



# Searching Sheet Music: IN Harmony Final Report

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Digital Library Program  
Brownbag Spring Series  
February 13, 2008



# Agenda

- Project Overview
- Sheet Music User Behaviors
- IN Harmony Search and Discovery Website



## DLP Project Staff

- Kara Alexander, Digital Media Specialist
- Michelle Dalmau, Digital Projects and Usability Librarian
- Jon Dunn, Associate Director for Technology
- Michael Durbin, Programmer/Analyst, Digital Library Infrastructure
- Jim Halliday, Software Analyst/Programmer
- Julie Hardesty, Usability and Interface Specialist
- Muzaffer Ozakca, Programmer/Analyst, Digital Library Tools
- Jenn Riley, Metadata Librarian
- Lindley Shedd, Digital Imaging Specialist
- Niki Roberg
- John Walsh
- Kris Brancolini

February 13, 2008

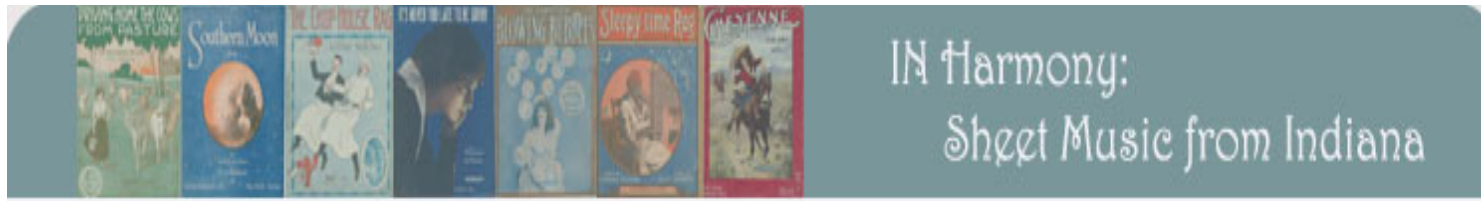
DLP Brownbag Series



# IN Harmony is

- An IMLS funded grant
- Awarded in Fall 2004
- To be completed in Fall 2008
- A partnership of
  - Indiana University Digital Library Program
  - Indiana University Lilly Library
  - Indiana State Library
  - Indiana State Museum
  - Indiana Historical Society





# Project Goals

1. To provide a mode for fostering collaborative digital library development by partnering with institutions with complementary collections;
2. To digitize a portion of the sheet music from these collections and offer access to these materials free of charge on the web;
3. To bring these materials and their attendant metadata together on a single web site, offering both federated searching of the entire collection and searching of one or more selected collections;
4. To explore copyright questions, specifically to test the hypothesis that approximately 90 percent of copyrights have not been renewed for materials published between 1923 and 1964.



# Fostering Collaboration

- Gaining a common understanding
- Negotiating conflicting requirements and priorities
- Developing Expertise

*Final deliverable is a long-term working relationship between all of the partners to participate in the Indiana Digital Library*



# Why Sheet Music?

- Musicologists
  - Musical practices, structures and meanings
- Historians
  - Cover designs, lyrics, and advertisements
- General Public
  - Playable copies of out of print music, connections to family stories



# Digitizing

Deliverable – 10,000 pieces of sheet music

- 4,000 Indiana University Lilly Library
- 2,000 Indiana State Library
- 2,000 Indiana State Museum
- 2,000 Indiana Historical Society





# Current Project Status

- Partner scanning began in January 2006
- Cataloging began in May 2006

	IHS Completed	ISL Completed	ISM	Lilly
Images Scanned	2020	1738	1468	5274
Cataloging Records	2020	1551	1467	3171



## Cataloging and Imaging Workflow Goals

- Data integrity
  - Quality of the scans
  - Quality of the metadata
  - Accuracy of the links between page images
  - Accuracy of the links between metadata and images
- Simplicity of use
  - Balance of flexibility and constraints



## Cataloging and Imaging Concepts

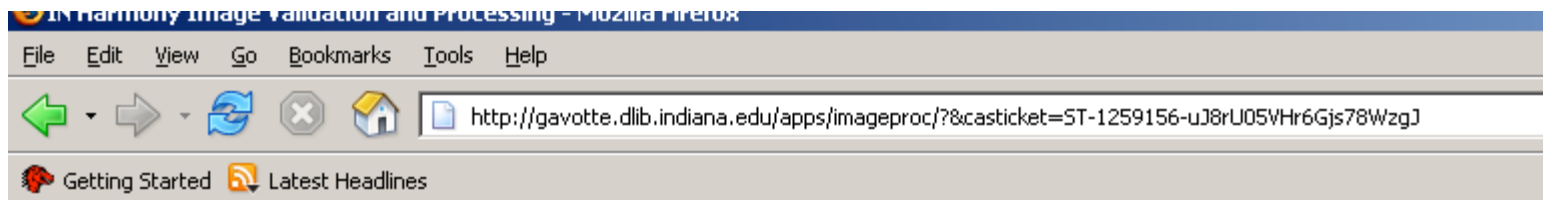
- **Batch** – a set of metadata records and images that are processed together.
- **Manual Quality Control (QC)** – visual verification of the quality and accuracy of the scan and metadata.
- **Automated QC** – a computerized process to verify the technical quality of the scans and the integrity of the metadata.



# Cataloging and Scanning Use Cases

1. Metadata exists
  - Get metadata from database
  - Create either full or minimal metadata record
  - Scan sheet music
2. Metadata does not exist
  - Create either full or minimal metadata record
  - Scan sheet music
3. Metadata is created in another system and imported into IN Harmony

# Image Workflow Processing



## IUDLP Image Validation and Processing

### Specify Institution

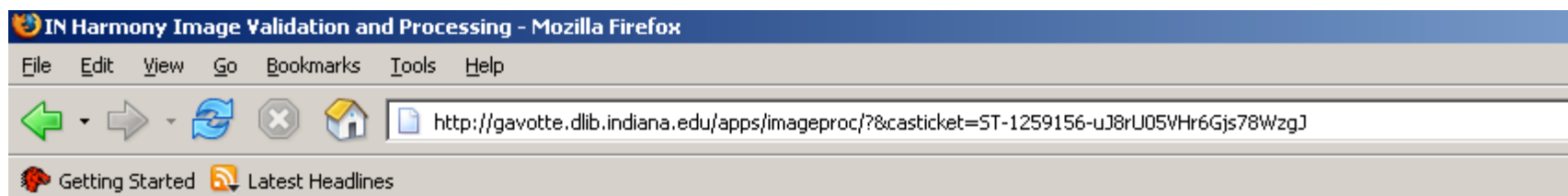
Scanning technician: skowalcz [logout](#)

Collection: IN Harmony

Institution:

For comments and questions about this collection, send email to [inharmony-support@dlib.indiana.edu](mailto:inharmony-support@dlib.indiana.edu).  
Send general comments and questions to [diglib@indiana.edu](mailto:diglib@indiana.edu).

# Choose an Institution



## IUDLP Image Validation and Processing

### Specify Institution

Scanning technician: skowalcz [logout](#)

Collection: IN Harmony

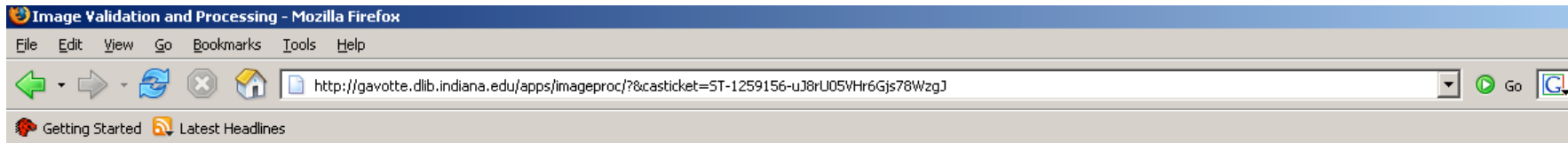
Institution:

- Choose An Institution
- Lilly Library
- Indiana State Museum**
- Indiana State Library
- Indiana Historical Society
- IN Harmony Test

For comments  
Send general c

n, send email to [inharmony-support@dlib.indiana.edu](mailto:inharmony-support@dlib.indiana.edu).  
[inharmony-support@dlib.indiana.edu](mailto:inharmony-support@dlib.indiana.edu).

# Choose a Batch to Process – Auto QC



## IUDLP Image Validation and Processing

### Automatic and Manual Quality Control (QC) for Batches

Scanning technician: skowalcz [logout](#)

Collection: IN Harmony

Institution: Indiana State Museum

If you have any problems, please send email to [inharmony-support@dlib.indiana.edu](mailto:inharmony-support@dlib.indiana.edu).

Select to either run automatic quality control or approve manual quality control on recently uploaded image batches. Automatic and manual quality control **must be done by different people**.

#### Run Batches for Automatic Quality Control

These batches have been recently uploaded and require automatic control. Select a batch and click 'Validate' to initiate automatic QC.

#### Approve Batches after Manual Quality Control

These batches have passed automatic QC. They need to undergo manual QC before you can continue with the upload process. Once you have completed manual quality control, select a batch and click 'Approve.'

If you need to delete a batch entirely from the holding area instead, select the batch and click 'Delete'.

# Failure Report Real Time



## IUDLP Image Validation and Processing

### Validation for Batch 2-6&7-05

Please wait while the images from batch '2-6&7-05' are being validated...

Step 1. Performing initial batch tests... **FAILED**

Validation failed.

**ERROR:** The uploaded batch folder contains subfolders, which cannot be processed correctly. Please delete all subfolders.

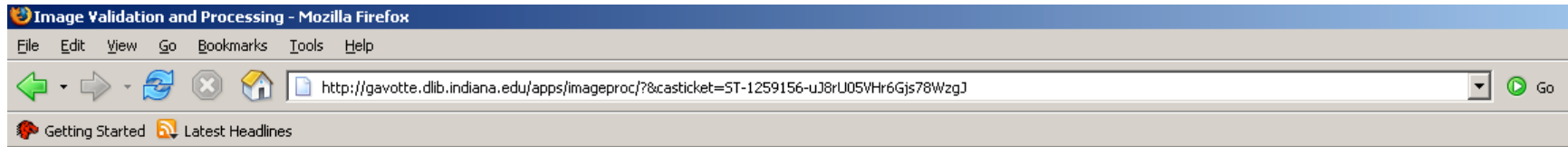
**ERROR:** The uploaded batch folder is empty.

**ERROR:** One or more files have page numbering problems.

[Click here](#) to work on other batches.



# Auto QC once again



## IUDLP Image Validation and Processing

### Automatic and Manual Quality Control (QC) for Batches

Scanning technician: skowalcz [logout](#)

Collection: IN Harmony

Institution: Indiana State Museum

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Select to either run automatic quality control or approve manual quality control on recently uploaded image batches. Automatic and manual quality control **must be done by different people**.

#### Run Batches for Automatic Quality Control

These batches have been recently uploaded and require automatic control. Select a batch and click 'Validate' to initiate automatic QC.

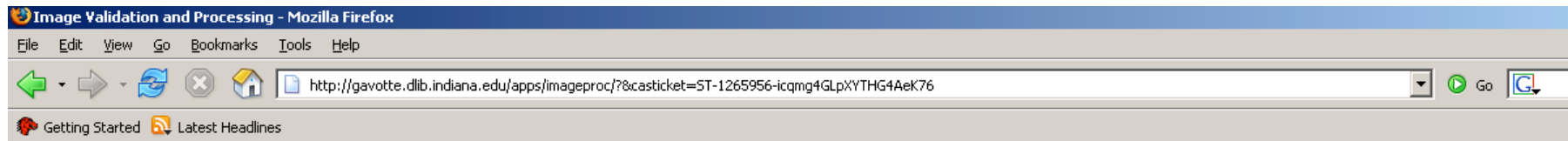
2-6&7-05

#### Approve Batches after Manual Quality Control

These batches have passed automatic QC. They need to undergo manual QC before you can continue with the upload process. Once you have completed manual quality control, select a batch and click 'Approve.'

If you need to delete a batch entirely from the holding area instead, select the batch and click 'Delete'.

# Batch Passed Auto QC



## IUDLP Image Validation and Processing

### Validation for Batch 2-1-06

Please wait while the images from batch '2-1-06' are being validated...

Step 1. Performing initial batch tests... passed

Step 2. Examining individual images...

Examining ism-71.998.058.0597-01-01.tif passed.  
Examining ism-71.998.058.0597-01-02.tif passed.  
Examining ism-71.998.058.0597-01-03.tif passed.  
Examining ism-71.998.058.0597-01-04.tif passed.  
Examining ism-71.998.058.0600-01-01.tif passed.  
Examining ism-71.998.058.0600-01-02.tif passed.

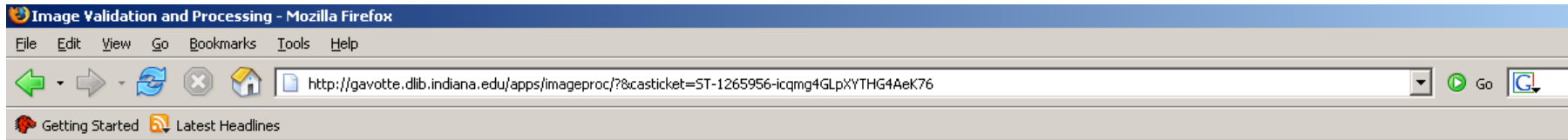
Validation passed. Moving images to holding area...

Moving ism-71.998.058.0597-01-01.tif..  
Moving ism-71.998.058.0597-01-02.tif..  
Moving ism-71.998.058.0597-01-03.tif..  
Moving ism-71.998.058.0597-01-04.tif..  
Moving ism-71.998.058.0600-01-01.tif..  
Moving ism-71.998.058.0600-01-02.tif..

Validation complete.

[Click here](#) to work with more batches.

# Manual QC Approval



## IUDLP Image Validation and Processing

### Automatic and Manual Quality Control (QC) for Batches

Scanning technician: skowalcz [logout](#)

Collection: IN Harmony

Institution: Indiana Historical Society

If you have any problems, please send email to [inharmony-support@dlib.indiana.edu](mailto:inharmony-support@dlib.indiana.edu).

Select to either run automatic quality control or approve manual quality control on recently uploaded image batches. Automatic and manual quality control **must be done by different people**.

#### Run Batches for Automatic Quality Control

NO batches ready for automated validation

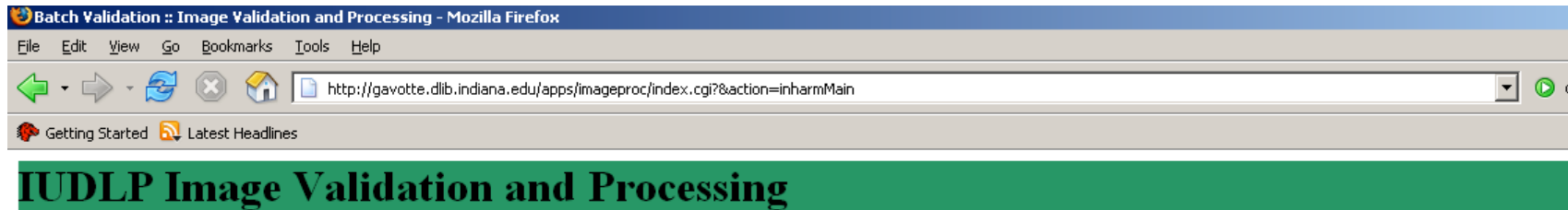
#### Approve Batches after Manual Quality Control

These batches have passed automatic QC. They need to undergo manual QC before you can continue with the upload process. Once you have completed manual quality control, select a batch and click 'Approve.'

2-03-06

If you need to delete a batch entirely from the holding area instead, select the batch and click 'Delete'.

# Final Approval



## QC for Batch 2-1-06 Complete

Please wait while the images from batch '2-1-06' are being moved...

Moving ism-71.998.058.0597-01-01.tif..  
Moving ism-71.998.058.0597-01-02.tif..  
Moving ism-71.998.058.0597-01-03.tif..  
Moving ism-71.998.058.0597-01-04.tif..  
Moving ism-71.998.058.0600-01-01.tif..  
Moving ism-71.998.058.0600-01-02.tif..  
Moving ism-71.998.058.0600-01-03.tif..  
Moving ism-71.998.058.0600-01-04.tif..  
Moving ism-71.998.058.0600-01-05.tif..  
Moving ism-71.998.058.0600-01-06.tif..  
Moving ism-71.998.058.0601-01-01.tif..  
Moving ism-71.998.058.0601-01-02.tif..  
Moving ism-71.998.058.0601-01-03.tif..  
Moving ism-71.998.058.0601-01-04.tif..  
Moving ism-71.998.058.0601-01-05.tif..  
Moving ism-71.998.058.0601-01-06.tif..  
Moving ism-71.998.058.0602-01-01.tif..  
Moving ism-71.998.058.0602-01-02.tif..  
Moving ism-71.998.058.0602-01-03.tif..  
Moving ism-71.998.058.0602-01-04.tif..  
Moving ism-71.998.058.0603-01-01.tif..

# Batch is Complete

Mail :: Inbox: Batch processing for batch 2-6-06 completed - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

https://webmail-beta.iu.edu/horde/imp/message.php?index=7402

Getting Started Latest Headlines

Inbox Compose Folders Search Filters Address Book Vacation Options Comment Help Log out Open Folder

Mailbox Quota: 65.94MB / 100.00MB (65.94%)

**Inbox: Batch processing for batch 2-6-06 completed (1860 of 1894)**

Mark as: [v] Move | Copy This message to [v]

Delete | Reply | Reply to All | Forward | Redirect | View Thread | Message Source | Save as | Print

**Date:** Wed, 8 Feb 2006 00:12:28 -0500 [02/08/2006 12:12:28 AM EST]

**From:** inharmony-support@dlib.indiana.edu

**To:** owner-inharmony-support@dlib.indiana.edu, skowalcz@indiana.edu, sbloomquist@statelib.lib.in.us, dkeele@statelib.lib.in.us, mkern@statelib.lib.in.us, adowns@statelib.lib.in.us

**Subject:** Batch processing for batch 2-6-06 completed

**Headers:** Show All Headers

This email is to inform you that batch 2-6-06 has been successfully processed. Derivatives have been created and may be accessed using the following links:

is1-abj-4603-01  
<http://inharmony.dlib.indiana.edu/inharm/is1/is1-abj-4603-01/>

Please send an email to [inharmony-support@indiana.edu](mailto:inharmony-support@indiana.edu) if you have any questions or problems. Thanks!

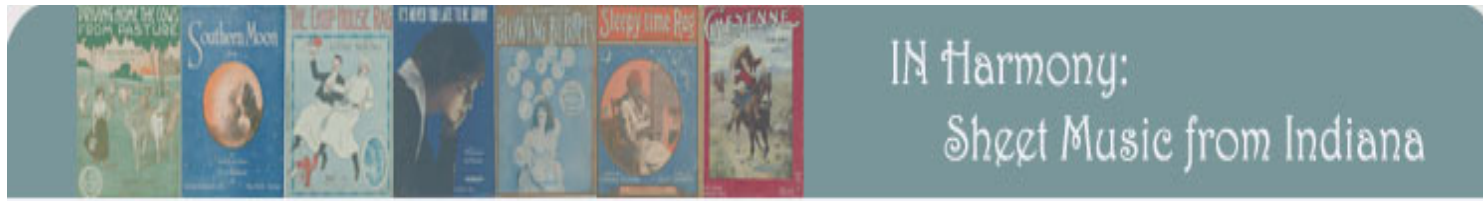
Delete | Reply | Reply to All | Forward | Redirect | View Thread | Message Source | Save as | Print

Mark as: [v] Move | Copy This message to [v]



# Designing the metadata model

- User studies
- Define fields
- Write cataloging guidelines with partner input
- Representation in MODS

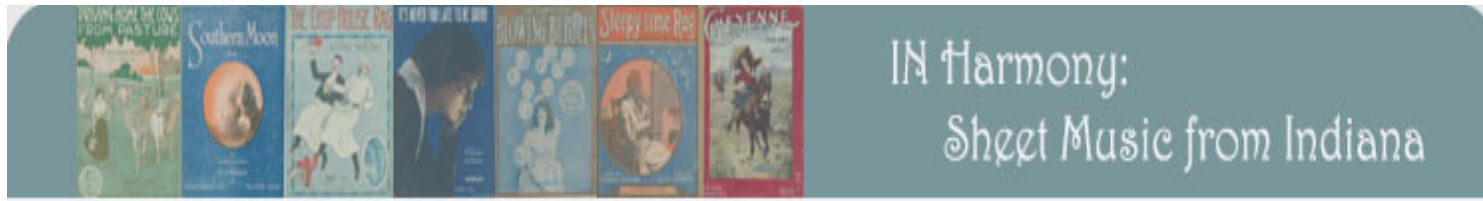


## Sheet Music User Behaviors

- 3 usability studies showed that users search by
  - Names (compose, arranger, performer, cover artist)
  - Key words
  - Subjects

Full usability reports are available at

<http://www.dlib.indiana.edu/projects/inharmony/projectDoc/index.shtml>



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## Impact on Cataloging

- Tendency towards name searching should require name authority control and integration of the cross-referencing structures in order for users to more reliably find name variants
- Preference toward keyword searching suggests the need for rich, descriptive records including the recording of lyrics, chorus lines, and other metadata that may enrich the record to increase recall when free-text searching
- Common subject searches such as genre/form/style, instrumentation and topic should require the use of controlled vocabularies suitable for describing these specific subject areas
- Infrequent but interesting searches of other metadata elements such as identification numbers and keys should be considered as part of the metadata model

# Cataloging Tool Search Page

IN Harmony Search Window - Version 1.19 - Production Database

Create a new record:

Score ID:

Or search for an existing record:   Include other institutions

Score ID:  Status:

Title:  Scanned:

Name:  Suppressed:

ID ▲	Status	Title	Composer
------	--------	-------	----------

# Search Functionality

IN Harmony Search Window - Version 1.19 - Production Database

Create a new record:

Score ID:

Or search for an existing record:   Include other institutions

Score ID:  Status:

Title:  Scanned:

Name:  Suppressed:

ID ▲	Status	Composer
------	--------	----------

Running query... please wait

# Search Results

IN Harmony Search Window - Version 1.19 - Production Database

Create a new record:

Score ID:

Or search for an existing record:   Include other institutions

Score ID:  Status:

Title:  Scanned:

Name:  Suppressed:

ID ▲	Status	Title	Composer
LL-SSM-1-020-0002	cataloged	Blues in the night (my mama don...	Arlen, Harold, 1905-1986
LL-SSM-1-020-0049	cataloged	This time the dream's on me	Arlen, Harold, 1905-1986
ihs-SHMU_30_24	cataloged	Everybody's crazy 'bout the doggo...	Layton
ihs-SHMU_31_42	cataloged	Serenade blues	Sissle, Noble, 1889-1975
isl-abt-4554	cataloged	Blues eyes crying in the rain	Rose, Fred, 1897-1954
ism-71.985.252.77	cataloged	Blues (my naughty sweetie gives t...	
ism-71.998.58.1295	cataloged	Blues: my naughty sweetie gives t...	

# Title Tab Functions

**Edit Score Object: ihs-SHMU\_31\_42** [Window Controls] [Help]


Score ID:

Institution: Indiana Historical Society (ihs)

Status:   Suppress this record

**Title** | Name | Publisher | Subject | ID | Note

Type	Value
First line	Blues lawd, I love them so
First line of chorus	Just take the serenade that Schubert wrote
Title	Serenade blues



[View copy 1](#)

# Title Tab Functions – Edit existing data

Edit Score Object: ihs-SHMU\_31\_42

Score ID:

Institution: Indiana Historical Society (ihs)

Status:   Suppress this record


**Title** Name Publisher Subject ID Note

Alternative title

Type	Value
First line	Blues lawd, I love them so
First line of chorus	Just take the serenade that Schubert wrote
Title	Serenade blues

**Edit First line**

Nonsort:



[View copy 1](#)

# Title Tab Functions – Add new title data

**Edit Score Object: ihs-SHMU\_31\_42**

Score ID:


Institution: Indiana Historical Society (ihs)

Status:   Suppress this record

**Title** | Name | Publisher | Subject | ID | Note

Alternative title

		Value
		Blues lawd, I love them so
<input type="checkbox"/>	chorus	Just take the serenade that Schubert wrote
		Serenade blues



[View copy 1](#)



## Search and Discovery Demo

[IN Harmony Project Website](#)





Questions?

Thanks for attending!

[IN Harmony Project Website](#)