Welcome to the first iDigBio Retreat!



May 6-7, 2013



This material is based upon work supported by the National Science Foundation under Cooperative Agreement EF-1115210. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



Agenda

• Monday, May 6

- Lunch at Tall Timbers Research Station
- Main Program
 - iDigBio progress accomplishments, surveys, recommendations
 - Strategic planning roles, priorities, funding, workshops
- Dinner at Andrew's in downtown Tallahassee
- After party at Aloft Tallahassee

Tuesday, May 7

- Wakulla Springs State Park
- Lunch at the Wakulla Springs Lodge



https://www.idigbio.org/content/idigbioretreat-2013

- Directions
- EAB Report
- NSF Site Visit Report
- iDigBio Implementation Plan
- "Homework"
 - iDigBio staff roles
 - Priorities for Year 3-5
 - iDigBio's most pressing needs
 - Future workshop topics
- Explore Research Video
- Draft Y2 Annual Report



iDigBio Project Progress



May 1, 2013



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Key Accomplishments

- Digitization Resources
 <u>https://www.idigbio.org/wiki/index.php/Digitization_Resources</u>
- Workshops and Training <u>https://www.idigbio.org/wiki/index.php/IDigBio_Workshops</u>
- Working Groups <u>https://www.idigbio.org/wiki/index.php/IDigBio_Working_Groups</u>
- Collaboration
 - Resources
 - Community
 - TCN support
- Education & Outreach
 - Visiting Scholars
 - <u>Explore Research</u>
- Cyberinfrastructure
 - Website upgrade <u>www.idigbio.org</u>
 - Portal upgrade <u>portal.idigbio.orq</u>
 - Data ingestion



Project Milestones & Progress – Part 1

iDigBio Project Progression	Status: ✓ Complete • On track • Off track but recoverable • Off track and not r			not red	covera	ble												
High-Level Activity / Milestone	20	12		20	13			20	14			20	15			201	L6	
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Project Administration																		
Improve iDigBio Branding & Conduct Website Design Review	٠	•	1		•	•												
Participate in NIBA Community Implementation Planning Process		✓																
Sustainability Planning & Sustainablity Implementation			•	•														
iDigBio Operates with Non-Gonvernmental Funding																		
Conduct Annual Summit to Integrate New TCNs and Align ADBC Plans		\checkmark																
Establish Formal Outreach to Broader Stakeholder Community			•	•														
Enhance Ongoing Activities with Broader Stakeholder Participation				•														
Identify and Engage Strategic Partners in the Collections Community	٠	•	•	•														
Receive, Review and Conduct Approved Workshop Requests	٠	٠	•	•														
Education and Outreach																		
Release University Education Materials ("Fossils in the Cloud")																		
Students Produce Published Papers and Downstream User Learning Material	s			•														
Release/Enhance "Explore Research" Educational Videos			•	•														
Release/Enhance "Explore Research" Interactive Smartboard Content																		
Conduct Annual "Visiting Scholar Program" & Release Deliverables		\checkmark	1	۲														
Coordinate & Consolidate E&O Activities Across ADBC @ Annual Summit		✓																
Education & Outreach Workshop																		
Conduct a Stakeholder Front-End Survey				٠														
Complete a Comprehensive Downstream User Needs Assessment				•														
Secure Additional E&O Funding & Disseminate E&O Information	•	•	•	•														
Serving the Research Community																		
Conduct Digitization Tools & Practices Workshop	\checkmark																	
Product Use Cases for Cyberinfrastructure Development	\checkmark		•															
Research Team Project (Biodiversity Patterns, Integrated with Phylogenies)	•	•	•	•														
Construct a National Network of Genetic Resources Repositories	• •		•	•														
Conduct a Linked Data Workshop & Release Deliverables to the Community		•	•															
Produce Use Cases to Extend iDigBio Connections to External Partners			•	•								(Ongo	ing Ac	tivity			
Conduct a Workshop to Engage Members of the Systematics Community																		



Project Milestones & Progress – Part 2

iDigBio Project Progression		Status: ✓ Complete • On track • Off track but recoverable • Off track and not recover			covera	ble												
	2012			2013		2014			2015		2		20	16				
High-Level Activity / Milestone	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Digitization																		
Expand Repository of Digitization Tool Documentation & Link to Public Forum	•																	
Finalize Minimum Information Standards for Collections (MISC)	•	•	1															
Publish Modular Workflows by Preservation Method	•	✓																
Conduct Digitization Workshops & Publish Materials	•	✓	•	۰														
Conduct Public Participation in Digitization Workshop	\checkmark																	
Conduct GeoReferencing Train the Trainer Workshop & Publish Materials		✓	•															
Publish & Maintain Documentation on Project Partnerships		•	•	•														
Conduct Augmenting OCR Hackathons & Publish Results	•	<	•															
Publish Public Authority Files			•	•														
Develop Digitization Use Cases (Data Quality & Associated Data)																		
Provide Digitization User Services	•																	
Cyberinfrastructure																		
Release Specimen Portal v0 - Core Infrastructure	\checkmark																	
Release Specimen Portal v1 - Improved GUI		•	1															
Release Specimen Portal v2 - TCN Data Ingestion and AAA Implementation				•														
Release Specimen Portal v3 - APIs for iDigBio Data Access by Strategic Partne																		
Release Specimen Portal v4 - Bi-Directional Communication with Data Provid	lers																	
Release Specimen Portal v5 - Enhanced Data Harmonization with Collections	DB									_								
Release Specimen Portal v6 - Data Linking and Federation																		
Release Specimen Portal v7 - Complex Data Retrieval and Visualization	<u> </u>																	
Release Specimen Portal v8 - Complex Data Retrieval and Visualization	ļ																	
Release Image Ingestion Application v0	•		•	۰														
Implement Hosted Services for Strategic Partners	\checkmark	\checkmark	٠	•														
Seek Funding and Resources to Access to more Storage and Compute Capacit	•	•	•	•														



Workshops & Training

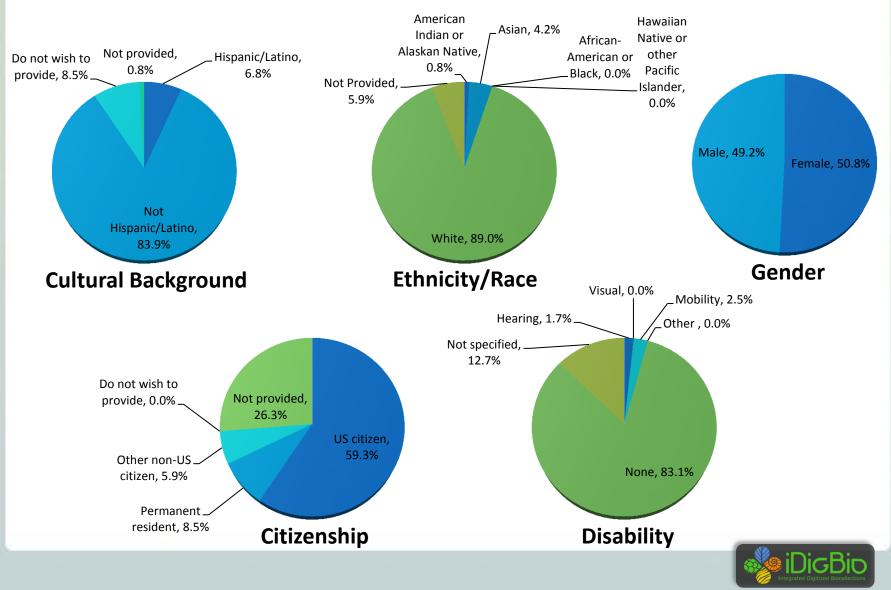
- Sponsored roughly 528 total non-iDigBio attendees
 - At least 350 unique participants
 - At least 181 unique institutions represented

Grant Year	# of Sponsored Workshops & Summits	# of Sponsored Symposia	# of Sponsored non-iDigBio Attendees
Y1	4	0	160
Y2	9	3	368*
TOTAL (Y1+Y2)	13	3	528*
Y3 (planned thru 12/13)	6	3	206*

* = best estimate



Workshop Demographics (9/12-4/13)



Y1 Sponsored Workshops

- Nov 2011 iDigBio Summit I
- Mar 2012 IT Standards Workshop
- Apr 2012 Paleocollections Workshop
- May 2012 DROID Workshop



Y2 Sponsored Workshops & Symposia

- Jul 2012 Workshop & Symposium at Botany 2012
- Sep 2012 Plant Collections Digitization Workshop
- Sep 2012 Public Participation in Digitization Workshop
- Oct 2012 Georeferencing Train-the-Trainer Workshop
- Oct 2012 iDigBio Summit II
- Oct 2012 OCR Working Group Workshop
- Feb 2013 OCR Hackathon & iConference Workshop
- Mar 2013 Georeferencing Materials Development
- Mar 2013 Wet Collections Digitization Workshop
- Apr 2013 Symposium at ASB 2013
- Apr 2013 Entomology Digitization Workshop
- Jun 2013 Symposium & Demo Camp at SPNHC 2013



Y3 Planned Workshops & Symposia

- Jul 2013 3 Symposia at Botany 2013
- Aug 2013 Georeferencing TTT Workshop #2
- Aug 2013 Specify Workshop
- Sep 2013 Arthropod Digitization Workshop
- Sep 2013 Paleontology Digitization Workshop
 - Oct 2013 Symposium at TDWG 2013
- Nov 2013 iDigBio Summit III

• On the radar:

- Dec 2013 Small Herbaria Workshop
- Jan 2014 Education & Outreach Workshop
- Feb 2014 HBCU Workshop
- Feb 2014 NPAC Symposium
- Mar 2014 Field Notebook Workshop
- TBD Biodiversity Informatics Workshop
- TBD Linked Data Workshop



Working Groups

- Active (11)
 - Augmenting OCR (aOCR)
 - Biodiversity Informatics Management
 - Cyberinfrastructure
 - Developing Robust Object to Image to Data (DROID1)
 - Developing Robust Object to Image to Data (DROID2)
 - Developing Robust Object to Image to Data (DROID3): 3D Objects and Things in Spirits
 - Education & Outreach Subcommittee
 - Georeferencing Working Group (GWG)
 - Minimum Information Standards, Authority Files, & Semantics (MISC)
 - Paleontology
 - Public Participation in Digitization
- Proposed (3)
 - Strategic Communication
 - Research
 - Sustainability
- Inactive (2)
 - Authority Files (rolled into MISC)
 - Intellectual Property Policy (work completed)



Resource Usage

Website Traffic	Year 1	Year2	%Change
Page Views	31,735	66,321	108%
Unique Visitors	5,454	8,568	<u> </u>
Registered Users	59	218	<u></u>
Facebook Followers	102	191	<u> </u>

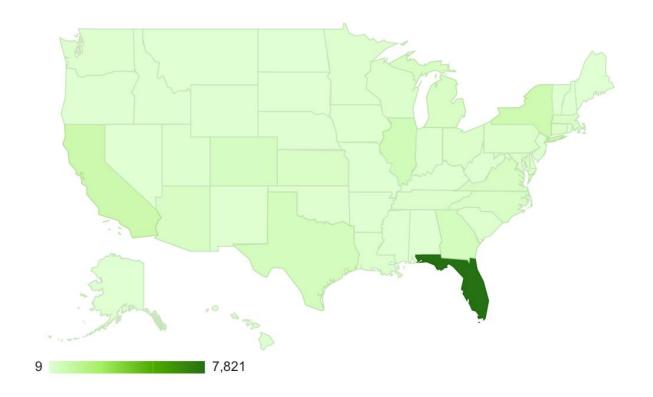
Website Visits	Year 1	Year 2	%Change
Returning Visitor	4,350	11,360	161%
New Visitor	3,029	8,174	170%
TOTAL	7,379	19,534	165%

Adobe Connect	Year 1	Year 2	%Change
Total Users	40	65	<u> </u>
Total Hosts	12	26	<u>↑</u> 117%
Distinct Meeting Rooms	37	62	<u> </u>
Total Meeting Time	767:58:00	4428:40:00	177%



Resource Usage – Domestic

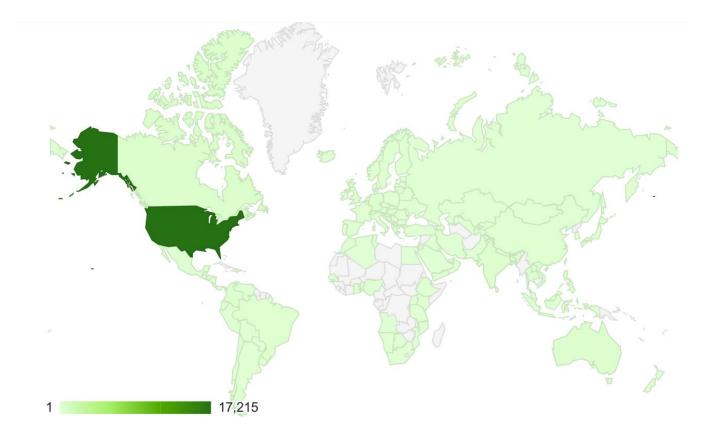
Website Visitors	Year 2
State	50





Resource Usage – Global

Website Visitors	Year 2
Country/Territory	127

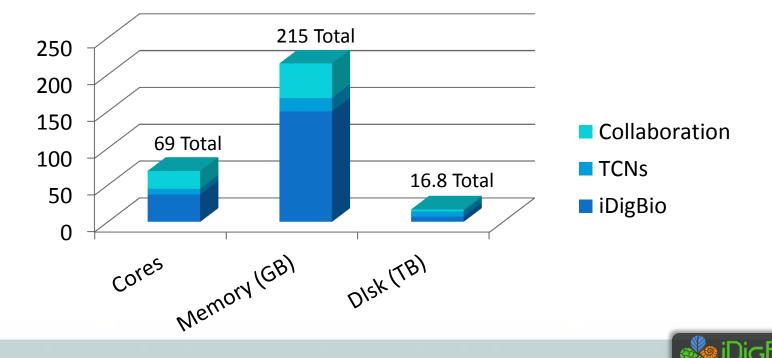


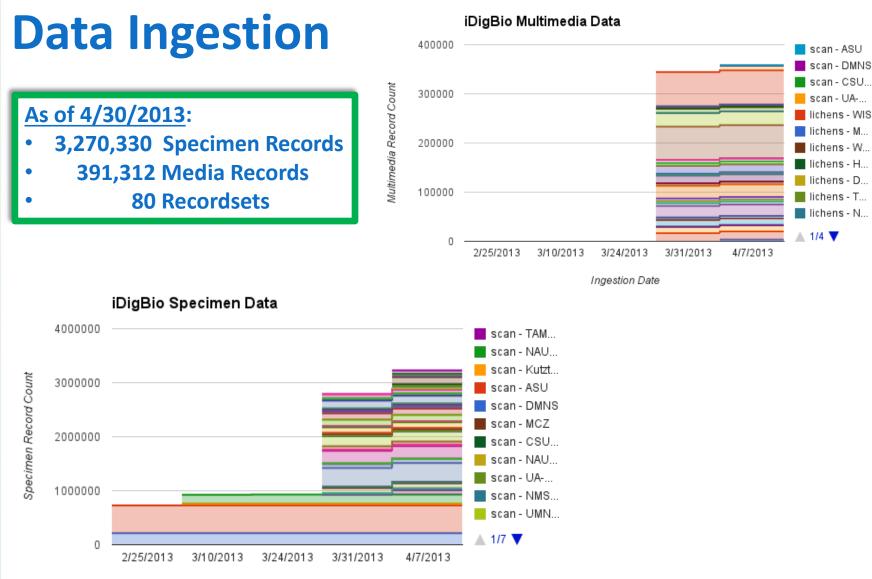


Cyberinfrastructure Resource Usage

Physical Machine Allocation:

- 26 assigned blade servers
- 8 storage servers totaling 256 TB raw disk space
- Virtual Machine Usage:





Ingestion Date



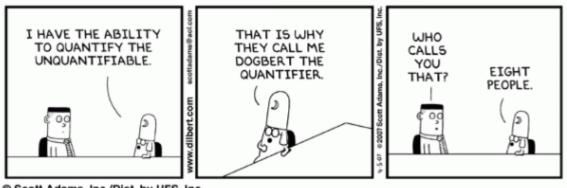
18

Explore Research

- First is a series of videos about iDigBio
- Intended to be used as outreach
- Will be disseminated widely

• <u>Video</u>

Community Feedback Survey



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April 29, 2013



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Method

- Survey sent to 400 individuals
 - TCN participants
 - Workshop/symposia attendees
 - Working group members
 - Avoided direct associates of iDigBio, FLMNH, FSU
- 128 total respondents as of 4/29/2013
 - 30% response rate
 - 111 had either direct contact with iDigBio personnel or interacted with the iDigBio website and/or portal



Respondents

Answer		Response	%
Collections manager		50	39%
Curator		41	32%
Volunteer	1	1	1%
Undergraduate student		0	0%
Graduate student		7	5%
University faculty		35	27%
Scientist		33	26%
Information technology specialist		11	9%
Computer scientist	1	2	2%
Library/information science specialist	I	4	3%
K-12 educator		0	0%
Other. Please explain.		13	10%

Answer	Response	%
TCN	41	32%
iDigBio	14	11%
Museum collection	58	46%
Herbarium	46	36%
College or university	75	59%
K-12 educator	1	1%
Software developer	10	8%
ADBC affiliated organization	11	9%
Other. Please explain.	4	3%

Answer		Response	%
Attended one or more of the annual Summits		19	17%
Attended one or more workshops or symposia		93	84%
Presented at a workshop or symposium		27	24%
Organized or facilitated a workshop or symposium		8	7%
Served as a consultant or provided expertise	•	6	5%
Participated in a Working Group		25	23%
Contributed content to the website		12	11%
Contacted iDigBio for assistance		26	23%
Utilized resources available on the website		46	41%
Read one of more of the wikis		59	53%
Read the newsletter		44	40%
Met with representatives of iDigBio when they visited my home institution		19	17%
Other. Please explain.		5	5%



What is iDigBio doing well? (n=96)

- Workshops, education, and/or outreach (40%)
- Other areas of strength include: providing resources, tools and information, providing networking opportunities and building community, and "spreading the word" about digitization
 - "Workshops are excellent, their frequency is good and I appreciate the fact that they are open to all institutions..."
 - "Serving as a repository for useful information on new ideas and technologies that serve many of us who work in museum collections"
 - "Getting users and content-providers together, establishing protocols and workflows, and the cross-pollination that goes with their workshops are very beneficial"
 - "Spreading the word about digitization efforts and why they are important"



What is iDigBio doing less well? (n=74)

- "Real" n=55 → 5 responses noted insufficient information or experience with iDigBio & 14 responses on the order of "n/a"
- Website and/or portal (10 responses)
 - "Website and wikis are hard to navigate... inconsistent arrangement of resources"
 - "iDigBio is producing a lot of documentation almost too much to be useful"
 - "Still waiting for a more useful specimen portal/database..."
- Other areas of potential weakness include communication (including communication about the overall vision of iDigBio) and lack of broad involvement especially among smaller institutions
 - "Reaching out on a personal level visiting institutions and working together with individuals to get collections systems flowing"
 - "There seems to be far less activity in the area of engaging a broader audience..."
 - "There is so much vocabulary, acronyms, complexities, it would be great for there to be some way to simplify, explain, etc."



Most important activities and initiatives (n=79)

- Expanding reach, data portal, standards and compliance, workshops and training, tool development and other technological solutions, public outreach, creating simple resources, OCR, and funding
 - "...Explain what we are all supposed to be doing and how..."
 - "Getting the GUID issue resolved in a manner that is both easily understood by participants and not a burden to collection with little IT support"
 - "Developing the best protocols for digitization and educating the museum specialists"
 - "Provide quick, well-structured training to students/interns/volunteers..."



Greatest challenges and how iDigBio can help (n=89)

- Funding was the most frequently cited challenge (40%)
 - "The biggest challenges are money and storage capacity"
 - "Sustainable long-term maintenance of metadata and images..."
 - iDigBio could offer mini-grants to support interns that perform digitization, take a advocacy role in seeking greater funding among federal agencies, and facilitate the formation of cooperative groups across institutions that could successfully secure funding from private and/or federal sources
- Coordination of efforts across institutions, disciplines, agencies; play a key role in bridging initiatives and facilitating networking
- Continue efforts to improve efficiency of digitization
- "Lack of standardization in workflows and in the materials being digitized"



Community Feedback Survey

Grading iDigBio (n=82)

- 84% gave "A" or "B"
 - Higher grades tended to be from content <u>contributors</u> (i.e., people with more involvement/contact with iDigBio)
 - Lower grades tended to be from content <u>consumers</u>

Answer	Response	%
F	0	0%
D	1	1%
С	12	15%
В	36	44%
А	33	40%
Total	82	100%



Leadership & Management Survey



May 1, 2013



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Method

- Survey sent to 34 individuals associated with iDigBio
- 25 total respondents as of 5/1/2013
 - 74% response rate
 - 15 report to a supervisor/advisor; 10 do not
- Demographics
 - 9 females; 14 males
 - 3 identify as Hispanic/Latino; 20 do not
 - 21 identify as White; 2 as Asian
 - 19 U.S. citizens, 4 permanent residents, & 1 non-U.S. citizen
 - No respondents reported a disability



Summary

- Both the senior leadership and project management teams were rated highly:
 - 90% or more of respondents indicated "agree" or "strongly agree" with statements assessing satisfaction/effectiveness
- Some areas of relative weakness noted were:
 - Efforts to promote diversity
 - Understanding about what other areas or sections of the project are doing
 - Role definitions
- Those reporting to a supervisor/advisor tended to rate their supervisors/advisors very positively



Suggested Retreat Topics

- "Please discuss everyone's role so we can prevent overlap"
- "Enable the search engine to search images.....very, very difficult to show off what iDigBio will do when this most basic task can't be accomplished!"
- "Improved decision-making, better assignment of responsibilities, more targeted focus of work: skip the fringe stuff"
- "Addressing underrepresented populations"
- "The portal and public participation in digitization"



What is leadership/management doing well?

- "All seem good at giving us the leeway to take the initiative and advance our part of the project"
- "Providing an environment that is positive and fosters collaboration, professional growth of individuals, and keeping the project as a whole on track"
- "The leadership does well at integrating such a diverse set of knowledge and experience into one cohesive team"
- "Community engagement through workshops"



What could leadership/management do better?

- "Just a bit more prescriptiveness might be helpful from some of the PIs although this seems to be improving"
- "The leadership should better define the roles of the people on the team to prevent work duplication"
- "Not be the bottleneck for critical issues"
- "Timely reimbursement to participants in workshops, etc."
- "It is difficult to know in some areas who is responsible for what, there are lots of us with opinions, but there need to be clearer lines of responsibility for issues, and those opinion holders need to get in line to support them. I would like to see more support of re-use and building on the work of others, we don't HAVE to invent everything. What we are working on from one day to the next does not always seem supported by team communication, people change direction, make decisions and don't consult the rest of the team. In some cases we are working on features no one needs, and not with any alacrity either. A feature for the sake of a feature. Sometimes it seems like we are too much of a research project, with too much deliberation, and not enough decisive forward motion."
- "Motivation is high. Encourage independent initiative."



Other Comments

- What one thing would you change about iDigBio's Leadership & Management?
 - "I would like to see all of the PIs equally engaged in the project"
 - "Be present and engaged more consistently"
- What could leadership/management do to improve your satisfaction with the project?
 - "Provide a clearer set of operational objectives for my limited involvement with the project"
- Other comments:
 - "In general, I think the leadership and management are doing a great job!"
 - "Very satisfied"
 - "A more user-friendly and science-relevant portal should be a very high priority"



Overall iDigBio Work Climate

% who responded "agree" or "strongly agree"	Statement
87	Sufficient effort is made to get the opinions and
	thinking of everyone affiliated with iDigBio.
78	Personnel are recognized for high quality work
73	Creativity and innovation are rewarded.
55*	Policies and programs promote workforce diversity
	(e.g., recruit under-represented groups, mentoring
	programs, outreach).
43	Appropriate action is taken when staff or other
	personnel do not meet assigned goals or otherwise
	under-perform.

* 20% of respondents did not agree that policies and programs promote workplace diversity



Ratings of Section or Area

% who responded "agree" or "strongly agree"	Statement
95	There is good alignment between the goals and activities of my section and the rest of iDigBio.
88	We share knowledge and expertise with each other.
83 79	We cooperate to get the job done. Within the group, we have the
	relevant knowledge and skills needed to accomplish our goals.
48*	We have sufficient information about what other sections are doing.

* 30% of respondents disagreed with the statement "We have sufficient information about what other sections are doing."



Ratings of Own Roles and Responsibilities

% who responded "agree" or	Statement
"strongly agree"	
92	I am allowed an appropriate amount of
	independence in doing my job.
84	I understand how my work relates to iDigBio
	goals and priorities.
84	I feel encouraged to come up with new and
	better ways of doing things.
80	Expectations regarding what I can accomplish are
	reasonable.
80	I am satisfied with my level of involvement in
	decisions that affect my work.
76*	My skills and expertise are utilized in my position.
75	Work assignments are distributed fairly.
68*	My role in iDigBio is well-defined.
68	I have enough information to do my job well.
68	I have sufficient resources (for example, people,
	materials, budget) to get my job done.

* 20% of respondents disagreed with the statement that "My role in iDigBio is welldefined" with 3 indicated "strong disagreement." 20% also disagree with the statement "My skills and expertise are utilized in my position."



External Advisory Board Report



March 22, 2013



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EAB Comments on iDigBio Progress

- Large amount of work produced in a short period of time
- Met its goals; stayed on track
 - Only a few items on the timeline delayed
- iDigBio workshops and symposia are of great value
 - Good outreach to community
- Digitization resources have had a significant impact
- Large potential for research with mobilized data



EAB Recommendations

- Start working towards internationalization
- <u>Mobilize TCN data</u> into the portal
- Conduct <u>user testing</u> on the website and portal
- Continue integration with collections management tools
- Seek "dark data" from both large and small institutions
- Seek community feedback on the API
- Develop plan for GBIF data



NSF Site Review Report



April 4-5, 2013



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Project Progress

- Significant progress since the initiation of funding:
 - Begun implementation of a software and data storage system that is responsive to community needs
 - Dedicated significant resources towards integrating with the TCNs and understanding their needs
 - Collaborating with existing projects that can be usefully integrated into iDigBio
 - Created significant synergies with existing TCNs
 - Greatly reduced the barrier to digitization by other network projects
 - Initiated and fostered a vast array of partnerships



Project Leadership

- Highly effective communication of expectations via the project implementation plan
- Appropriate flexibility to move the project forward in partnership with diverse institutions and collaborations
- A highly collaborative environment has been developed among the staff and leadership
 - Dedication to the success of the project is highly evident
- "We encourage discussions with NSF to enhance the support for this project, in particular for additional personnel, to ensure the continued progress and build upon the success to date."



Scientific Outreach

- Very successful at engaging the TCNs and collections community via working groups and workshops
- CI plans will enable a large community of users to access the mobilized data
- Results from first 2 years of the grant are being disseminated via publications, presentations, and newsletters published on the website



Educational Outreach

- Plan to facilitate enhanced outreach activities that will engage the public and highlight the uses of the data
- Still in planning stage, but team has set in motion the means for implementation



Human Resources

- Mentoring for post docs, grad students, and staff members include professional development and interactions across disciplinary boundaries
- Communication among all project participants is evident
- Commitment to achieving the project goals by all project participants is highly evident



NSF Panel Suggestions – Part 1

- Develop a strategic plan for iDigBio, including a prioritized listing of potential future sustainability options
- Maintain a communications database accessible to all project personnel
- Clarify the role of the EAB, develop transition plan for members, and enhance diversity of the board
- Develop an explicit evaluation plan linked to metrics for success to provide evidence of project impacts
- Develop a leadership evaluation plan
- "Keeping a strict focus on the job of getting more deposited data and providing access to data by more mechanisms should trump any peripheral tool development."



NSF Panel Suggestions – Part 2

- Enhance diversity in all aspects of working groups, workshops, and external advisory board
- Formal cross-training among grad students and post docs
- Open access to all workshop proceedings
- Ramp up educational outreach activities during the second half of the grant
 - Develop educational modules and mechanisms to facilitate TCN outreach activities
- The website needs a major redesign, including testing/review by focus groups
- Careful consideration of iDigBio scope before engaging research communities not focused on collections digitization



iDigBio Strategic Planning



May 6, 2013



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Where do we go from here?

- Roles of iDigBio staff
- Top priorities for Years 3-5
- How to use new funding
- Future workshop ideas



iDigBio Staff Roles

- How do we get comfortable with our roles?
- How much overlap is healthy vs. unhealthy?
- Do any roles need to be redefined?



Priorities for Years 3-5

- Data ingestion & integration
- Sustainability
- Public outreach
- Improving the usability of iDigBio web presence
- Professional development & training
- Broader community participation
- Increase involvement of under-represented groups
- Digitization efficiency & standardization
- Publicity/marketing
- Continue CI development, including web services



New Funding / Pressing Needs

- Persons hired on supplemental funds:
 - One FTE, in the administrative unit of iDigBio, is an important liaison with TCNs.
 - A second FTE, in ACIS, is developing a state-of-the-art user interface to provide consumers of data easy access to data in the specimen data portal.
 - The third, a 0.5 FTE, at FSU, is a software developer who is responsible for integrating the Morphbank image management system into the iDigBio software.
- New positions:
 - 1 FTE to assist with IT aspects of data migration from TCNs/other institutions to iDigBio; a data integration expert to be the point contact person for new data sources that need to be represented in iDigBio's systems.
 - 1-2 FTEs to focus on the integration of public participation into the digitization of biodiversity specimens: (1) a post-doctoral scholar in the Mast lab at FSU to focus on methods of establishing public participation as part of iDigBio, and (2) a programmer in ACIS who focuses on both producing interoperability between iDigBio and existing cyberinfrastructure for digitization of biodiversity specimens and tailoring the iDigBio portal interface to meet citizen science needs.
 - 1 FTE to enable the use of collections data in addressing big-science questions by integrating tools and services into a computational environment for data integration, analysis and visualization.
- Other:
 - Good copy / technical writers
 - Partial hardware refresh/extension
 - Meeting off-site storage expectations



Future Workshop Ideas

- Workflows for specific collection types
- Imaging (in general)
- Education & outreach including public participation
- Data mobilization, transformation, cleaning, quality, management, ingestion, visualization
- Biodiversity informatics
- Collections applications to research
- Cyberinfrastructure
- Hackathons
- Using iDigBio specimen data, API, working groups, hosting online meetings
- Communicating the importance of collections / digitization
- Tools georeferencing, aOCR

