

Utilization of Tamarisk by Southwestern Willow Flycatchers and Other Bird Species, and Potential Impacts of Biological Control Releases in the Southwest

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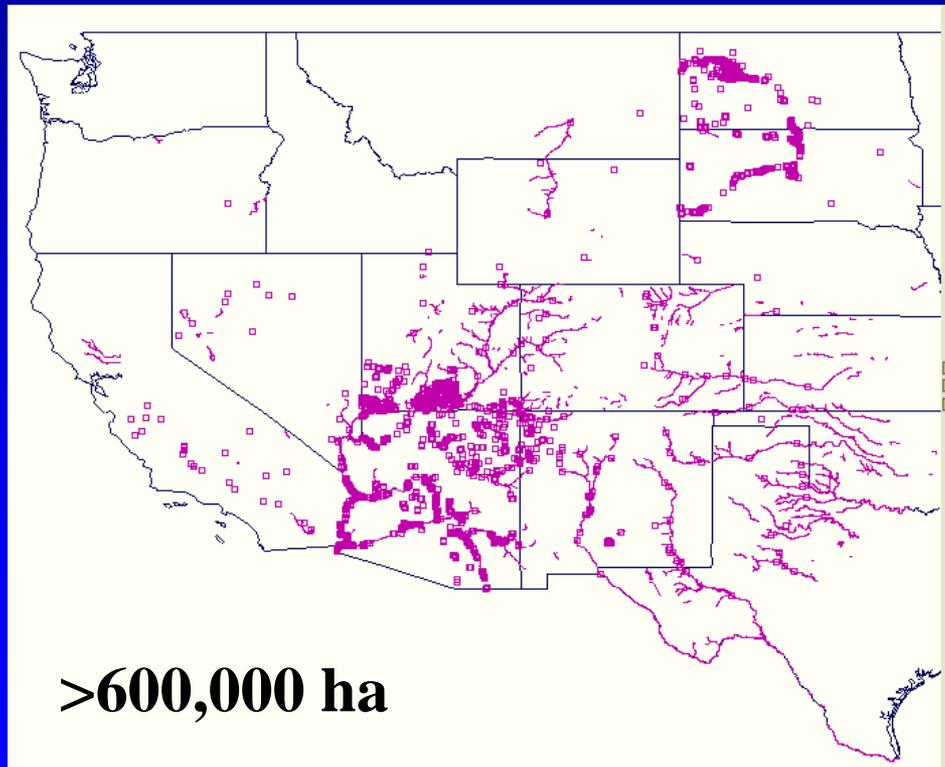


Santa Ynez River, CA



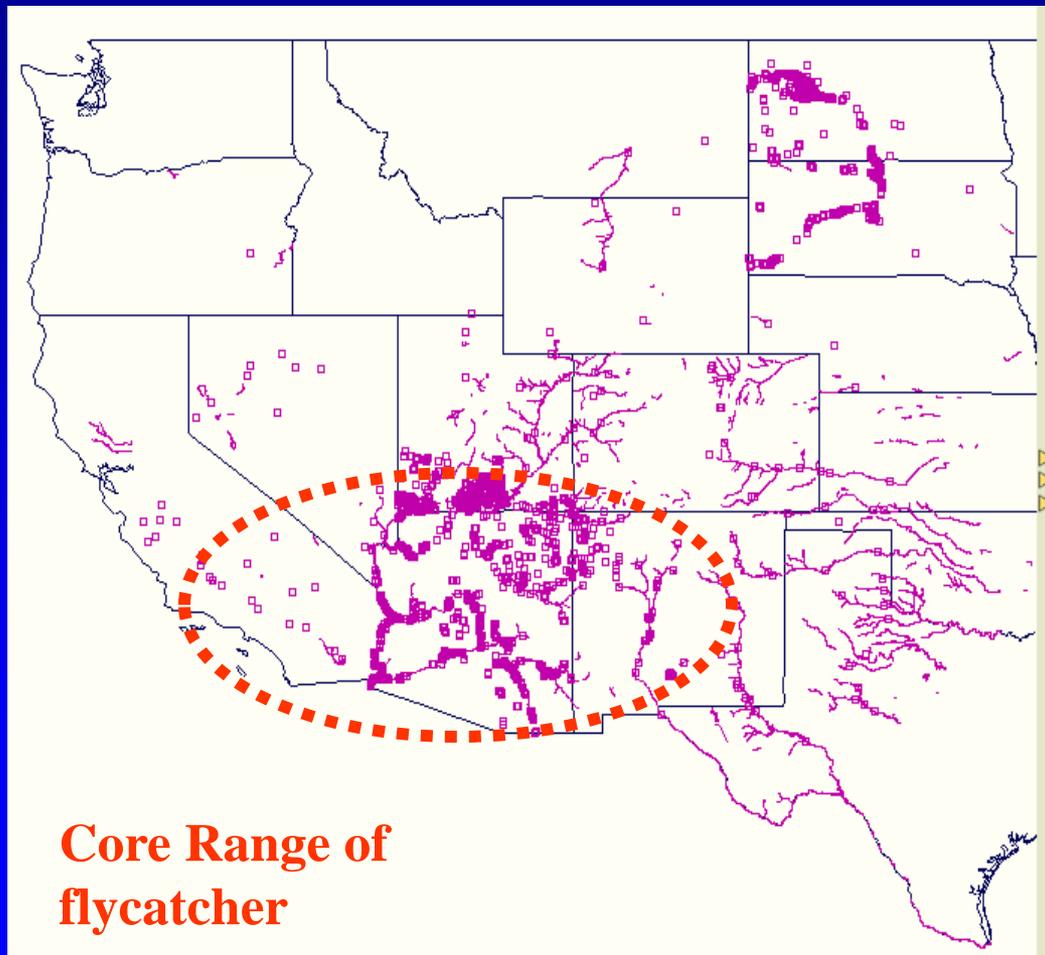
Invasives

Tamarisk (saltcedar)



From TMap web site

Southwestern Willow Flycatcher



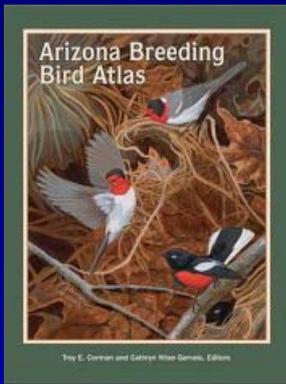
Southwestern Willow Flycatcher

- Multiple studies undertaken
 - Owen et al. 2005, Sogge et al. 2006 , Paxton et al. 2007, Durst et al. 2008a, Durst et al. 2008b
 - Productivity (**no difference**)
 - Survivorship: adult, juvenile (**no difference**)
 - Movement patterns/fidelity (**no difference**)
 - Physiology (**no difference**)
 - Prey base (**different, but biomass similar**)
 - Diet (**different, but so are sites, years, etc.**)



Yellow-billed Cuckoo





AZ Lowland and Mid-Elevation Riparian Birds

22 of 29 species (76%) breed in tamarisk habitats

Yellow-billed Cuckoo

Broad-billed Hummingbird

Black-chinned Hummingbird

Anna's Hummingbird

Belted Kingfisher

Northern Beardless Tyrannulet

Willow Flycatcher

Black Phoebe

Brown-crested Flycatchers

Thick-billed Kingbird

Bell's Vireo

N. Rough-winged Swallow

Cliff Swallow

Bewick's Wren

American Dipper

Lucy's Warbler

Yellow Warbler

Common Yellowthroat

Yellow-breasted Chats

Summer Tanager

Abert's Towhee

Song Sparrow

Blue Grosbeak

Lazuli Bunting

Indigo Bunting

Red-winged Blackbird

Brown-headed Cowbird

Hooded Oriole

Bullock's Oriole

Sogge et al. 2008



Birds of North America

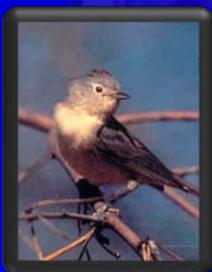
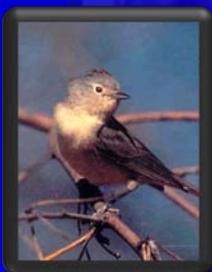
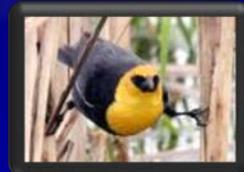
Species nesting in tamarisk

Blackbirds/Orioles/Tanagers:	9
Sparrows/Grosbeaks:	8
Warblers/Vireos:	6
Wading/Water Birds:	5
Flycatchers:	3
Game Birds:	3
Hummingbirds:	2
<u>Others:</u>	<u>12</u>
TOTAL	32

49 + species



49 + species



Conclusions - Tamarisk as habitat for birds

Birds do use tamarisk for breeding

Tamarisk control can result in negative impacts

“One size does not fit all”



What determines extent of tamarisk removal impacts ?

Timing of removal

Rate of removal

What replaces the tamarisk

Speed of habitat recovery



Within-season Effects and Long-term Effects

Same-season Effects

Habitat Value

Changes in Foliage Cover and Food Availability



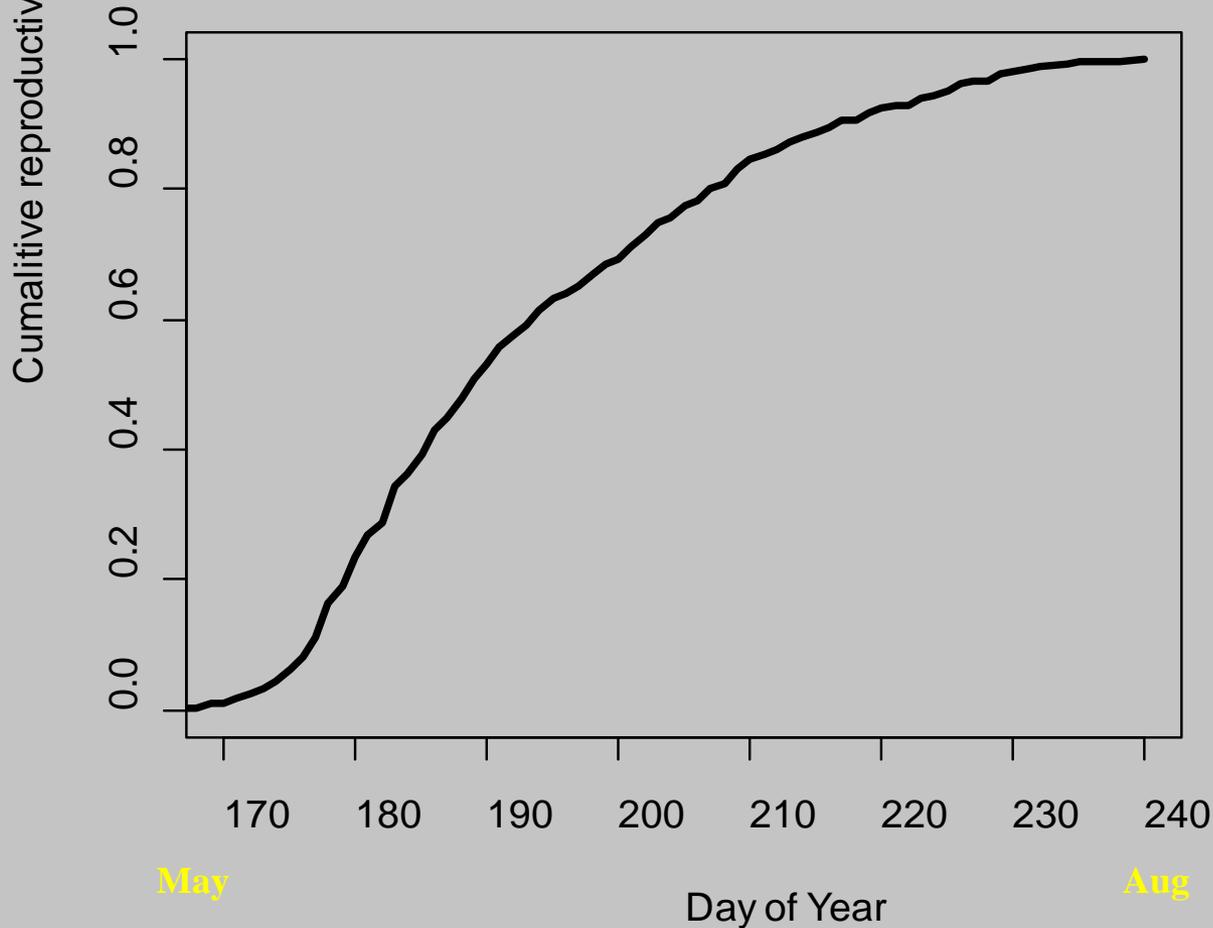
April

Time 

September

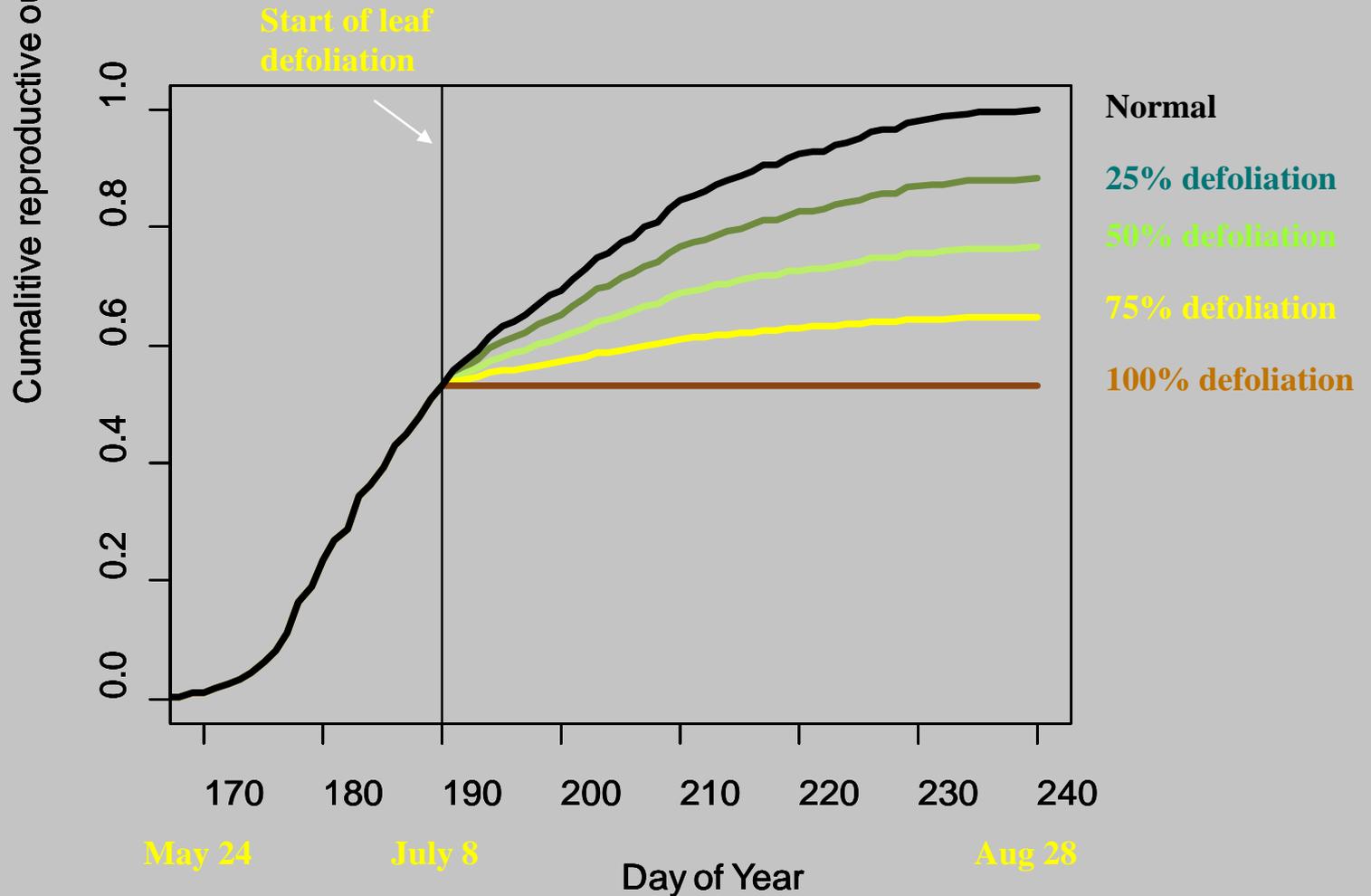
Same-season Effects

Southwestern Willow Flycatcher Productivity During Breeding Season*



Same-season Effects

Productivity in Relation to Timing of Defoliation by Beetles*



Same-season Effects



What determines Multi-year Effects?

Timing of tamarisk loss

Rate of tamarisk loss

What replaces the tamarisk

Speed of riparian recovery



Riparian Habitat Post-Beetle Recovery Scenarios

Concurrent replacement

Proactive Replacement

Delayed Replacement

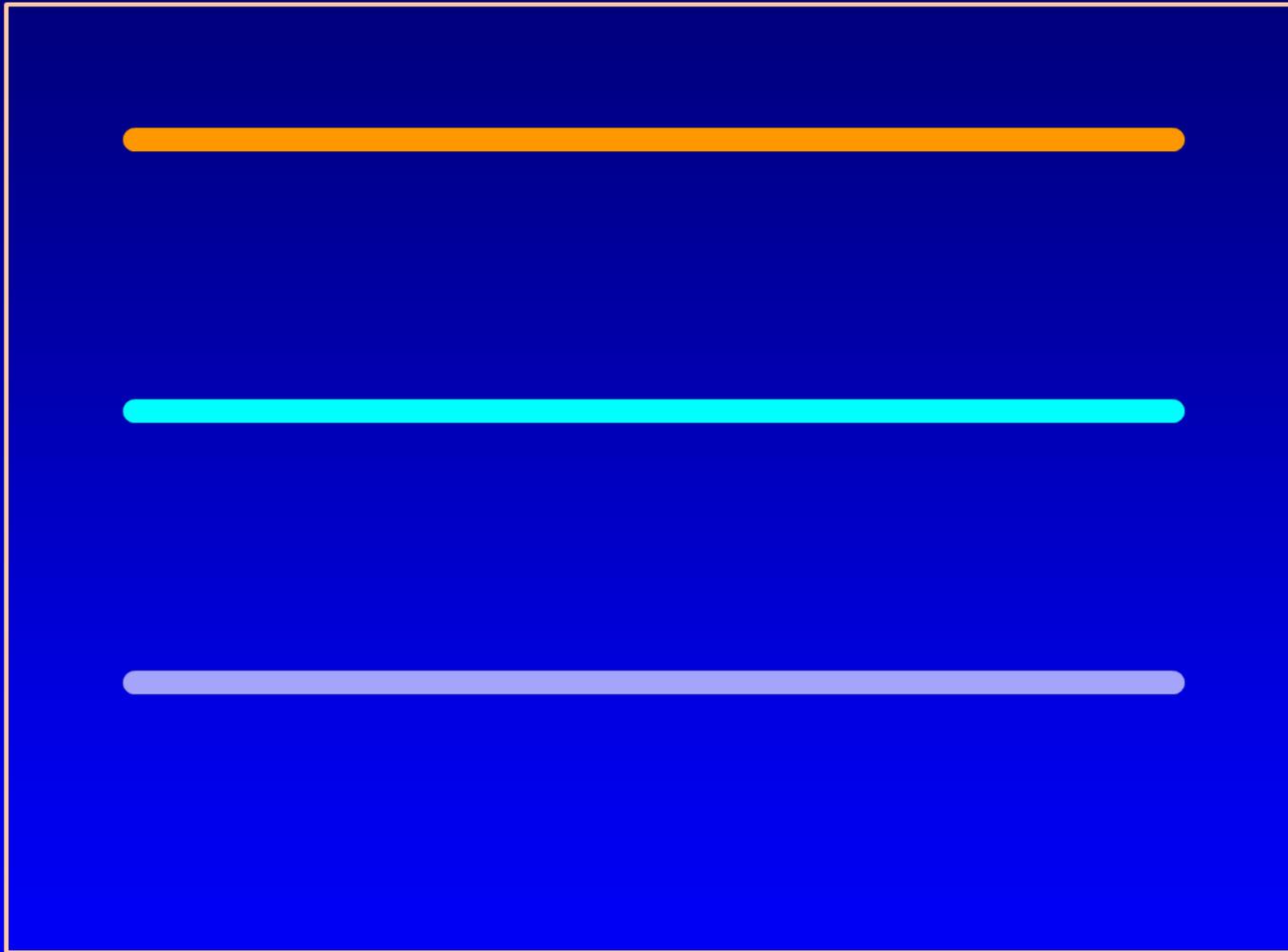
No Replacement

“Worse Case” Scenario



Stable Habitat Scenario

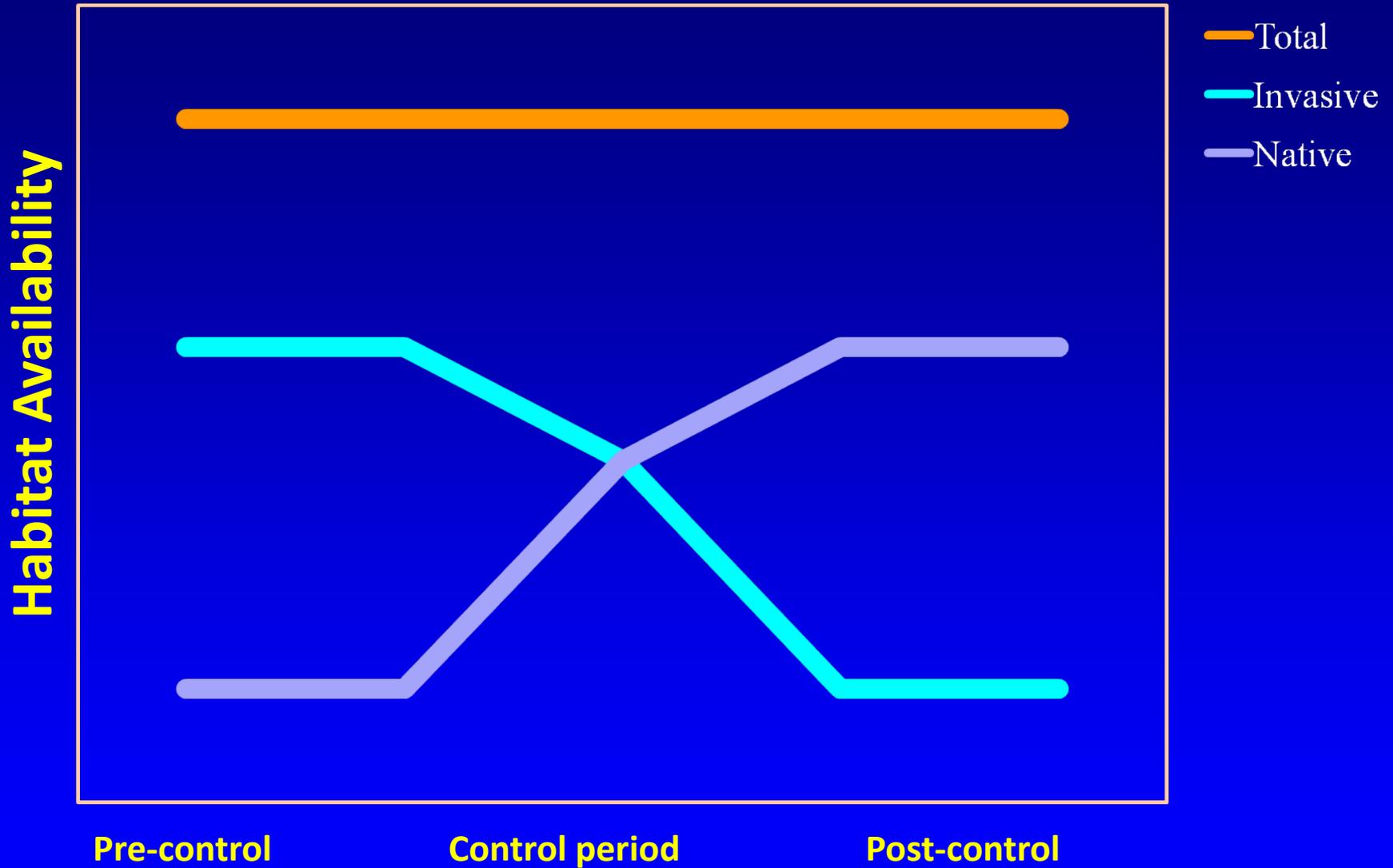
Habitat Availability



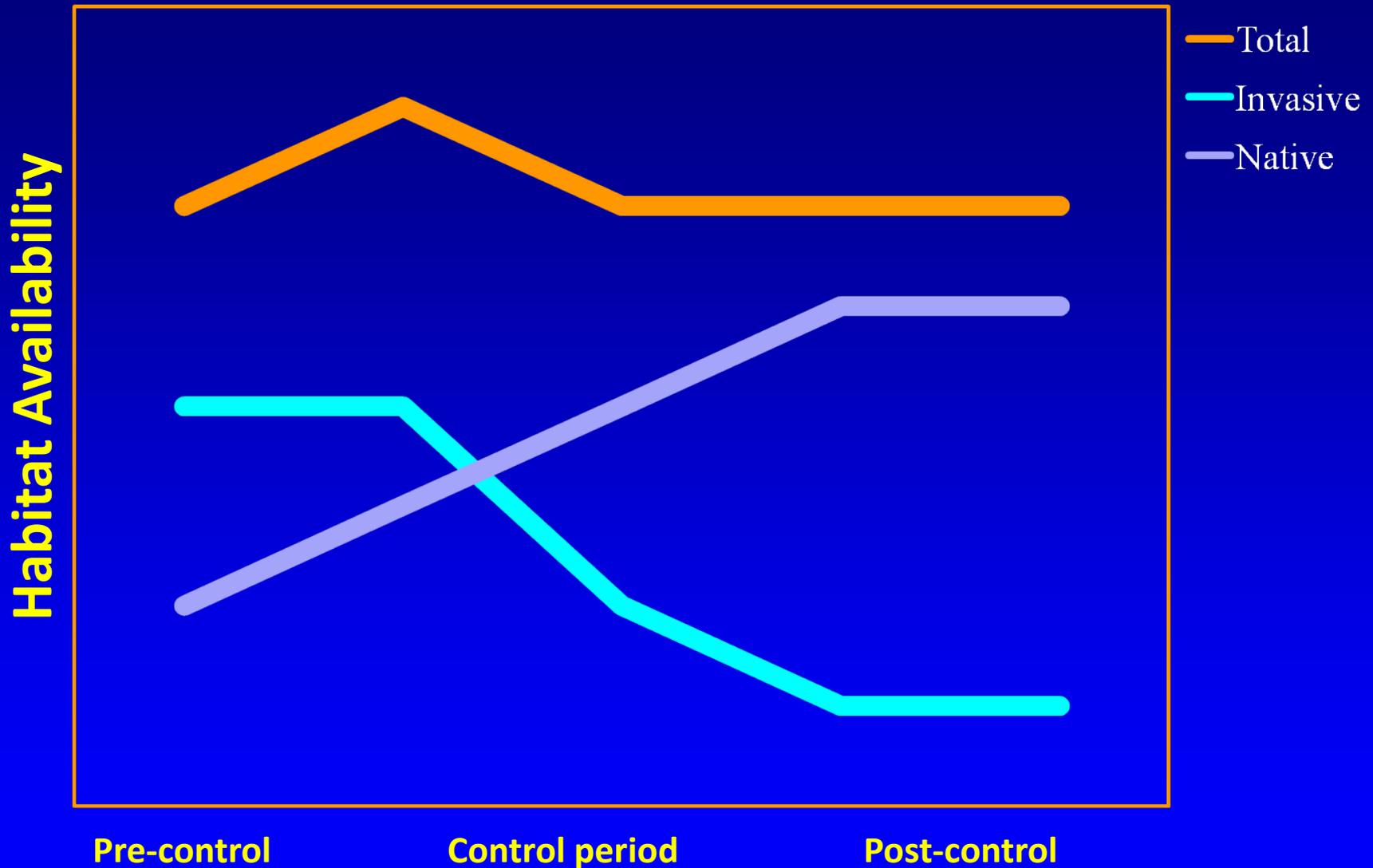
- Total
- Invasive
- Native

Time →

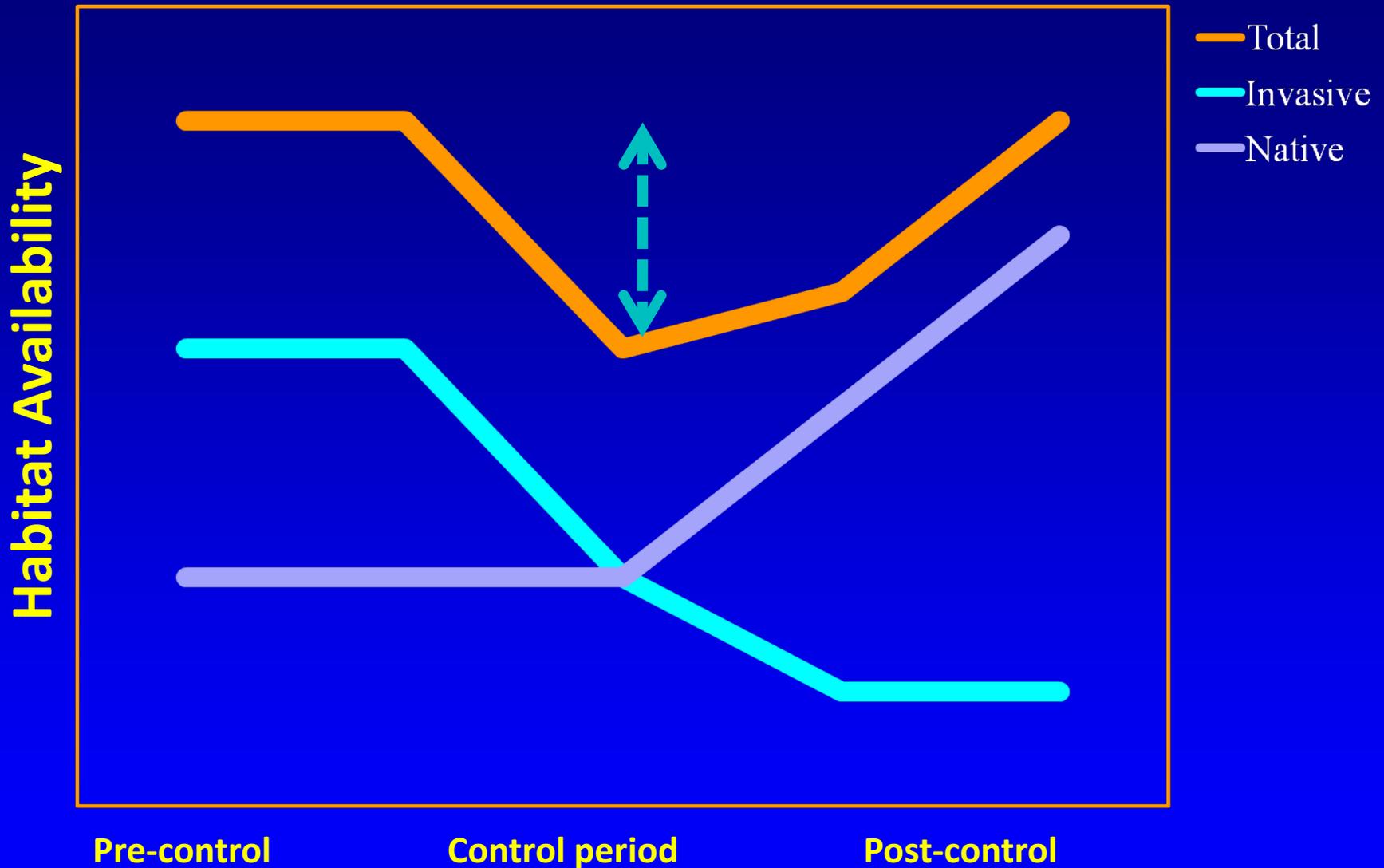
Concurrent Habitat Replacement



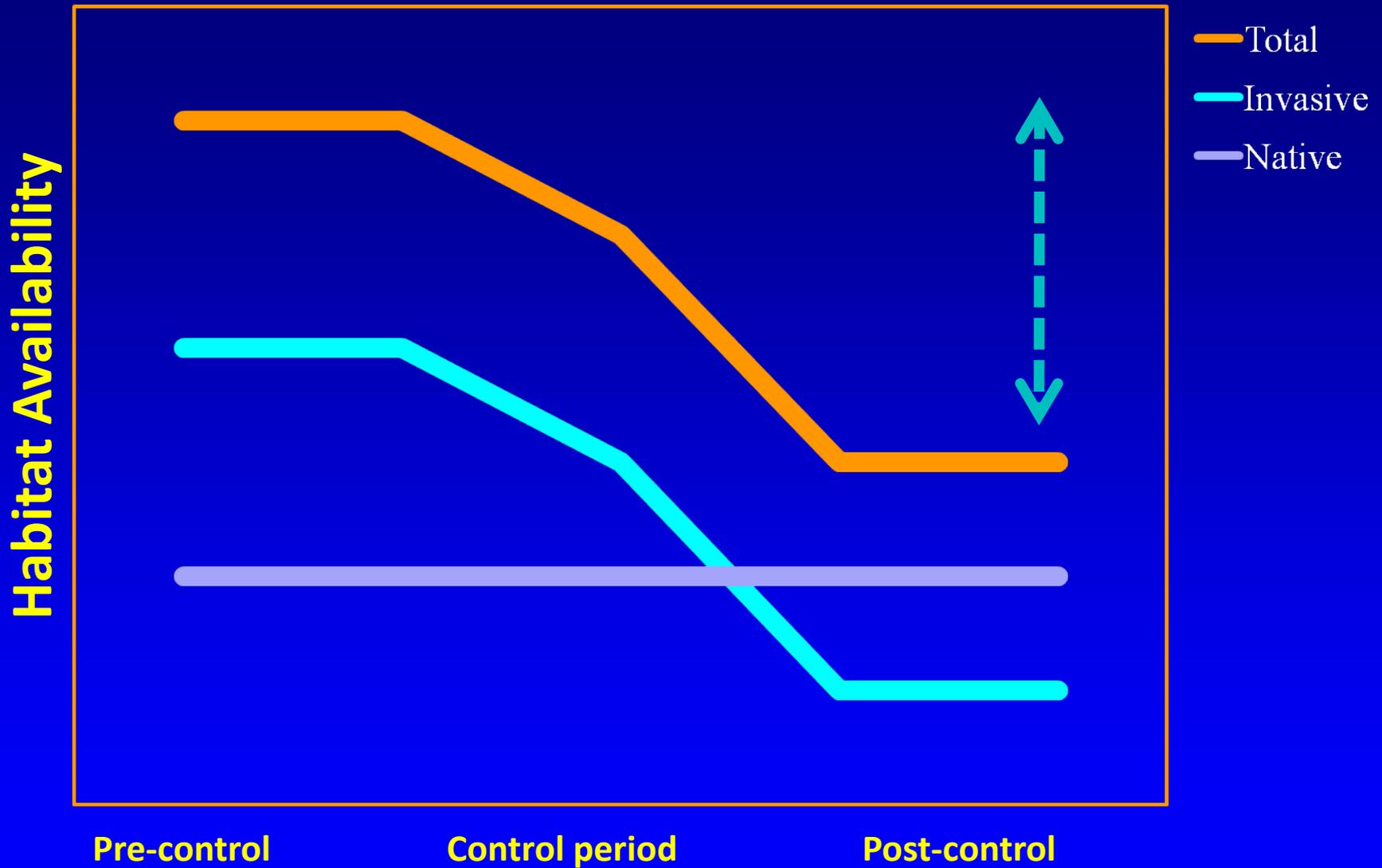
Proactive Replacement



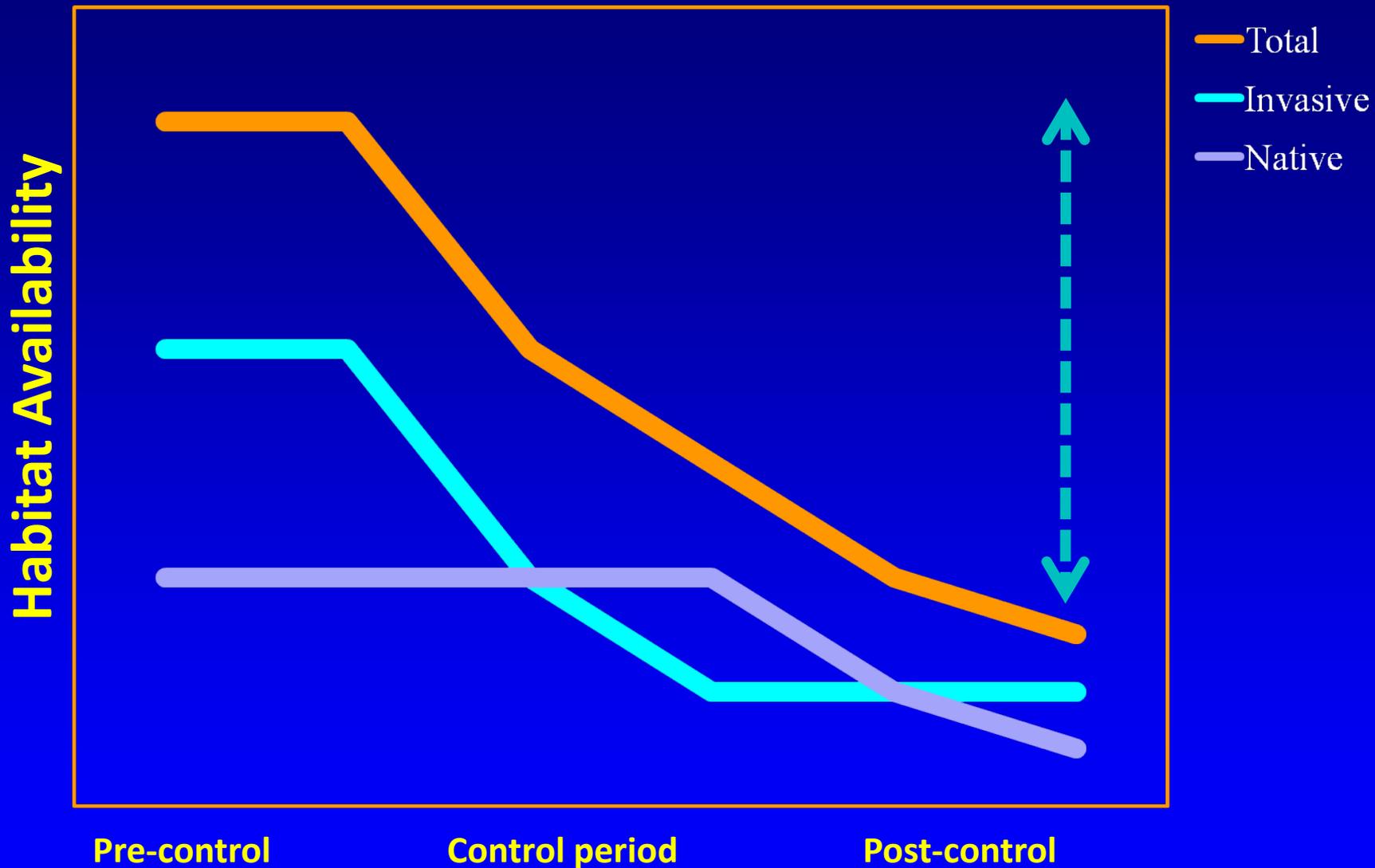
Delayed Habitat Replacement



No Habitat Replacement



“Worse Case” - No replacement... and less



So Which Replacement Scenario Will Happen?





Species that use tamarisk extensively in AZ and NM

Species	Partners in Flight Priority Species		U.S. Fish and Wildlife Service Birds of Management Concern	
	Regional	National Watch List	Regional	National
Bell's vireo	X	X	X Endangered, Least ssp	X Other ssp
Bewick's wren	X			
Black-chinned hummingbird	X			
Blue grosbeak				
Lucy's warbler	X	X		
Summer tanager	X	X		
White-winged dove	X			
Willow Flycatcher	X	X	X Endangered SW	
Yellow warbler	X		X	
Yellow-billed cuckoo	X		X Western ssp	
Yellow-breasted chat				

Acknowledgments

- Arizona Game and Fish Department
- National Park Service
- New Mexico Department of Fish and Game
- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Geological Survey