A Review of Gar Biology and Ecology

Kevin Pope
Dept. of Range Wildlife and Fisheries Management
Texas Tech University
Lubbock, Texas
USA
People are fascinated by extraordinary fishes

Alligator gar (3-m TL) captured March 1910 from Moon Lake, MS.
Of all enemies of indigenous fishes, the gar tops the list:

- It is a “voracious consumer of other fishes”
- It is a “destroyer of the food used by the game fishes”

Caldwell 1913
Valuable

- Consumed by people
- Important part of culture
- Ecologically important
Lepisosteiformes
Lepisosteidae

- Attenuated needle-like snout
- Elongate body
- Ganoid scales
- Abbreviated heterocercal tail
- Primitive lung
Lepisosteidae

Atractosteus spatula alligator
Atractosteus tristoechus Cuban
Atractosteus tropicus tropical
Lepisosteus oculatus spotted
Lepisosteus osseus longnose
Lepisosteus platostomus shortnose
Lepisosteus platyrhincus Florida
Peer-reviewed Papers on Lepisosteidae

<table>
<thead>
<tr>
<th>Species</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Atractosteus spatula</em></td>
<td>26</td>
</tr>
<tr>
<td><em>Atractosteus tristoechus</em></td>
<td>0</td>
</tr>
<tr>
<td><em>Atractosteus tropicus</em></td>
<td>1</td>
</tr>
<tr>
<td><em>Lepisosteus oculatus</em></td>
<td>26</td>
</tr>
<tr>
<td><em>Lepisosteus osseus</em></td>
<td>36</td>
</tr>
<tr>
<td><em>Lepisosteus platostomus</em></td>
<td>18</td>
</tr>
<tr>
<td><em>Lepisosteus platyrhincus</em></td>
<td>10</td>
</tr>
</tbody>
</table>
Spawning

- Spring
- Shallow waters
- Polyandrous mating (♀ with ♂s)
- Adhesive eggs
Ichthyotoxotoxin

- Reported for *A. spatula*, *L. oculatus* and *L. osseus*
- Toxin affects crayfish, mammals and birds
- BUT, has no ill effects on fish
Larvae

• Newly hatched larvae have adhesive organ on their snout
• Although capable of swimming, remain inactive until yolk sac is absorbed
Food Habits

- Top-level predators
- Adults are mainly piscivorous
Sexual Dimorphism

- ♂ usually has faster growth rate and lives longer than ♀
- ♂ becomes mature at size/age greater than ♂
Ecological Roles

- In Upper Mississippi River basin, gars serve as hosts to parasitic young (glochidia) of the yellow sandshell (a freshwater mussel of concern)
Ecological Roles

• Help prevent overpopulation (stunting) of many other species, especially sunfishes
Needs

• More research
• Scientific publication of results
• Education of the public
Gar Fisheries

- Population dynamics (R, G & M)
- Genetic assessment
- Habitat requirements
- Harvest estimates