

EIRAMP: An integrated program for monitoring invasive species

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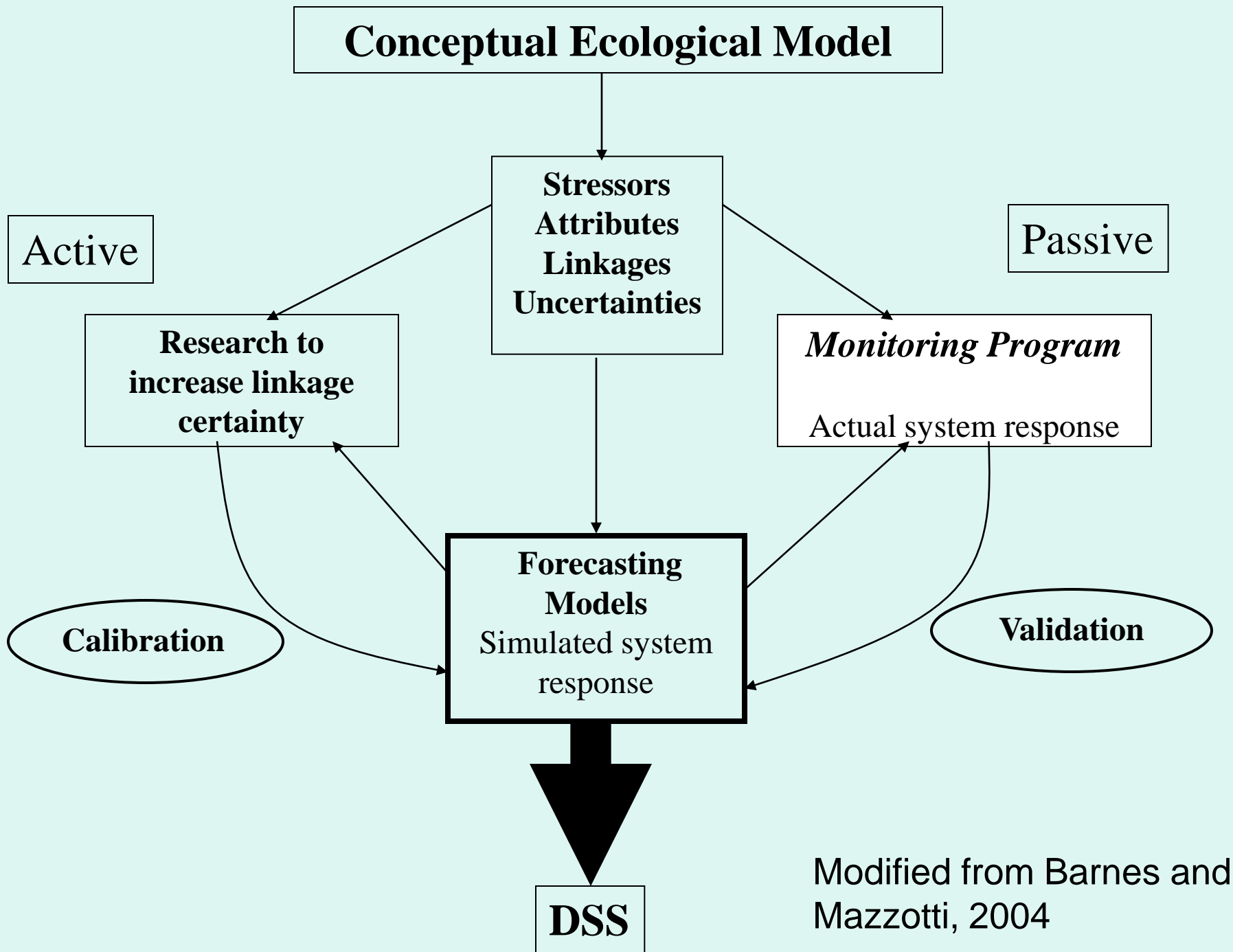
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Integration with ED&RR

- With adaptive management
- CEM and performance measures
- Removal
- Impact assessment
- With other efforts
 - Organizations
 - Taxa
 - Geographic
 - Databases
 - Passive



Modified from Barnes and Mazzotti, 2004

EIRAMP Objectives

- Provide early reporting of new invasions
- Determine status and spread of existing populations of invasive species
- Provide additional capability for rapid response and removal of invasive species
- Evaluate status and trends of native reptiles, amphibians, and mammals
- Synthesize in an adaptive management framework

EIRAMP Considerations

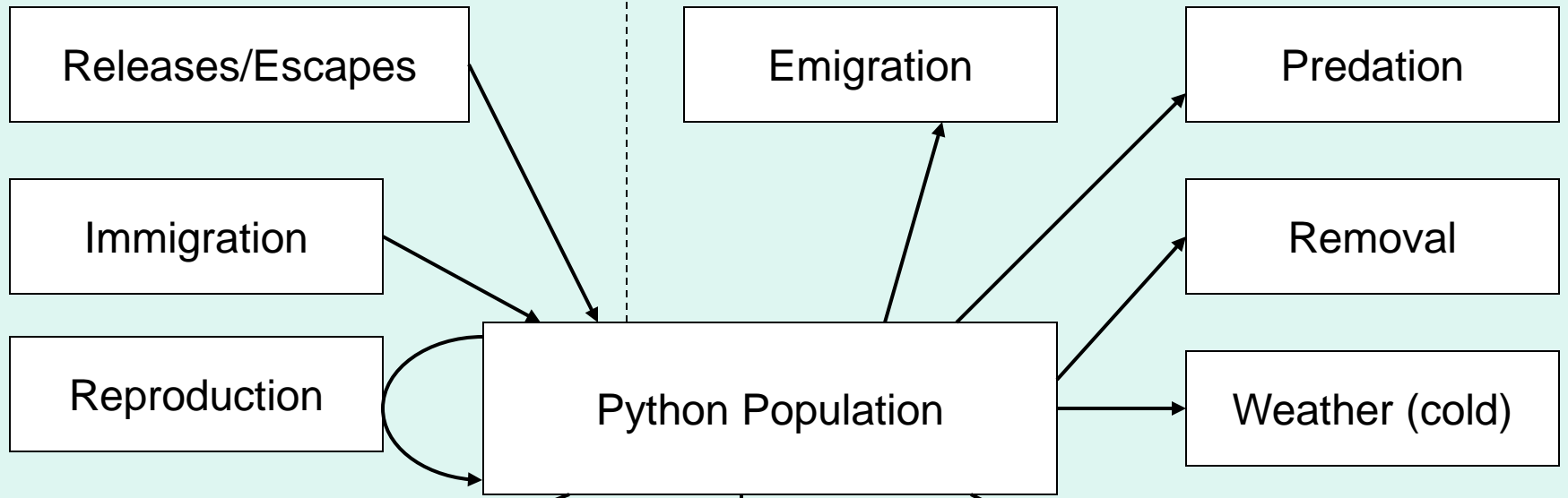
- Cross taxa – taxa specific
- Standard - opportunistic
- Our focus has been constrictors, amphibians, and mammals – natural areas
- Evenings – visual and auditory suveys
- Missing diurnal species of invasive reptiles
- Burmese python CEM

Adaptive Management of Invasive Spp

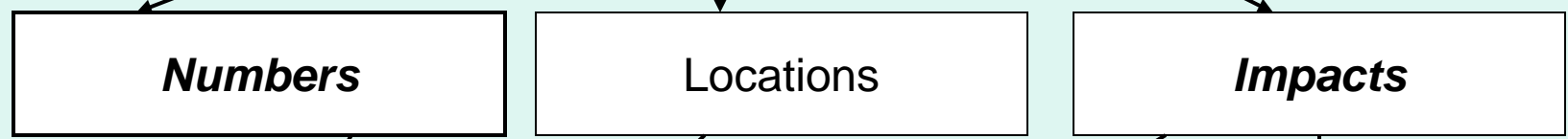
- Management in the face of uncertainty
- Development and evaluation of methods
- Effectiveness of methods in meeting objectives
- Performance measures
- Conceptual model
- Research and ***Monitoring***

Increase - Enhancers

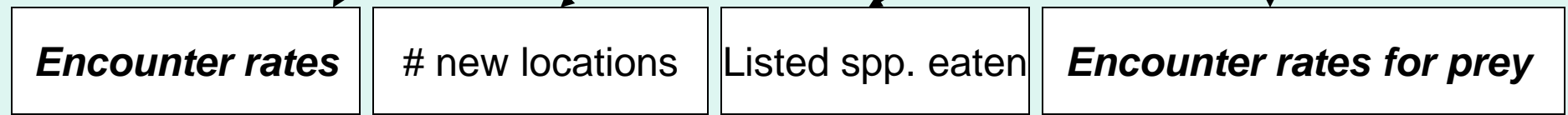
Decrease - Stressors



Attributes



Performance measures



Monitoring Performance Measures

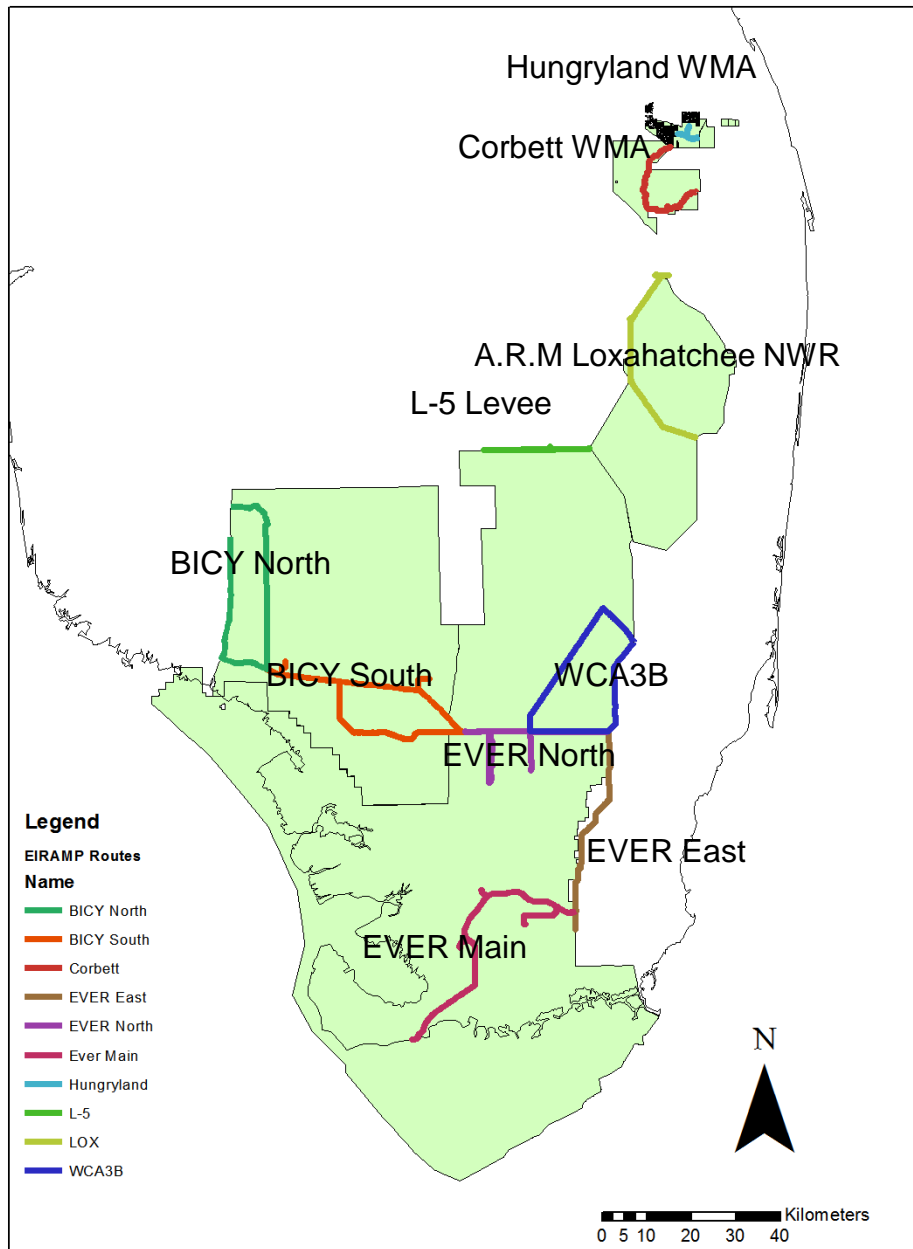
- ***Encounter rates for invasive spp*** – visual searches over time and distance
- New locations – GIS mapping
- Listed species eaten – diet studies
- ***Encounter rates for prey species*** – visual searches, trapping...
- Basis for occupancy, occurrence, or density modeling

From PM to Target: When do we declare success?

- The annual number of pythons removed is less than 10
- Encounter rates on survey routes is 0



Methods



- 10 Routes
- Roads and levees
- Dusk
- Visual searches
- Call surveys
- Monthly
- ENP weekly
- Attempt removal

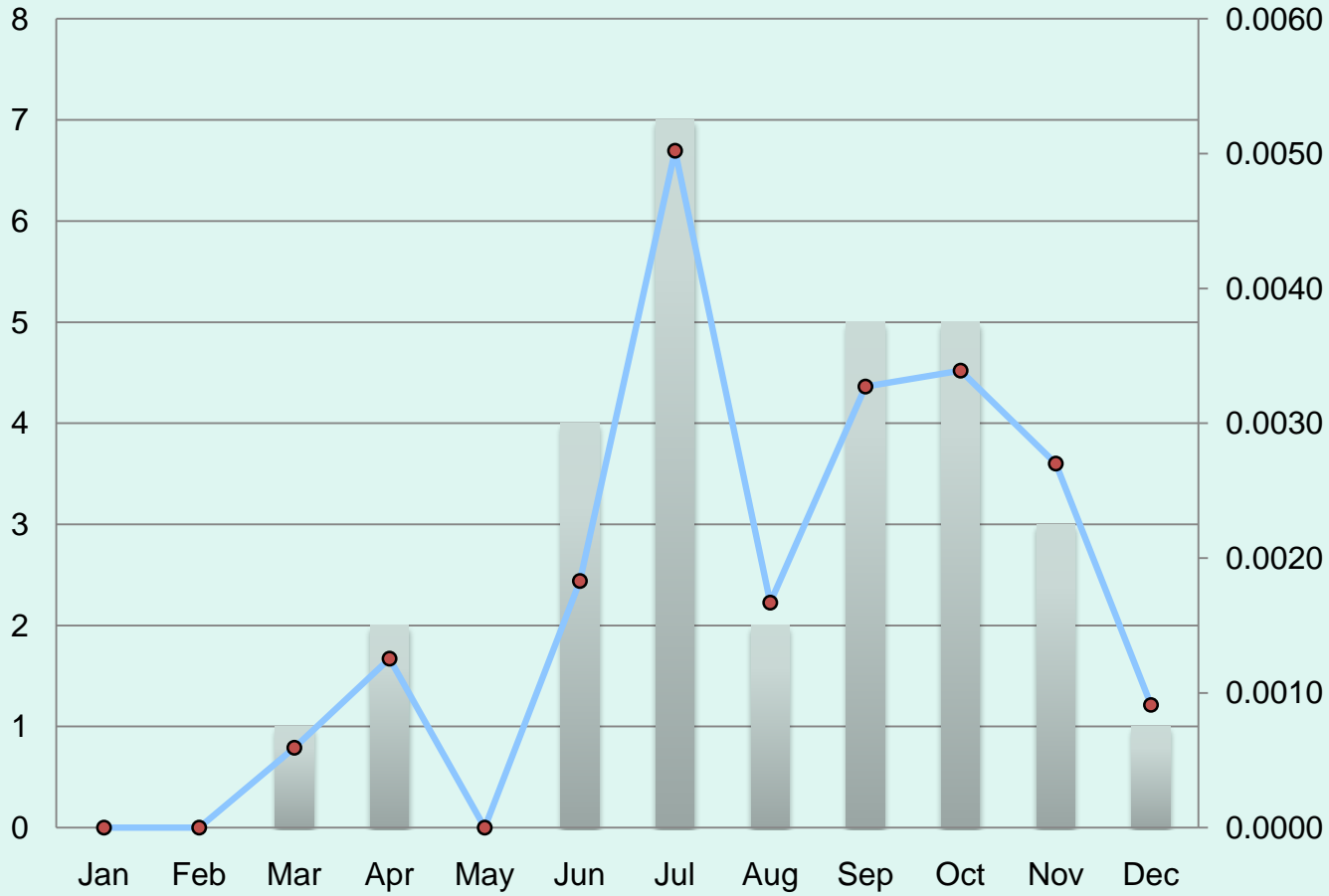
Quick Summary of New Routes

- Routes have been surveyed between 2-7 times
- Encounter rates for Inv Spp 0.0-0.09/km, IA's have highest ER – IR's most spp
- Encounter rates for native spp 0.0-0.139, NM highest ER (Lox) – NR's most spp
- Brown anole, Mediterranean gecko, greenhouse frog, marine toad, black rat, armadillo, and wild hogs most common Inv spp
- Opossums and raccoons most common NM

Weekly ENP Surveys

Pythons Removed by Month

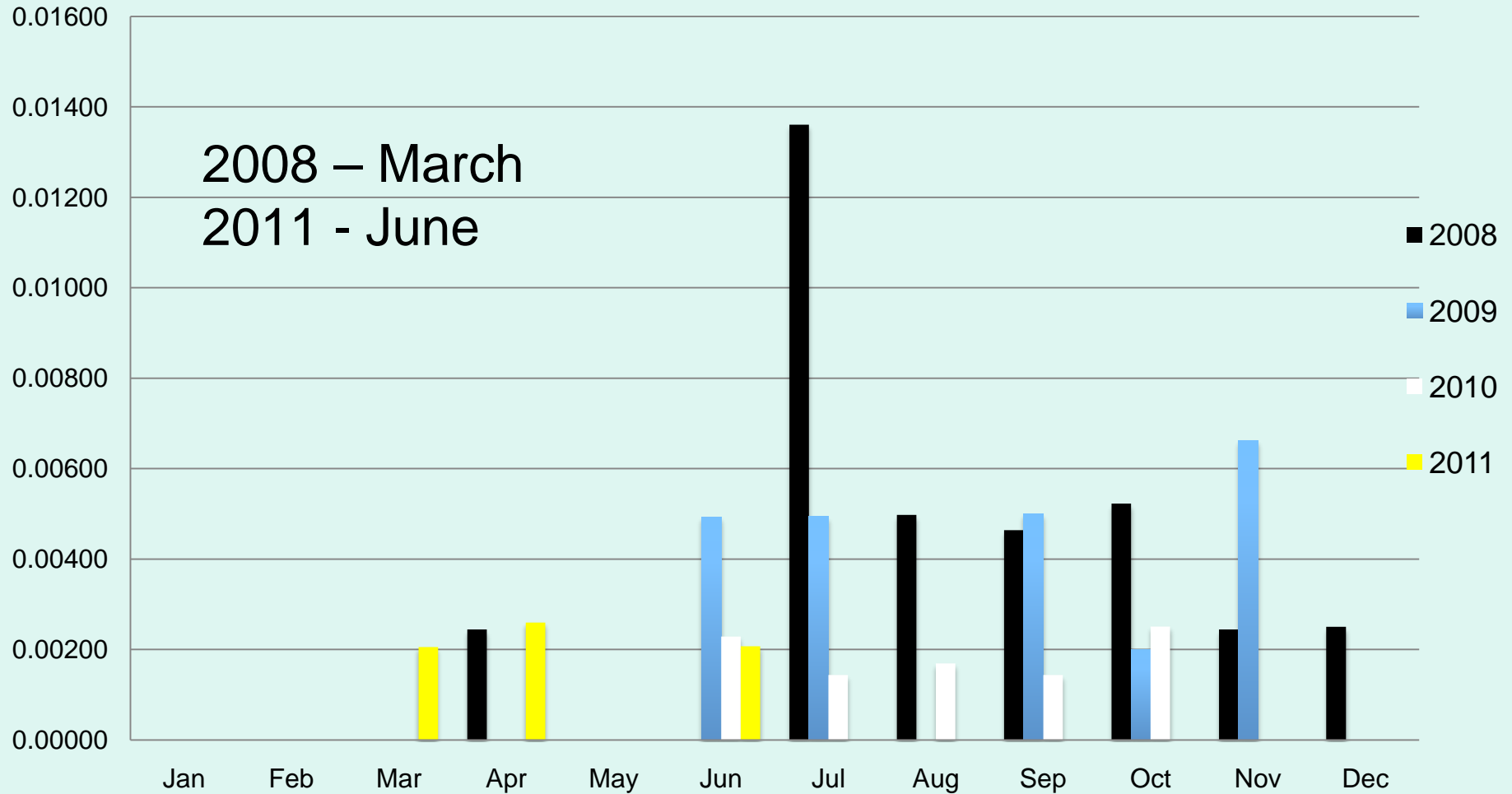
March 2008 –
June 2011



- Pythons Removed
- Pythons Removed/Miles Driven

Weekly ENP Surveys by Year

Pythons Removed per Mile Driven



To do (doing)

- More surveys
 - Opportunistic - response
 - Locations
 - Habitats
 - Times
 - Frequency
- Design(ing) occurrence experiment
 - Is presence of invasive spp related to the absence of native spp?
 - Detection rates



This is Not



The End



In the worst instances, the absence of population biological data can be an excuse for inaction, when a prudent decision or quick and dirty operation might have excluded or eliminated an invader. The most effective way to deal with invasive introduced species, short of keeping them out, is to discover them early and attempt to eradicate or at least contain them before they spread. This approach has often been successful, but its success has usually relied on brute-force chemical and mechanical techniques, not on population biological research.