



MOVEMENT MATTERS:
MIGRATORY CONTINGENTS AND DIFFERENTIAL
MORTALITY IN SMALLTOOTH SAWFISH DURING THE
FLORIDA KEYS SPINNING FISH EVENT

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Sawfish Symposium 2026



Project objectives

Critical Habitat remains undefined for large juvenile and adult smalltooth sawfish and is a priority research need for management.

(Brame et al. 2019, Poulakis and Grubbs 2019)



Movement Behavior:

Spatial Networks

Residency

Habitat Use

Social Networks

Acoustic telemetry:
Innovasea v16 10-year transmitter



background

migration

questions

exposure

mortality

CONCLUSIONS

SMALLTOOTH SAWFISH SAMPLING SUMMARY

FSU: 108 acoustic tags deployed since 2016

FWC: 74 additional animals provided

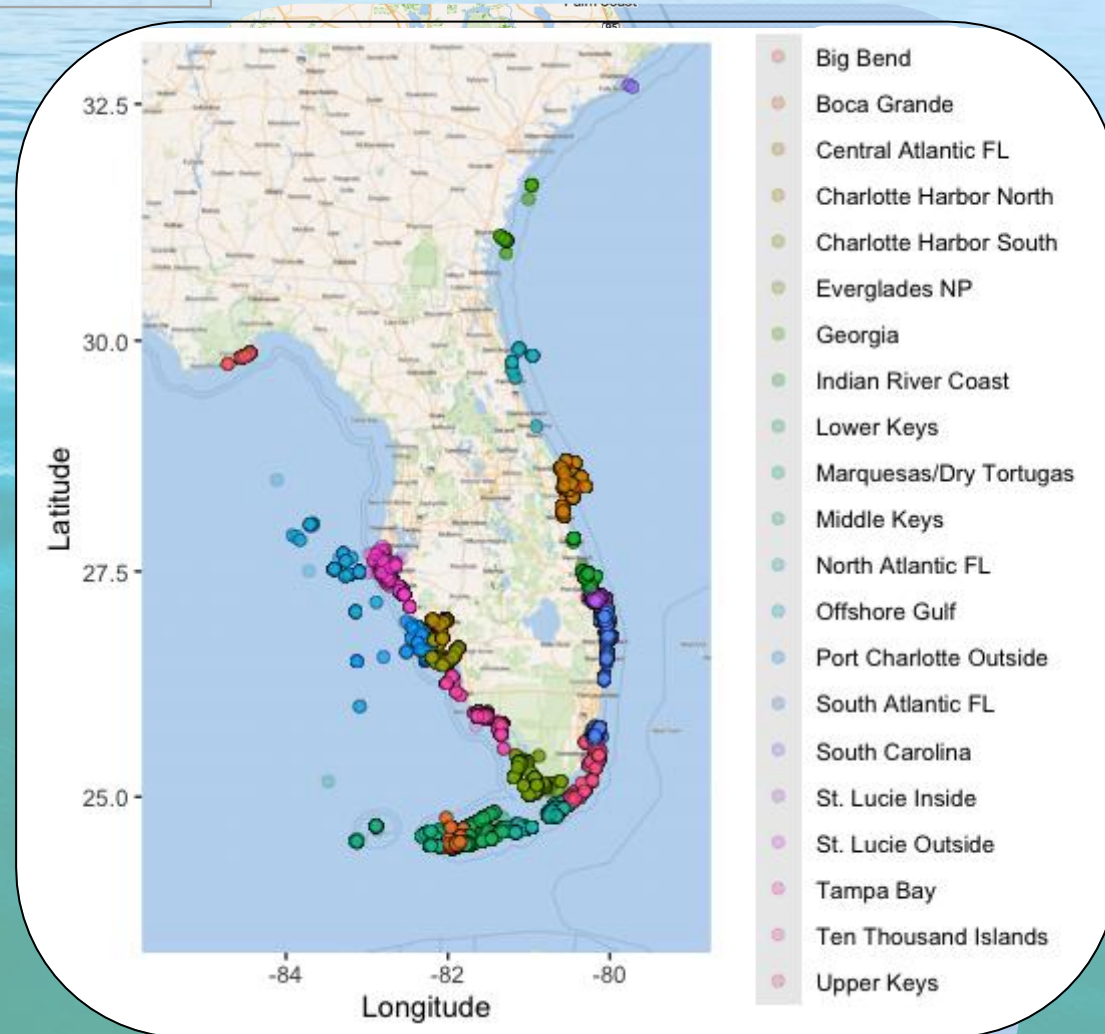
NOAA: 6 additional animals provided

Field School: 4 tags deployed

183 animals detected at 1,867 stations
spanning over 2,000 km of coastline



Baylic Faddool/ Bimini Biological Field Station



background

migration

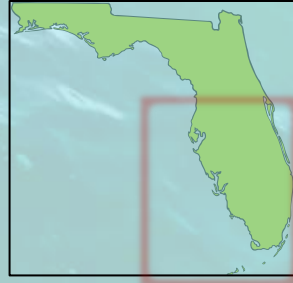
questions

exposure

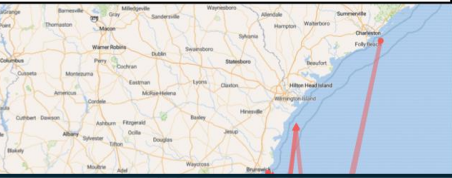
mortality

CONCLUSIONS

Migratory Behavior



Adults



Most individuals exhibit cyclic movement behavior at an annual scale.

SEX

▲ M

Contingent

— EAST COAST MIGRANT

— GULF COAST MIGRANT

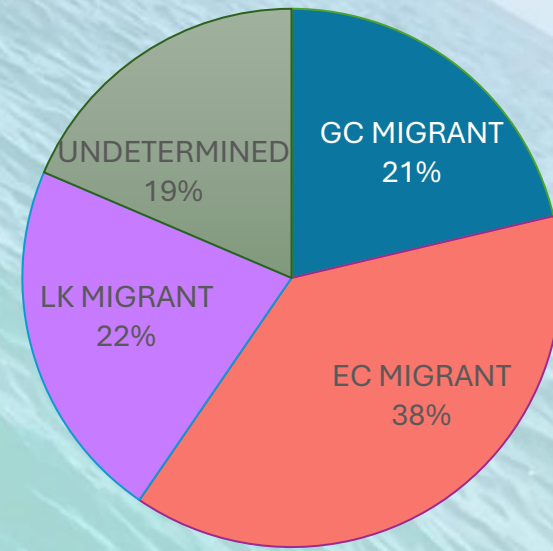
— LOWER KEYS MIGRANT

Most individuals use **either** the Gulf or East coast for migration.

-84 -82 -80

Gulf Coast Migrants

Lower Keys Migrants



East Coast Migrants

background

migration

questions

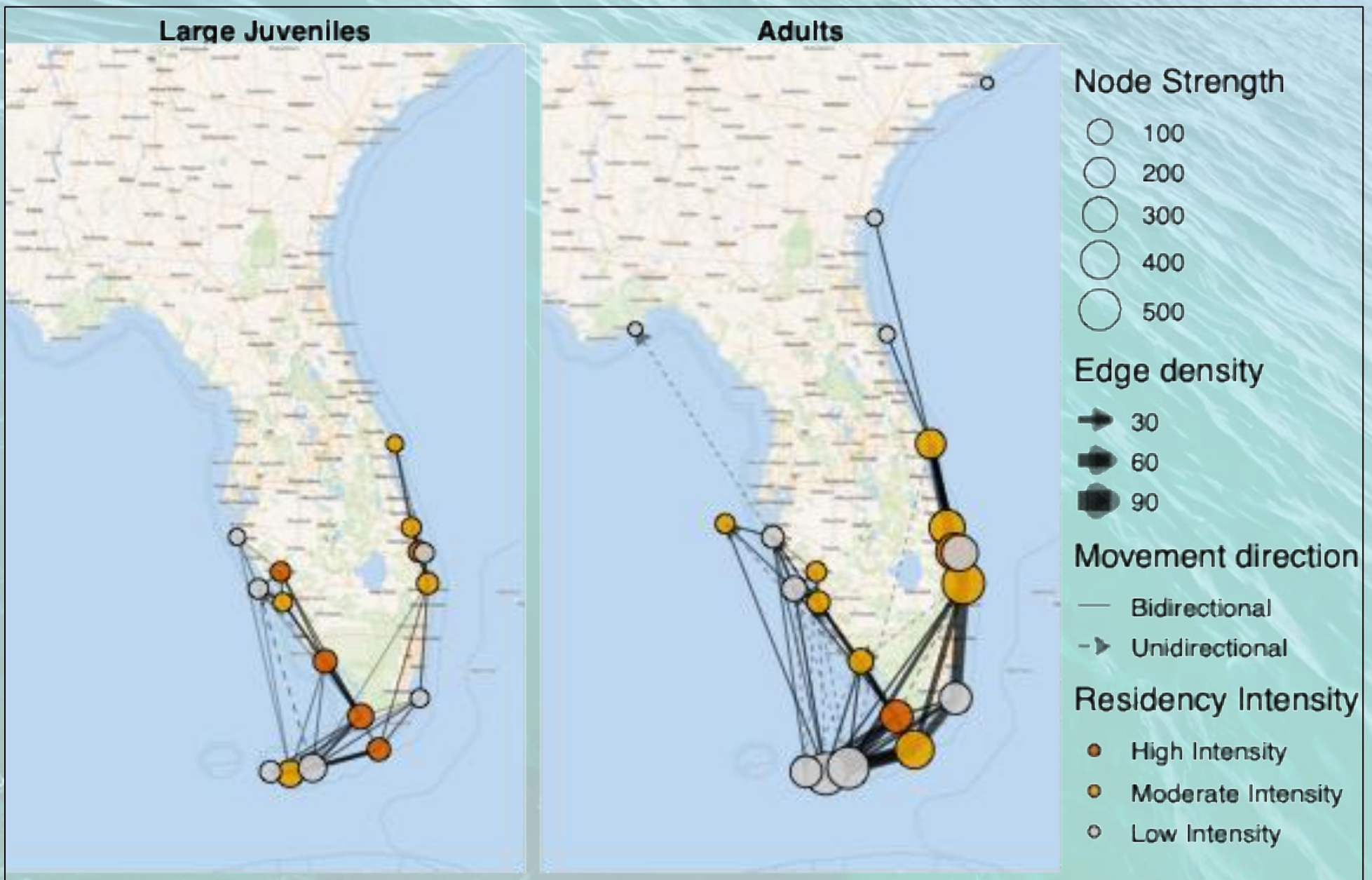
exposure

mortality

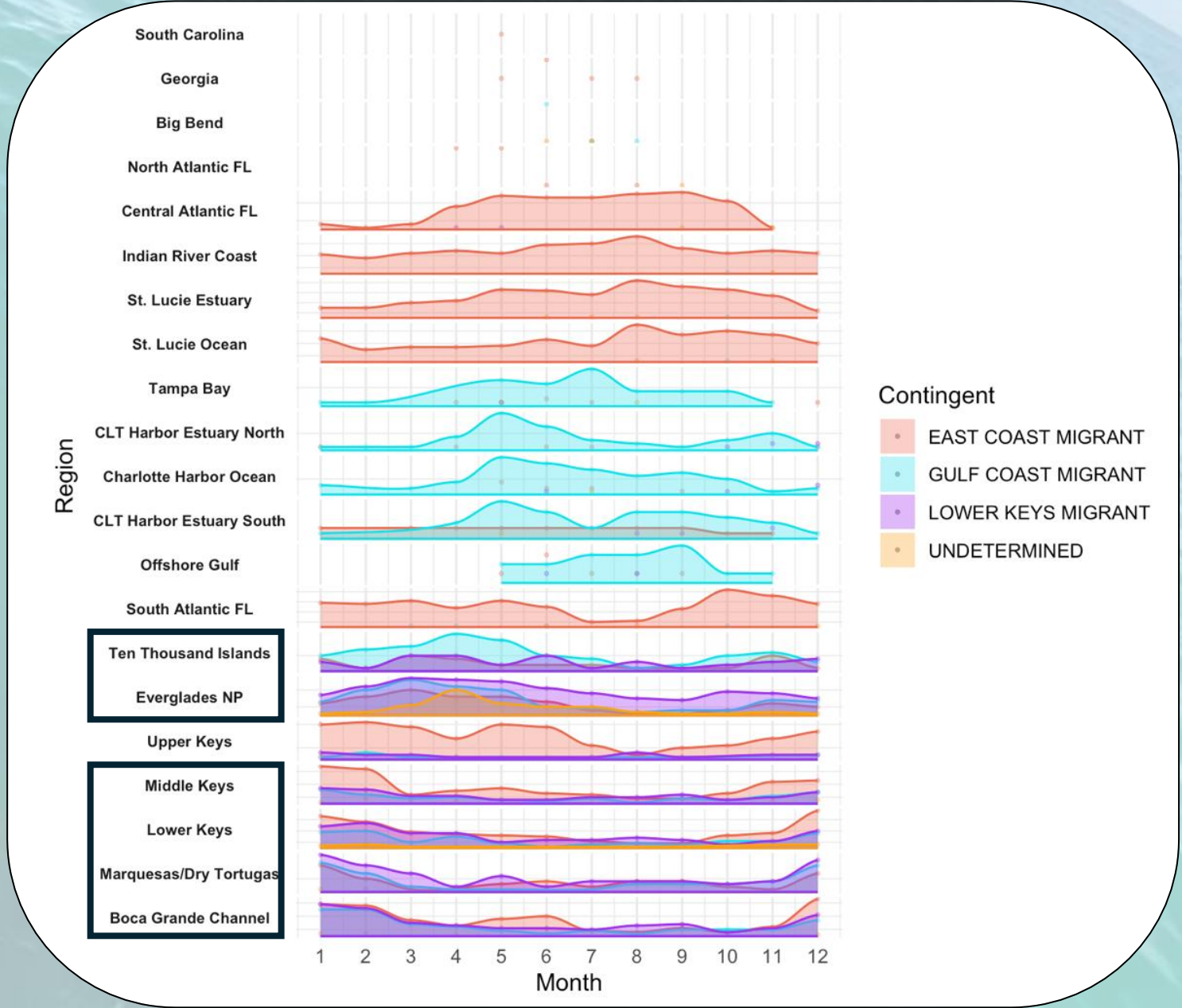
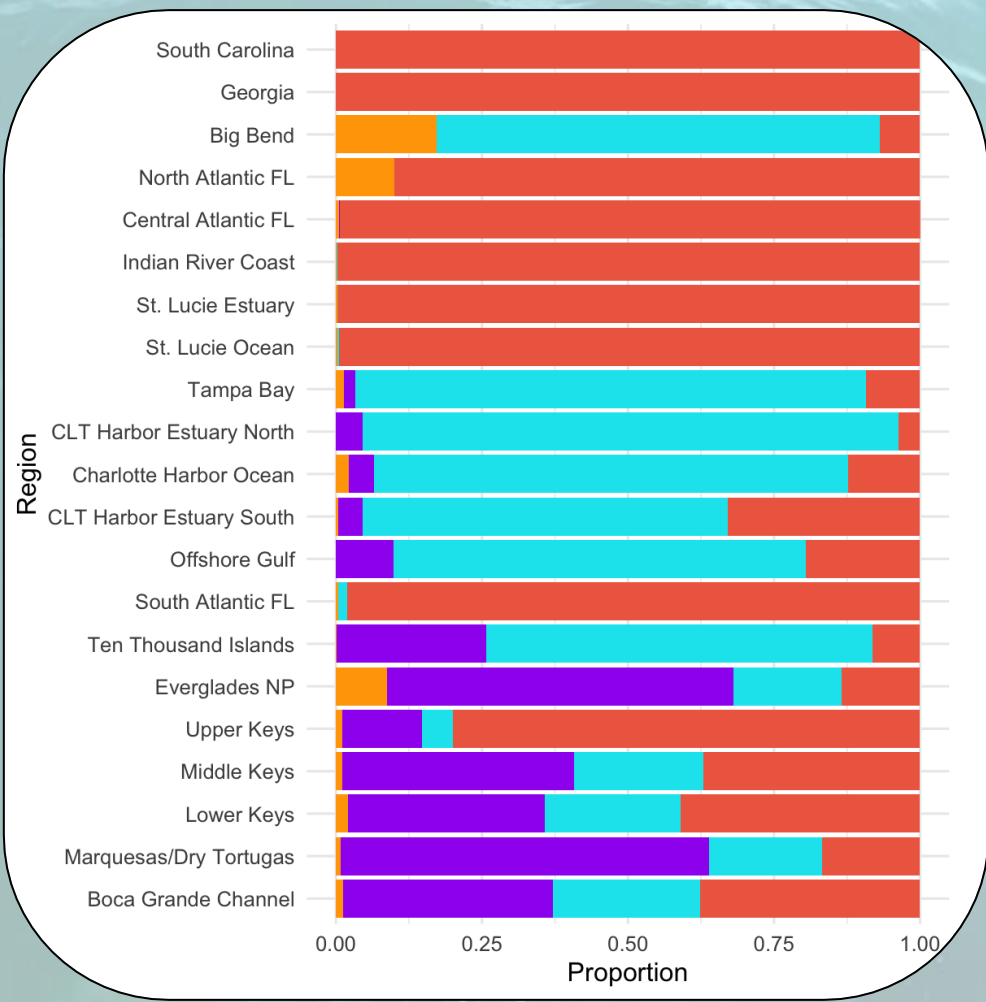
CONCLUSIONS

Spatial network

The FL Keys and ENP facilitate connectivity between Gulf and Atlantic movements



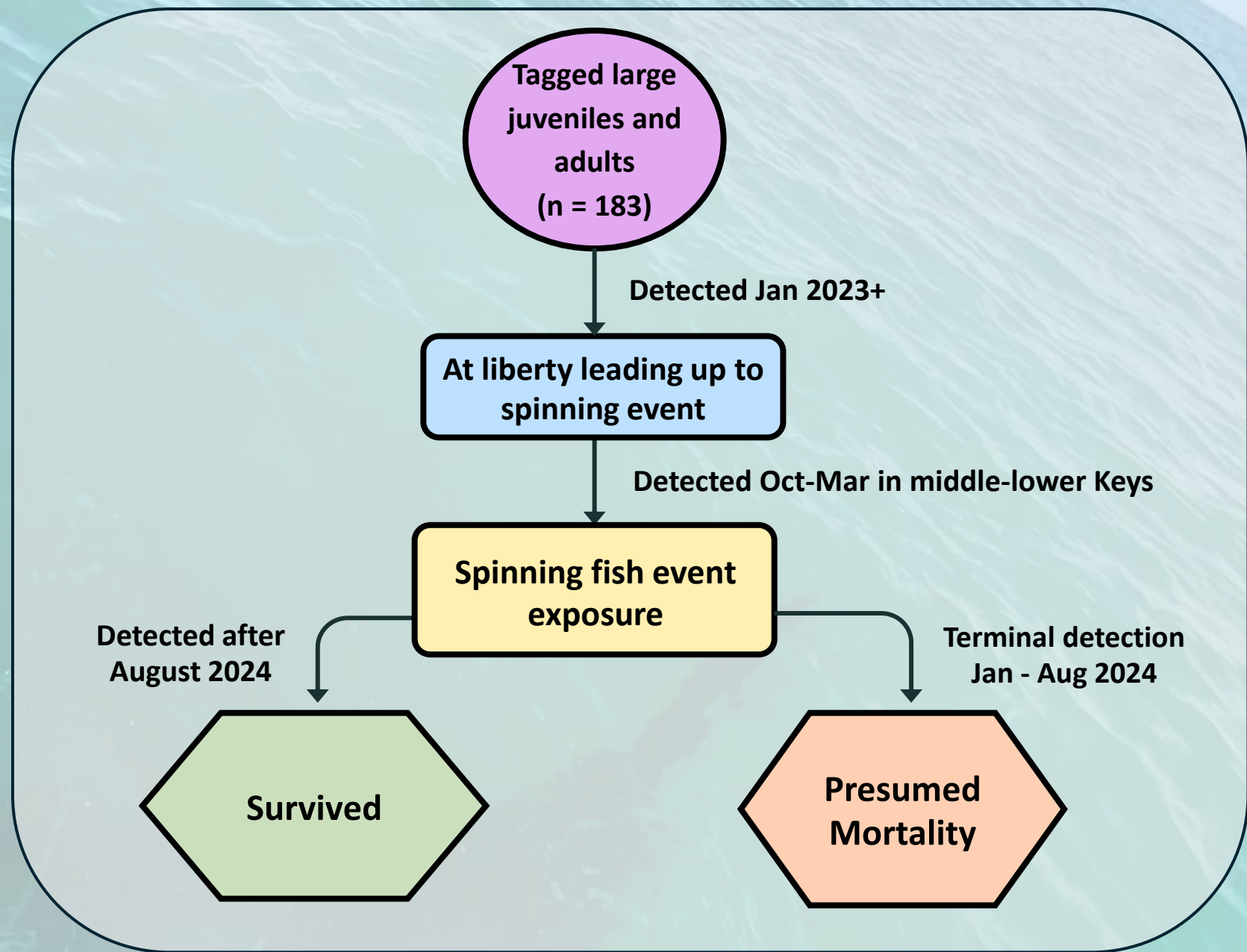
Contingent overlap



questions

Did migratory contingent affect odds of exposure or mortality in the 2024 spinning fish event?

What proportion of tagged sawfish suffered mortality in the 2024 spinning fish event?





A. Exposure probability by migratory contingent





B. Mortality among exposed individuals

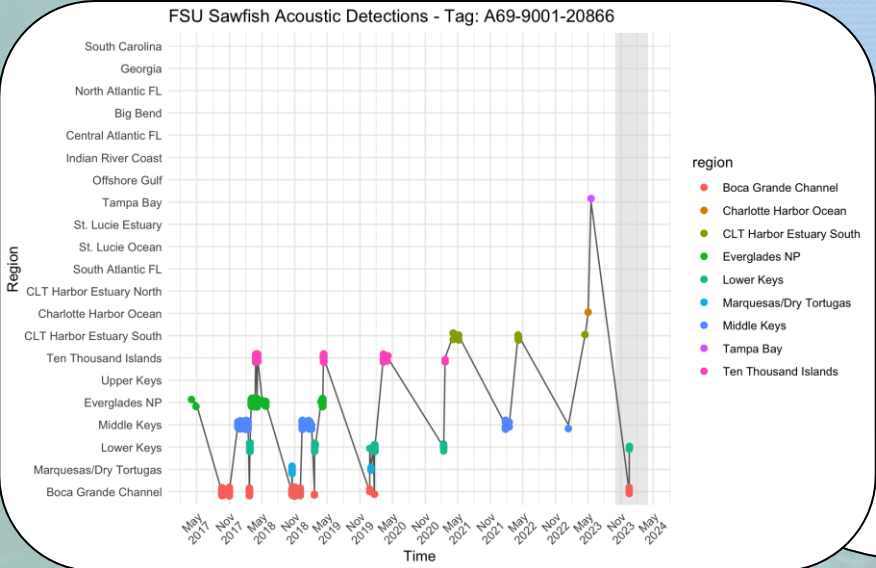
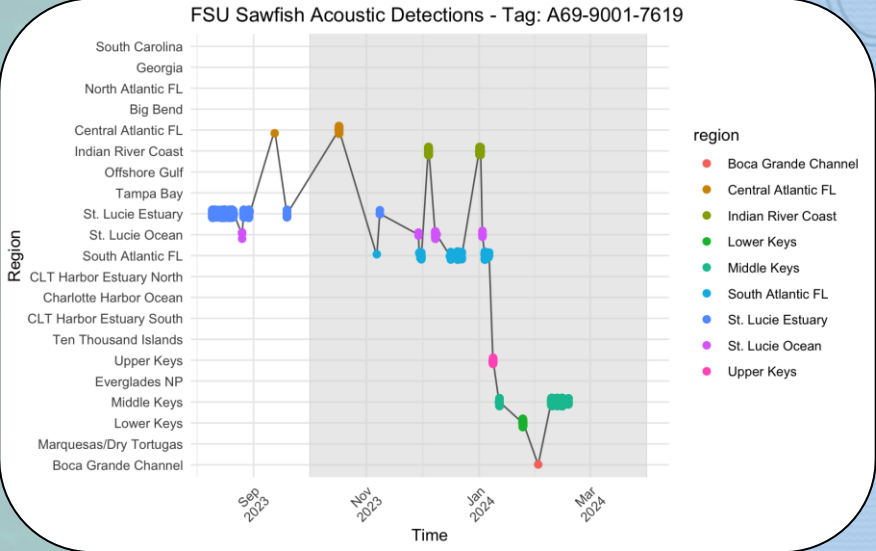




C. Overall mortality among all available individuals



mortality



- EAST COAST MIGRANT
- GULF COAST MIGRANT
- LOWER KEYS MIGRANT
- UNDETERMINED

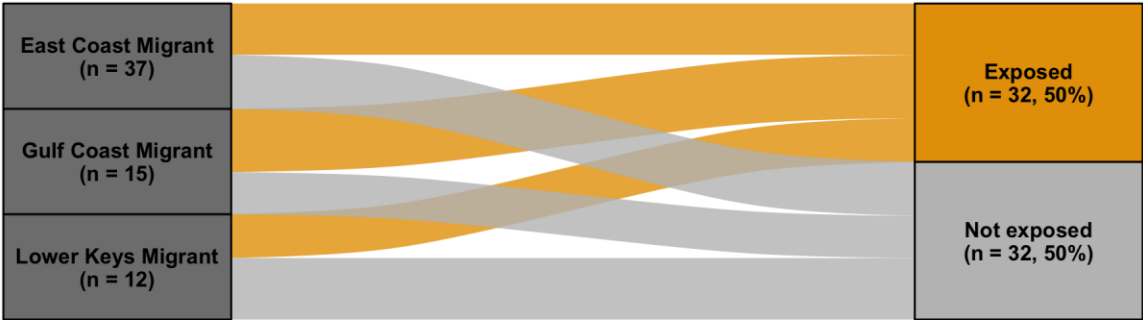
conclusions

Did migratory contingent affect odds of exposure or mortality in the 2024 spinning fish event? **YES**

At least 50% of tagged sawfish had exposure to the affected area in the lower FL Keys

What proportion of tagged sawfish suffered mortality in the 2024 spinning fish event? **~27%**
Gulf Coast Migrants suffered disproportionate mortality

A. Exposure probability by migratory contingent



B. Mortality among exposed individuals



C. Overall mortality among all available individuals



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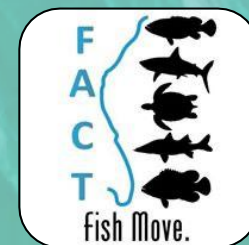
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