What new topics do you think we should cover in future workshops? Are there any past topics that should be repeated?

- Identifying stakeholders (to be addressed at CollectionsWeb and SPNHC; another may not be needed)
- Natural History Collections not included in TCNs; how do they send data to iDigBio?
- Developing a Biodiversity Policy Think-Tank (Biodiversity Institute). Massive amount of information from NHCs allows intractable questions about evolutionary and ecological processes and patterns, including those under strong anthropogenic impact.
- imaging (in general)
- education/outreach including citizen science
- more workflow workshops for specific collection types
- previous workflow workshops that had too many applicants to be able to include everyone should be offered again. These training opportunities are important to the overall success of the digitization of collections in all types of institutions. These should also be repeated on a cycle of every 2-3 years for TCNs/PENS as they come aboard and for digitization professionals that are new to the field.
- No comment.
- Maybe a Data Mobilization and Cleaning workshop? Test the waters for on-site work? One end goal should be having the host institutions digitized collections 100% mobilized.
- I think the topics have been good, and have served the community well. It will comes as no surprise that E&O is a topic that requires a workshop.
- I have no idea since I have not attended a workshop.
- Biodiversity informatics methods (modeling, etc)
- Collections applications to research (targeted to grad students/post-docs)
- May be we can talk more about need and role of data transformation and how and where does it fit into iDigBio.
- Data ingestion workshop, with emphasis on data management issues, data format standards, and tools and techniques to improve data quality, which were not covered by DROID workshops.
- Workshop on existing data visualization techniques and desired future functionality to guide year-5 cyberinfrastructure development.

- Hackathons to develop interoberability with other cyberinfrastructure and another public participation in digitization workshop.
- Hands-on cleaning data
- Promote biodiversity informatics in museum management practice
- Designing metrics to track our progress and success
- Are there been any workshops for anthropology collections? Does that fall into the natural history collections (since it is in natural history museum)
- I think all of the workshops have been successful and worth repeating if there are funds available to reach new folks. That said, I would not recommend repeating the Public Participation workshop until either iDigBio or the TCNs or other digitization efforts have made progress on this front and there are individuals who can actually teach workshop attendees how to involve the public (in a big way) to accomplish digitization. I think the most successful workshops are those where attendees go home with concrete new information or skills that they can apply. In my view, brainstorming or theorizing should take place in the working groups.
- I don't know enough about the workshops to make suggestions. However, I'm not sure we are ready for an E&O workshop in the near future. I would like to know more about the E&O workshop goals.
- Perhaps helping TCNs to create topics/sites for citizen scientists to access and make use of. You could also create teaching modules for K-12 where there is a tutorial and then student assignments (accessing the existing data) which will not only have them using the current data (e.g. geolocation, habitat, mapping etc.) but also inputting and/or cleaning up current data that is not ready for general use. You could also offer various clubs/groups on college and/or K-12 campuses tours of their local TCNs and opportunities to become involved by either learning to scan directly or learning to review and correct labels already inputted and/or tag locations and so on. I'm thinking about computer science clubs, art history clubs, biodiversity/biology clubs, etc. This is so multifaceted that it will have clearly written out/planned goal by goal and target group by target group and step by step . ...but Corinna Gries has already set something up that might be useful as a model.
- I'd envision a specific problem that needs to be tackled. For example:
  - Example 1: transcribing/checking labels that were uploaded using OCR.
    - TCN: (whichever groups are involved)
    - Citizen scientists: any group interested. Could even be a service project for a sorority/fraternity/club/boy scouts etc. If they are close enough

geographically, give them a tour of the museum collections that are relevant and then explain how they can access the database and what they would need to do for this particular project. Set up a minimum commitment/reward system.

- Issue: need to design a database that will allow remote access and ability to modify.
- Education - n/a

- Example 2: adding in coordinates for specimen locality data
- TCN: (whichever groups are involved)
- Citizen scientists: any group interested. Could even be a service project for a sorority/fraternity/club/boy scouts etc. GREAT for a geography or biodiversity class or students. If they are close enough geographically, give them a tour of the museum collections that are relevant and then explain how they can access the database and what they would need to do for this particular project. Set up a minimum commitment/reward system.
- Education: This can be tied into student classroom assignments by having them go out to localities they have labelled and look for/verify that the specimen actually exists...so someone could create a lesson plan and module that incorporates all of this. Topics: biodiversity, geography, climate
- Issue: need to design a database that will allow remote access and ability to modify.

- We will need a cyberinfrastructure-related workshop in the next year
- I'd like to see a workshop or presentation that attempts to have actual scientists use programmatic tools to interact with iDigBio or other online services to answer research questions.
- I'm going to put N/A here because I don't know a thing about the workshops.
- Public participation and citizen science was fantastic. I could see a repeat of that, perhaps more oriented towards how to get the public to access or have knowledge of online data (image) repositories.
- Biodiversity Informatics Workshops (Brian Wiegmann at NESCent has expressed some interest in this (possible co-sponsor) when I have brought it up in passing discussion).
  - Similar to VertNet, TTD-TCN Workshops
  - May be software specific (Gil recently asked if there was interest in a Specify-specific workshop – there was).

- Would like to have one more general to specific. Start with "this is an object-oriented database" and then go from there.
  - How to get your data into your database
  - How to get it out
  - How to clean it…
- Focus on Honors Undergrads, Graduate Students and interested Collection Managers
- These workshops could vary in length and could come after any of the shorter digitization workshops.
  - They could be the hands-on part of the workshop.
- These also fit into plans for Linked Data / Semantic Web Workshop (either before or after or even in conjunction with).

- Georeferencing TTT3?
  - Perhaps iDigBio as co-sponsor? I'm thinking that with future rounds of TCNs there'll be a need to help coordinate efforts, share materials, and facilitate use of services. We'll have people to carry these out, but can still play a vital role in sharing what's been learned from the first 2 TTT workshops.
  - Neil Cobb is interested in next year.
- Crowd-sourcing tools enhancement / (development?)
  - Programmers + Users
    - Sharing what tools are available
    - Defining what's missing or needs to be incorporated
    - Having a workshop / Hackathon to put the pieces together as an end product for all to use.
  - Tie to OCR (and other) services.
  - Include E & O components in design and usability.
  - (ask Deb about the Smithsonian efforts / plans)
- I think we need to begin to include "Using iDigBio" content into workshops. Topics could include: "Intro to iDigBio's specimen data", "API basics", "Hosting successful meetings via the web", "Joining a working group", etc.
- I believe that workshop ideas come from needs that are expressed by providers, users and staff. We should remain flexible in our support for these new ideas.
- "Funding Your Digitization" or "Communicating the Importance of Your Collection" might be possible workshops that would be of interest to the larger community. I have attended

many meetings (including iDigBio Summits) where these issues have been raised. Maybe we can increase participation in iDigBio across the collections community with this type of effort.

- I think if we want to increase participation in the digitization effort and make this a sustainable endeavor, we will need to empower our community with the knowledge, skills, and resources to solicit the financial support they need to do the work. I've mentioned before that it might be a good idea to test some of these ideas on a regional scale (sort of like the train-the-trainer workshops that have been happening--we learn as we train and can provide a resource that can extend beyond the region to the broader community).

- I would like to see workshops on the following: (1) using specimen data in ecological niche modeling – different approaches, software, etc., linked to studies of climate change; (2) research applications using specimen data – what is new and potentially possible?; (3) international efforts at digitization and portals – how to integrate?; (4) using specimens (and specimen data, images, metadata, etc.) in education (undergraduate and other). Continued training in digitization best practices, database use, etc. are essential and tremendously valuable to the community.

- This is largely answered in question 2. To reiterate the most important new directions: 1) workshops targeted at helping small collections get started, 2) workshops focused on schooling institutional biodiversity informatics managers and IT support in Specify and Symbiota, 3) workshops targeted at specific digitization tasks, 4) workshops for linking ancillary materials to specimen records. We may want to repeat the wet collections workshop (which was oversubscribed) and the paleo workshop (which is also oversubscribed).

- Lessons learned in the GWG (e.g., how to train trainers, and developing e-learning resources) could be adapted to other topic areas. Linked data, especially links to genetic resources (perhaps co-hosting) and environmental data.

- I think training workshops along the lines of IT training for bio-collections staff, and on cloud infrastructures and specifically the iDigBio cloud and APIs would be interesting. I'm not sure what is the right tie for those - it'd be more productive when we have the majority of iDigBio cloud functionality/APIs in place so I imagine this would be towards the latter part of the 3-year period.