

## Method Matrix page 1

FISHE Step

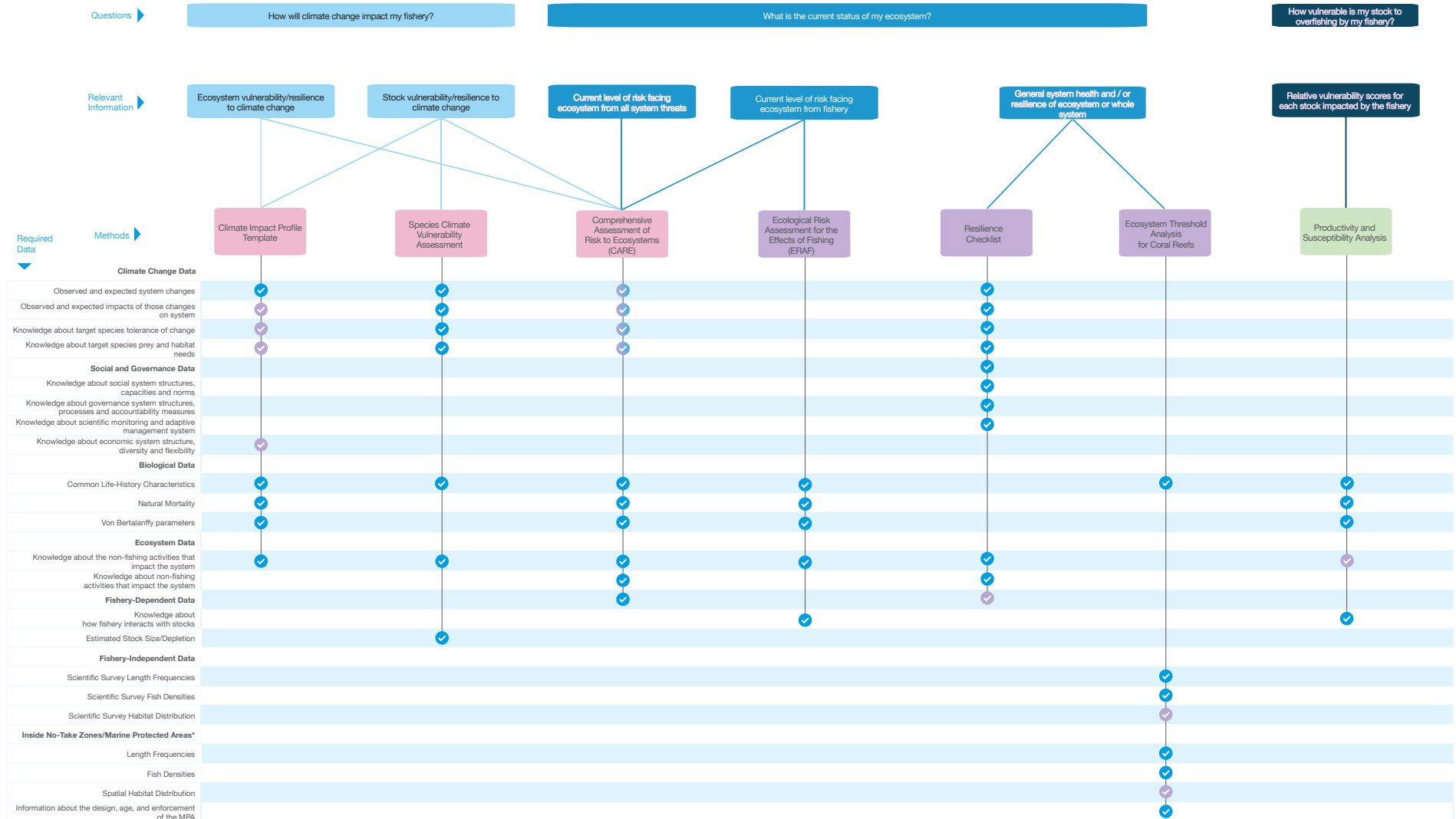
1 3 4

- Need to Have Data (data that is necessary to conduct a given method)
- Nice to Have Data (data that can be used with the given method to answer additional questions)
- Data could be Need to Have or Nice to Have depending on relevant information

\* Marine Protected Area must be appropriately cited, to ensure habitats are comparable with corresponding fished areas, appropriately designed and managed to ensure efficacy in allowing stocks to rebuild, and old enough to infer that populations inside are representative of unfished populations.

Use the answers from your species data worksheets to determine which assessment method(s) are most appropriate for your fishery.

Visit <http://fishe.edf.org/method-matrix>



## Method Matrix page 2

FISHE Step

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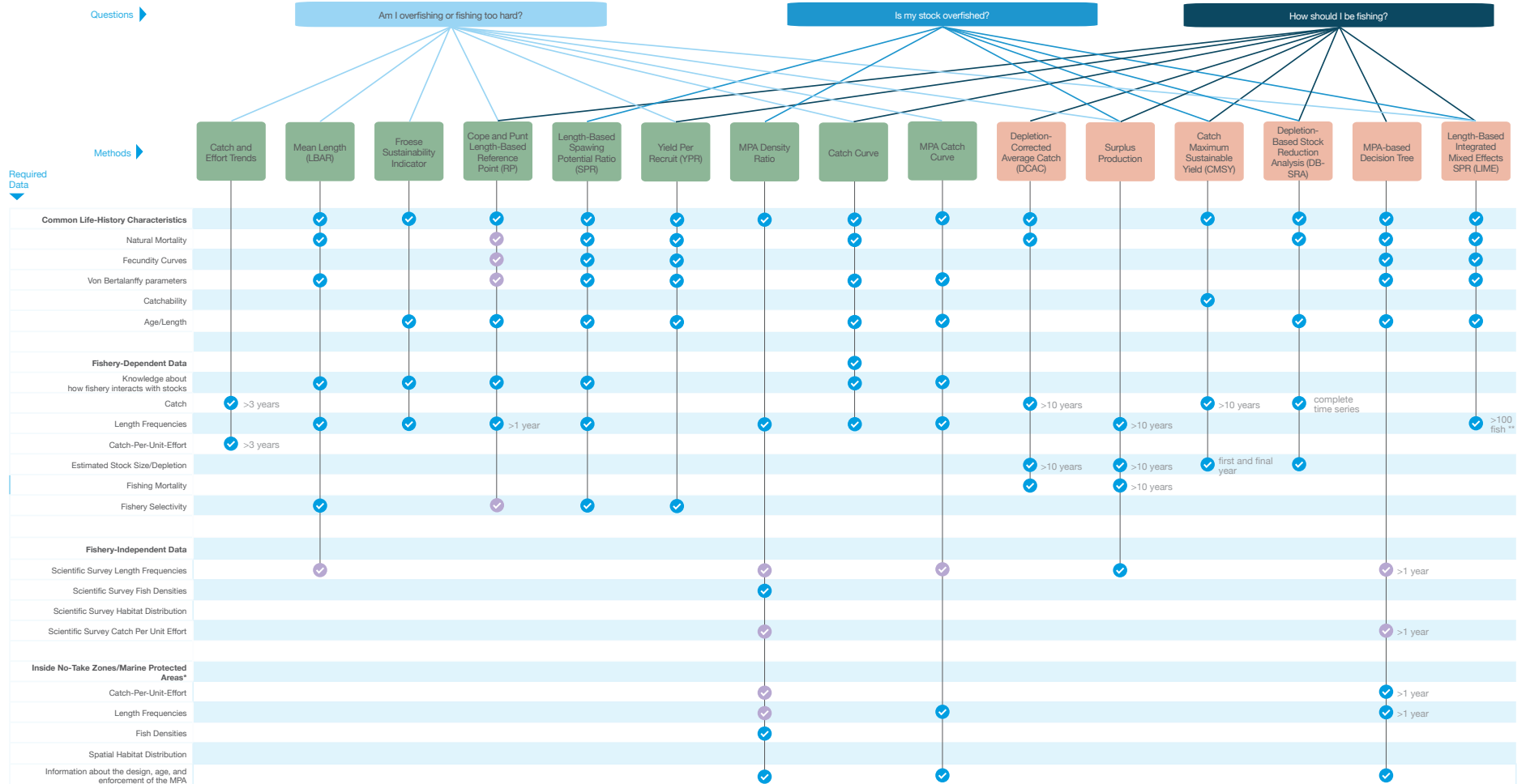
- ✓ Need to Have Data (data that is necessary to conduct a given method)
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# Method Matrix page 2 - inset 1

FISHE Step

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Questions ▶

Am I overfishing or fishing too hard?

Relevant Information ▶

Trends in abundance, Catch-Per-Unit-Effort, and average length in the catch

Percent of the catch made up of different sizes of fish

Current Fishing Mortality Rate

Historic trends in fishing mortality

Methods ▶

Catch and Effort Trends

Froese Sustainability Indicator

Cope and Punt Length-Based Reference Point (RP)

Yield Per Recruit (YPR)

Length-Based Integrated Mixed Effects SPR (LIME)

Mean Length (LBAR)

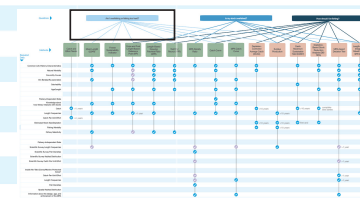
MPA Catch Curve

Catch Curve

Surplus Production

Required Data ▼

Common Life-History Characteristics		✓	✓	✓	✓	✓	✓	✓	
Natural Mortality			✓	✓	✓	✓		✓	
Fecundity Curves			✓	✓	✓	✓		✓	
Von Bertalanffy parameters			✓	✓	✓	✓		✓	
Catchability									
Age/Length		✓	✓	✓	✓	✓	✓	✓	
Fishery-Dependent Data									
Knowledge about how fishery interacts with stocks		✓	✓			✓	✓	✓	
Catch	✓ >3 years								
Length Frequencies		✓	✓ >1 year		✓ >100 fish **	✓	✓	✓	✓ >10 years
Catch-Per-Unit-Effort	✓ >3 years								
Estimated Stock Size/Depletion									✓ >10 years
Fishing Mortality									✓ >10 years
Fishery Selectivity			✓	✓		✓			
Fishery-Independent Data									
Scientific Survey Length Frequencies						✓	✓		✓
Scientific Survey Fish Densities									
Scientific Survey Habitat Distribution									
Scientific Survey Catch Per Unit Effort									
Inside No-Take Zones/Marine Protected Areas*									
Catch-Per-Unit-Effort							✓		
Length Frequencies									
Fish Densities									
Spatial Habitat Distribution									
Information about the design, age, and enforcement of the MPA							✓		



# Method Matrix page 2 - inset 2

FISHE Step

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Questions ▶

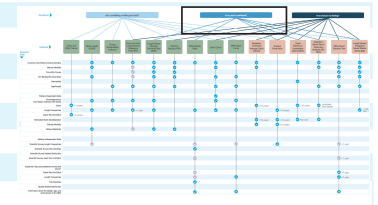
Is my stock overfished?

Relevant Information ▶

Methods ▶

Required Data ▼

Common Life-History Characteristics	✓	✓	✓	✓	✓	✓
Natural Mortality		✓	✓	✓	✓	✓
Fecundity Curves		✓	✓	✓		
Von Bertalanffy parameters		✓	✓	✓		
Catchability					✓	
Age/Length		✓	✓			✓
Fishery-Dependent Data						
Knowledge about how fishery interacts with stocks		✓				
Catch					✓ >10 years	✓ complete time series
Length Frequencies	✓	✓	✓ >100 fish **	✓ >10 years		
Catch-Per-Unit-Effort				✓ >10 years		
Estimated Stock Size/Depletion				✓ >10 years	✓ first and final year	✓
Fishing Mortality				✓ >10 years		
Fishery Selectivity		✓				
Fishery-Independent Data						
Scientific Survey Length Frequencies	✗			✓		
Scientific Survey Fish Densities	✓					
Scientific Survey Habitat Distribution						
Scientific Survey Catch Per Unit Effort	✗					
Inside No-Take Zones/Marine Protected Areas*						
Catch-Per-Unit-Effort	✗					
Length Frequencies	✗					
Fish Densities	✓					
Spatial Habitat Distribution						
Information about the design, age, and enforcement of the MPA	✓					



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Questions ▶

### How should I be fishing?

Relevant Information ▶

## Methods

Required  
Data  
▼

	Relevant Information	Methods	Required Data
	Appropriate proportions of each size class in the catch		
	Appropriate Fishing Mortality Rate for my fishery		
	Appropriate Yield for my fishery		
	Target TAC rates for different size classes		
	Cope and Punt Length-Based Reference Point (RP)	Catch Curve	Yield Per Recruit (YPR)
	Surplus Production	Length-Based Integrated Mixed Effects SPR (LIME)	Depletion-Corrected Average Catch (DCAC)
	Depletion-Based Stock Reduction Analysis (DB-SRA)	Catch Maximum Sustainable Yield (CMSY)	MPA-based Decision Tree
Common Life-History Characteristics	✓	✓	✓
Natural Mortality	✓	✓	✓
Fecundity Curves	✓	✓	✓
Von Bertalanffy parameters	✓	✓	✓
Catchability	✓	✓	✓
Age/Length	✓	✓	✓
Fishery-Dependent Data	✓	✓	✓
Knowledge about how fishery interacts with stocks	✓	✓	✓
Catch	✓	✓	✓
Length Frequencies	✓ >1 year	✓	✓ >10 years
Catch-Per-Unit-Effort	✓	✓	✓ >10 years
Estimated Stock Size/Depletion	✓	✓	✓ >10 years
Fishing Mortality	✓	✓	✓ >10 years
Fishery Selectivity	✓	✓	✓
Fishery-Independent Data	✓	✓	✓
Scientific Survey Length Frequencies	✓	✓	✓ >1 year
Scientific Survey Fish Densities	✓	✓	✓ >1 year
Scientific Survey Habitat Distribution	✓	✓	✓ >1 year
Scientific Survey Catch Per Unit Effort	✓	✓	✓ >1 year
Inside No-Take Zones/Marine Protected Areas*	✓	✓	✓ >1 year
Catch-Per-Unit-Effort	✓	✓	✓ >1 year
Length Frequencies	✓	✓	✓ >1 year
Fish Densities	✓	✓	✓
Spatial Habitat Distribution	✓	✓	✓
Information about the design, age, and enforcement of the MPA	✓	✓	✓