Paul W. Thomas, Fisheries Biologist
The Good,

The Bad,

And The Ugly!
Definitions: Non-native Species

Critter living outside captivity that did not historically occur in Florida!
Definition: Invasive Species

A non-native critter that has spread into natural areas and preys upon or competes with native species!
Definition: Exotics!
The Goods, The Bads, and the Uglies!

1. Brown Hoplo *Hoplosternum littorale* Callichthyidae
2. Bullseye Snakehead *Channa marulius* Channidae
3. Oscar *Astronotus ocellatus* Cichlidae
4. Butterfly Peacock Bass *Cichla ocellaris* Cichlidae
5. Black Acara *Cichlasoma bimaculatum* Cichlidae
6. Midas Cichlid *Cichlasoma citrinellum* Cichlidae
7. Rio Grande Cichlid *Cichlasoma cyanoguttatum* Cichlidae
8. Jaguar Guapote *Cichlasoma managuense* Cichlidae
9. Yellowbelly Cichlid *Cichlasoma salvini* Cichlidae
10. Mayan Cichlid *Cichlasoma urophthalmus* Cichlidae
11. African Jewelfish *Hemichromis letourneuxii* Cichlidae
12. Blue Tilapia *Oreochromis aureus* Cichlidae
13. Mozambique Tilapia *Oreochromis mossambicus* Cichlidae
14. Blackchin Tilapia *Sarotherodon melanotheron* Cichlidae
15. Spotted Tilapia *Tilapia mariae* Cichlidae
16. Walking Catfish *Clarias batrachus* Claridae
17. Common Carp *Cyprinus carpio* Cyprinidae
18. Suckermouth Catfish *Hypostomus sp.* Loricariidae
19. Vermiculated Sailfin Catfish *Pterygoplichthys disjunctivus* Loricariidae
20. Orinoco Sailfin Catfish *Pterygoplichthys multiradiatus* Loricariidae
21. Clown Knifefish *Chitala ornata* Notopteridae
22. Pike Killifish *Belonesox belizanus* Poeciliidae
23. Asian Swamp Eel *Monopterus albus* Synbranchidae

1. Eartheater *Geophagus sp.* Cichlidae
2. Eastern Happy *Haplochromis callipterus* Cichlidae
3. Banded Cichlid *Heros severus* Cichlidae
4. Theraps Hybrid *Theraps melanurus x T. zonatus* Cichlidae
5. Hornet Tilapia *Tilapia buttikoferi* Cichlidae
6. Nile Tilapia *Oreochromis niloticus* Cichlidae
7. Oriental Weatherfish *Misgurnus anguillicaudatus* Cobitidae
8. Bristlenosed Catfish *Ancistrus sp.* Loricariidae
9. Spotfin Spiny Eel *Macrognathus siamensis*
10. Black Pacu *Colossoma macropomum* Characidae
11. Redbellied Pacu *Piaractus brachypomus* Characidae
12. Cichlasoma Hybrid *C. citrinellum x C. urophthalmus* Cichlidae
13. Northern Snakehead *Channa argus* Channidae
14. Grass Carp *Ctenopharyngodon idella* Cyprinidae
15. Barred Bichir *Polypterus delhezi* Polypteridae
How Do They Get Here? What Are the Agents of Introduction?

- Aquarium Dumping
- Food Fish Release
- Pond Flooding
- Legal Introductions
What’s the Harm?

• Alter Natural Energy Flow
• Compete/Hybridize With Natives
• Harmful to Man
• Disease/Parasite Vectors
• May Just Exist Semi-peacefully
The Good
Butterfly Peacock Bass

- Legal Introduction (FWC) – 1984
- Native to South America
- Additional Predator for Pesky Exotics in Miami Canals
- Can’t Expand Range
- $8 Million/Year Sportfishery
- To 12 lbs.
Triploid Grass Carp

• Legal Introductions (FWC et.al.) – 1980’s
• Biocontrol Agent
• Triploid – 3 Sets Chromosomes
• Native to China
• To 75 lbs.
Mayan Cichlid – The Atomic Bream!

• Documented 1983, South Florida
• Native to South/Central America
• Hurricanes (Andrew et. al.) expanded range to Kissimmee Chain of Lakes
• Prized Sportfish
The Bad
Blue Tilapia – “Nile Perch”

• Introduced 1961 (GFC), Native to Middle East
• 3000 Juveniles, Phosphate Pit in Hillsborough County
• Research Project – Sportfish Properties and Biocontrol Agent for Aquatic Plants
• Compete for Spawning Space with Native Sportfish – Largemouth Bass and Bluegill
• Mouthbrooders, Multiple Spawns
• To 10 lbs.
Sailfin/Suckermouth Armored Catfish

- Documented 1950’s, South Florida, Range Has Expanded Greatly Since 90’s
- Actually 3 Species, Native to South America
- Erosion of river and pond banks due to nesting habits
- Energy Shifts in Ecosystems Poorly Understood at Present
- To 3.5 lbs.
Brown Hoplo Catfish

- Discovered 1995, Indian River Lagoon, Now Throughout Central/South Florida
- Native to Trinidad and Eastern South America, National Dish!
- Purposely Introduced by Fishermen
- Poorly Understood
- Energy Disruption in Ecosystems?
- Preyed on by Largemouth Bass and by Common Snook in Rivers
- To 12 Inches
Walking Catfish

- Escapees Documented 1967, South Florida and Hillsborough County
- Golden Goose of the Aquarium Fish Trade...NOT!
- Native to Southeast Asia
- Competitive Predator With Natives
- Not Nearly as Horrific as First Thought to Be
- To 3 lbs.
- Yes, They Do Walk!
The Ugly
Piranha – Not in 3D

- Discovered 2009, West Palm Beach and Bonita Springs
- Prohibited Species
- Total of 5 Individual Fish
- Pond in West Palm Killed Out and Restocked
Last But Not Least…
Bullseye Snakehead

- Documented Fall 2000, Canals of Southeast Florida
- Popular Sportfish
- Not the Northern Snakehead of the Potomac River Fame
- Coexists in Canal Systems With Natives
- Do NOT Walk on Land
- Cannot Stay Out of Water Long
### Bowfin vs. Snakehead

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<thead>
<tr>
<th></th>
<th>Bowfin</th>
<th>Snakehead</th>
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<tbody>
<tr>
<td><strong>Head</strong></td>
<td>Broadly rounded</td>
<td>Flattened, pointy</td>
</tr>
<tr>
<td><strong>Jaw</strong></td>
<td>Lower shorter than upper</td>
<td>Lower longer than upper</td>
</tr>
<tr>
<td><strong>Pelvic fin</strong></td>
<td>Insert on the abdomen well back of the front of the dorsal fin</td>
<td>Insert on the abdomen below the front of the dorsal fin</td>
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<tr>
<td><strong>Anal fin</strong></td>
<td>Short, less than half the length of the Dorsal Fin with 12 rays</td>
<td>Long, more than half the length of the Dorsal Fin with 18 rays</td>
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What Can Be Done?

Division of Fresh Water Fisheries Management
Non-Native Fisheries Laboratory
Boca Raton

• Long-term Goal: Eliminate Illegally Introduced Fish When Possible
• Education and Outreach
• Find a Use for Fish – Recreational and/or Commercial Fishing
What’s Worse, Bad Fish or Bad Fish Movies?