

Hypoxia and Mississippi River Diversion Ecological Modeling Workshop

Model Matrix adapted from Rose and Sable (2013)*

Model Platforms Presented at Workshop

Model	Location	Type	Currency	Biological Organization	Spatial	Temporal Scale	Purpose
Ecopath with Ecosim (EwE) <i>Walters et al., 2008</i>	GOM	Food-web	Age-structured for several populations State variables for others	Ecosystem	Point	1950-2004	Ecosystem function
EwE <i>de Mutsert et al., 2012</i>	Breton Sound	Food-web	Age-structured for several populations. State variable for others	Ecosystem	Point	Multiple years	Assess diversion effects
EwE <i>de Mutsert et al., in progress</i>	LA Shelf	Food-web	Age-structured for several populations. State variable for others	Ecosystem	Point Spatially explicit w/Ecospace	Multiple years	Assess impacts of hypoxia
EwE <i>Chagaris et al., 2013</i>	West Florida Shelf	Food-web	Age-structured for several reef fish populations. State variable for others	Ecosystem	Point Spatially explicit w/Ecospace in development	1950-2009	
EwE <i>Lewis & Cowan, in progress</i>	Barataria Basin	Food-web	Age-structured for several populations. State variable for others	Ecosystem	Point Spatially explicit w/Ecospace in development	Multiple years	Assess impacts of diversions
CASM <i>Bartell et al., 2010</i>	Pontchartrain Basin	Multiple species bioenergetics	State variables	Ecosystem	Point	1989-2007	Population Functional Response

Model Platforms Presented at Workshop cont.

Model	Location	Type	Currency	Biological Organization	Spatial	Temporal Scale	Purpose
CASM <i>Watkins & Sable, in progress</i>	Barataria Basin	Multiple specis bioenergetics	State variables	Ecosystem	Point	One year	Population Functional Response
TroSim <i>Milroy et al, in progress</i>	MS Sound	Multiple specis bioenergetics	State variables	Food web	Point	One year	Population Functional Response
Atlantis <i>Ainsworth et al., in progress</i>	GOM	Integrated spatial	Age-structured	Ecosystem	Spatially explicit w/crude or no movement	Under development	Ecosystem-based Management
Atlantis <i>Mason et al., in progress</i>	GOM	Integrated spatial	Age-structured	Ecosystem	Spatially explicit w/crude or no movement	Under development	Ecosystem-based Management
Atlantic croaker IBM <i>Creekmore, 2011</i>	Northern Gulf shelf	Agent-based	Individual Atlantic croaker	Single species	Spatially explicit	Multiple years	

Additional models evaluated by Rose and Sable (2013)

Model	Location	Type	Currency	Biological Organization	Spatial	Temporal Scale	Purpose
Tidal marsh community IBM <i>Sable & Rose, in draft</i>	Northern Gulf/Louisiana		Individuals for six tidal marsh species	Food web	Spatially explicit	One year	
Shell-neutral oyster stock assessment model <i>Soniat et al., 2012</i>	Breton Sound		Size-structured	Single species	Point	Single year runs using data for 1999 to	Fishery stability
PTM-IBM <i>Rose et al., in review</i>	Gulf		Individual fish larvae	Single species	Spatially explicit	Seasonal	
OSMOSE for Integrated Ecological Assessment <i>Grus et al., 2013</i>	Gulf		Individual	Multispecies	Spatially explicit	Multiple years	
Shrimp IBM <i>Roth et al. 2008</i>	Louisiana/Texas	Agent-based	Individual juvenile brown shrimp	Single species	Spatially explicit	One year	
Fisheries model <i>Barnthouse et al., 1990</i>	None – for Gulf menhaden and Chesapeake Bay striped bass		Age-structured	Single species	Point	Multiple years	

Additional models evaluated by Rose and Sable (2013) cont.

Model	Location	Type	Currency	Biological Organization	Spatial	Temporal Scale	Purpose
Lotka-Volterra <i>Whipple et al., 2000</i>	None – assessing modeling approaches for fishing and predator interactions		State variable	Multispecies	Point	Multiple years	
LDWF blue crab stock assessment <i>West et al., 2011</i>	LA		State variable	Single species	Point	Multiple years	
LDWF striped mullet assessment <i>West et al., in progress</i>	LA		Age-structured stock assessment	Single species	Point	Multiple years	
LDWF spotted seatrout assessment <i>West et al., in review</i>	LA		Age-structured stock assessment	Single species	Point	Multiple years	
Brown shrimp bioenergetics growth model <i>Adamack et al., 2001</i>	TX/LA		State variable	Single species	Point	Single year	
Spatially-explicit age-structured assessment model <i>Porch, 2004</i>	GOM		Age-structured	Single species	Spatially explicit	Multiple years	

*Rose, Kenneth A., & Sable, Shaye. 2013. 2017 Coastal Master Plan: Model Improvement Plan. Version I. Baton Rouge, Louisiana: Coastal Protection and Restoration Authority, 122p.