Evaluation of two restored Mississippi River floodplains with a focus on species-habitat associations of gars (Lepisosteidae)

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Introduction

River-floodplain connectivity has been significantly altered by anthropogenic impacts[1,2].

Floodplains offer essential spawning/nursery areas for riverine fishes such as gars.

To mitigate these effects, The Nature Conservancy (TNC) and Louisiana Department of Wildlife and Fisheries (LDWF) are conducting restoration activities.

Gars may have different floodplain habitat preferences[3,4] and significance of this variation is poorly understood.

Study Area

Figure 1. Richard K Yancy Wildlife Management Area (Left) and The Nature Conservancy Loch Leven Reservoir (Right). Inset of LA identifying sample locations[5]

Objectives

1. Determine spatio-temporal distribution relationships among lepisosteids between geographically similar restoration sites

2. Validate presence of Alligator Gar spawning habitat

Figure 2. Panel featuring habitat sampling types A) low-level lake B) LDWF culvert C) inundated floodplain D) TNC culvert

Methods

Fish will be collected via gillnets (5&7 cm), cast nets, and jug lines
Fishes caught will be identified and length measured
Size and abundance data will be analyzed using multivariate statistics
GIS will be used to develop spatio-temporal distributions

Figure 3. Total length, standard length, head length, and snout length were measured (cm) for all gars. Alligator Gar (*Atractosteus spatula*) pictured.
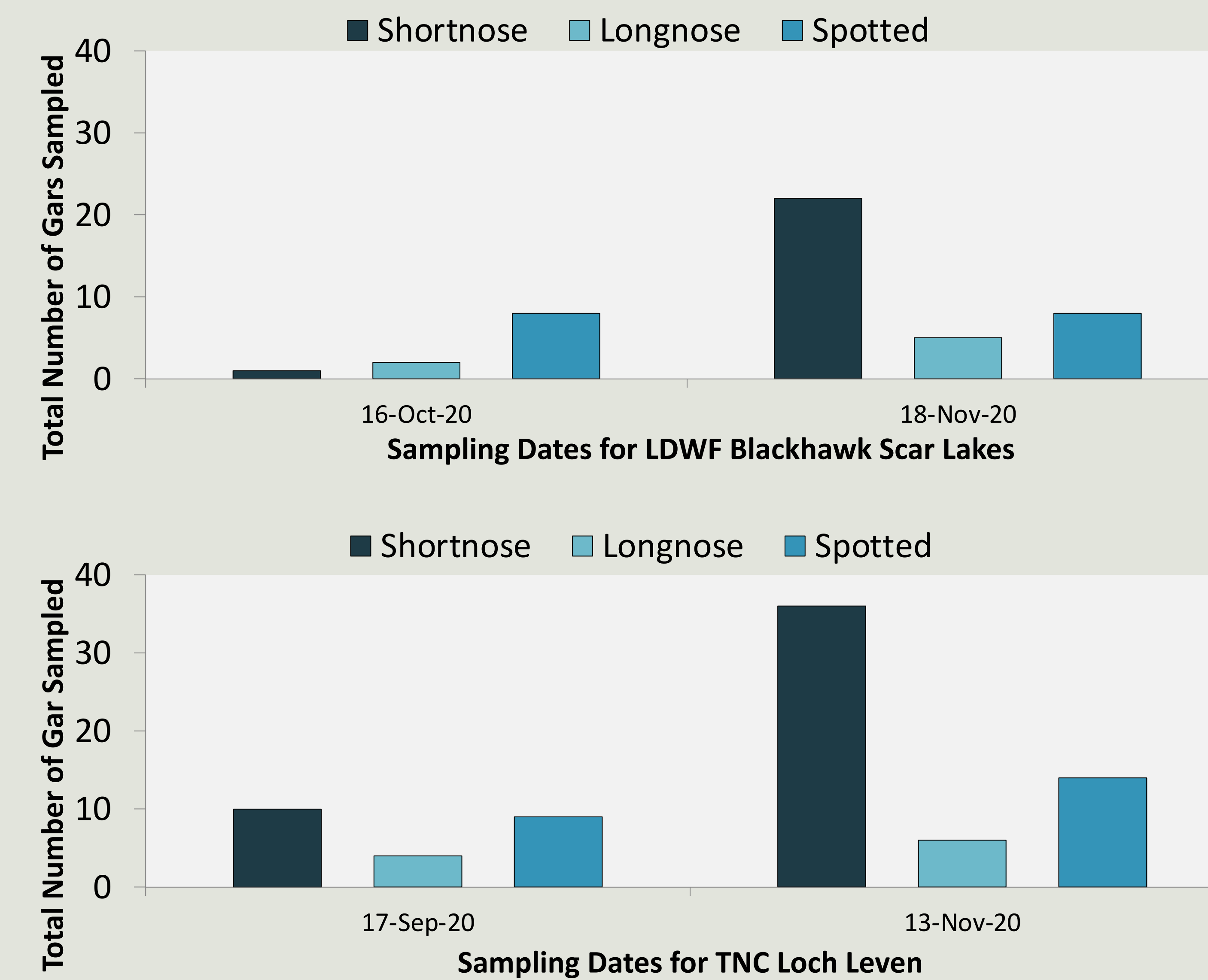
Preliminary Data

Figure 4. 3 species of gar were collected at LDWF (top) and Loch Leven (bottom) during September and November, for a total of 125 gars.

Expectations and Significance

Construction of flood control structures, culverts, and weirs within the floodplain will improve access for fish and enhance natural flow regimes.

Identifying potential differences in gar-species habitat associations can inform future restoration efforts.

Literature Cited

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5. Louisiana geographic map. Wikimedia Commons, free media repository.

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