

# The importance of juvenile shad in the fall diets of smallmouth bass and walleye in the middle Columbia River

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# TRANSACTIONS

OF THE AMERICAN FISHERIES SOCIETY

Volume 120

July 1991

Number 4

*Transactions of the American Fisheries Society 120:405-420, 1991*

## Feeding of Predaceous Fishes on Out-Migrating Juvenile Salmonids in John Day Reservoir, Columbia River

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*Transactions of the American Fisheries Society 120:448-458, 1991*

## Estimated Loss of Juvenile Salmonids to Predation by Northern Squawfish, Walleyes, and Smallmouth Bass in John Day Reservoir, Columbia River

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*Transactions of the American Fisheries Society 120:439-447, 1991  
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## Abundance and Distribution of Northern Squawfish, Walleyes, and Smallmouth Bass in John Day Reservoir, Columbia River

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*Transactions of the American Fisheries Society 120:421-438, 1991*

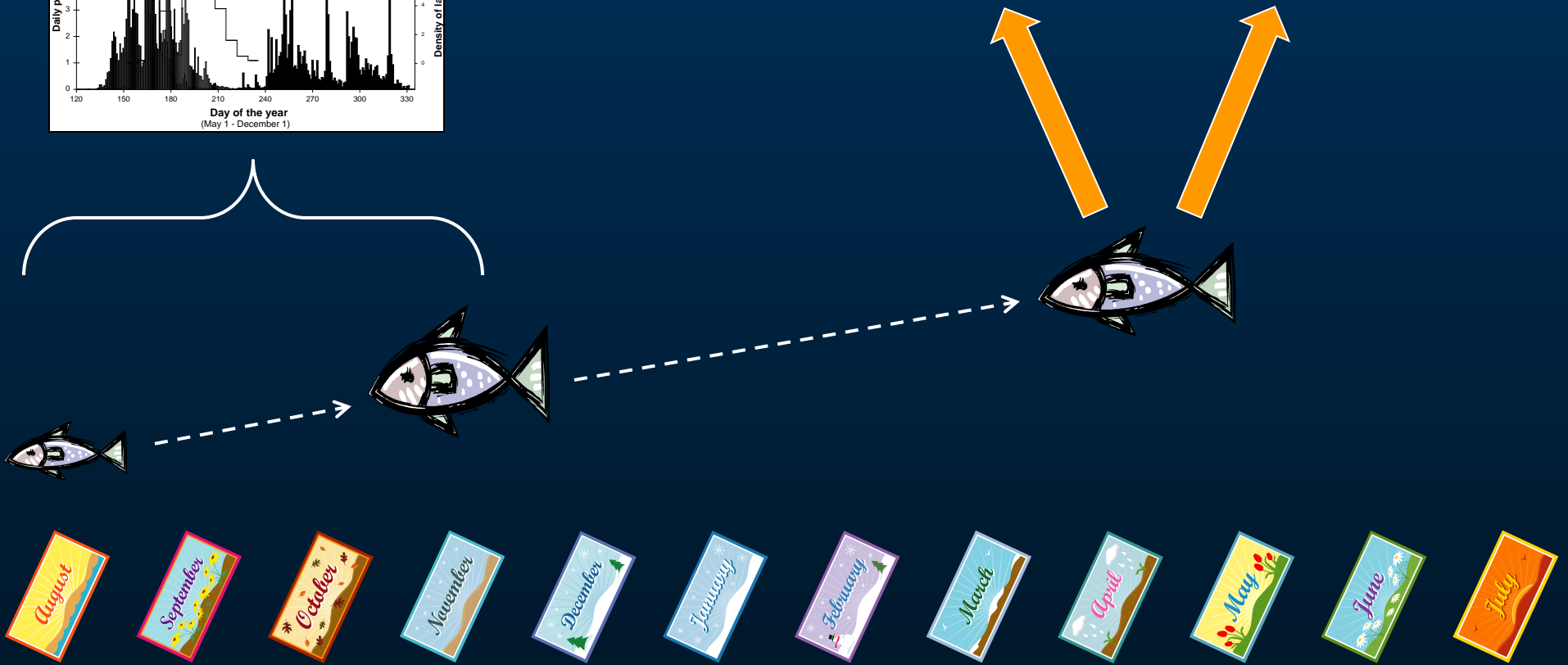
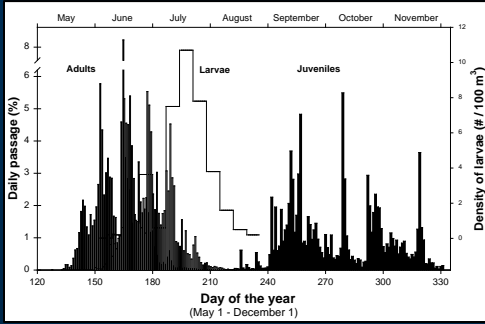
## Rates of Consumption of Juvenile Salmonids and Alternative Prey Fish by Northern Squawfish, Walleyes, Smallmouth Bass, and Channel Catfish in John Day Reservoir, Columbia River

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# Shad, smallmouth bass, walleye, channel catfish





# Objectives

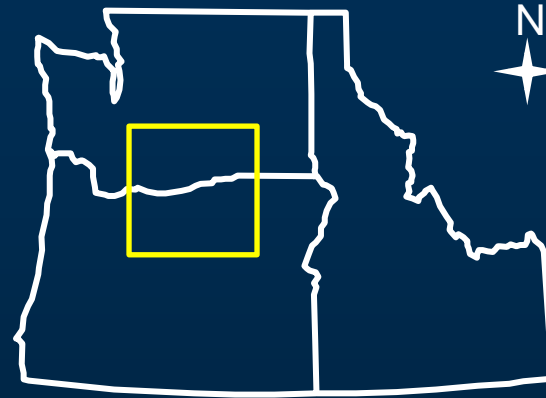
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- 1. Document fall food habits of SMB and WAL in mid-Columbia River**
- 2. Assess the condition of SMB and WAL from Aug-Nov**
- 3. Determine any relations between diet and condition**



# Study area and sampling locations

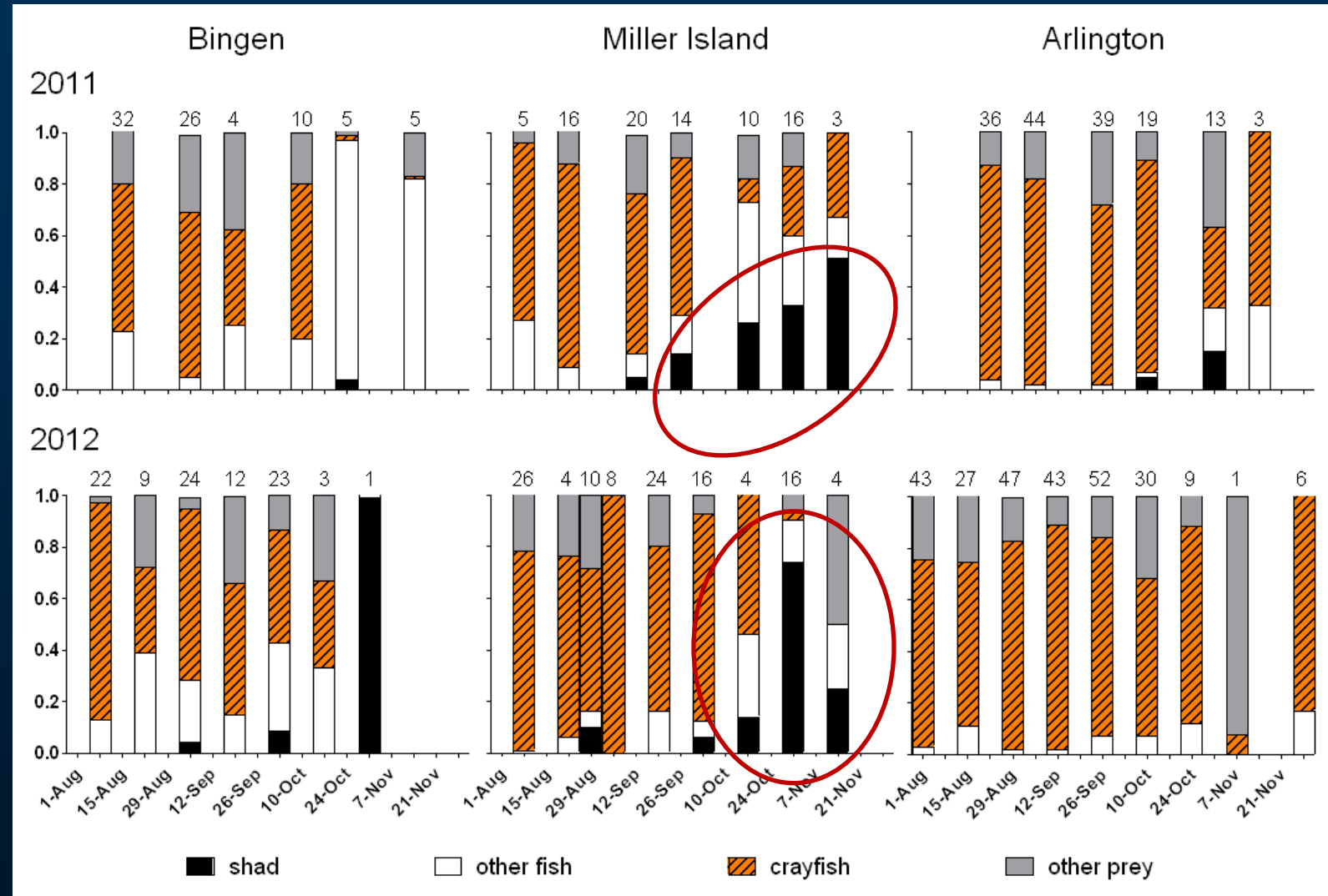
Drinking water sampling locations



# Methods

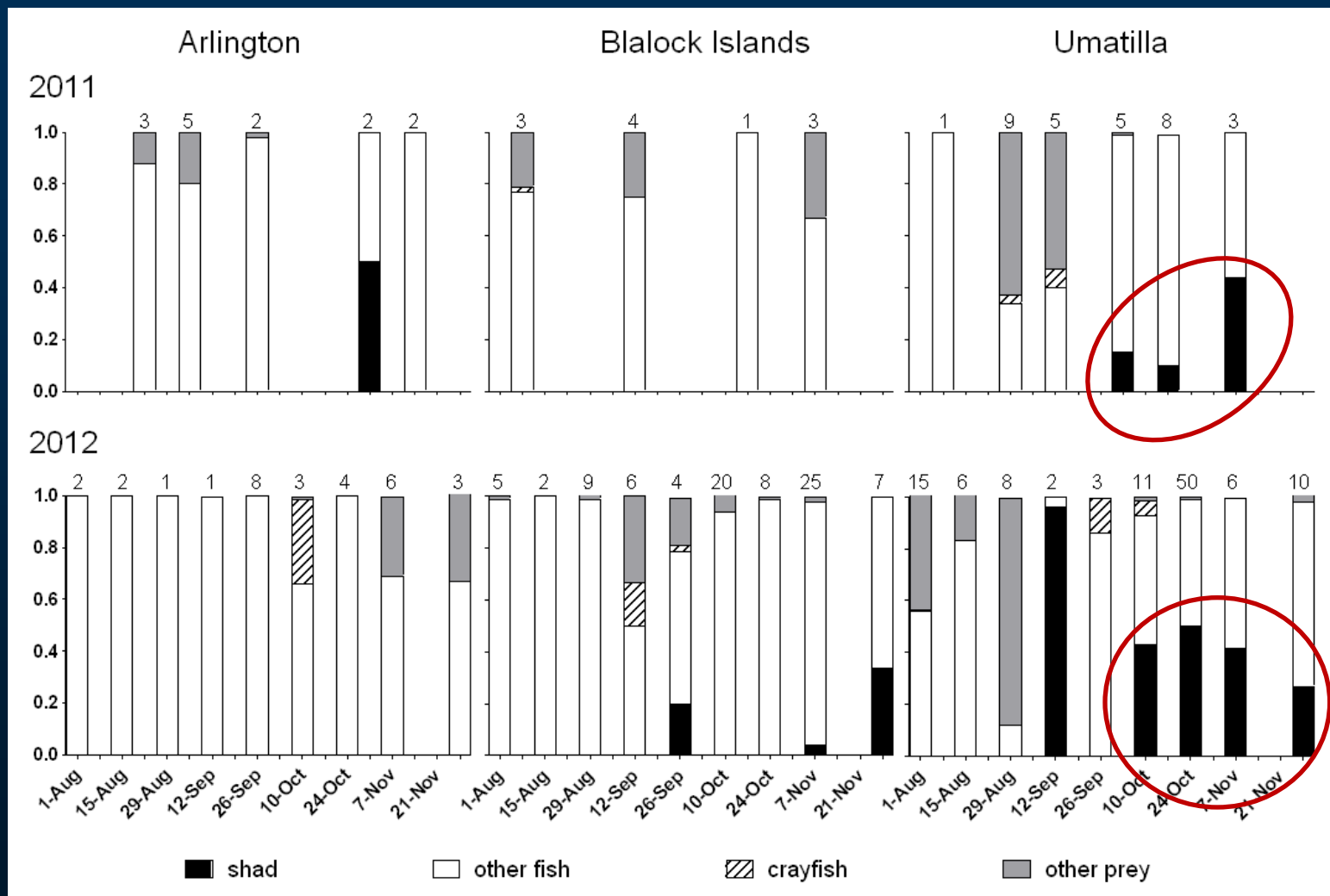


# SMB diet composition (mean % mass)

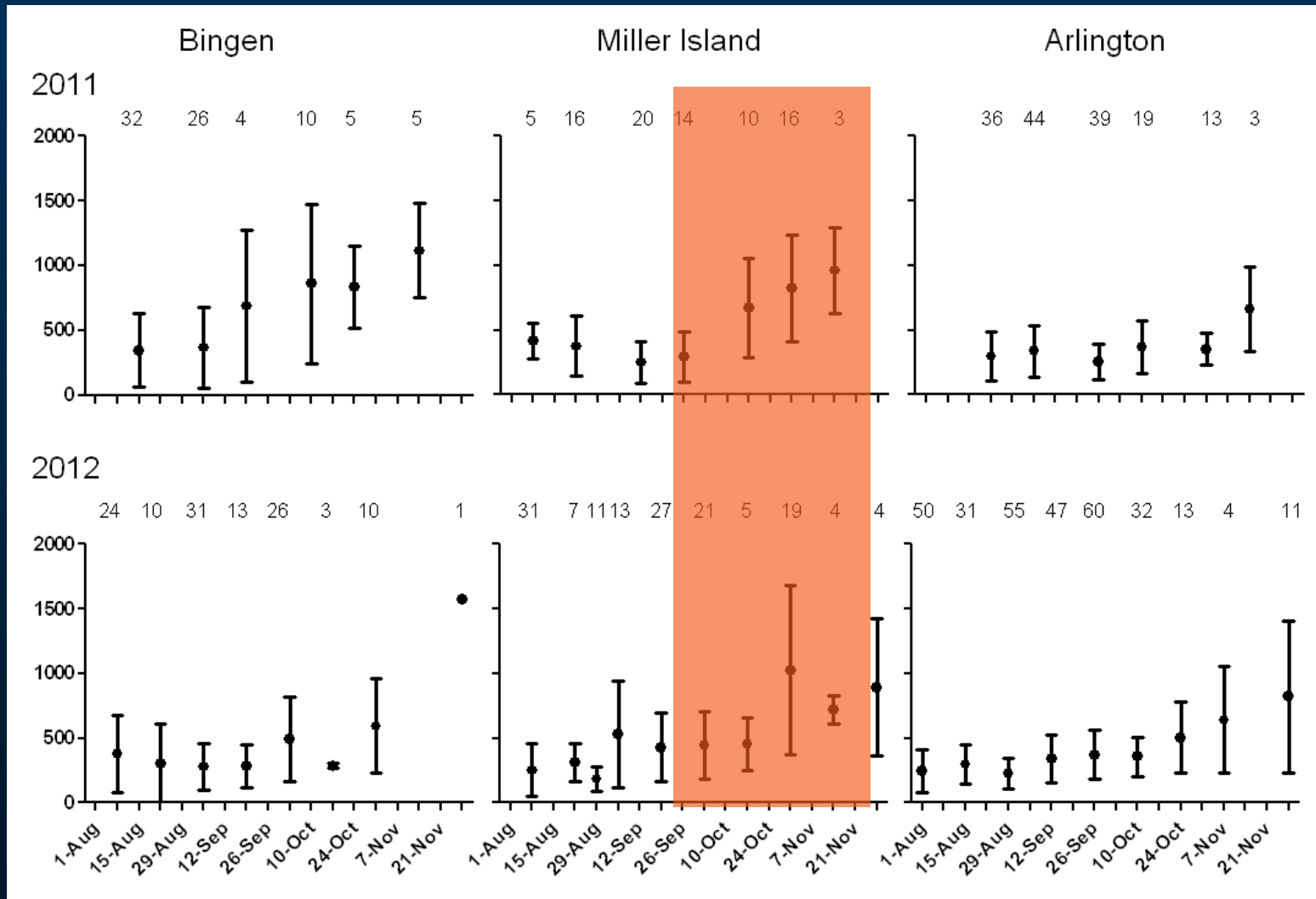




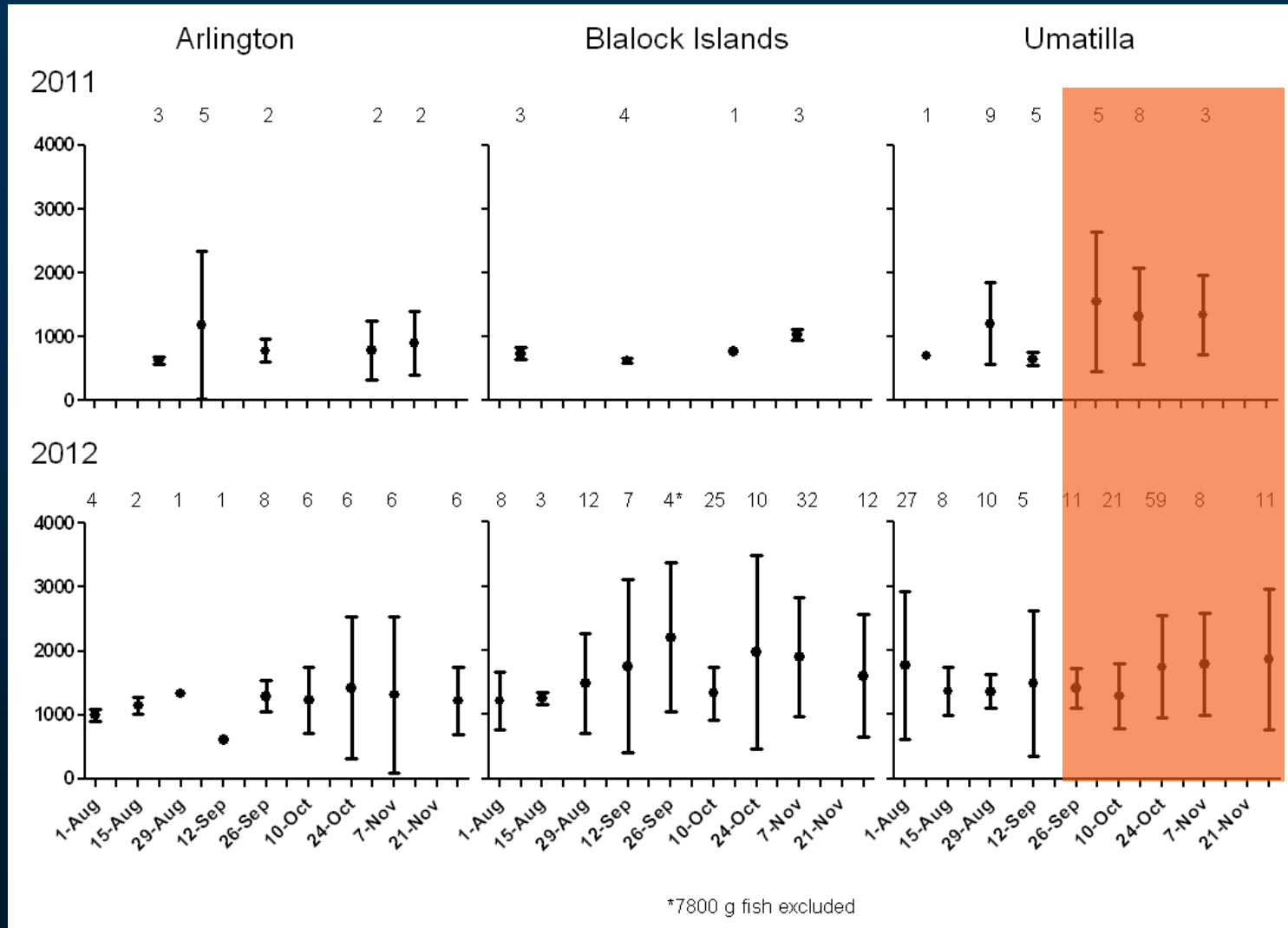
# WAL diet composition (mean % mass)



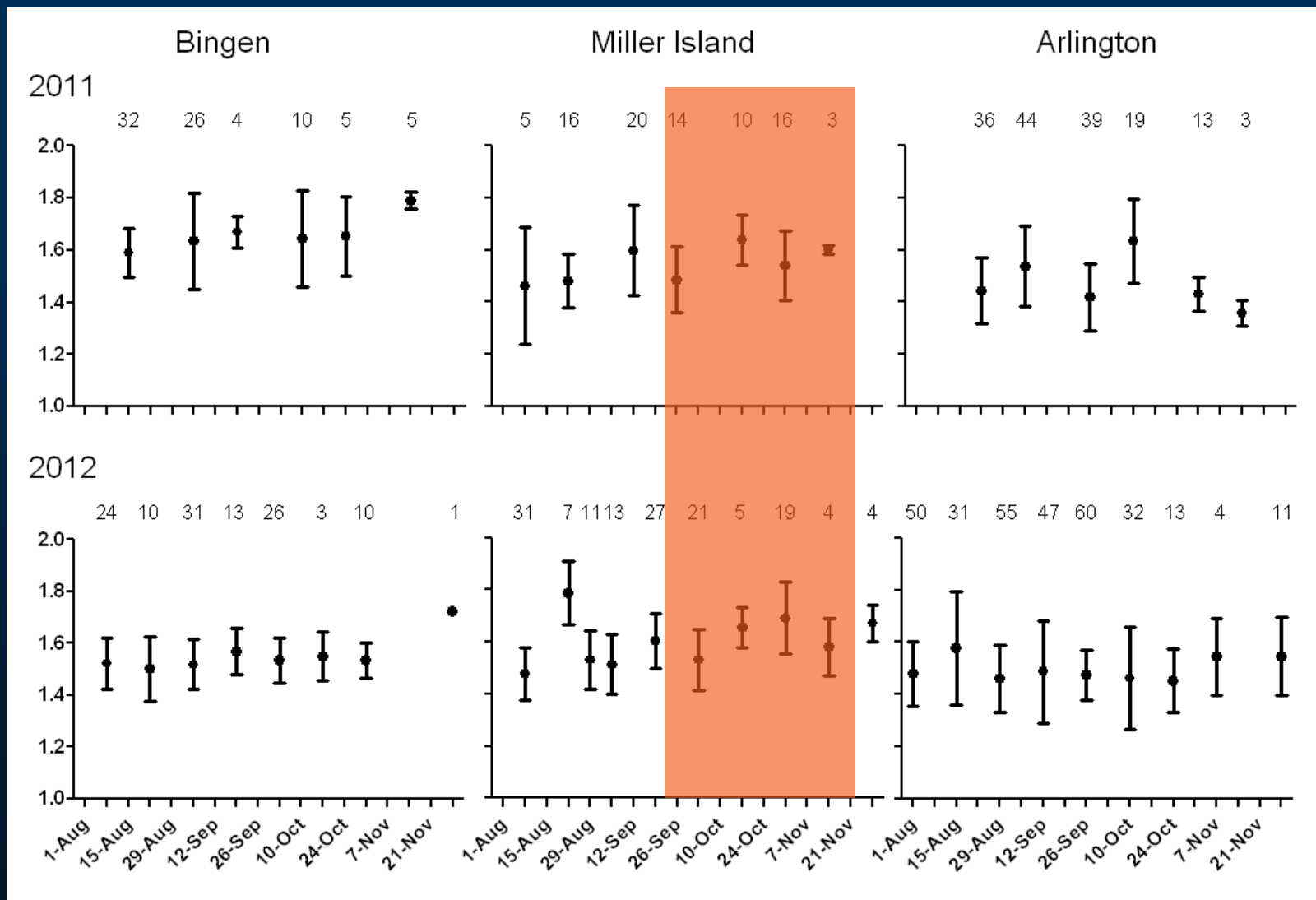
# SMB mean mass (g) over time



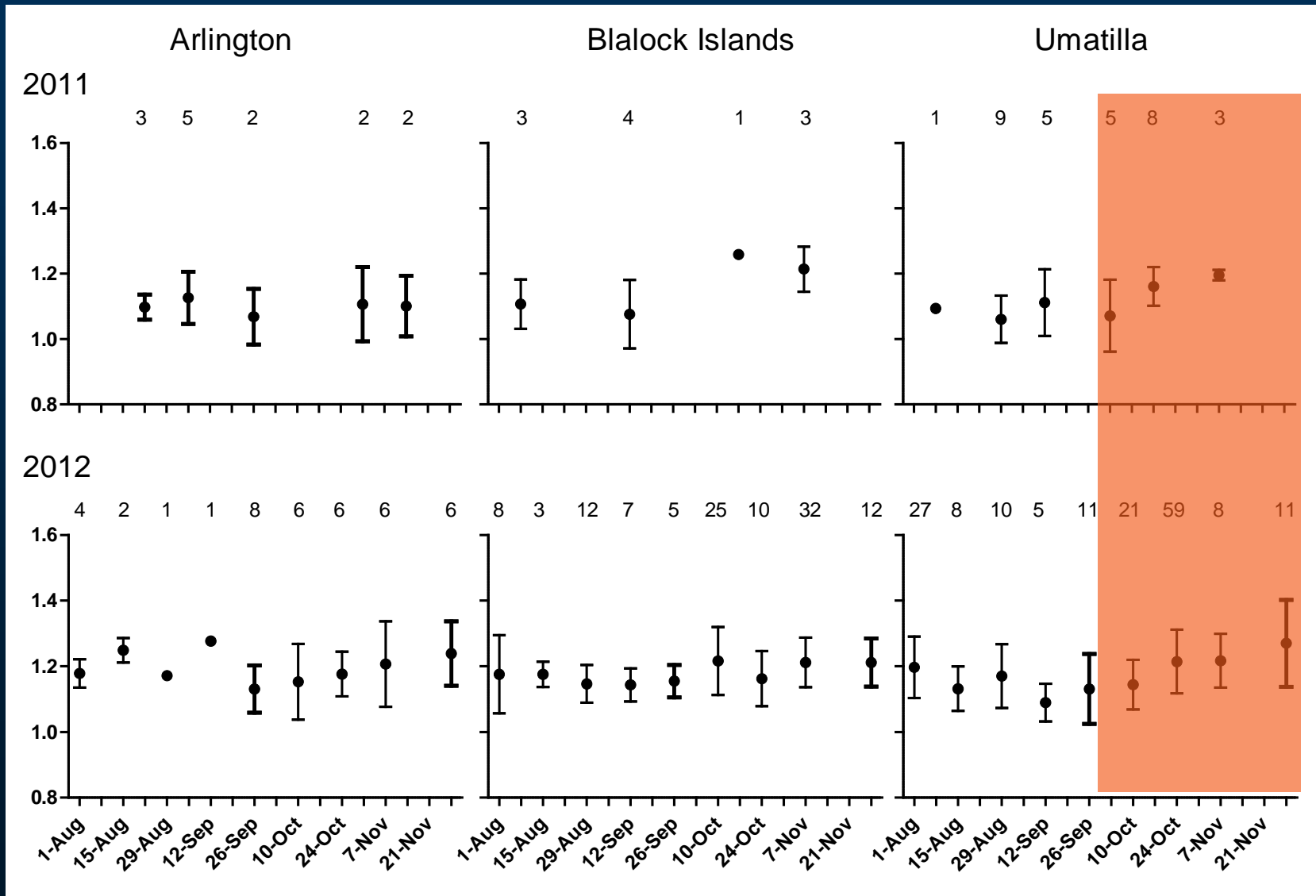
# WAL mean mass (g) over time



# SMB K factor

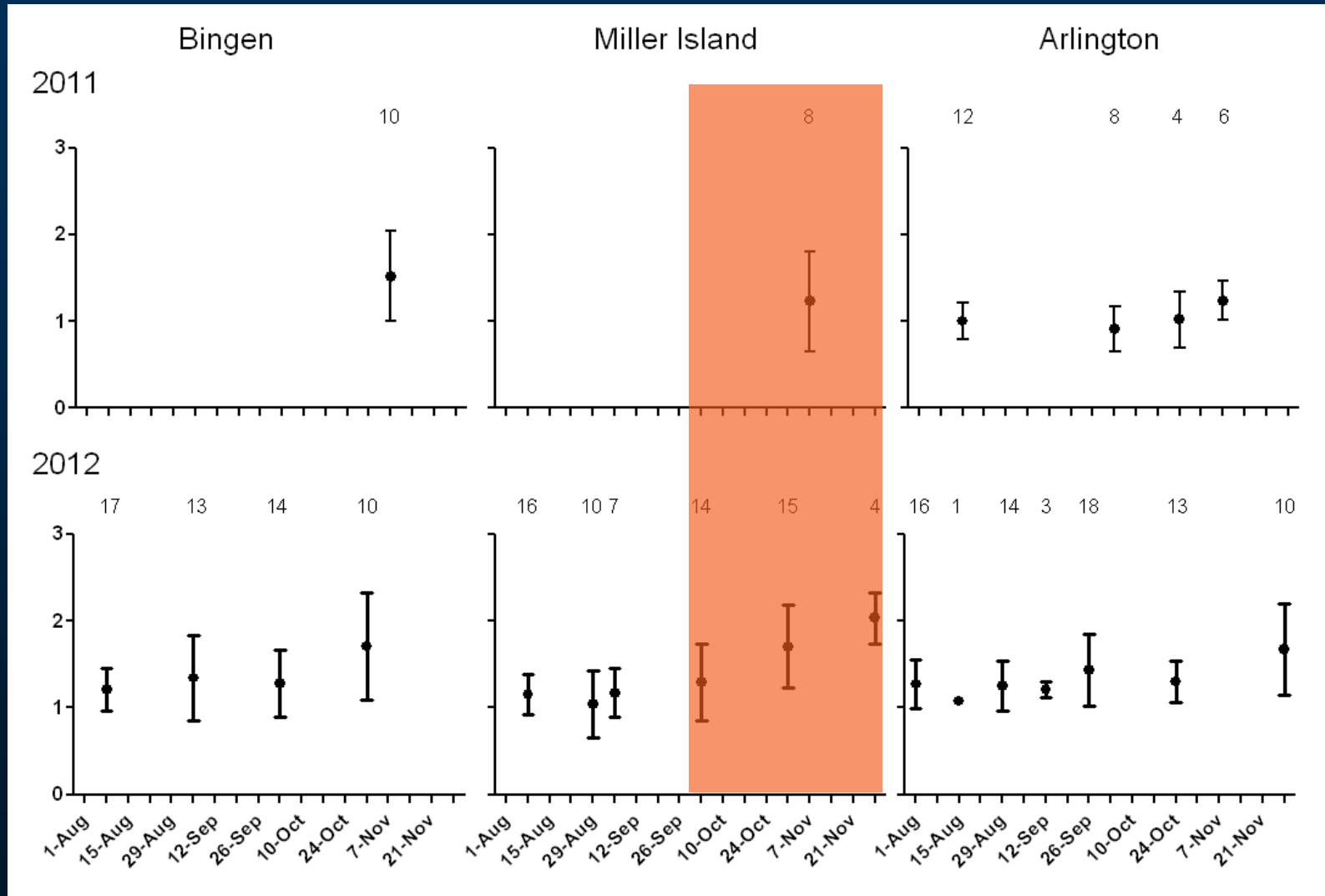


# WAL K factor

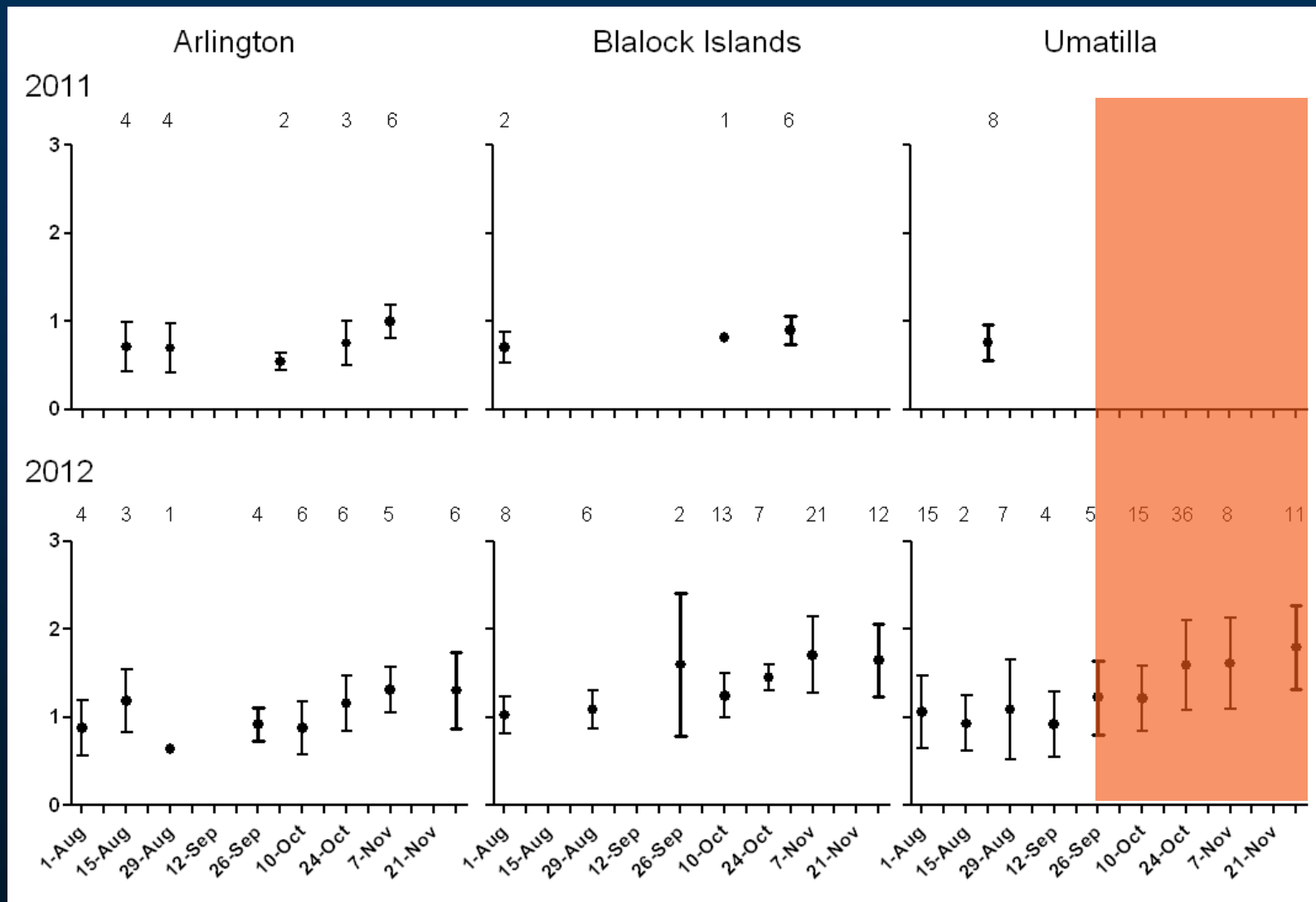




# SMB liver somatic index



# WAL liver somatic index



# Do shad influence the growth and condition of SMB and WAL?

- Increases in K and LSI occurred at sites where shad was an important diet item
- Increases in K and LSI occurred concomitantly with the presence of shad in diet



# Or not?

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- **Mass of SMB increased over time at all sites—even where shad was rare in the diet**
- **No trends in mass of WAL over time at any site**
- **Increases in K and LSI were slight at sites where shad was important in the diet—will they hold up to statistical scrutiny?**
- **Mean K and LSI similar at start of sampling for fish at all sites**
- **LSI of WAL showed similar increases for fish at the Blalocks (no shad) and at Umatilla (shad present)**





