS focused workshops/meetings and cover more info.
- Yes, I do. Great way to include, otherwise I would not have been able to come.
- Very good add-on session to NWQMC and MAP side meeting.

### **Would you recommend we coordinate with NWQMC in the future?**

- Please make this workshop more accessible or send reminders during steering committee meetings.
- Pros and cons: may be best way if we can get the right people here.
- Yes, absolutely.
- Yes, combining allows for more networking and cross-learning.
- Correct people may not be able to attend conference.
- Yes, especially with budget issues.
- N/A: Had to leave to catch flight.
- Yes, obviously a large contingent of NWQMC attendees are associated with NARS.
- It is a good opportunity to put the two together but have to have time for both.
- Yes, but also consider supplementing with series of NARS/stat survey design and data analyses webinars and separate meeting.
- Saves travel \$ and time.
- On some levels.
- Allows for informal conversations to get other state perspectives.
- These seem to go well together.
- Not sure, not enough experience.
- Yes, but also have a NARS specific meeting every five years or so.
- This was useful, but might be beneficial to do multiple smaller groups, maybe with regional EPA.
- Biennial NWQMC is a great venue to showcase NARS work.
- But also ok to do separate meetings in-between.

### **Would you recommend we consider a cross-survey meeting separate from NWQMC to discuss NARS issues?**

- I recommend best use of to get people together, complicated question.
- Only if it is in addition to NARS info/sessions at NWQMC.
- Seems to be a lot of good cross-cutting discussions.
- It would be great if states could discuss overarching common problems for a dedicated length of time.
- No, one can attend/learn about many topics, NARS as well.
- Additional workshops/meetings annually might be beneficial.
- We need to select appropriate people for the meeting/class.
- Yes, but I'm not sure how realistic this is due to budgets.
- Sure, if EPA can provide travel support.
- Often regional trainings cover a lot, but only include small set of people involved in program.
- Particularly if done in an off year from MWQMC – harder to travel (week) 2 times in a year.
- Yes, but travel is constraint – perhaps series of webinars.
- Maybe yes, but already have had separate NCWA and NCCA meetings. NRSA and NLA need particular attention. Also, data analysis needs particular attention – unique audience sometimes.
- Waterbody specific, many of the same biologists need to be in all resource types so separate for resource type.
- A meeting specific to NARS where we could spend more time on specific topics would be great.
- Would love the opportunity for more of this overarching type training.
- Not everyone can make the monitoring conference.
- Always great to have regional workshops with ORD staff – Regional biologist workshops are good venues.
- Only if more NARS talks prepared.

- I think opportunities for states and EPA to discuss specific topics/issues are useful, particularly in person, but budget constraints are always a concern.
- Seems like that could be helpful – allow for more time to devote to NARS.
- Yes, many of us do more than one resource type.
- I'm not sure.
- This would be valuable, although expensive.
- Now that NARS is here to stay and reports are coming out, we need to re-group and discuss how we are using information!

## **Responses to ratings 1 – 5** *(bottom section page 1)*

### **Pre-workshop Information & Registration**

- Need better communication pre-conference.
- Starting time was different in program from agenda.
- Start time confusing.
- Did not understand the info but knew it would become clear learning within the workshop.
- It was never really clear to me what the topic/purpose of the workshop was prior to Friday.
- Did not understand topic from agenda.
- Super easy as a scholarship recipient.
- Tammy T. - well organized.
- Discrepancy in start time not noticed.
- Many people did not have agenda and thought it started at 8:30.
- Discrepancy between conference agenda and emailed agenda – start time.
- Didn't know much about workshop content beforehand.
- Quick and easy
- Would have been helpful to have slides before workshop.
- Sent out in a timely fashion.
- Start time was incorrect in program.

### **Written Materials**

- I did not get one.
- Font too small for some slides.
- Clarity issues.
- PowerPoint slides are A+!
- Two slides per page would have given more room for notes and made them more readable.
- PowerPoint note slides too small.
- Tiny words.
- Small font size.
- Sometime room changes were last minute.
- Small font.
- Larger slides to take notes would be better.
- Larger slides on handouts would be easier to read.
- Good having PowerPoint print outs.
- Only a PowerPoint handout, slides too small to read.

### **Room Set-up**

- Not enough room. Non-state people showed up?
- Needed to be larger – audio excellent!
- Let people sit where they want.

- Not quite enough chairs.
- Not enough seating space.
- Lots of distracting noise in the beginning.
- More people than registered made this challenging.
- Need Wi-Fi in future for hands-on workshops.
- Internet connection during R talks and workshops is absolutely necessary.
- Needs more room.
- Standard set-up.
- A little tight, but cozy.

### **Overall Workshop Content**

- A bit more context in intro would have helped.
- More specific examples.
- Some clarity issues.
- Too much, too fast but great material.
- Topic of weights didn't seem totally relevant - was hoping for more on what we as samplers do - why certain sampling is needed, etc.
- Great, but somewhat confusing.
- Too deep a dive for many participants.
- Very appropriate.
- Too much info, not going to get through all material.

### **Workshop Organization/Flow**

- Too fast at end.
- It's hard to simply sit and listen for this length of time on the last day of the conference. More opportunity for participation would be good. And hold the workshop earlier in the week rather than at the end.
- Pace uneven. Did not plan to cover all slides.
- Presentation didn't always feel very orderly.
- Liked laidback flow.

### **Scholarship responses:**

#### **Communications:**

- Tammy was great!
- Tammy was great!
- Tammy Taylor is amazing at her job!
- Great – thank you!
- Wasn't sure at first that flight info had been received and ticket purchased but it was very convenient that purchasing was handled by Tammy.
- Excellent coordinators working for CTIC.
- Just missed one email of final details.

#### **Travel Arrangements:**

- Would have preferred non-stop flight as in suggested flight that was sent in – there is a 3 hour drive to reach airport from home...thanks!
- So easy!
- Tammy was very responsive in providing information for travel arrangements.

#### **Responsiveness:**

- Had a delay in response time.

## What did you find to be most valuable from the Friday NARS workshop?

- Very helpful to know the weighting process and how states can improve their individual assessments by planning and taking into account the national design.
- Important topic – I would like to have some part of it on other topics, not just one thing.
- Background for state survey approach.
- Sample session knowledge.
- A better understanding in general about design.
- Better understanding would be nice for more examples.
- Incredibly knowledgeable presenter! Understanding the process, however I/we are not going to be doing any surveys – EPA did not contact us, but the state. I was hoping to learn more about how to use the NARS data – I chose other workshops, thinking I would learn on Friday.
- Realizing that weights need to be considered in drawing inferences from NARS data.
- Learning insight from those who have been involved in the design/analysis of the national surveys.
- Examples of computing weights and weight adjustments overall. Very comprehensive workshop on NARS, worked on multiple levels. Thanks!
- Understanding that more than just sampled sites are included/weighted in analysis – especially sites dropped that were determined to be non-target. Could have used more time to let this sink in – maybe broken into groups and go through an example with one of the Corvallis stats guys leading/supporting each group.
- Side discussions with EPA technical experts – Peck, Kaufman, Mitchell. Offer more networking time.
- Gained a better understanding of weights.
- Basic information for me reminding about fundamentals – design, weighting, target populations, sample frame, trends, etc. Understanding better what my staff may need to support their statistical survey data analyses, and what questions statistical surveys can address.
- Just a good discussion of an important aspect of design and analysis.
- More thorough understanding of study design.
- The general explanations were really helpful for me to understand overall purpose, goals, etc.
- Gained a better understanding of survey design.
- Hearing other attendee’s questions! Understanding approach from ORD is crucial to inform our interpretation of the data we collect and to improve our communication of results to the public, etc.
- As a first time conference goer, I would have benefited from an overall intro to NARS and the survey process. At the beginning it was not clear to me why we were discussing weights/unequal probability sampling, etc. when we’re not the ones conducting these analyses. Discussing sample parameters and why those parameters were selected, what the end goals are, what changes have been made from the previous surveys - at least at the beginning would be helpful.
- Seeing formula for weighting sites, along with Tony’s explanations of how to apply per stratum.
- Discussion of how weights are calculated.
- Learning more about survey design. I have not yet participated in a NARS survey, but likely will in the near future.
- Weight discussions and trend estimation.
- Good to hear from the “Godfather” of GRTS and probabilistic sampling.
- Concept with weights.
- Bringing in ORD to talk with states about their expertise (like Tony) is a great experience.
- Gained deeper understanding of NARS survey design and helped me further understand data management of site data.
- Examples, answers to questions.
- Tony’s knowledge and expertise. His explanations of complex issues are stellar!
- A very basic understanding of how the surveys are designed and why replacing sites in order maintains the integrity. It raised more questions (in a good way) for our own state design. Thanks!
- Being able to ask specifics of Tony. This is invaluable since he directly works with survey creation.

- Content regarding the trends of survey weighting was quite valuable. That said, Tony went a little deeper than some could follow. Would have been good to reference procedures mentioned to the components of the R packages where procedures are computed.
- Getting Tony's perspective and explanation of the design aspects of the surveys - very informative.

### **What topics would be of most interest for future workshops or webinars?**

Consider issues that cross waterbody types and those that are waterbody specific.

#### **Topic #1:**

- The possibilities for reports at the state scale and steps to accomplish a useful report, (i.e. how to be sure there is an adequate number of sites within a state and that those sites are dispersed proportionally to have the ability to run stats and have a good report)
- QA in NARS.
- Types of analyses techniques used for various parameters.
- Utility of NARS for designated uses beyond aquatic life.
- Separating intermittent streams from perennial streams.
- R basics.
- More discussion on trend analysis and change analysis.
- Mitigation for HAB: lectures dealt with detection, monitoring and ecology – but no suggestions on how to clear up an event, if possible.
- Carrying NARS methods and random design surveys into state programs, i.e. implementing and using NARS for state reporting purposes on 305b, 303d and integration with standard state targeted monitoring programs.
- Waterbody specific – considerations for survey design and stratification for probabilistic wetland surveys.
- Examples of using survey to implement a design (draw a specially balanced sample) would be really interesting.
- Could use more time on trend design.
- Communicating results to multiple audiences.
- How data in this program can be incorporated into climate change monitoring.
- Calculation of metrics and conditions.
- More on analysis.
- Need either series of webinars and/or face to face training on statistical survey design and data analysis (note: this is not necessarily a NARS topic). This should include progressive level of detail from what types of questions surveys can answer, all the way up to detailed analyses and questions.
- Defining target population, developing GIS sample frame.
- Incorporating NARS data into local projects and surveys.
- How to incorporate NARS data locally – using national survey data in local assessments, determinations, etc. – Some was covered during the week, but more time would be helpful.
- Examples of how states are using results for their needs.
- A similar workshop running through NARS data analysis examples i.e. use simple data set to do a mock run-thru of one type of analysis – just to get an idea of how ORD guys do their thing!
- Cyanobacteria sampling and analyses.
- Same topic with hands-on examples to step through. Examples of samples are great to get concepts down and understand back-end calculations.
- How to use R and possibly GIS/NHD to do a sample draw, calculate weights, etc. Actually using a computer and data.
- Uses of intensification for state-scale surveys.
- Selecting sampling locations for NARS.
- Rivers and streams – survey design.
- Analyzing NARS data at regional and state levels.
- Pros and cons of doing statewide assessment in one year vs. over five years.
- Building National Benthic IBI's (could use lakes, coast, streams or rivers). Provide R code, autecology, etc.
- Data analysis.

- Results of NARS for each waterbody type – most recent surveys.
- Extracting NARS data from WQX.
- Additional R training to evaluate state level data.
- Benefits of regional collaboration with sampling and sharing data.
- Tech: Stoddard’s IBI “recipe”. Reconstructing stressor gradient. How to use combined class estimates.
- How states have implemented survey work within state – in house staff, contracts, partnering with other organizations, etc. – leveraging other data.

### **Topic #2:**

- Biological metric development. There is still a need for basic interaction. Also need for more advanced information.
- Poor sample frames and how to improve them especially in the west.
- Maybe a session on tribal WQ monitoring or a “how to” coordinate government to government relationship. I would have liked to see more tribes represented – I only noted 4 tribes at conference, including myself.
- Comparing results between assessments.
- Expanded comparison of year to year trends.
- Presentation of results.
- NARS workshop or webinar – include general topics like how are states partnering with others to do NARS sites in their states, how using NARS data, etc.
- Details of different design types, unequal weights; how and why, stratified designs; how and why.
- How to use raw data to calculate metrics. How to use R to look for relationships between indicators in surveys. Also how to establish threshold values, indices and subsequently assess good/fair/poor ratings.
- More guidance on specific analyses that can be performed using NARS data (R tutorial).
- Something more focused on comparing results across surveys.
- Communicating because that is my focus, although it would have been good to have a fourth NARS talk rather than volunteer monitoring.
- Relating the biological assessments to the BCG. How states and EPA can further develop biological criteria together. Issues with biological data management and analysis.
- Class just on detecting trends using probability data. Need to see examples and R code.
- Temporal comparison of results for each waterbody type – e.g. 2007 have survey vs 2012 have survey.
- Communications: Alternative presentation approaches for state reports. Facilitated discussion on creativity on online reporting tool akin to Attains.
- How states are using NARS info for their own monitoring and assessment programs.

### **Topic # 3:**

- NRSA workshop – after 3 surveys – time to get together and re-evaluate – managers and technical field staff.
- Change/trends: what are they? How do they impact survey design?

### **Topic # 4:**

- (As per Tony) designing a monitoring program: What is STRIDE and how can it help?

## **May 2-5, 2016, Monday through Thursday Sessions**

### **Which NARS sessions or presentations from the rest of the week did you find the most useful and why?**

- All are great. Would like more.
- Cyan toxins – BCG/standards.
- I enjoyed the bio criteria session because of relevant results I can use in my state.
- A few with states comparing their methods to NARS methods, they were useful.
- USGS presentations combining data.



- All of them! HAB's were very useful. Information on P & N criteria and setting criteria was something I didn't know I needed.
- I found most of the topics applicable to the work I conduct.
- Wetland session was great! Promote more sessions and involvement for presenters/participants to attend as well. Maps session was great!
- Dave Peck's NRSA fish metrics – R modeling vs traditional methods. I'm hopeful this will help states have the ability to calculate metrics.
- Other regions sharing their struggles, accomplishments and approaches to probabilistic monitoring surveys.
- Social – it was good to have a small group to discuss issues.
- Workshop – Relative Bed Stability. D6: National scale monitoring perspectives, H7: A fish, a mussel, I4: Multi stressor response in streams, J7: Approaches for bio condition – Not all NARS necessarily, but all good. I deal a lot with bio-monitoring data.
- Applications of R. Data management.
- NARS meeting on Wednesday night – good to meet partners in person and discuss achievements/challenges.
- The presentations I found most helpful discussed which R packages were used and where to find those packages.
- Sessions on national and regional site monitoring. Sessions on how to apply R, use packages etc.
- Learning about guidance for study design on national-scale surveys. Would like to learn more about study design in general.
- Ones on biological condition and habitat.
- R workshops are great, but need Wi fi!
- Technical approach for answering one question: “What is the condition of the nation's water?” – Paulson
- Enhancing data interpretation in the Delaware River Basin with R – great overviews of power and limitations of scientific method to answer questions.
- Wednesday night workshop/review for NARS.
- The evening session on biological monitoring was useful. It's helpful/interesting to see what others in your region are doing.
- Because it's the end of the week and so much information, I honestly can't remember. I do know that I was able to get a lot of information out of coming.
- I focused on the effectiveness monitoring and continuous monitoring work.
- Wednesday (pm) bio-indicator discussion was very good – finding out challenges and opportunities from other states.

### **What would you change about these other NARS sessions?**

- More results and derivation of results.
- Would love to see the tools used incorporated into more workshops.
- All great!
- I enjoyed the sessions that were “communication” based – but most often some people dominated group, others hardly spoke – need a little more structure or “rules” enforcement.
- I would recommend continuing to run these sessions as is.
- Define all terms used and avoid jargon wherever possible. Don't assume base level of program knowledge of attendees without providing advance reading materials. Clarity of class material suffered as a result.
- More clearly identify which are NARS specific or have a specific session(s) that is NARS titled.
- Presentations on NARS should go beyond reports – share one or two particularly interesting stories from the data. Avoid recapping report.
- Too many concurrent sessions. I end up missing talks I really want to see because they are at the same time.
- More about how NARS surveys (at both national and state level) have changed policy or supported policy.
- Some seemed short or at less convenient times did not allow focus on NARS.
- IBI development for the NARS surveys.
- If doing them through the dinner time then provide some snacks/drinks. Maybe have folks pre-register to get headcount. Separate breakout groups to various locations – it was hard to hear people in our circle speaking.

- I thought the MAP meeting was good. We need more of these, though it is costly if travel support is provided.
- More time, schedule during day (Monday or Friday) – good to have smaller break out groups.

### **Any other comments or ideas?**

- When workshops are held after NWQMC sessions (like 6 – 8 pm), please have snacks available. Perhaps workshops could occur Monday.
- I learned so much! The networking was invaluable! The casual conversations that led to important, relevant insights or knowledge sources were wonderful! The timing of breaks was necessary to chat with others. Also liked how the program was set-up, with general schedule and details about each presentation. Wish I had known about the options for acquiring software so I could bring a laptop to take advantage of them.
- Need to set up NARS meetings with state representatives separate from other events to ensure right people attend to represent states and enough time is allocated to ensure true dialogue occurs leading to improvement in programs to meet needs.
- It would be more useful for me/us to take longer and go over topics more slowly. Tony is amazing – he is flying!
- Having handouts was very helpful.
- Would be helpful to have session/webinar on some basics for those not crunching the numbers – what kinds of questions (and therefore designs) can be addressed with state scale surveys, and how best to integrate state and national surveys?
- Provide a basic NARS session – what it is, survey design, etc. Then build on that to more detailed or specific topics for those who are interested or more intimately tied to NARS.
- These kinds of workshops are great and very productive. Very effective at building confidence in our design among those not directly involved in analysis.
- More NARS training opportunities would be pretty cool. Maybe webinars to keep costs down? I'm interested in the issues that span all NARS surveys like stats, site selections, etc.
- There was inconsistent info, RE: what time the Friday NARS presentation started (8:00 or 8:30 am).
- Thanks!
- A NARS conference would be nice. Thanks for the support to attend this conference!
- Thanks! Jason (sorry about my pen!)
- Overall really beneficial and informative.
- Great workshop! Fantastic conference! Thank-you so much!
- Next time have an intro session or mixer on first day so people get to know each other and who is here throughout the week.