

# **Empowering Anglers to Make a Difference**



**The science behind catch-and-release angling**

**David Petersen, Core Angling**

**Dr. Andy Danylchuk, Cape Eleuthera Institute**

**The First Cast  
29 March 2008**



# Why do we love to fish?



**“People protect what they love”**

*Jacques-Yves Cousteau*



# How Can Anglers Protect What They Love?

**Learn and apply best practices for catch-and-release angling**

**Anglers ~ first line of defense for the conservation of sportfish**

**Conservation is the legacy that anglers can leave behind**



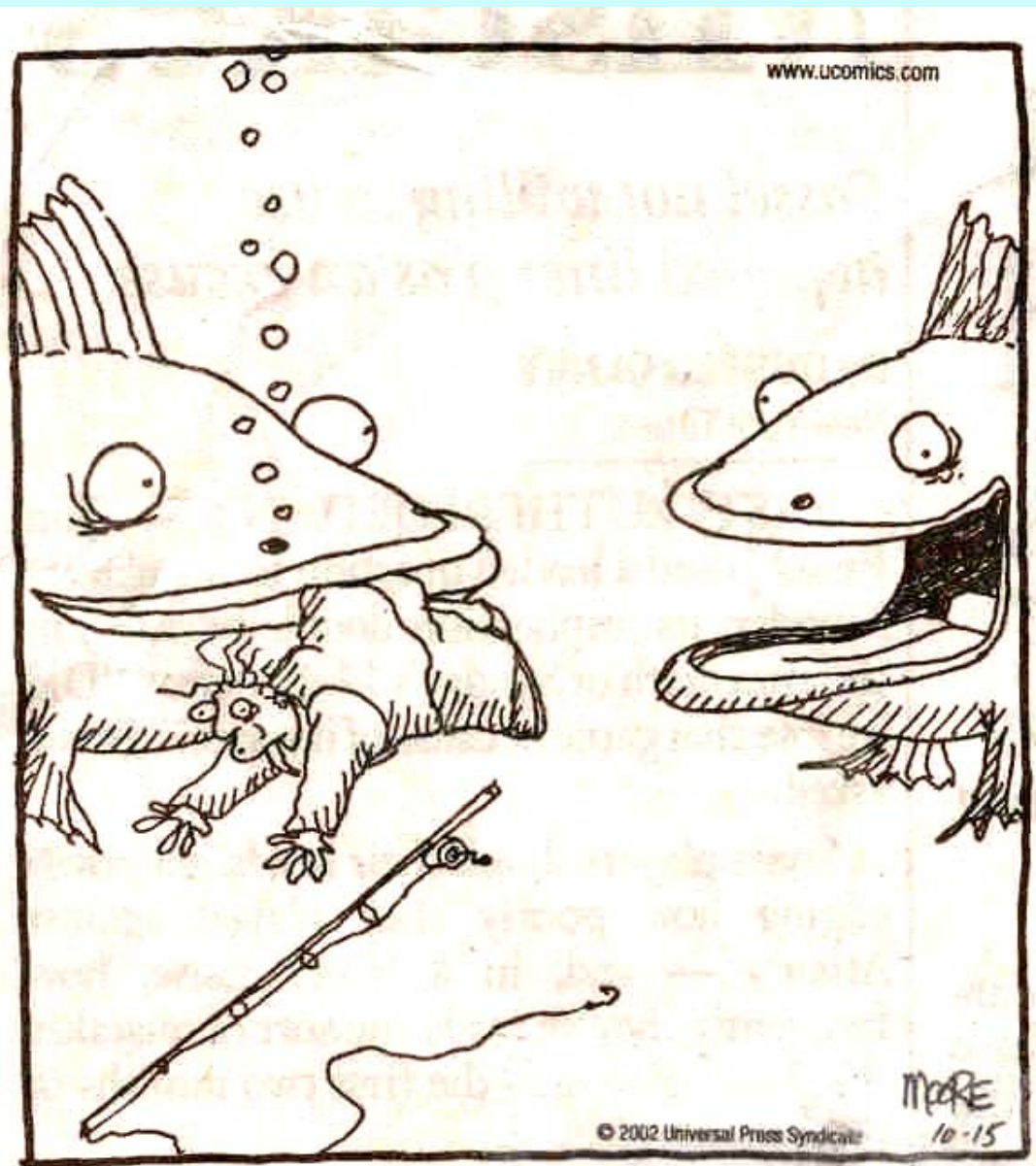
# What Are Best-Practices?

**Practices that are of the highest conservation benefit to fish (little/no negative impacts)**

**Often based on anecdotes from anglers however their benefit needs to be confirmed by science**

**Systematically tested and quantified**





**"That's a reeeal beaut, Larry! Let's measure it, snap a photo, and then release it before it drowns."**



# Elements of the Angling Event

## Capture

Physical hook injury, exhaustion, predation

## Handling

Hook removal, air exposure, slime removal, injury from handling

## Release

Predation, disease, parasites, fitness



# Bonefish (*Albula* spp)



**Circumglobal**

**9+ species**

**Shallow flats**

**Benthivore**





# **Bonefish Fishery**

**Multi-billion dollar industry in Florida  
(annually!)**

**Supports the economy of local communities in  
developing countries such as The Bahamas**

**How has science helped to develop best handling  
practices that will make this industry more  
sustainable?**



# **What Has Science Addressed?**

**What attributes of the angling event have the greatest influence on the survival of bonefish?**

**How long does it take for a bonefish to recover from catch-and-release angling?**

**Can lip gripping tools reduce the impact of handling for bonefish?**



# How Do Different Attributes of the Angling Event Influence the Survival of Bonefish?



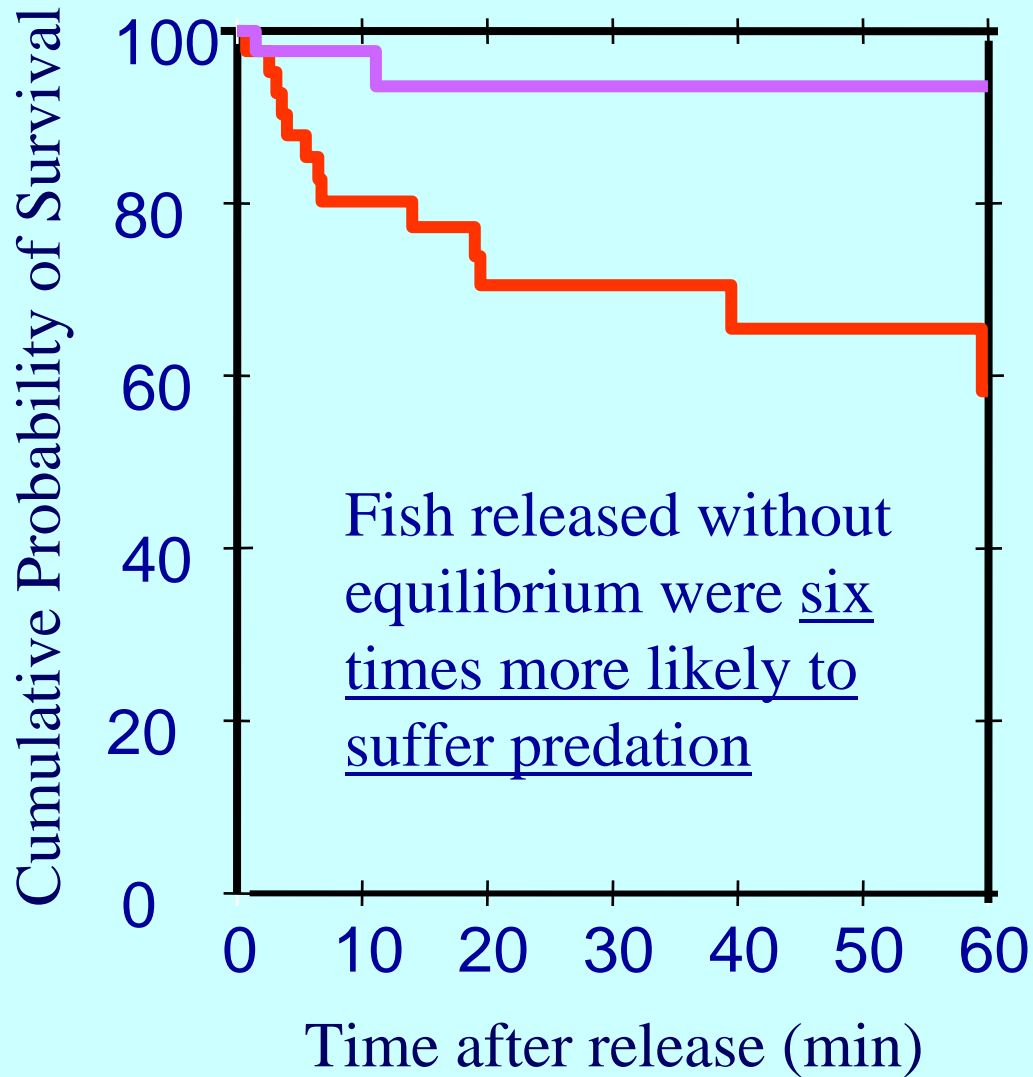
**88 bonefish caught-and-released  
(Mar – Aug '05)**

**Quantified all attributes of the  
angling event (capture, handling,  
and release)**

**17% mortality by predation**



# Survival Curve



Equilibrium

Loss of Equilibrium



# Factors Influencing Equilibrium

**NO** ~ Length of fish, incidence of bleeding,  
duration of fight

**YES** ~ Duration of air exposure

For every min of air exposure, chance of loss of  
equilibrium increases by 6 times

**YES** ~ Handling time

For every min of handling, chance of loss of  
equilibrium increases by 1.2 times



# How Long Does it Take for Bonefish to Recover from Angling?



Exposed bonefish to exercise and different levels of air exposure

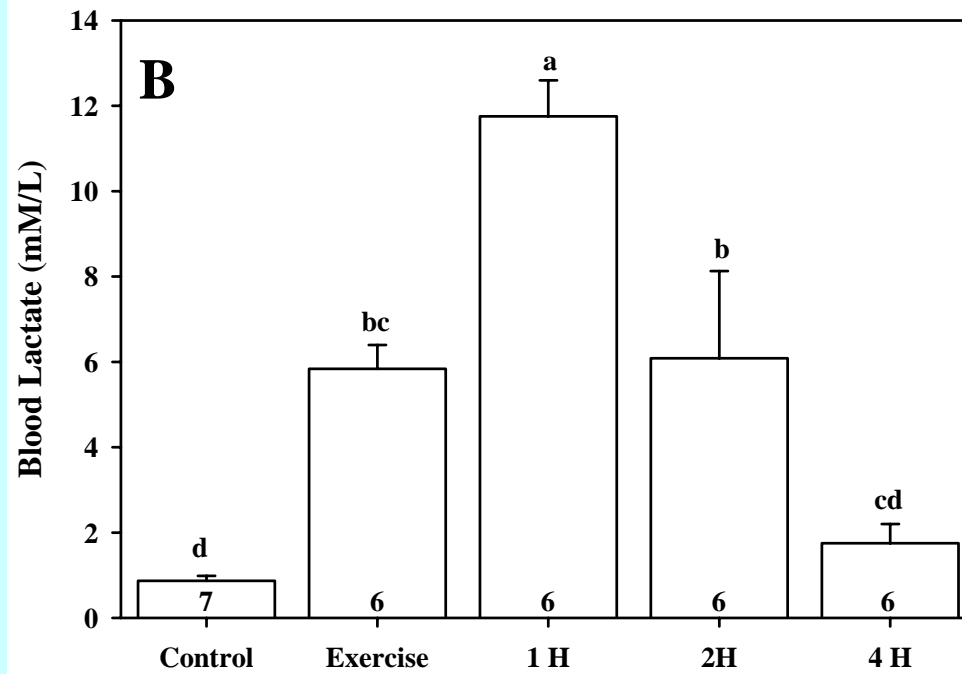
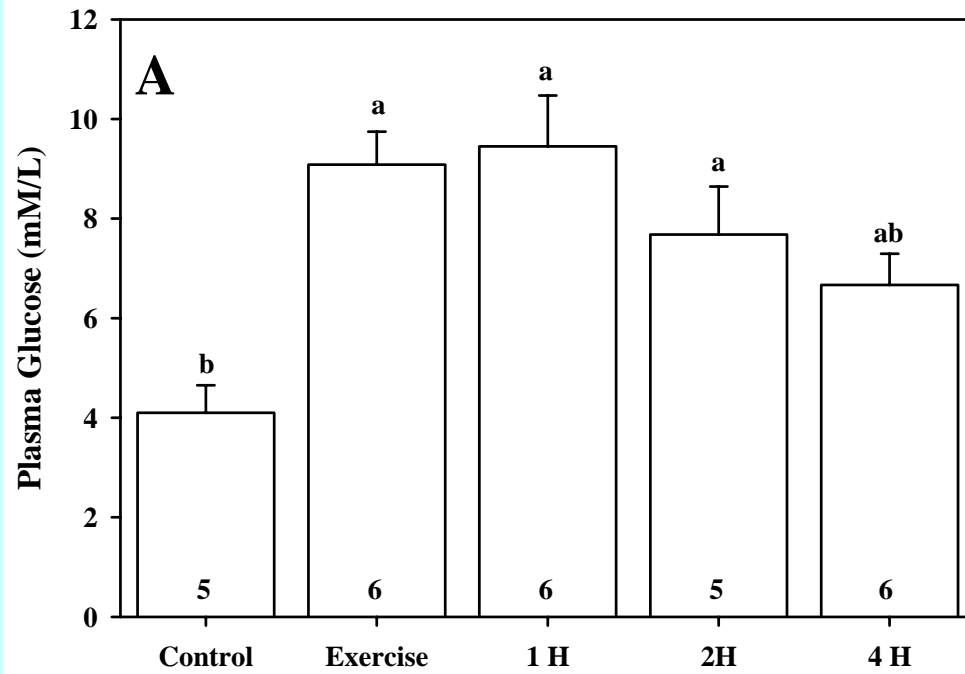


Examined blood chemistry as a measure of physiological disturbance



Monitored behavior and survival





# Recover from Angling

**Bonefish exercised for four minutes and not exposed to air took 2-4 hrs to physiologically recover.**

**Greater physiological disturbance occurred when exercise was followed by air exposure, with these fish needing more than 4 hrs to recover (and some died).**

**Degree of physiological disturbance was related to the duration of air exposure and handling**



# Can Lip Gripping Tools Reduce the Impacts of Handling?



**Bonefish held vertically in air, bonefish held horizontally in water, and control**

**Ten bonefish in each group**



**Examined injury and mortality after 48 hrs**



# Impacts of Lip Gripping Tools

**18 of 20 bonefish handled with lip grip devices suffered injuries, 100% of those held vertically and 80% of those held horizontally**

**40% of injuries were severe, likely resulting when bonefish thrashed**





# Scientifically-Based Guidelines

**Reduce or even eliminate air exposure ~ anything over 15 sec is too much**

**Reduce angling time**

**Minimize handling time**

**Avoid using lip gripping devices**



# Scientifically-Based Guidelines

**Match the tackle with the conditions**

**Land the fish before it is exhausted**

**Use barbless hooks**

**Remove hook in water**

**Be camera ready**

**Wet hands before  
handling**



# Science in Progress/Pending

**Does pure oxygen help reduce the recovery rate of bonefish?**



**Does water temperature influence the survival of bonefish?**



**How do predators home in on bonefish following release?**



**Do cradles/slings reduce the impacts of handling?**



# Research Partners and Supporters

Tom Davidson, Russ Fisher, and members of BTU







Copyright Aaron Adams 2008



Copyright Aaron Adams 2008



Copyright Aaron Adams 2008



Copyright Aaron Adams 2008



Copyright Aaron Adams 2008



Copyright Aaron Adams 2008



Copyright Aaron Adams 2008





core angling

# Close The Loop

*Between Fishing, Research and Conservation*

*The evolution of angling adventure*



Contact us to learn more

Toll free 1-866-207-1891 [info@coreangling.com](mailto:info@coreangling.com) [www.coreangling.com](http://www.coreangling.com)



CAPE ELEUTHERA INSTITUTE  
RESEARCH SUSTAINABLE DEVELOPMENT OUTREACH



A Division of Earthshine Investment Inc.