

Restoration of Lake Griffin - Influence on Silver Springs?

Rolland Fulton

Bureau of Environmental Sciences

June 20, 2013



Lake Griffin - late 1990s

Orlando Sentinel - 8/26/01

SPECIAL REPORT
Toxic algae in our lakes

Menace lurks hidden in lakes

A study reveals how risky it
may be to go into the water

water in Lake
Griffin for
visibility

TOM BENITEZ/THE
ORLANDO
SENTINEL

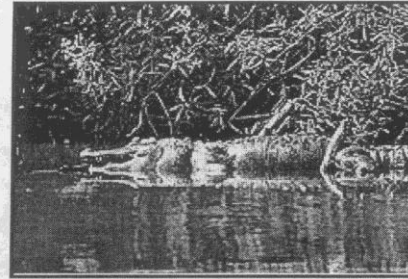
Test confirms bacteria will poison lake

Ramsey Campbell
of The Sentinel Staff

Published in The Orlando Sentinel on July 23, 1999.

Killed by Cy? A
gator lies dead
in Lake Griffin.
Scientists think
the killer may be
a tiny organism
nicknamed 'Cy.'

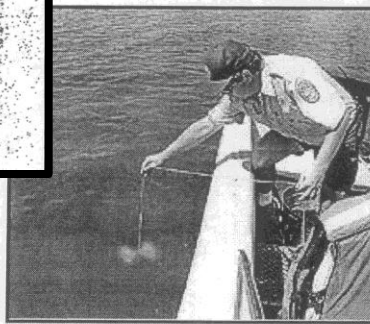
TOM BENITEZ/THE
ORLANDO
SENTINEL



Do lakes hold a killer algae?

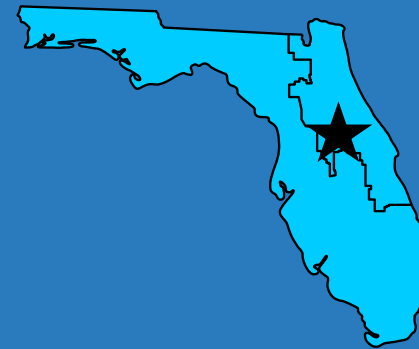
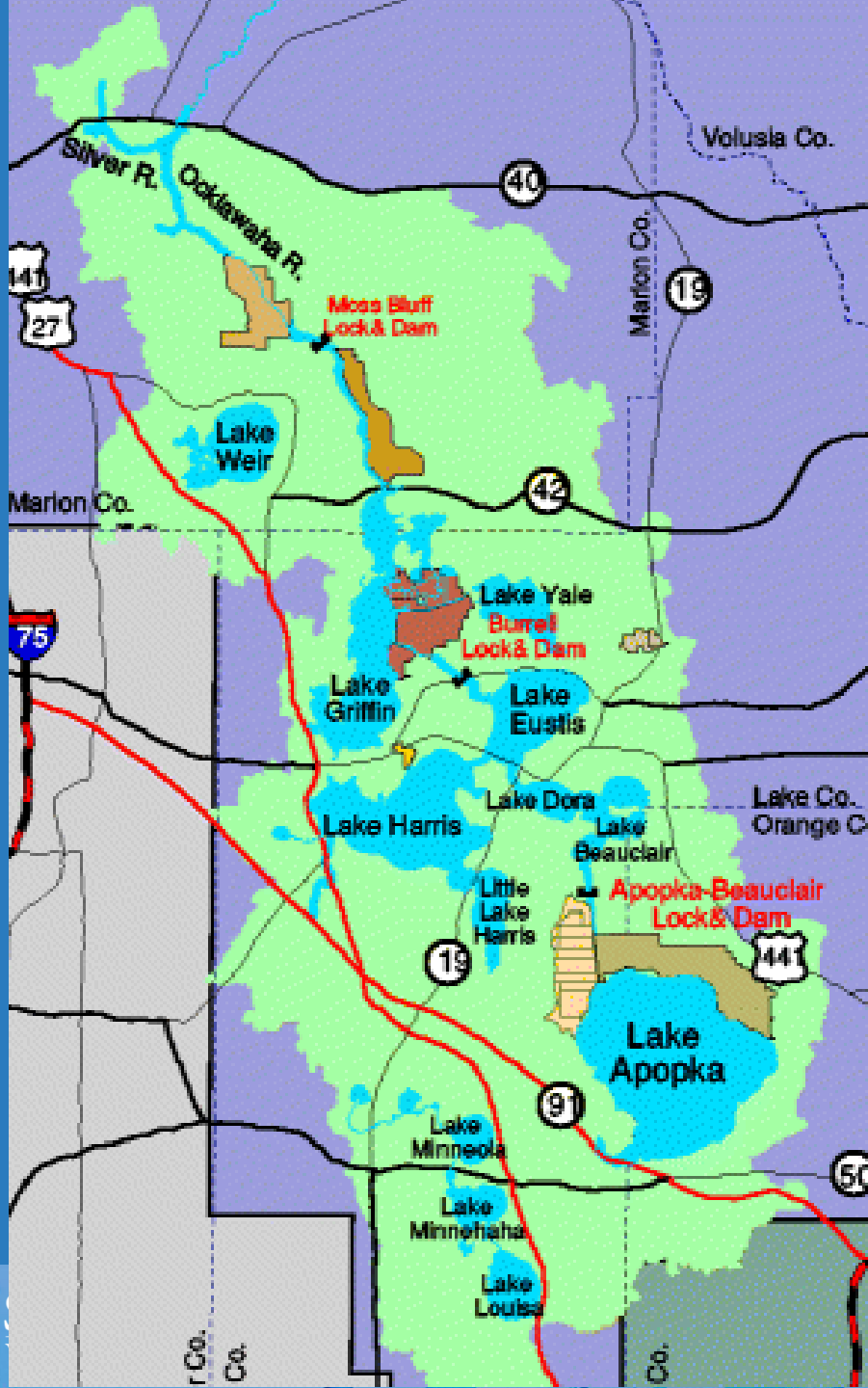
Robert Sargent Jr. and Ramsey Campbell
of The Sentinel Staff

entinel on July 22, 1999.



St. Johns River
Water Management District

Upper Ocklawaha River Basin



Lake Griffin restoration program

- Wetland restoration to reduce phosphorus load and restore habitat
- About 5,000 acres of former farmlands

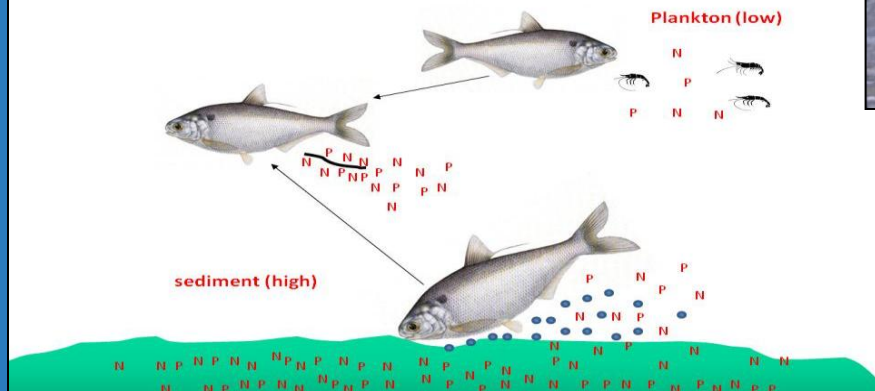


Removal of Gizzard Shad from Lake Griffin

- Remove P in fish bodies
- Reduce recycling of P caused by bottom feeding



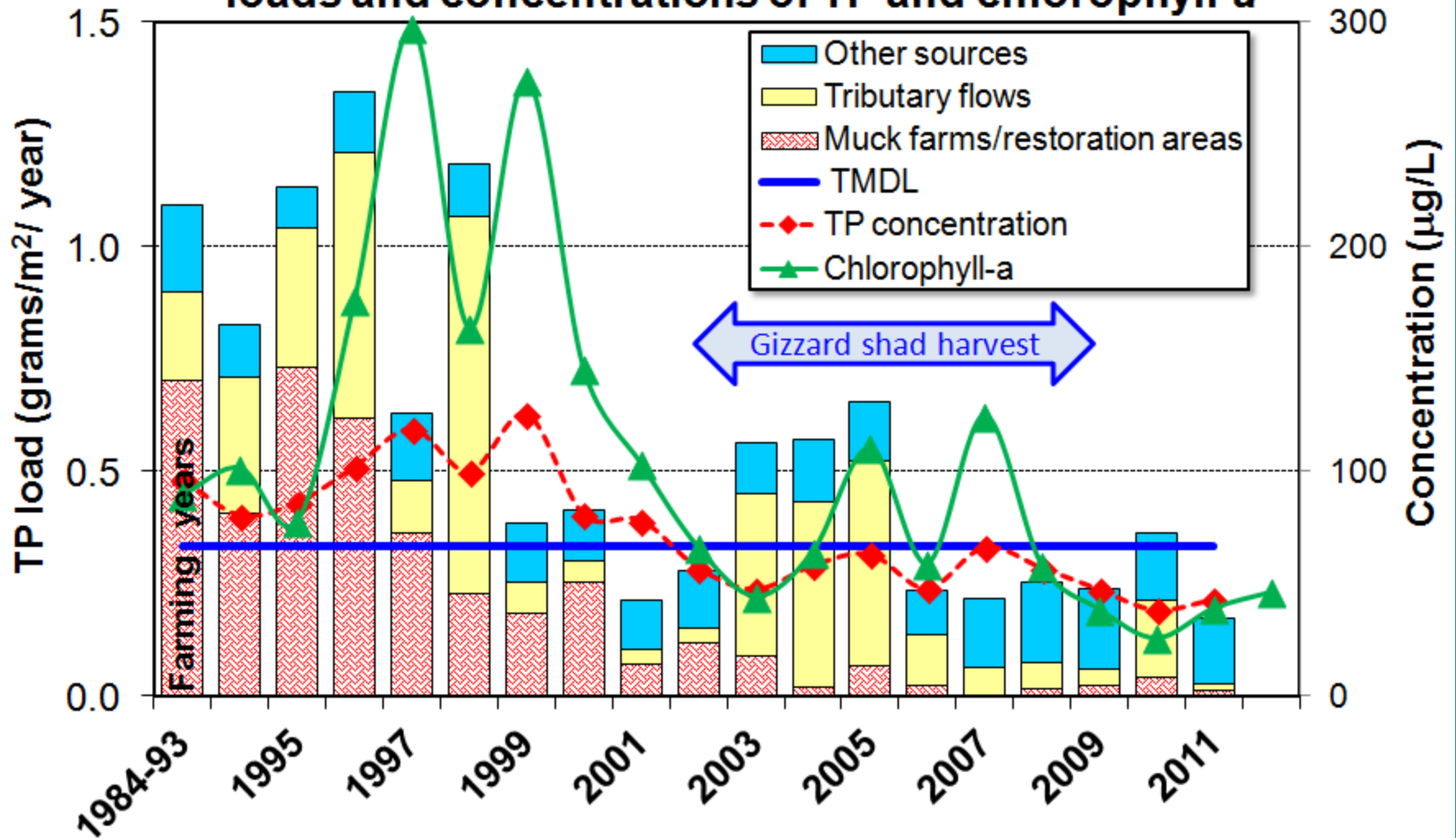
Impact of gizzard shad feeding depends on primary source of food



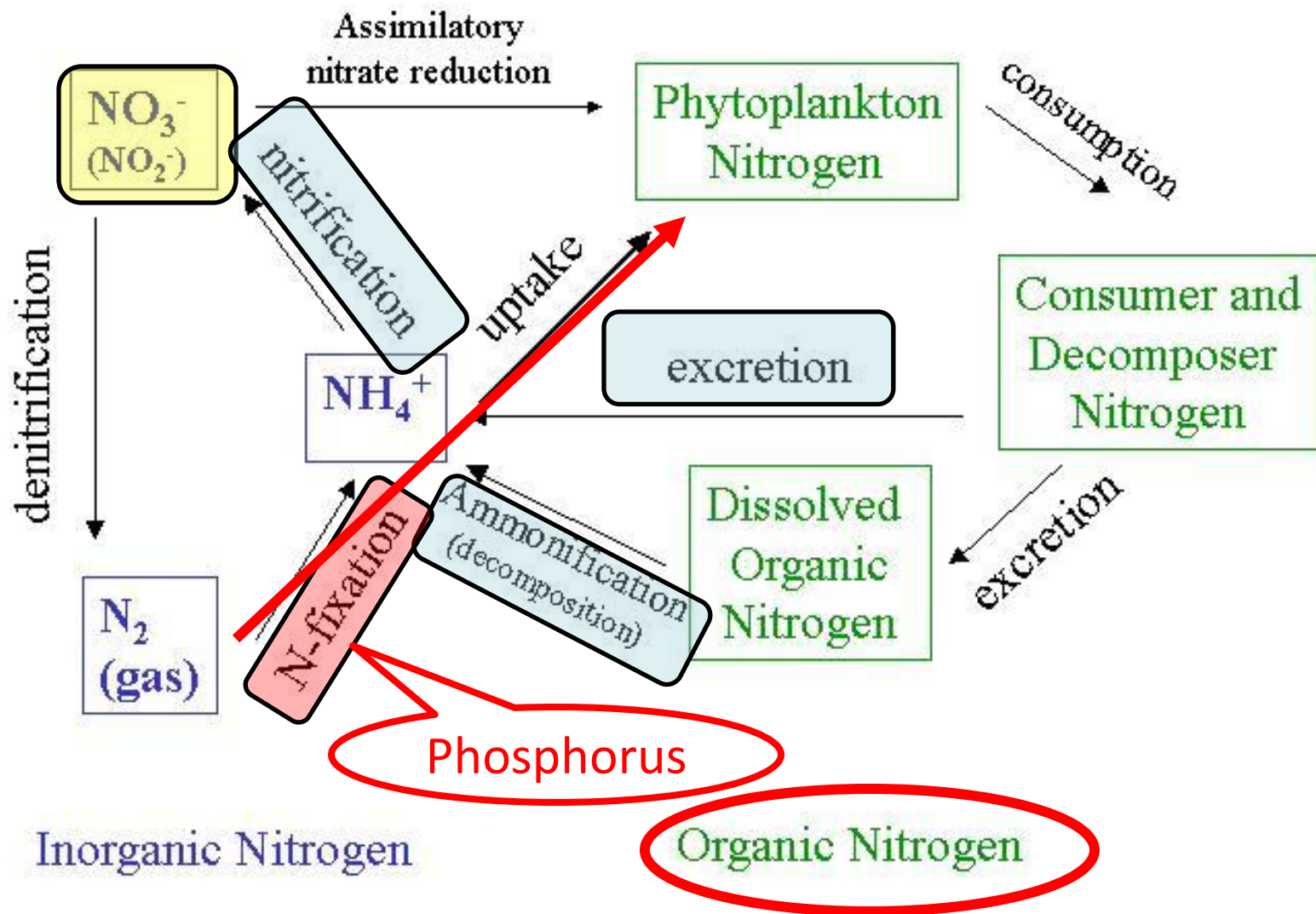
- Reduce turbidity caused by bottom feeding disturbance



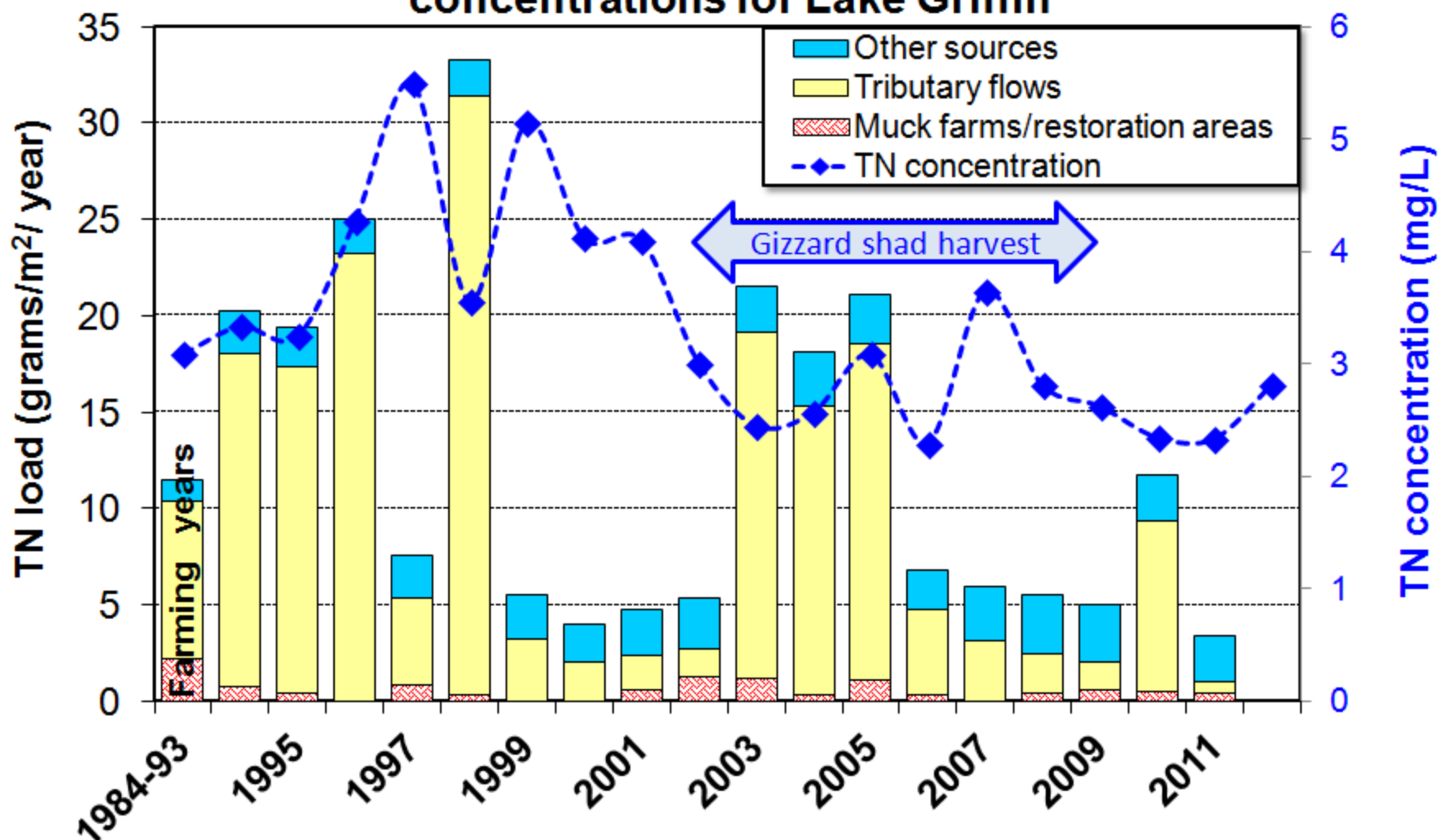
Lake Griffin estimated annual external total phosphorus loads and concentrations of TP and chlorophyll-a



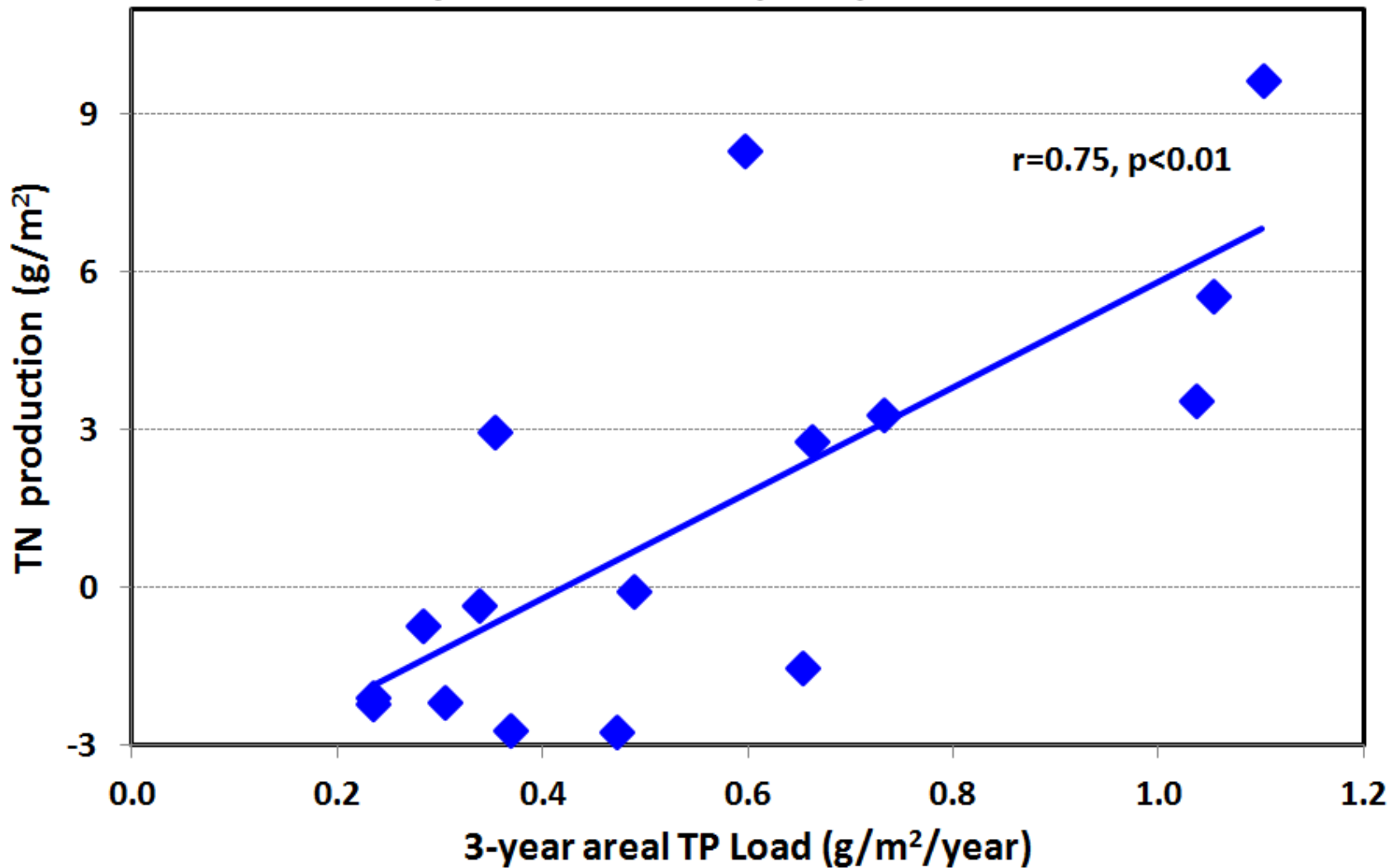
Aquatic Nitrogen Cycle



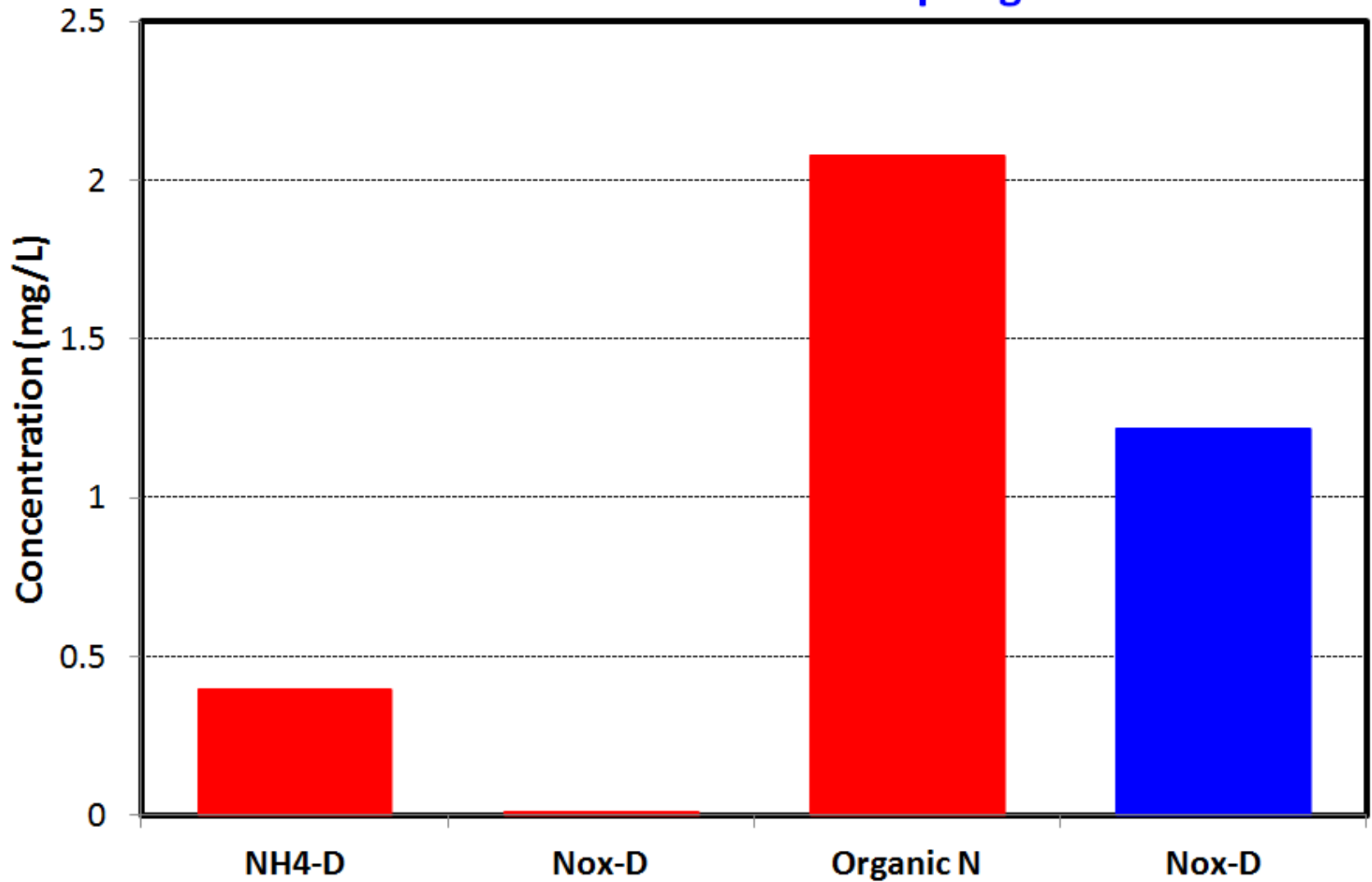
Estimated annual external total nitrogen loads and concentrations for Lake Griffin

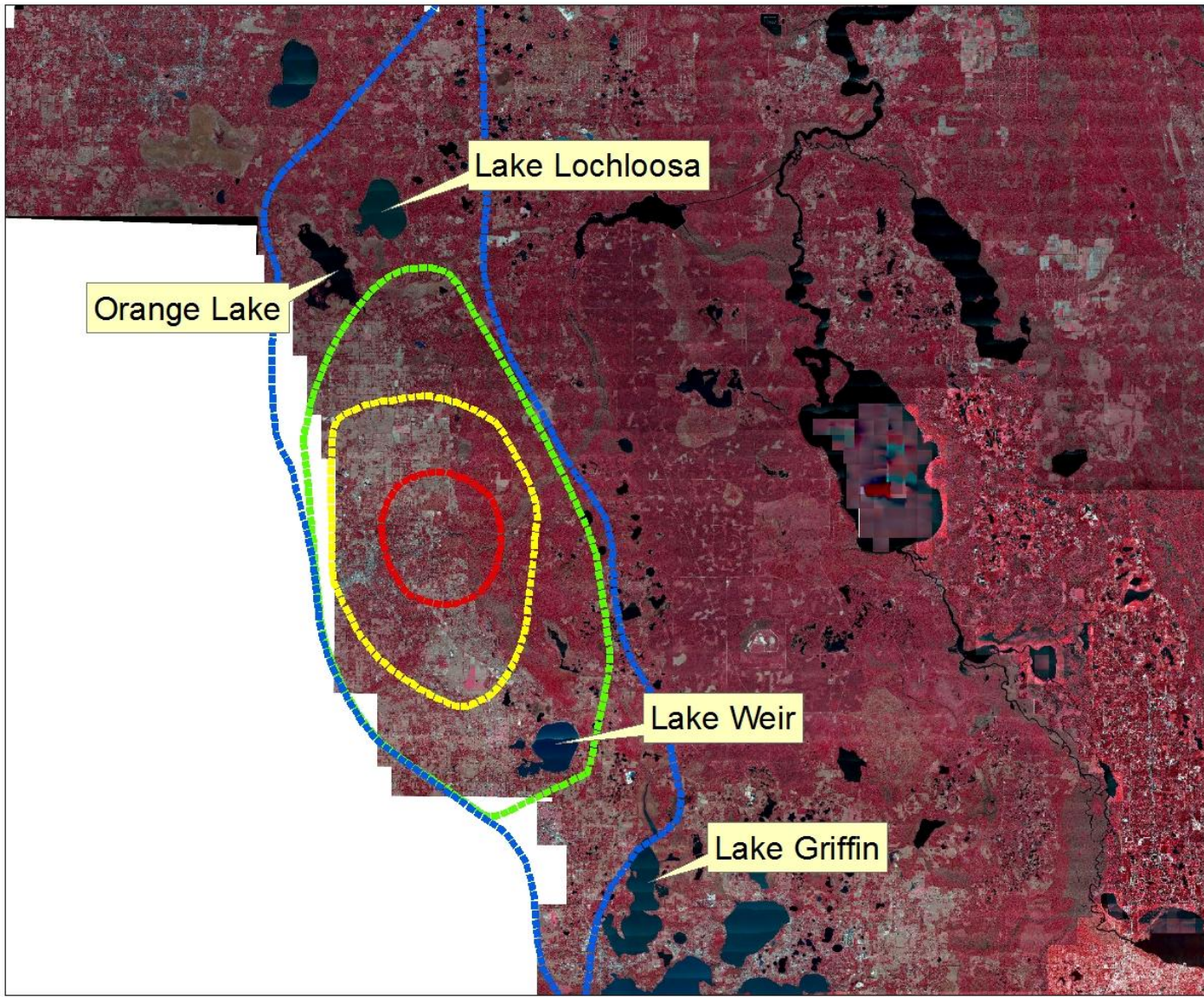


Lake Griffin anual net total nitrogen production vs. 3-year areal total phosphorus load



Average recent N-fraction concentrations for Lake Griffin and Silver Springs

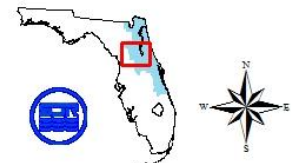




Silver Springs springshed and area lakes

Legend

-  2-year Capture Zone
-  10-year Capture Zone
-  100-year Capture Zone
-  1000-year Capture Zone



2.5:250 2.5 Miles

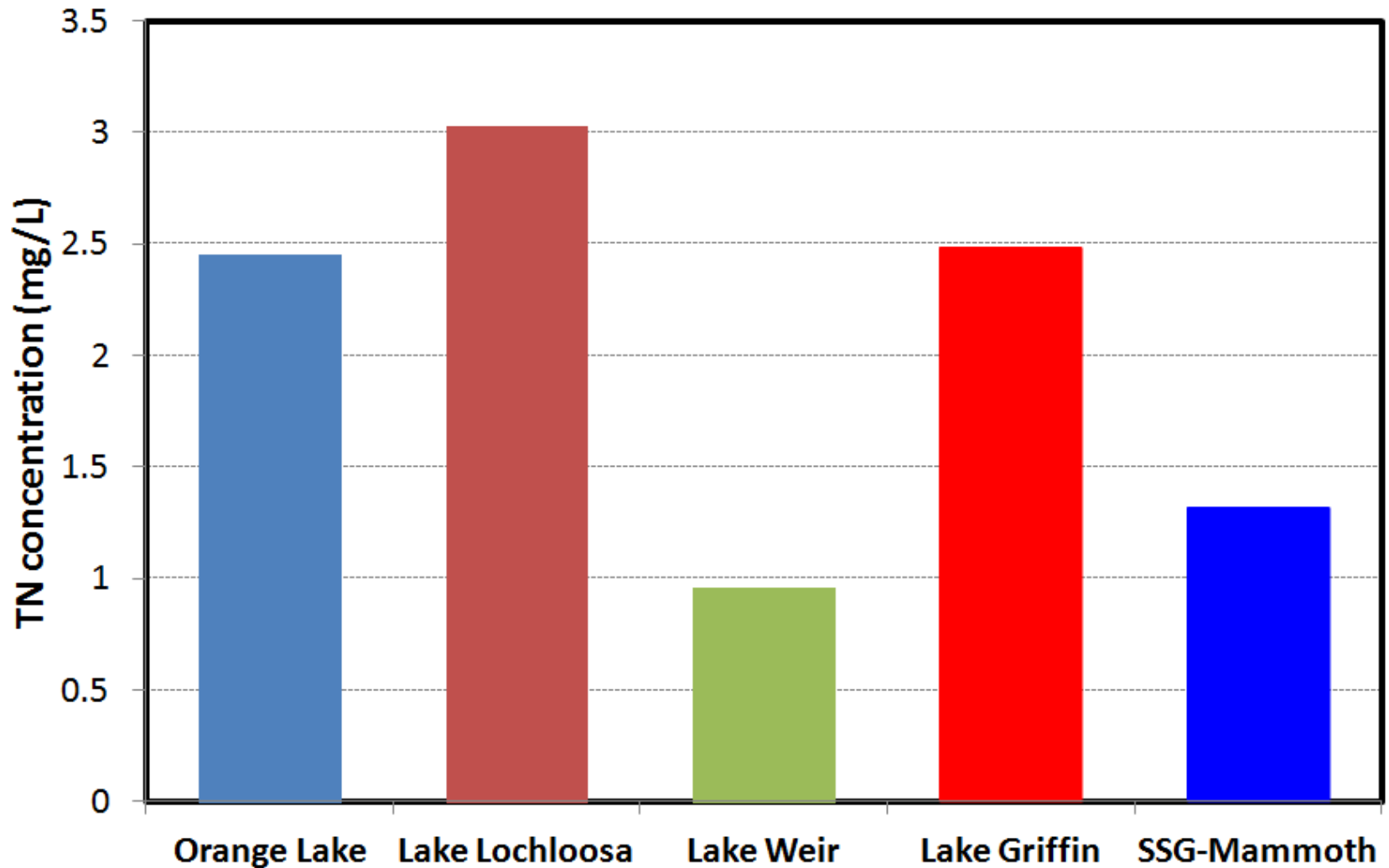


1 = 400000

The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems, Program Management, P.O. Box 1429, 4049 Reid Street, Palatka, Florida 32177-1429. Tel: (386) 329-4176.

Author: Source: Y:\ARCGIS files\Denham basin.mxd, Time: 4/3/2013 3:03:07 PM

Average total nitrogen concentrations for Silver Springs and lakes in the Silver Springs springshed



Reasons to doubt that springshed lakes contribute significant nitrate load to Silver Springs (1)

- Depending on the head difference between lake stages and UFA potentiometric surface, there can be discharge or recharge. Don Boniol believes these lakes are primarily discharge areas (pers. comm.).
- Ocklawaha lakes regulation schedules believed to increase recharge (SJR Spec. Publ. SJ2004-SP2). However, that is believed to increase eastward groundwater flow, towards Wekiva R. (SJR Spec. Publ. SJ2008-SP3)



Reasons to doubt that springshed lakes contribute significant nitrate load to Silver Springs (2)

- Likely to be losses of nitrogen during recharge to aquifer (retention by lake sediments, denitrification)
- Current groundwater models predict long transit times from lakes to Silver Springs (100 to >1000 years)





Any questions?

Lake Griffin - April 30, 2004



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