



**NOAA  
FISHERIES**

- Northwest Fisheries Science Center



# Ecosystem Monitoring Program 2020

## Fish Community

- Regan McNatt, Susan Hinton, Jeff Grote, Paul Chittaro, Ben Sandford, and Dan Lomax
- October 27, 2020



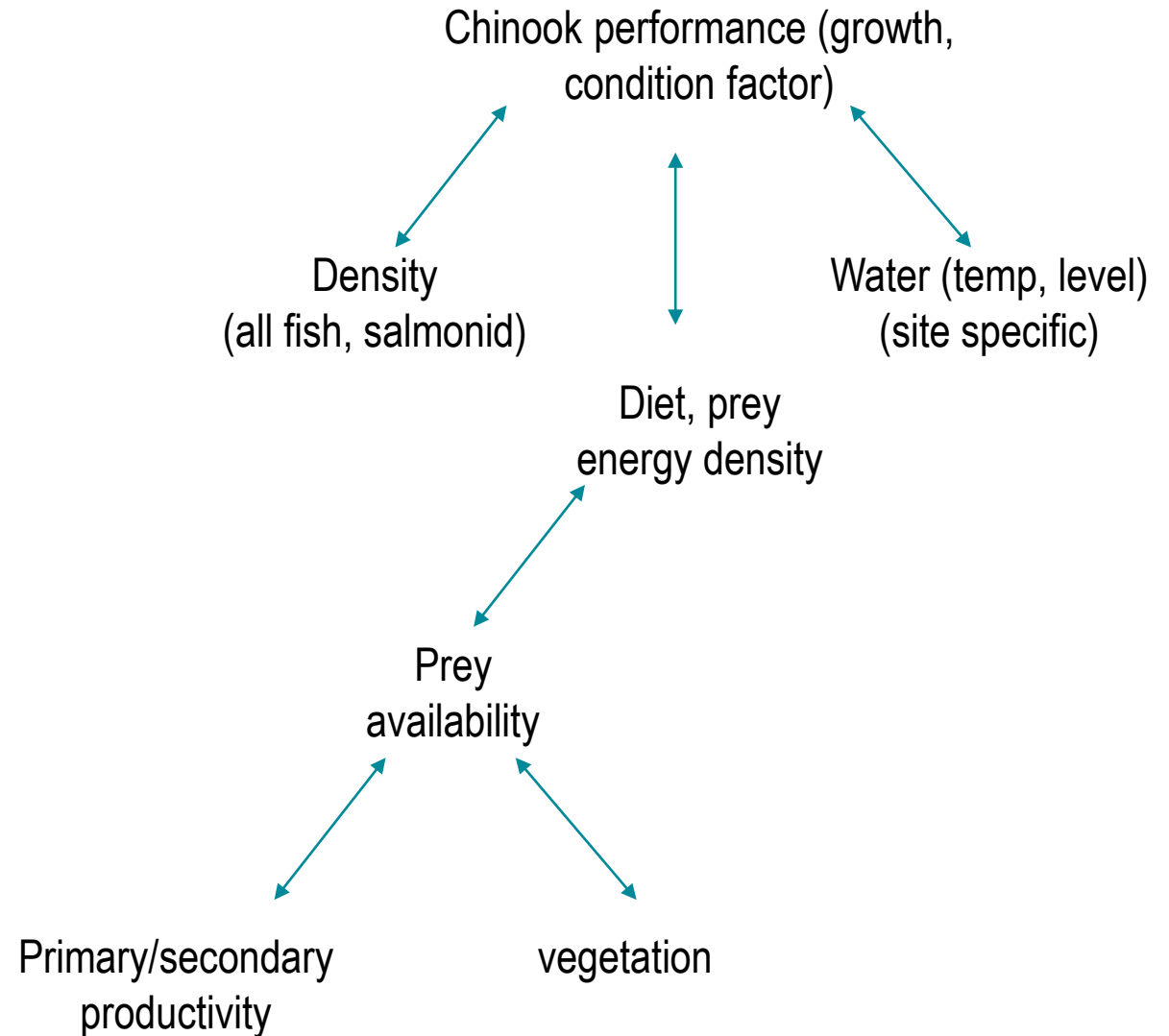
**NOAA FISHERIES**

# Trend Sites and PIT Arrays



## Fish data

- Welch, White, Campbell Slough
- May, June, 2008-2019
- Some data for other months, but not as consistent

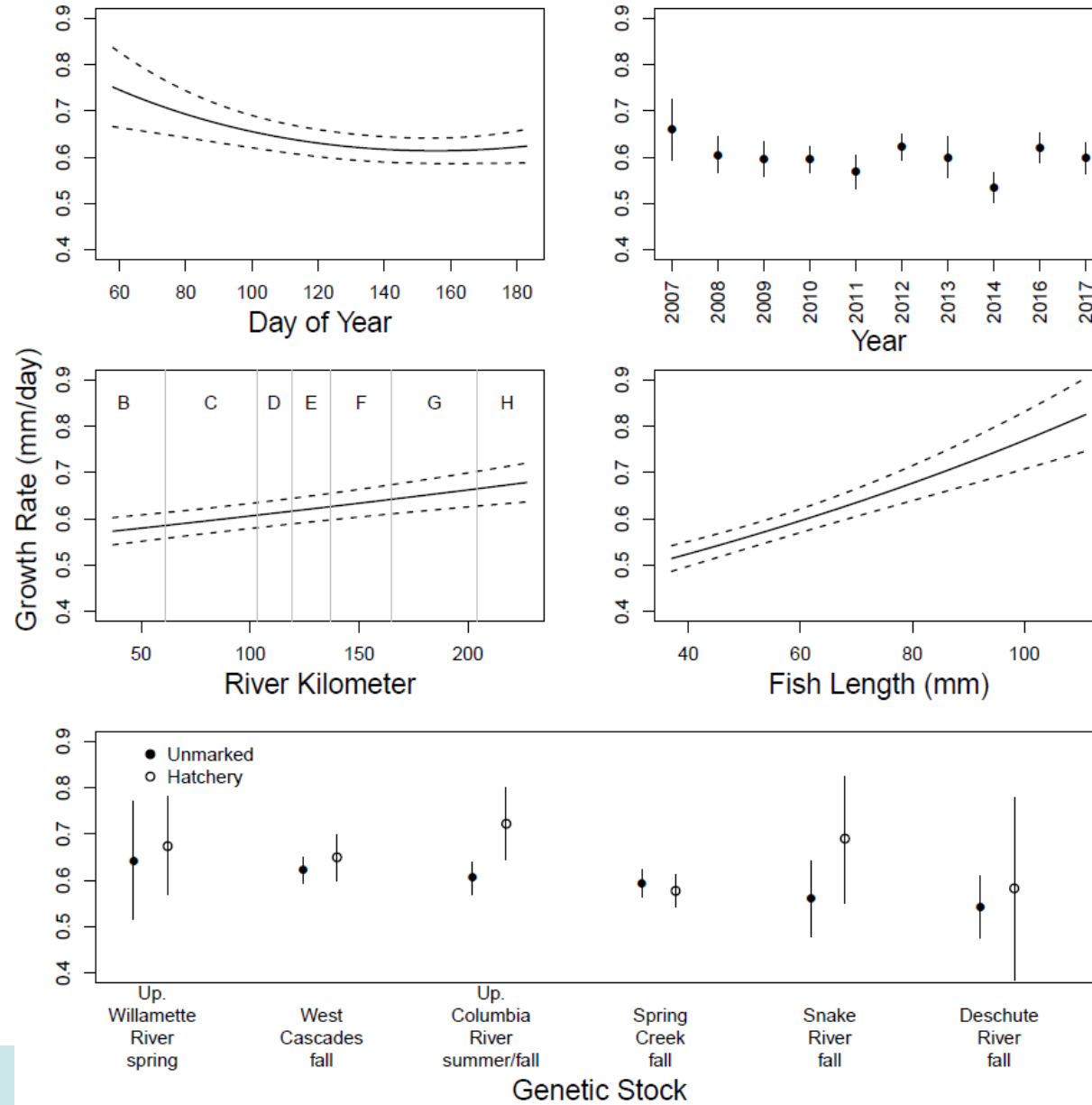


- Prepping data tables
- 2008-2016 database & 2017-2019 database
- Ensuring two databases are congruent as possible
- Error checking catch numbers, sample numbers, H/W designation

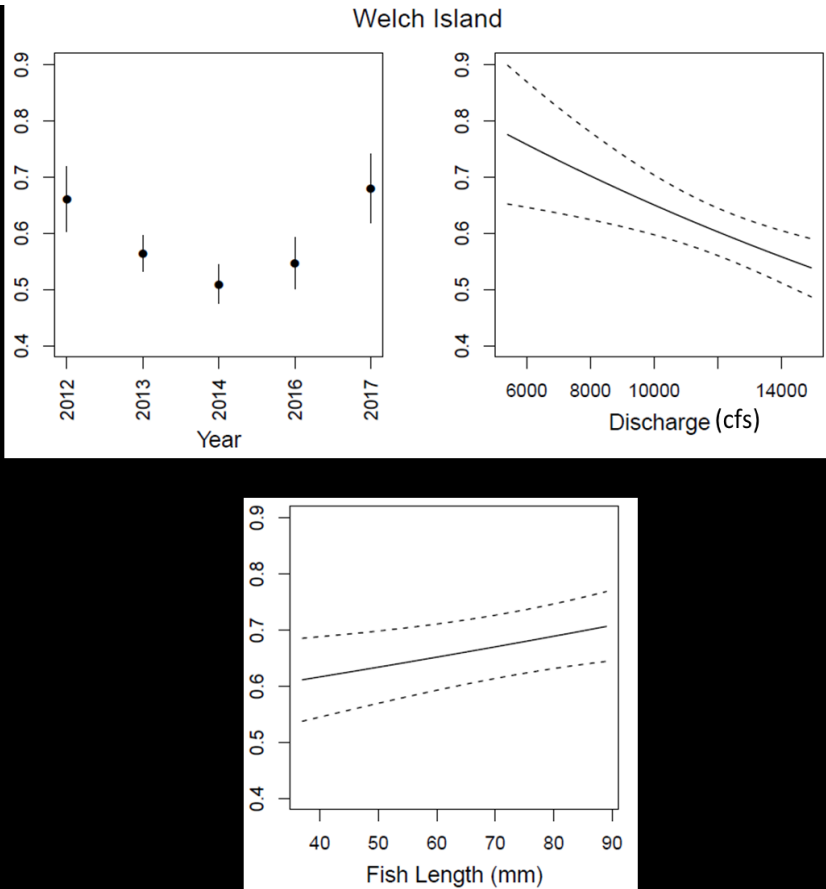
# Initial Growth Analysis

## All trend sites

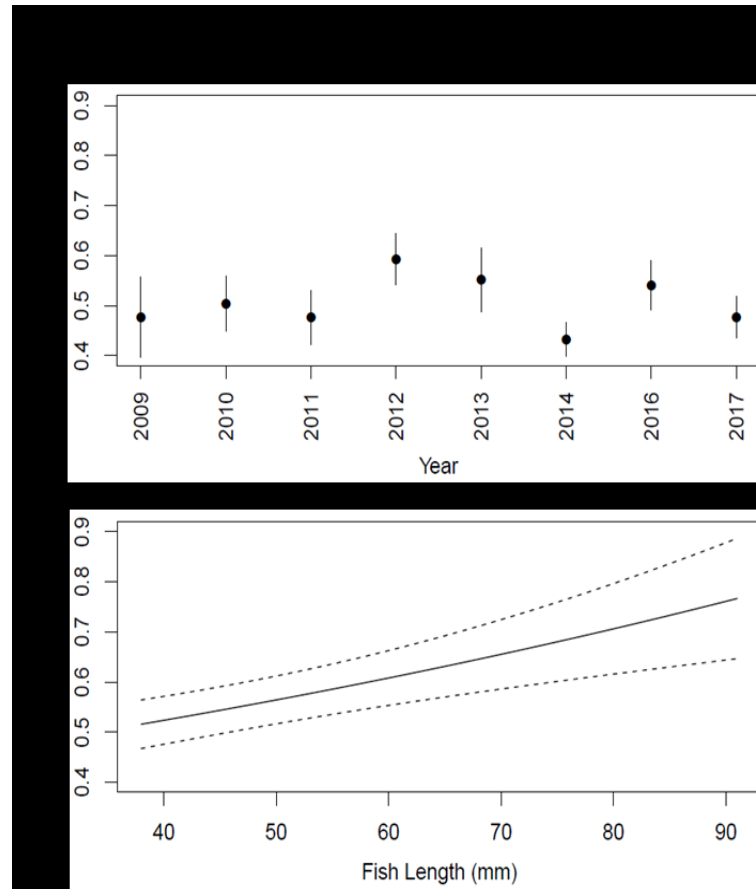
### Off-channel



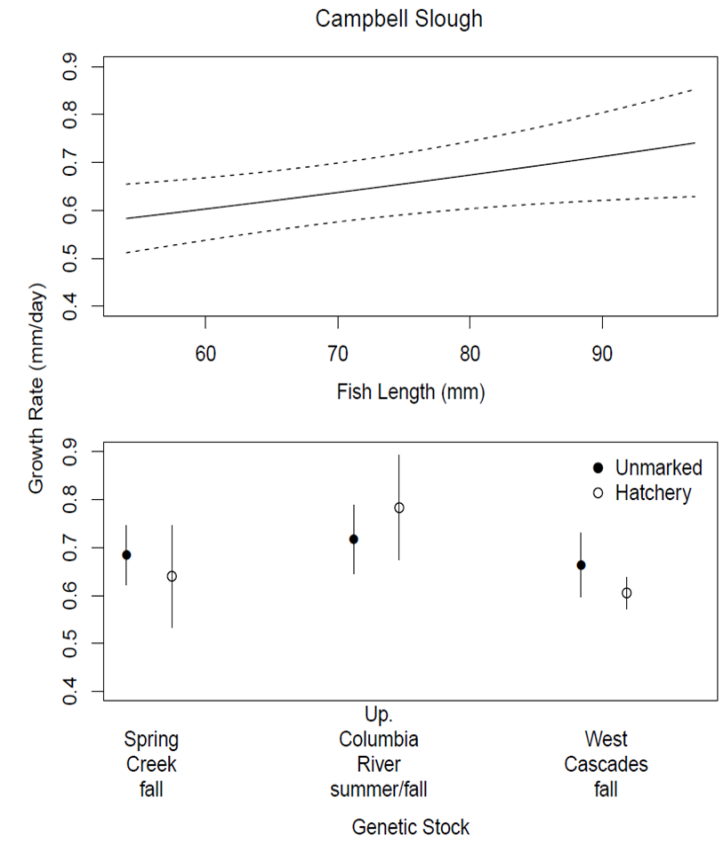
## Welch



## Whites



## Campbell

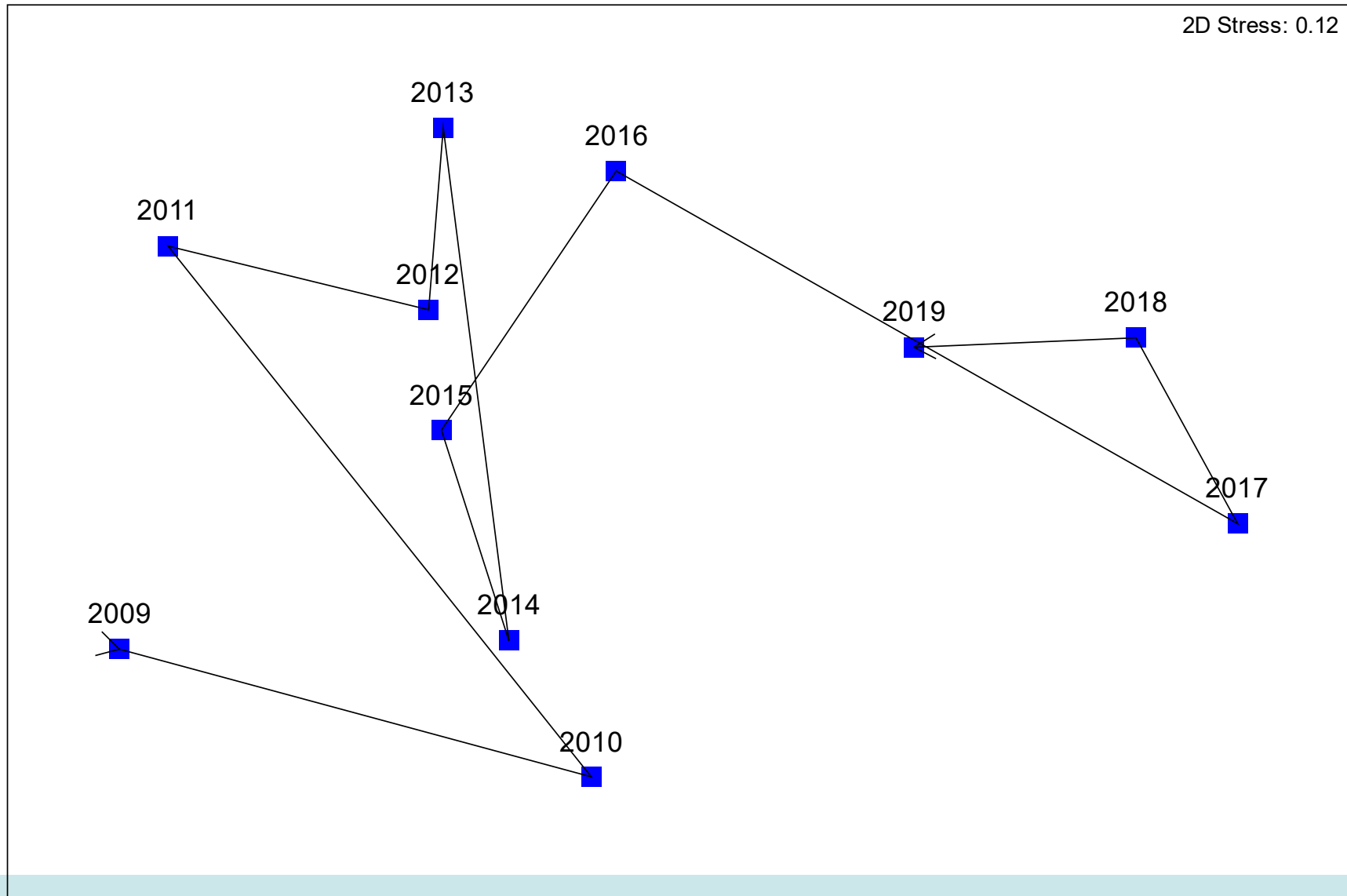


# Trends in fish assemblages

# Impact of year on fish assemblages, all sites/years

## Non-metric MDS

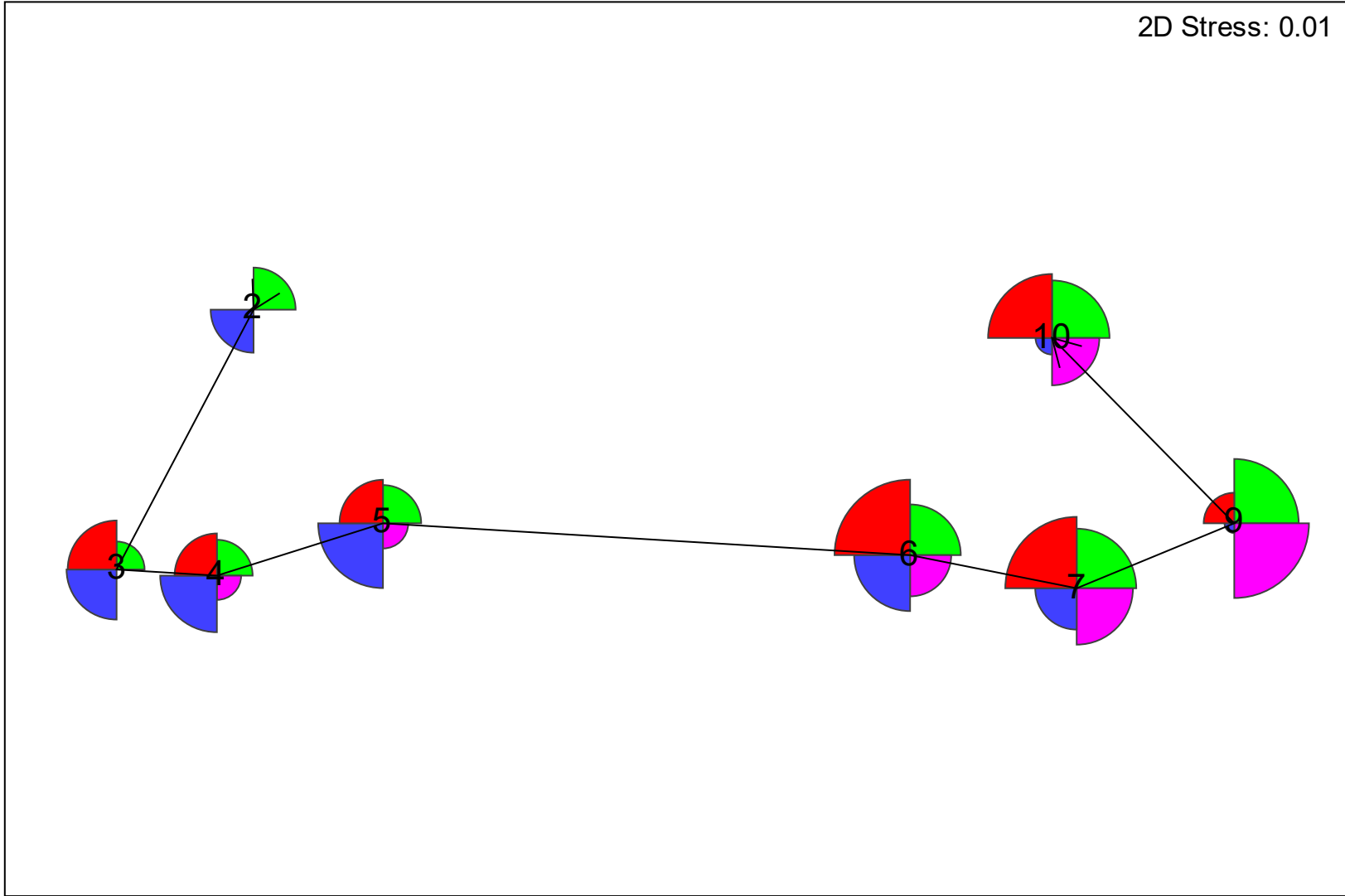
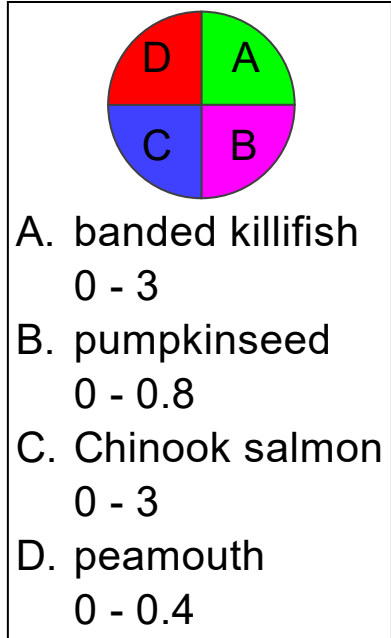
Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity



Impact of month on fish assemblages, all sites/years  
Key species driving seasonal changing

Non-metric MDS

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity

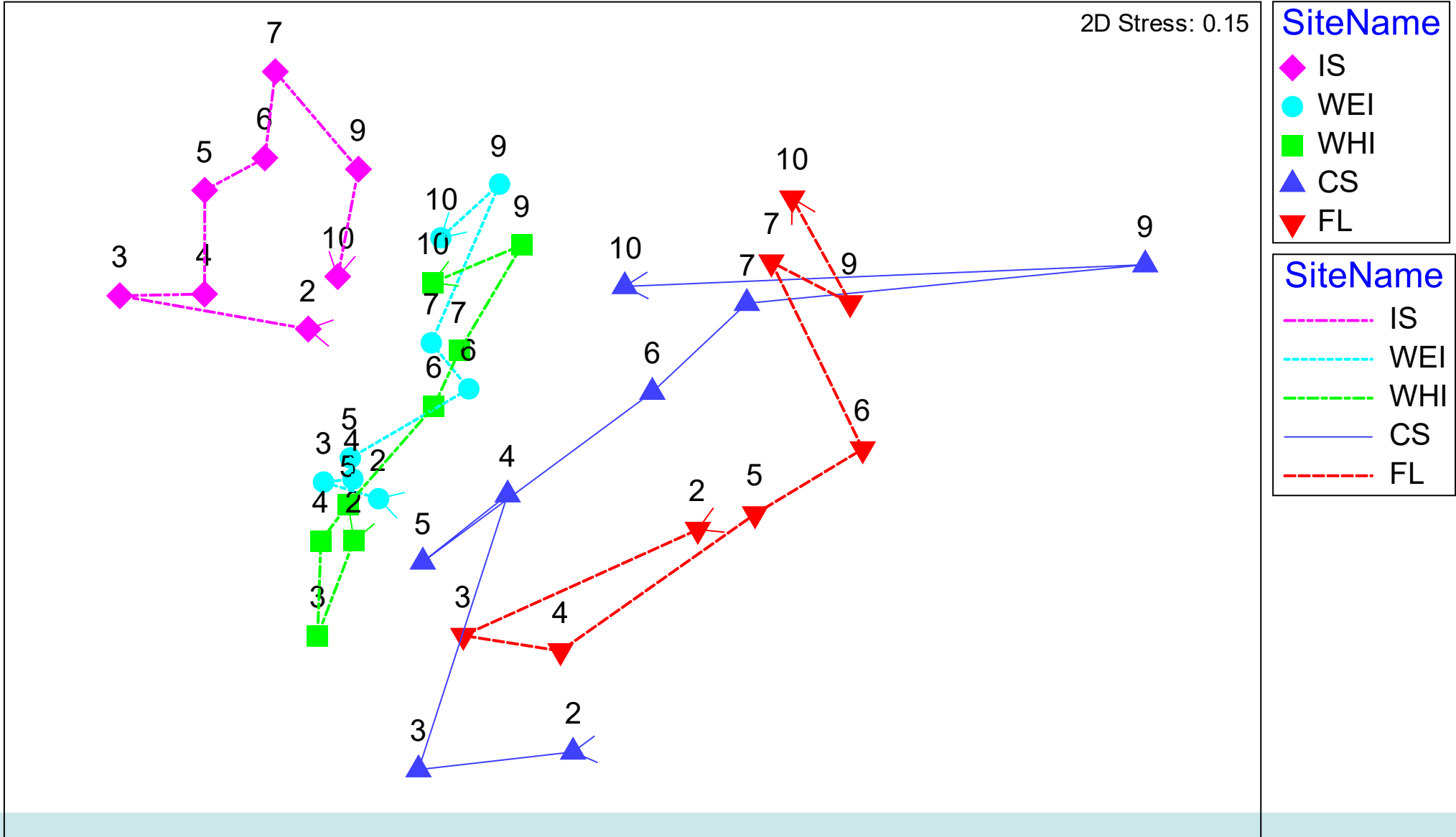




### Non-metric MDS

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity

2D Stress: 0.15

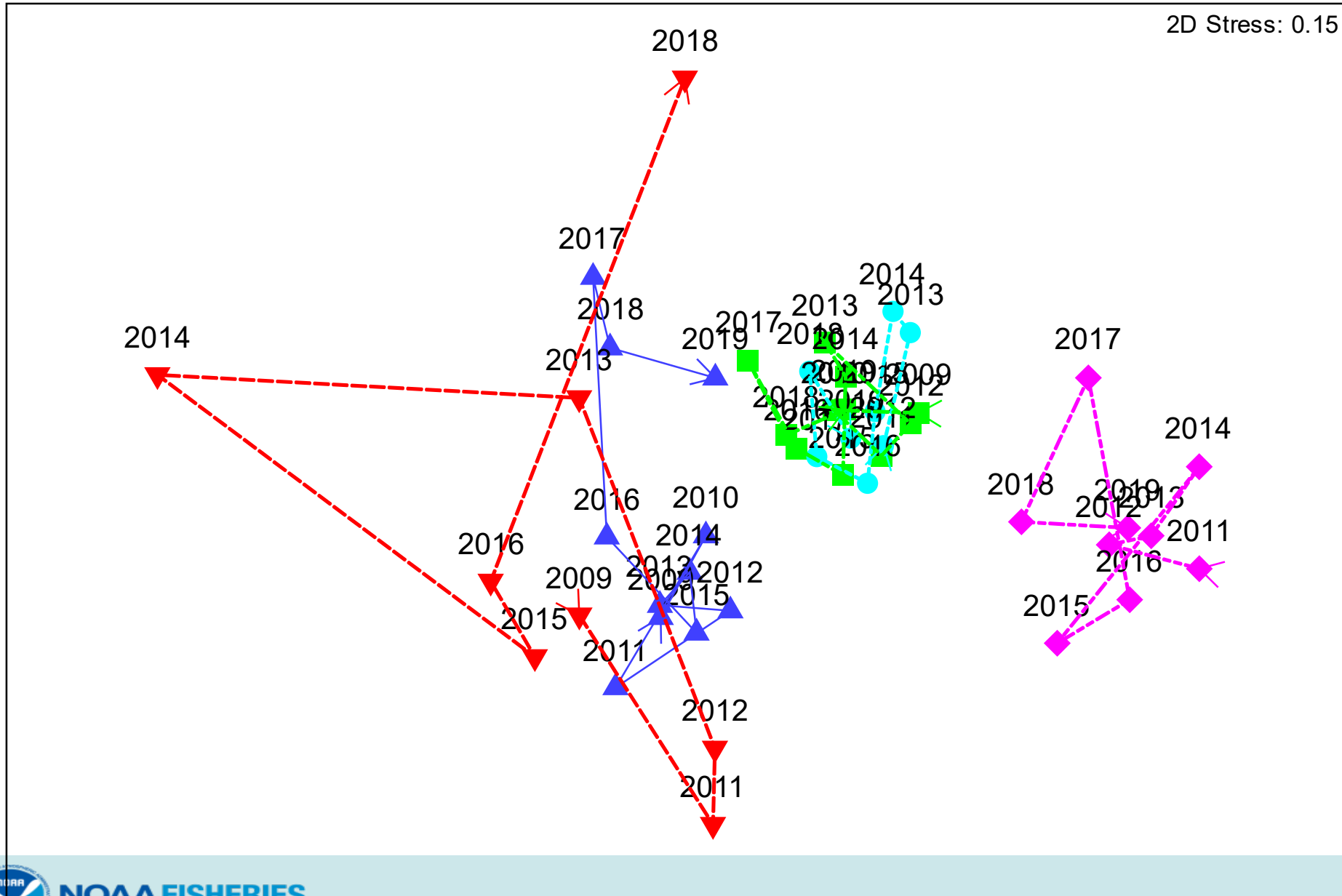
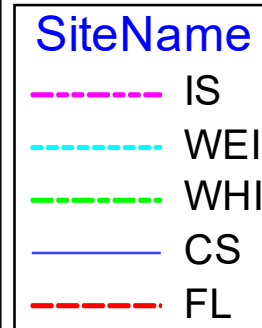
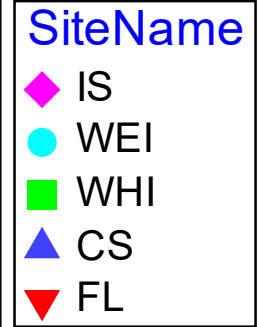


# Interannual variation of fish assemblage within site

## Non-metric MDS

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity

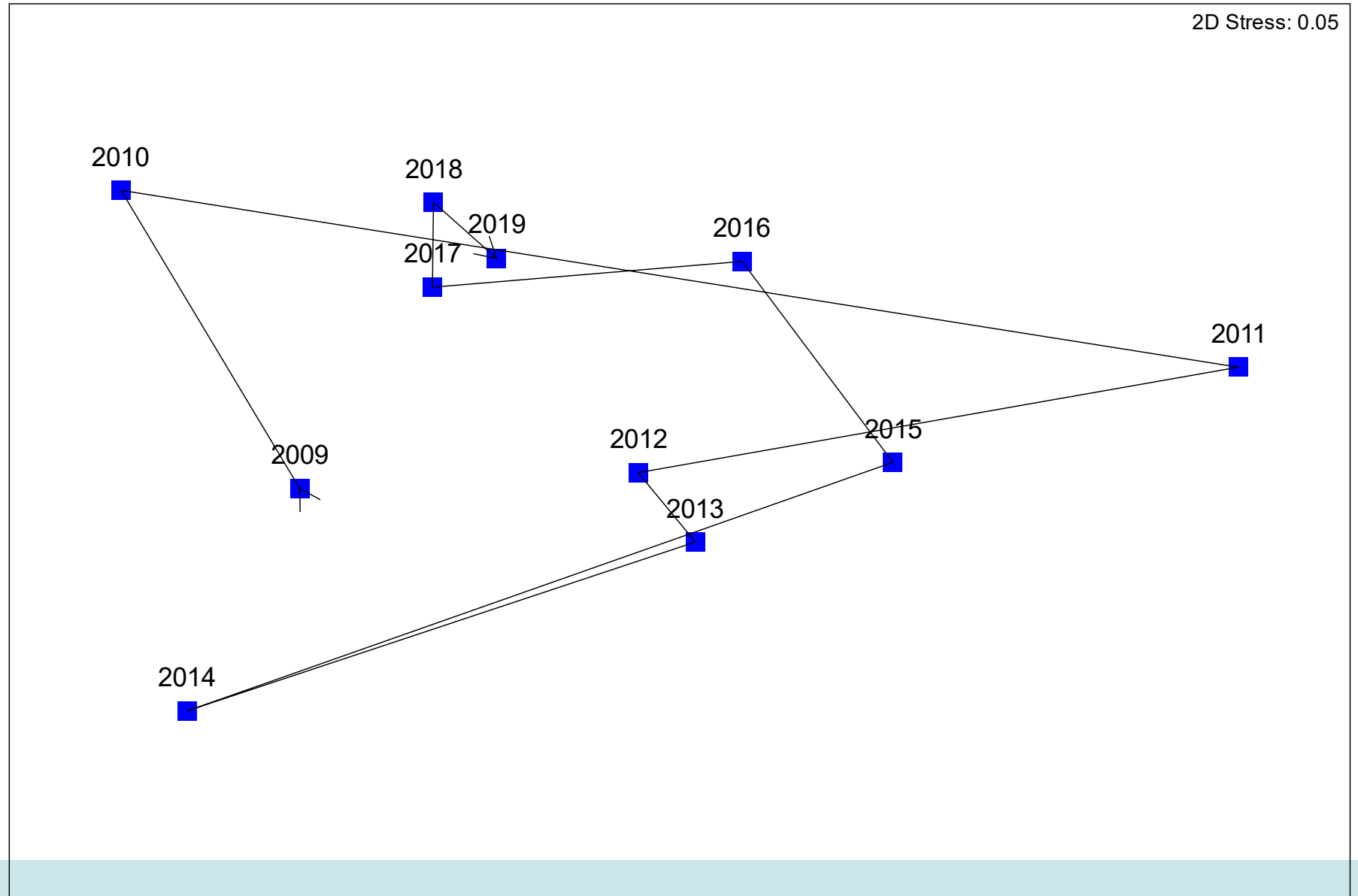
2D Stress: 0.15



# Impact of year on salmon assemblages, all sites/years

## Non-metric MDS

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity

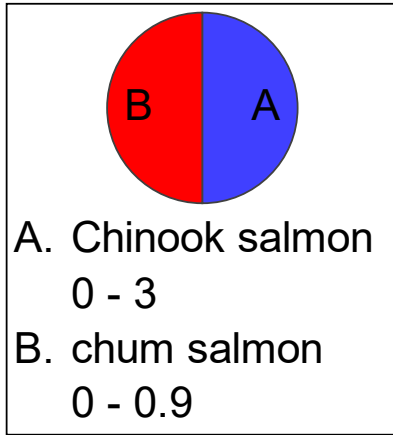


Impact of month on salmon assemblages, all sites/years  
Key species driving seasonal changing

*Non-metric MDS*

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity

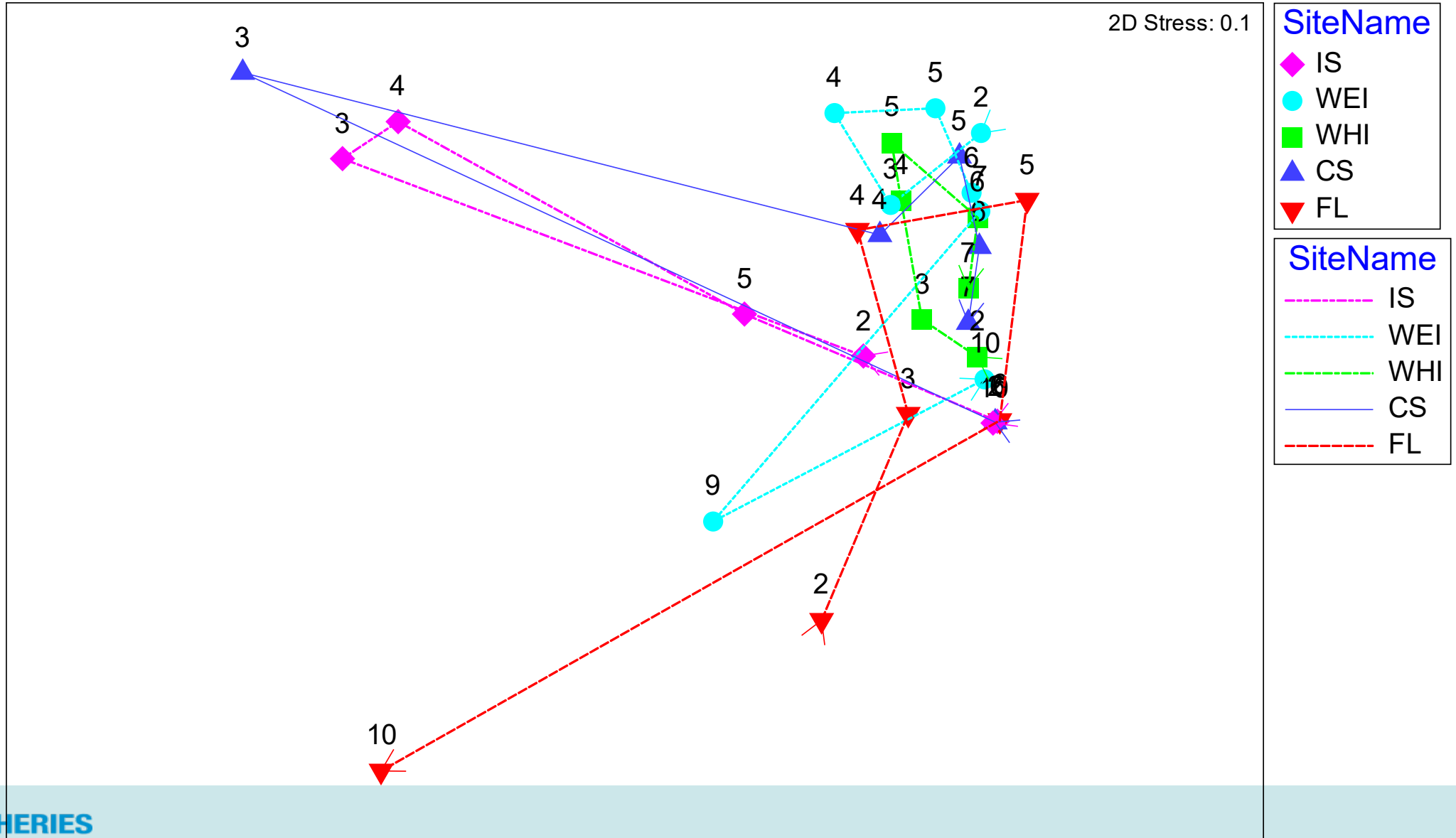
2D Stress: 0.01



Greater similarity among sites within year, salmon only

### Non-metric MDS

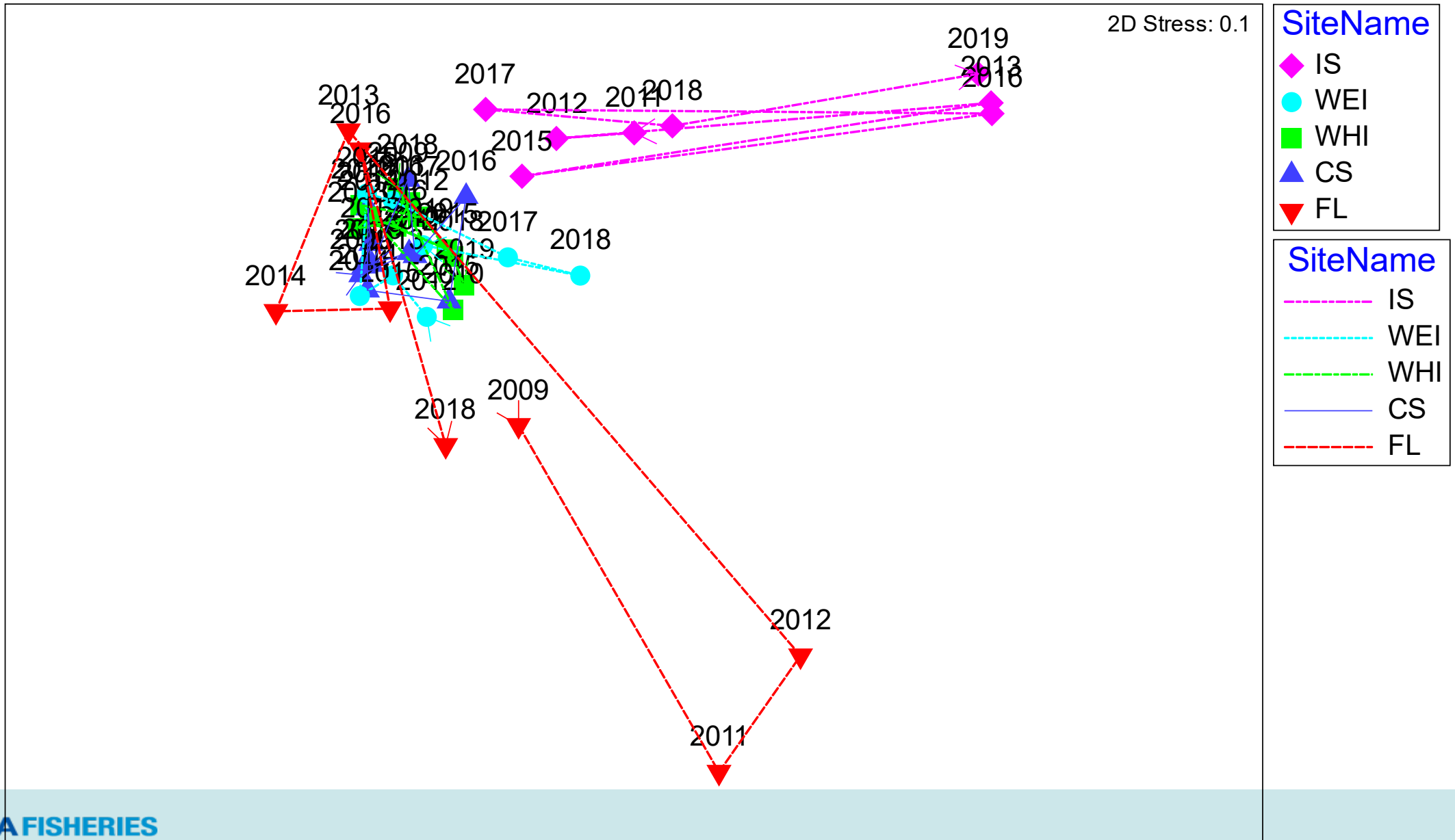
Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity



Greater similarity of salmon assemblage across years and among Welch, Whites, and Campbell

### Non-metric MDS

Transform: Fourth root  
Resemblance: S17 Bray-Curtis similarity



# Next Steps

- Explore regression models for salmon performance
- Incorporate site specific temp data
- Add-in other aspects of program: diet, prey availability, vegetation,
- Non-parametric analysis for overall fish assemblage