

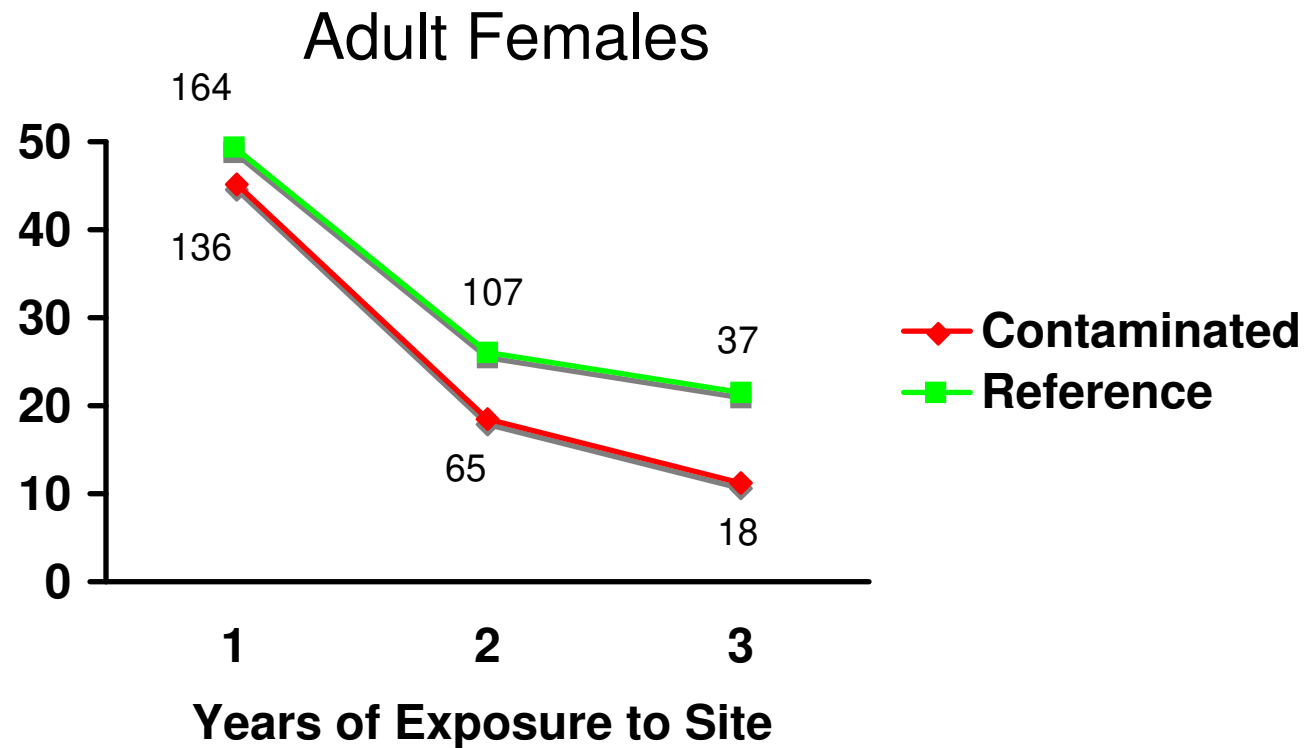
Last Year's "Next steps":

1. Final year of swallow survivorship
2. Source of spider mercury - river or land?
 - PCR on stomach contents to ID
 - Isotope signatures
3. Continue Biomarker studies
 - Corticosterone in adults and nestlings
 - Immune response and infection rates
 - ~~-- Oxidative damage to chromosomes~~
4. Modeling avian exposure in different habitats



Final year of swallow survivorship

Is adult return rate worse on contaminated sites?

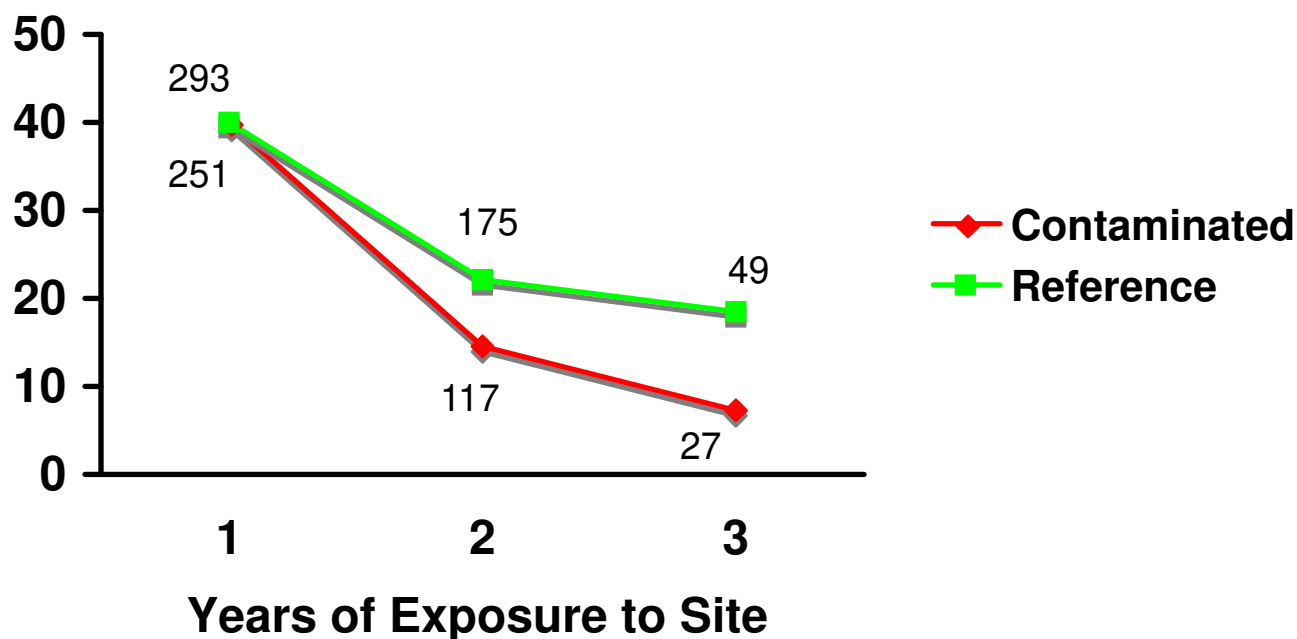


Sample size is number alive at end of previous year

Final year of swallow survivorship

Is adult return rate worse on contaminated sites?

Males and Females

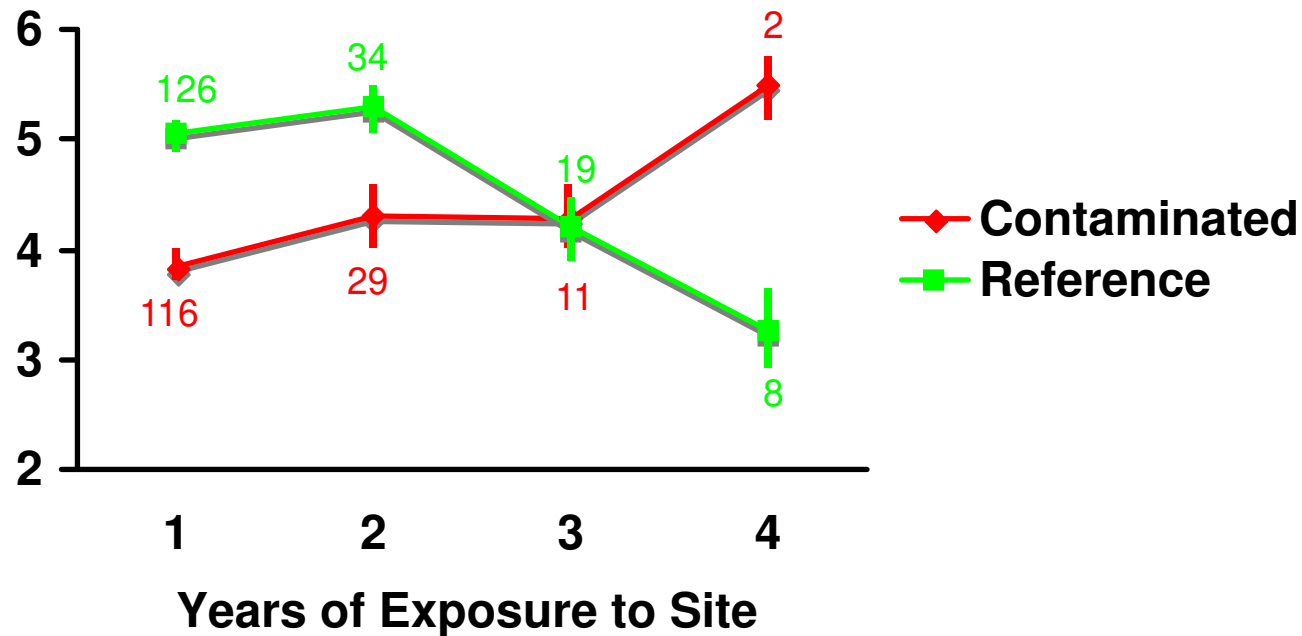


Sample size is number alive at end of previous year

Final year of swallow survivorship

Is female reproduction worse on contaminated sites?

All females (first nest only)

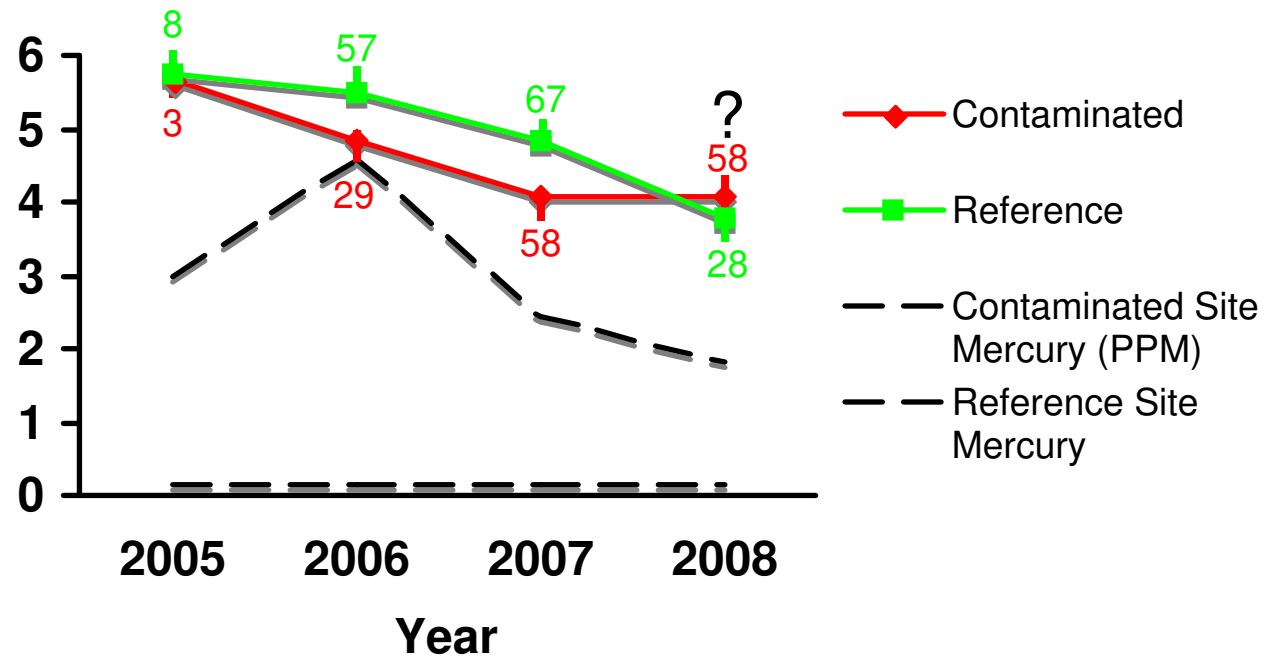


Sample size is number of sampled SY and ASY females

Final year of swallow survivorship

Annual reproductive success

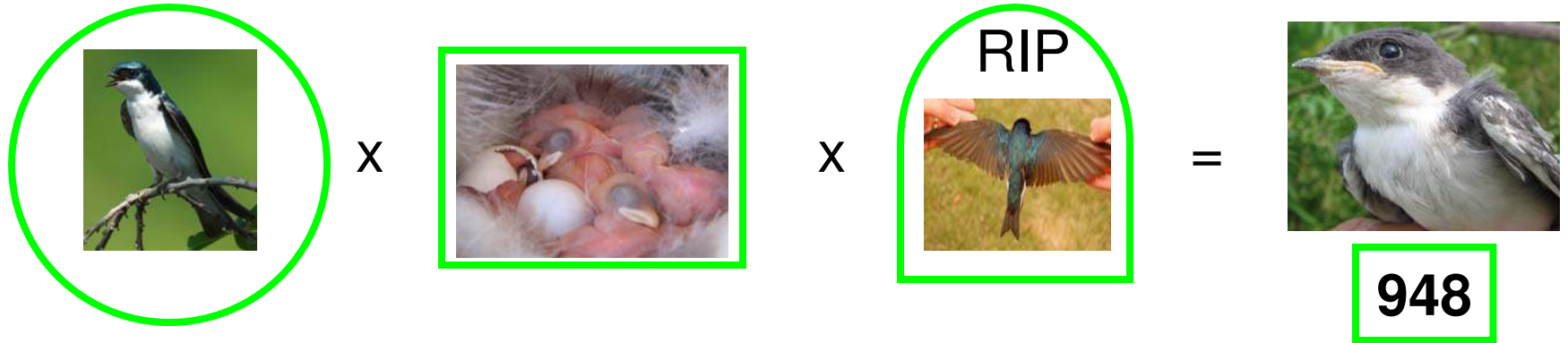
ASY Females



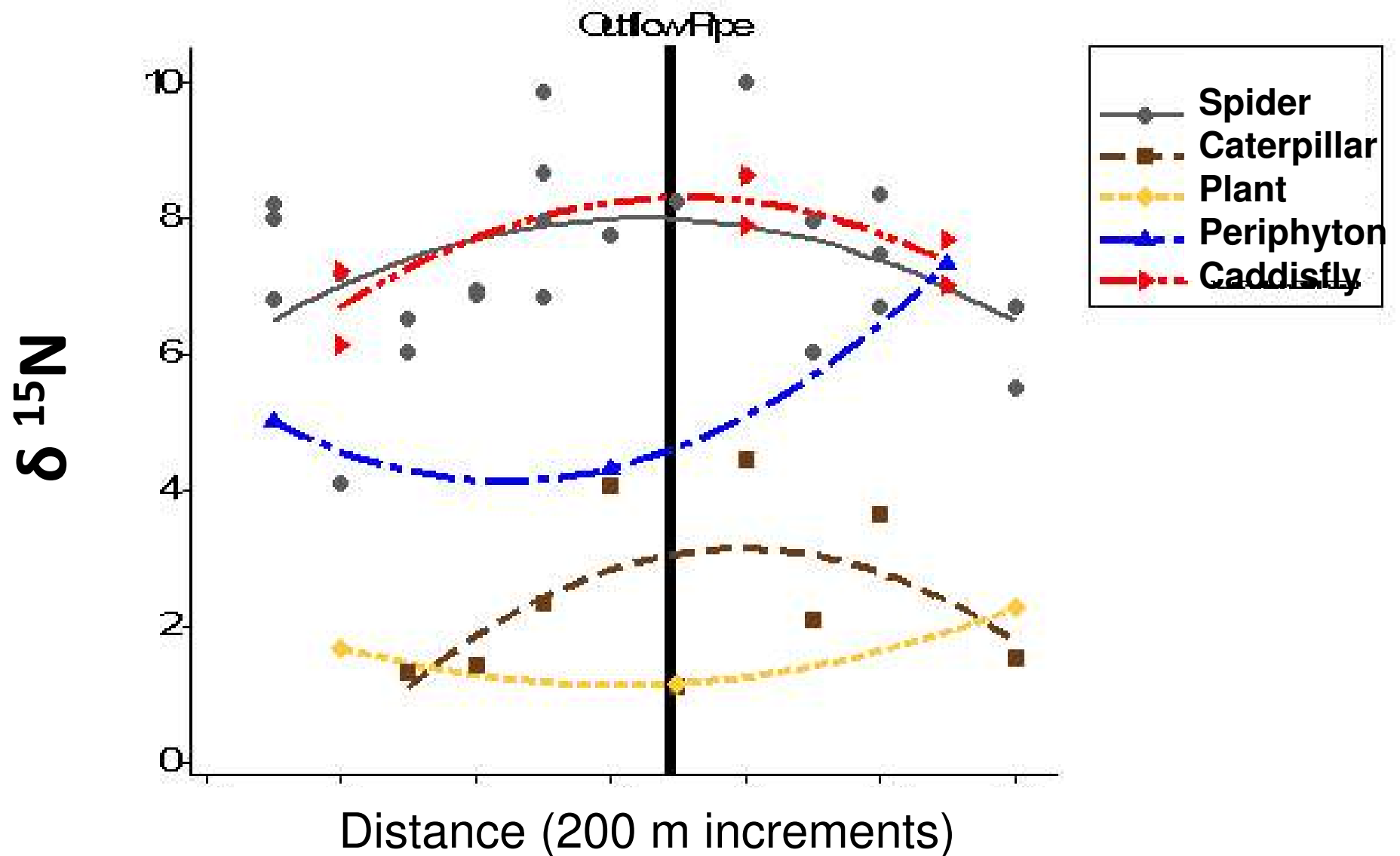
Sample size is number of sampled ASY females

Hypothetical exercise using 2005-2008 data

100 females annual productivity adult mortality offspring



Waynesboro Water Treatment Plant



spider mercury - river or land?

Tree Swallow Brood Manipulation Study

Increased broods



Control broods



Continue Biomarker studies

Continue Biomarker studies

Tree Swallow Brood Manipulation Study

We are analyzing blood samples and other measurements we collected for:

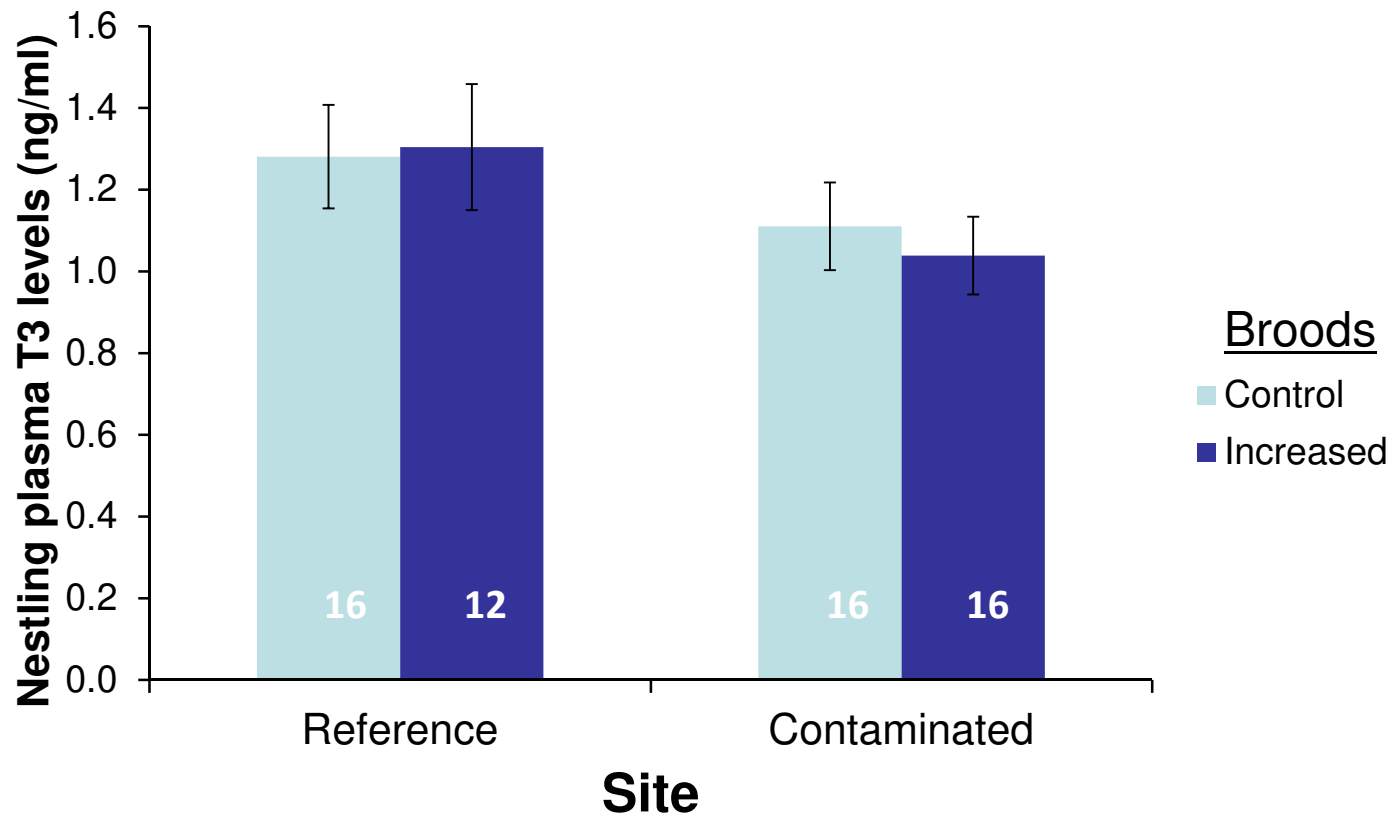
- Growth and survival of young
- Immune function
 - phytohaemagglutinin (PHA) assay
 - heterophil to lymphocyte ratios
 - blood killing assays
- Hormonal responses
 - hormone assays for thyroid hormone and corticosterone



Continue Biomarker studies

Tree Swallow Brood Manipulation Study

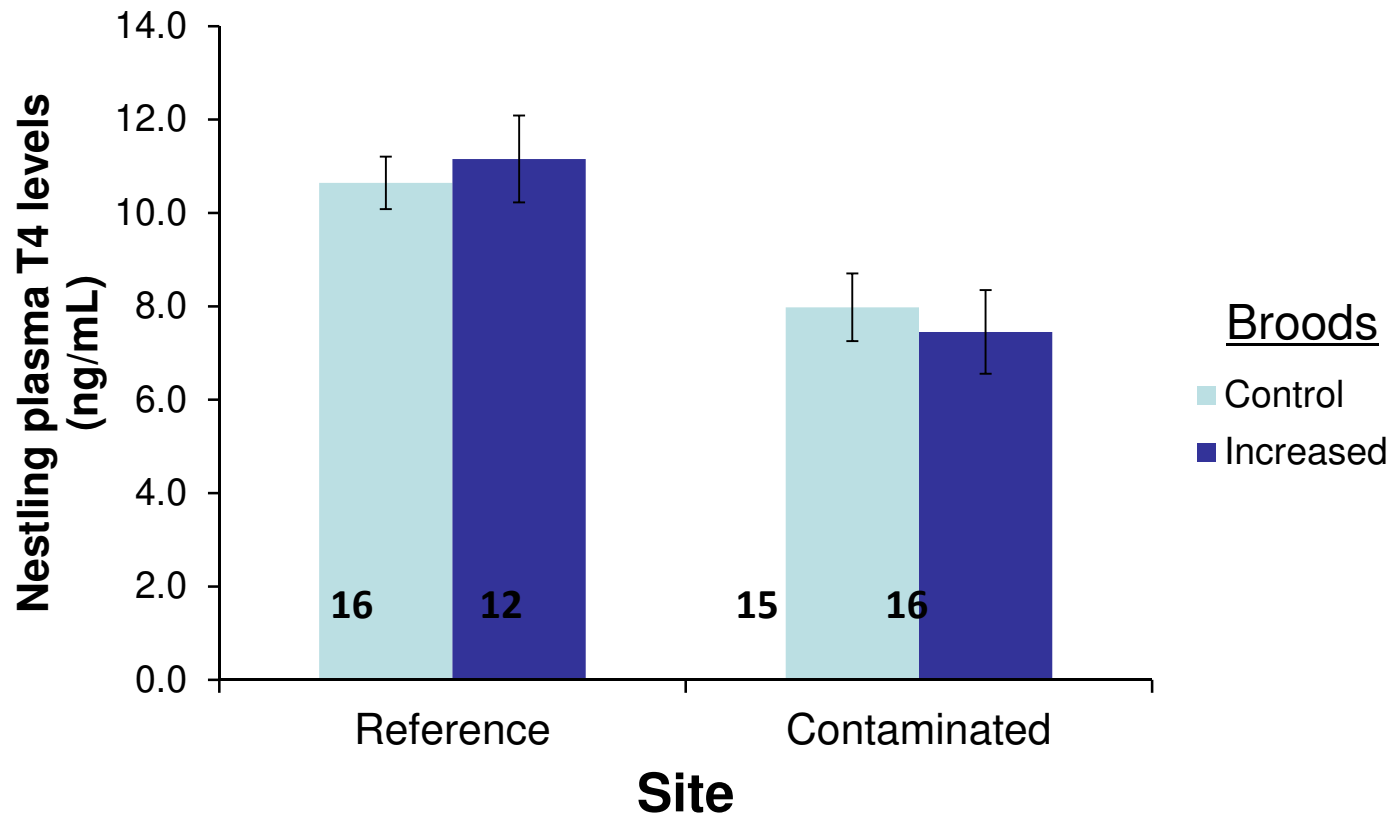
Nestling T3 levels on Day 14-15



Continue Biomarker studies

Tree Swallow Brood Manipulation Study

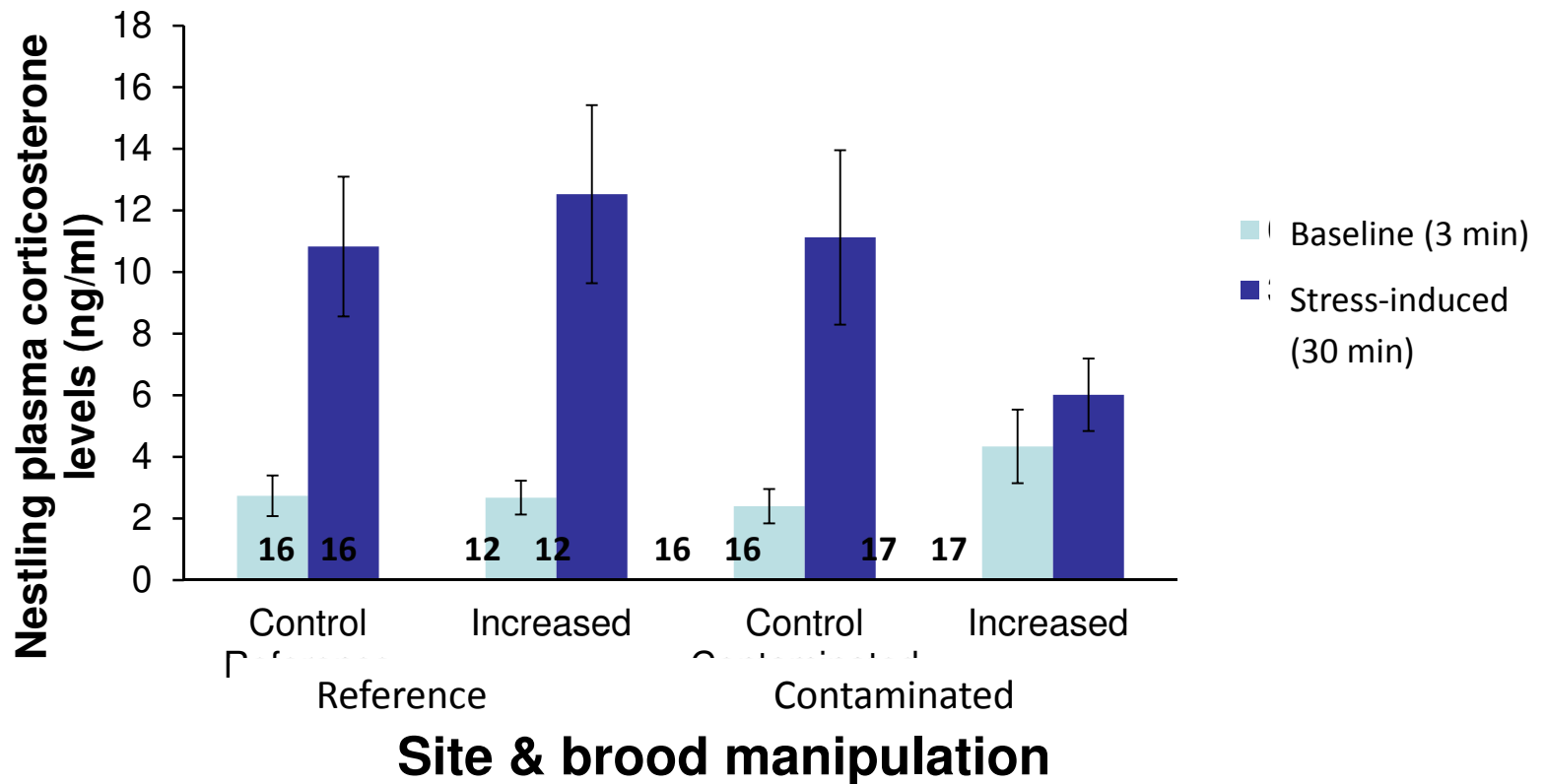
Nestling T4 levels on Day 14-15



Continue Biomarker studies

Tree Swallow Brood Manipulation Study

Nestling corticosterone levels on Day 14-15



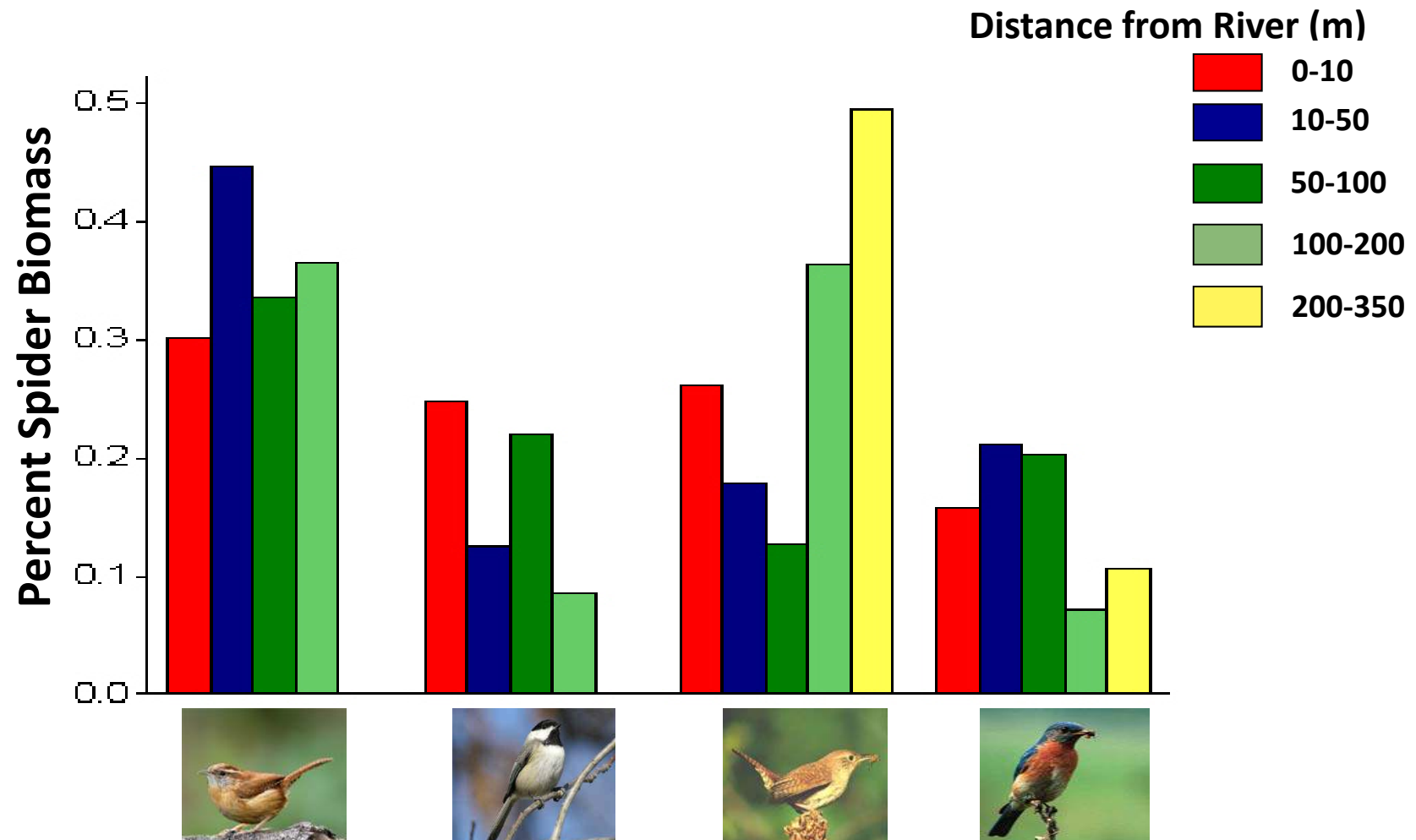
OTHER STUDIES IN PREPARATION:

- **Mercury deposition in eggs**
- **Effects on song, nesting success, behavior**
- **Modeling effects of habitat remediation**
- **Effects on immune system, disease**
- **Extent of Hg exposure out into floodplain**



Other studies

% Spider biomass in diet doesn't differ by distance from river



What's next? Dosing Study

