Mussels of Texas
An Online Database for Accessing Texas Mussels Distribution Information
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Esri User Conference, 2017
USA Mussels at risk

- Presumed / Possibly Extinct: 12%
- Critically Imperiled: 25%
- Imperiled: 15%
- Vulnerable: 16%
- Secure/Apparently Secure: 32%

Data Source: 1997 Species Report Card.
Locations of freshwater mussel species contained in the Texas Freshwater Mussel Database

What we do

Current Texas mussel database
- Only for threatened species
- Hard to inquiry
- Lack status assessment maps

Before 2011
- Contemporary sampling + historical records (≈7,000)

2015
- Partners – CPA, TPWD, FWS, UT-Tyler, TSU, TAMU, BIOWEST, SARA, TRA, LCRA, etc. (≈10,000)

Ongoing
- Annual Institute investment…
How we implemented the Database

Statewide freshwater mussel database
Data Processing

Remove Duplicates

To delete duplicate values, select one or more columns that contain duplicates.
- Select All
- Unselect All
- My data has headers

Columns:
- CommonName
- CorrectSpeciesName

Table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Date</th>
<th>Drainage</th>
<th>Waterbody</th>
<th>Accuracy</th>
</tr>
</thead>
</table>

VBA Code:

```vba
Private Sub CollectorID_Click()
    Dim lastRow As Long
    lastRow = WorksheetFunction.CountA(Range("V:V"))
    Dim i As Long, j As Long
    For i = 2 To lastRow
        If Cells(i, 20).Value <> "" Then
            For j = 2 To lastRow
                If LCase(Cells(i, 20).Value) = LCase(Cells(j, 23).Value) Then
                    Cells(i, 21).Value = Cells(j, 22).Value
                    Exit For
                End If
            Next j
        End If
    Next i
End Sub
```
Final Database
Website Development Tools

- Microsoft ASP.NET MVC
- ArcGIS API for JavaScript
C# & ASP.NET Development Environment
MVC Makes Mobile Friendly

Data Query

Taxonomy:

Collected By:

County:

Waterbody:

Drainage:

Filter

0 Record(s) found:

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Location</th>
<th>Catalog Number</th>
</tr>
</thead>
</table>

Conservation status

Golden orb is listed by TPWD as legally threatened and it is being considered for federal listing.

Figure 1. Photograph of Golden Orb.

Figure 2. Range map of Golden Orb.

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Data Query

Taxonomy:
Amblema plicata threeridge

Collected By:
Dobie, J.L.

County:
Llano

Waterbody:
Llano River

Drainage:
Colorado

Search Keywords

Search Results

6 Record(s) found:

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Waterbody</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>4048</td>
</tr>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>4027</td>
</tr>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>4066</td>
</tr>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>2977</td>
</tr>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>2945</td>
</tr>
<tr>
<td>Amblema plicata</td>
<td>threeridge</td>
<td>Llano River</td>
<td>2949</td>
</tr>
</tbody>
</table>
Layer List
Select the various levels of HUC you would like on the map. Zoom in and out to see them.

HUC Layers
- HUC2
- HUC4
- HUC6
- HUC8
- HUC10
- HUC12

Search by Species
- Fusconaia mitchelli false spike

Search by County
- Webb

Search by Waterbody
- Rio Grande

Search by Drainage
- Rio Grande

Collected Between Dates
01/01/2007 and 02/12/2017
Map Page

Other GIS functions
Golden Orb

Description
Shell shape: ranges from oval to nearly round, subquadrate and somewhat subrectangular.
Shell: moderately compressed, solid and moderately thick; posterior ridge is broad and rounded and is sometime double; anterior end rounded; dorsal margin slightly curved; ventral margin straight to slightly curved; posterior end almost truncated.
Umbo: elevated above the hinge line, but not high or extremely full; beak cavity is moderately deep.
Pseudocardinal teeth: two left and one right, are large, but not massive; left pseudocardinal teeth are triangular or square, slightly compressed, posterior-most tooth somewhat less elevated than anterior tooth.
Lateral teeth: are relatively short, only slightly thickened and straight to very slightly curved.
Periostracum: yellowish-orange, orangish-tan, brown, dark brown or black, sometimes with green vague rays; typically no external sculpturing, but some specimens may have faint pustules on the central disk.
Nacre: white or bluish-white, iridescent posteriorly

Habitat
Often abundant in riffles but can occur in other habitat types in mud, sand and gravel.

Range
Endemic to the Nueces-Frio and San Antonio-Guadalupe drainages. Extant populations remain throughout most of its presumptive range, though its taxonomy is in question.

Conservation status
Golden orb is listed by TPWD as legally threatened and it is being considered for federal listing.
Benefits

- Mussels of Texas Project can help
- For all the mussel species
- Conservation status assessment maps

Need more of this

Mussel Data

Analyses

✓ Mussels of Texas Project can help
✓ For all the mussel species
✓ Conservation status assessment maps

Future Possibilities

- More Data
- More Search Keywords
- User Account Management
Thank You

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