# Publishing GRIN-Global Accession Data to Genesys

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## Background

Blue Bicycle Technologies was contracted by The CropTrust to extend the GRIN-Global Curator tool to support the publishing of accession data to the Genesys. This document provides instructions on how to use the new functionality, as well as a brief overview of the design approach.

## How to Publish Data

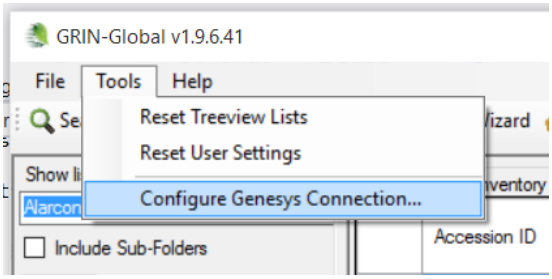
The new capability works by leveraging the current dataview as a source of accession data to send to Genesys. Before accession data can be sent, the user must create an account on Genesys and configure the connection to authorize the Curator Tool to send data on the user's behalf.

### Setting Up the Genesys Account

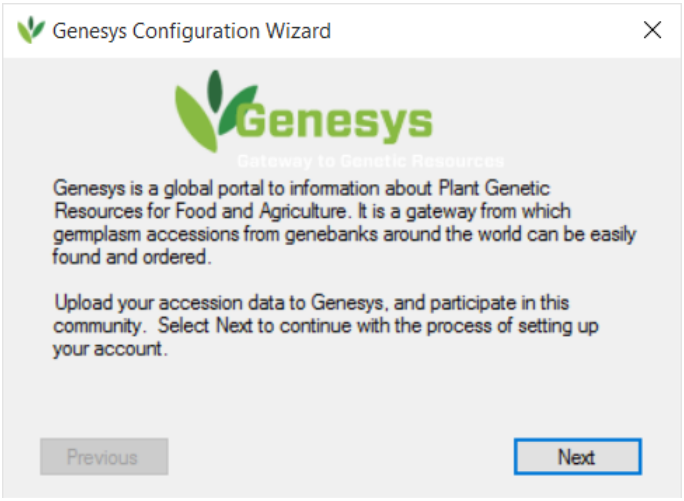
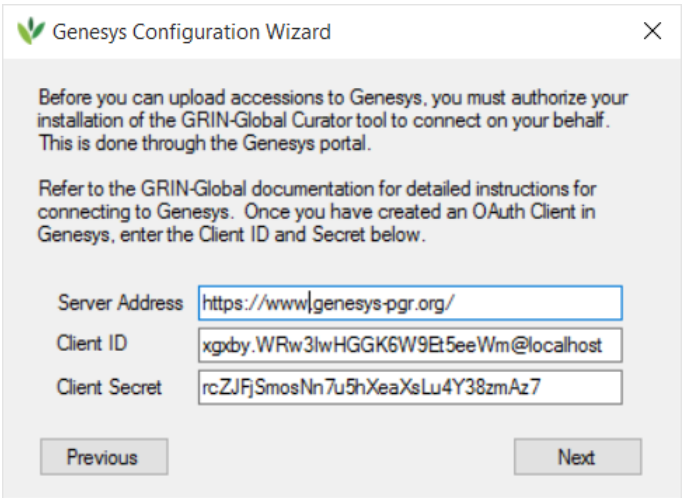
Visit the Genesys site at https://www.genesys-pgr.org and register. Once you have registered, request access to publish data by sending an email to helpdesk@genesys-pgr.org. You will be provided with two text values called the Client ID and Client Secret, which will be used to configure the connection from the Curator Tool to Genesys.

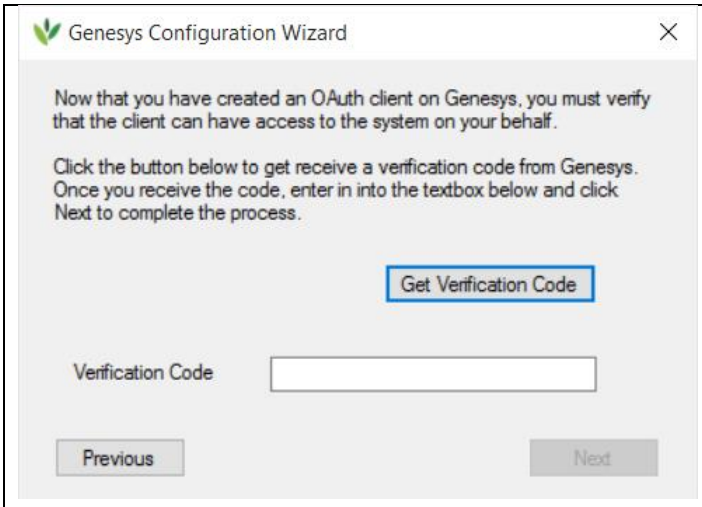
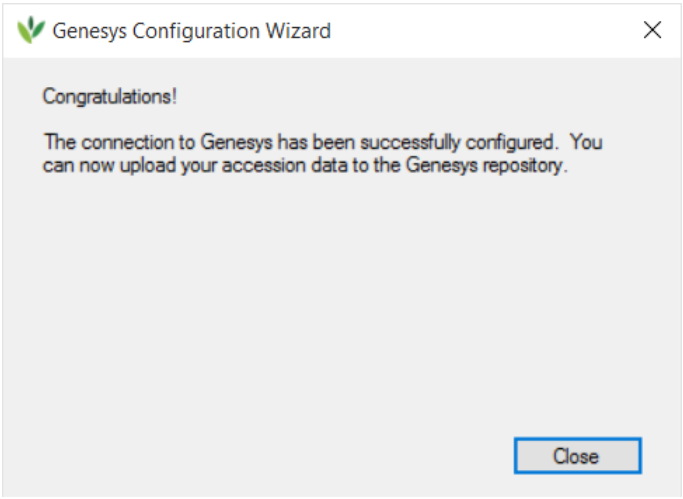
## Configuring the Connection

To setup the connection to Genesys, a configuration Wizard was implemented to walk the user through the process. To access the wizard, choose "Configure Genesys Connection…" from the Tools menu.




The wizard will take you through the following steps:

| | |
|---|---|
|  | Welcome screen introduces the Genesys product. |
|  | The first step is to enter the **Client ID** and **Client Secret** provided by the Genesys website when you setup an account.<br><br>The Genesys server address will default to the production environment located at https://www.genesys-pgr.org/. It can be changed to another destination if needed for testing. |
| | |

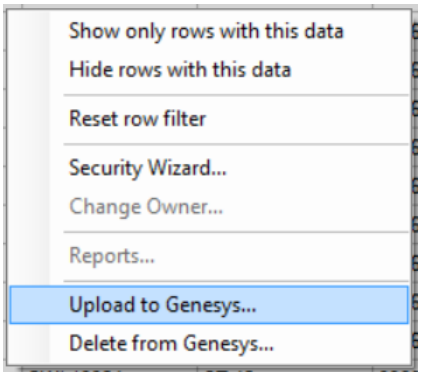
| | |
|---|---|
|  | Once the OAuth client has been created and entered in the prior screen, you must authorize the Curator Tool to act on your behalf.<br><br>Click the "Get Verification Code" button to launch a browser window, and login to the Genesys site.<br><br>Agree to allow access for the curator tool by clicking the "Yes, allow access" button. The resulting page will provide and authorization code. Copy this value into the "Verification Code" textbox and select Next. |
|  | If the process was successful, the dialog to the left will be displayed. It there was a problem, the user will be notified of the error and can modify the information and resubmit. |

Note: If you attempt to upload data to Genesys prior to configuring the connection, the configuration wizard will be displayed.

## Uploading Data

To publish accession information to Genesys, first select a dataview that contains passport information. At a minimum, the INSTCODE and ACCENUMB are required columns in order to identify the published accessions. Beyond those two fields, any columns with name that match the passport information elements will be published to Genesys.

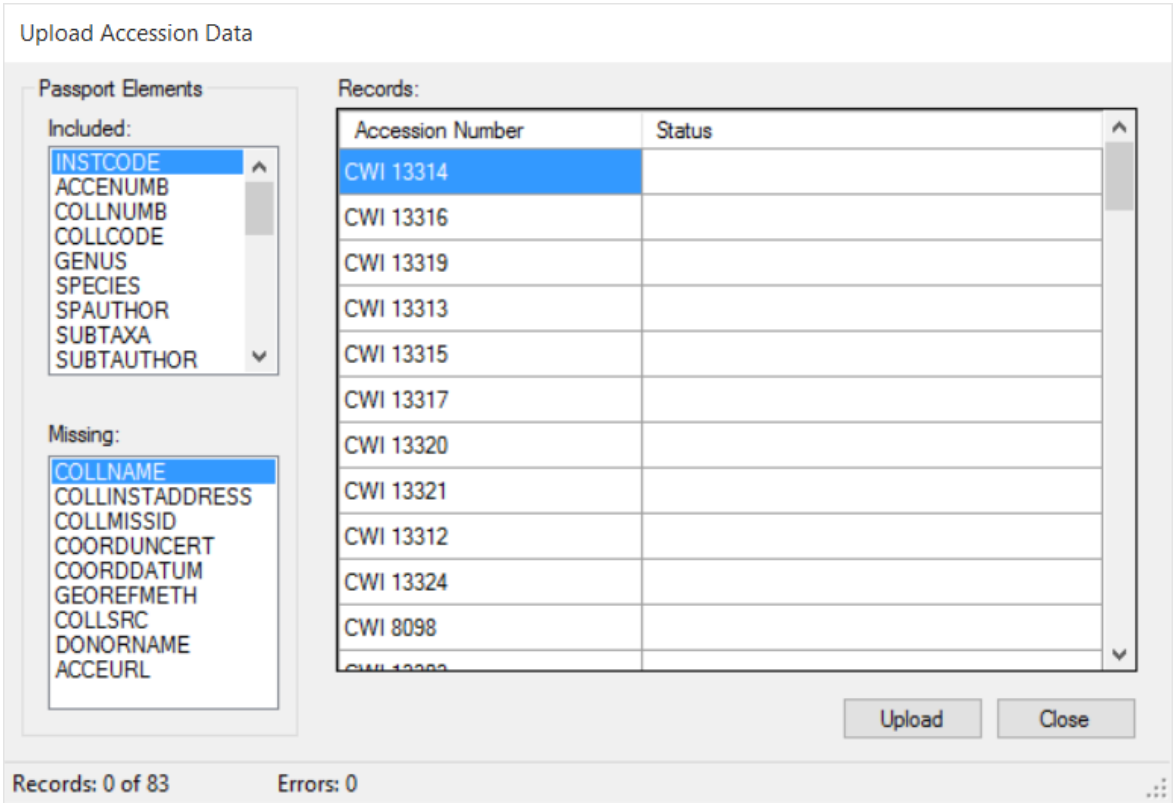
To start the process, right-click on a cell of the dataview and choose "Upload to Genesys…" from the subsequent menu.




The Upload Accession Data is displayed with some key elements. On the left, all passport elements are listed in one of two groups. If the element name matches the column of the source dataview, it will be displayed in the "Included" list. Otherwise if there is not a match, it will be displayed in the "Missing" list.

The upload process is resilient and will work with the information which is available. While more passport elements to ensure data completeness is ideal, the failure to find a few fields does not prevent the other data from being transferred.

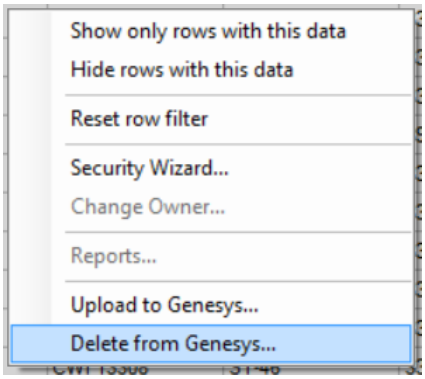
The records list on the right of the screen lists all the accessions in the dataview to be transferred. Once the "Upload" button is selected, accession records will be sent to Genesys in batches and the individual status of each accession will be updated on the screen.



The upload process can be run multiple times without any negative effect.

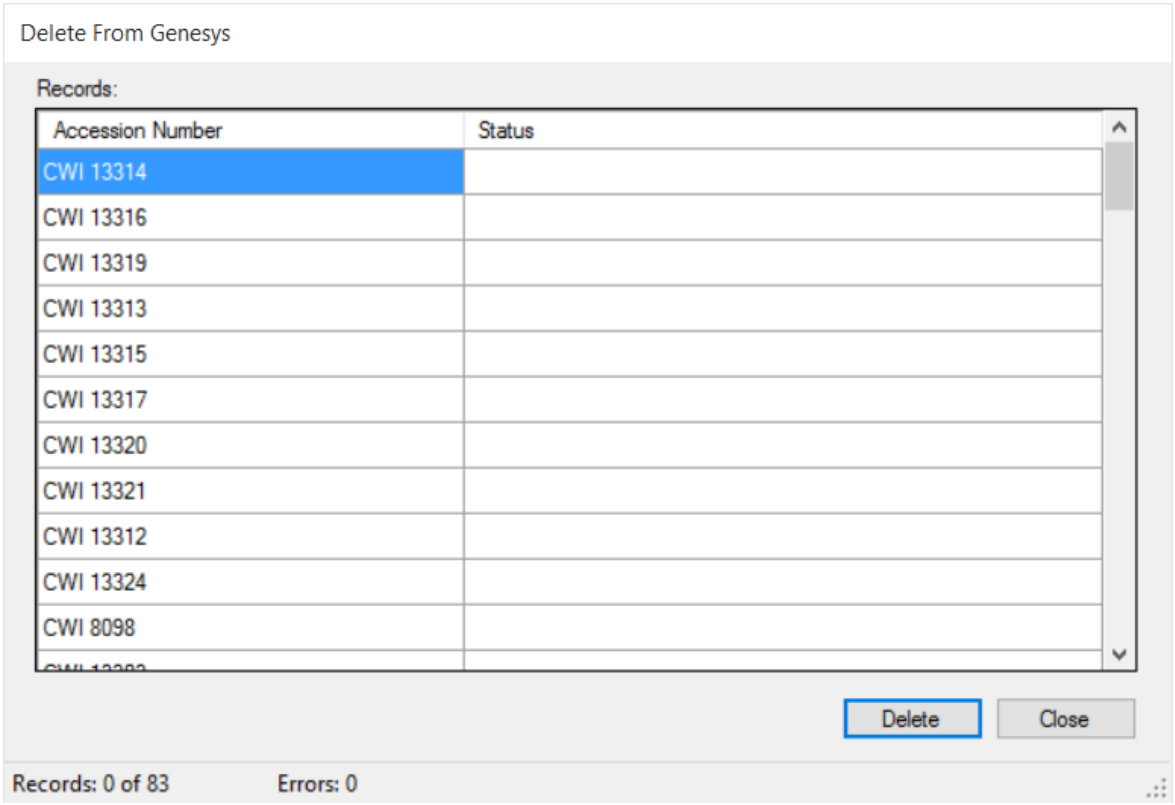
## Deleting Data

Similar to publishing accession information to Genesys, the process of deleting accession information from Genesys is started by right-clicking on a cell of the dataview and choosing “Delete from Genesys…”.




The dataview used to delete data must contain the following three columns: INSTCODE, ACCENUMB and GENUS.

The subsequent dialog will display the list of accessions which will be deleted. When the Delete button is clicked, the data is deleted from Genesys in batch.  As the accessions are processed, the status field is updated.



# Implementation Approach

## Genesys .Net API Library

The integration with Genesys is coordinated by the Genesys .Net API library, created by Blue Bicycle Technologies for The CropTrust. The library simplifies the Genesys authentication scheme, constructing well-formed requests, and parsing responses. Further, the library provides a number of strongly-typed classes representing Genesys object. In order the leverage the Genesys .Net library, the GRIN-Global projects were upgraded from .Net 3.5 to .Net 4.5.2.

## Core Classes

The vast majority of the code to interact with the Genesys .Net API library is centralized in the Genesys directory of the GRINGlobal.Client.Common project. The core classes are as follows:

| Class | Purpose |
|---|---|
| **SyncController.cs / ISyncController.cs** | Central point of entry for all Genesys operations. The class exposes the following key methods:<br><br>CheckConnectivity() – Verify connectivity with Genesys<br>Configure() – Launch configuration wizard dialog<br>UploadAccessionData() – Launch upload data dialog<br>DeleteAccessionData() – Launch delete data dialog |
| **SecureTokenStorage.cs** | Stores user Genesys authentication information |
| **GenesysResources.resx** | Resource file containing user messages and strings. Allows them to be localized for different languages. |
| **ConfigWizard.cs** | Configuration wizard dialog and associated logic |
| **UploadData.cs** | Upload / delete access dialog and associated logic |

## Securely Storing Credentials

Genesys credentials are per individual user, so the implementation was designed to ensure that the credentials are stored securely. It handles the case where each user logs into GRIN-Global from a unique Windows account, or when they login with their individual logins from a shared Windows account.

Credentials are stored in a text file located in the Window user's application data folder. Specifically, it is stored at C:\Users*<username>*\AppData\Roaming\GRIN-Global\Curator Tool. A file is created for each curator username. For example, if a user with username *joeblow* configures a Genesys connection, a file names *genesys_joeblow.txt* will be created containing client id, client secret, and tokens.

Only users who login into the machine with the same Windows user account will be able to access the file. In the case multiple users access the Curator Tool from a single Windows account, the contents of the file are further encrypted using the Windows Data Protection API.

If at any time the credentials file is deleted or corrupted, the next time the user attempts to upload data, the configuration wizard will run automatically.

## Outstanding Items

With the implementation in place, the Curator Tool installation must be modified to

1. Ensure the .Net 4.5.2 library is installed on the target machine.
2. Include the Genesys .Net API library (GeneSys2.Client.dll) is included.