AFAM Step 5 - Perform Assessment Methods

Road map for this session

- Presentation
  - Importance of data visualization and analysis
  - AFAM Toolkit Dashboard walk-through
- Breakout group activity
  - Using AFAM Toolkit Dashboard, perform data-limited methods for your site

Importance of data exploration/visualization

- Better understand your data
- Spot and remove outliers
- Understand if there are common measurement errors
- Quick, “back-of-the-envelope” analysis
- Understand how different gear types affect fishery
- Important first step before performing data-limited stock assessments

Methods included in AFAM

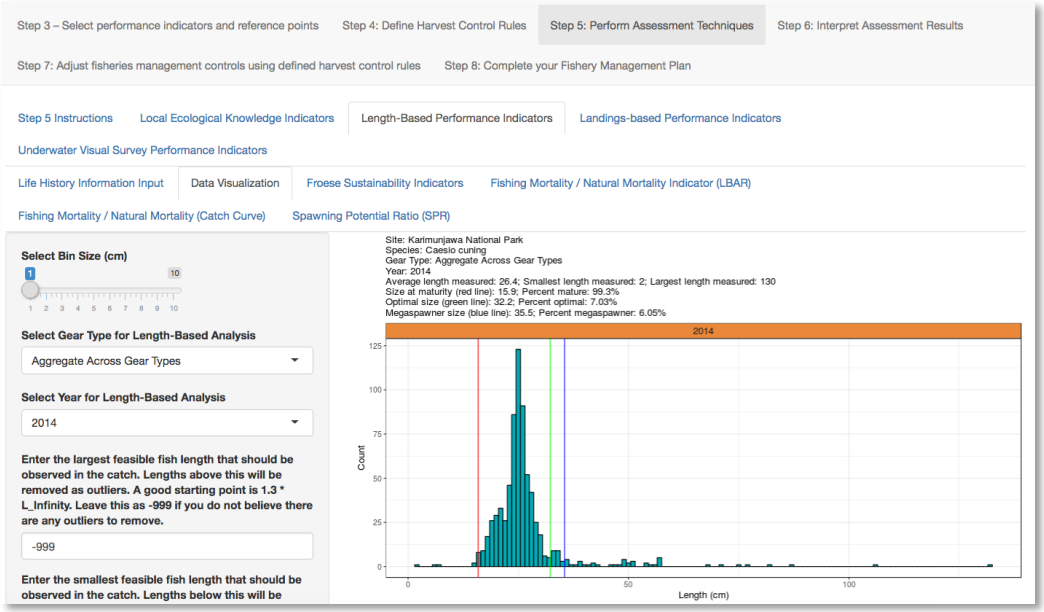
- Length data
  - Fishing mortality from Mean length (LBAR)
  - Fishing mortality from Catch curve
  - Spawning potential ratio
  - Froese sustainability indicators
- Catch and effort data
  - Trends in catch
  - Trends in CPUE
- Underwater visual survey data
  - Fished:unfished biomass ratio (coral reef ecosystem indicator)
  - Fished:unfished density ratio (starget species indicator)

AFAM Toolkit Dashboard

- Used for performing all assessment methods
- Can be used online
- Can also be used offline
  - Need to install R on your computer and also the AFAM package: instructions
- Automatically calculates all performance indicators following some basic inputs

Length data

- First, enter life history information
- Next, simply visualize data and select gear and year for analysis
- Then, turn to assessment methods



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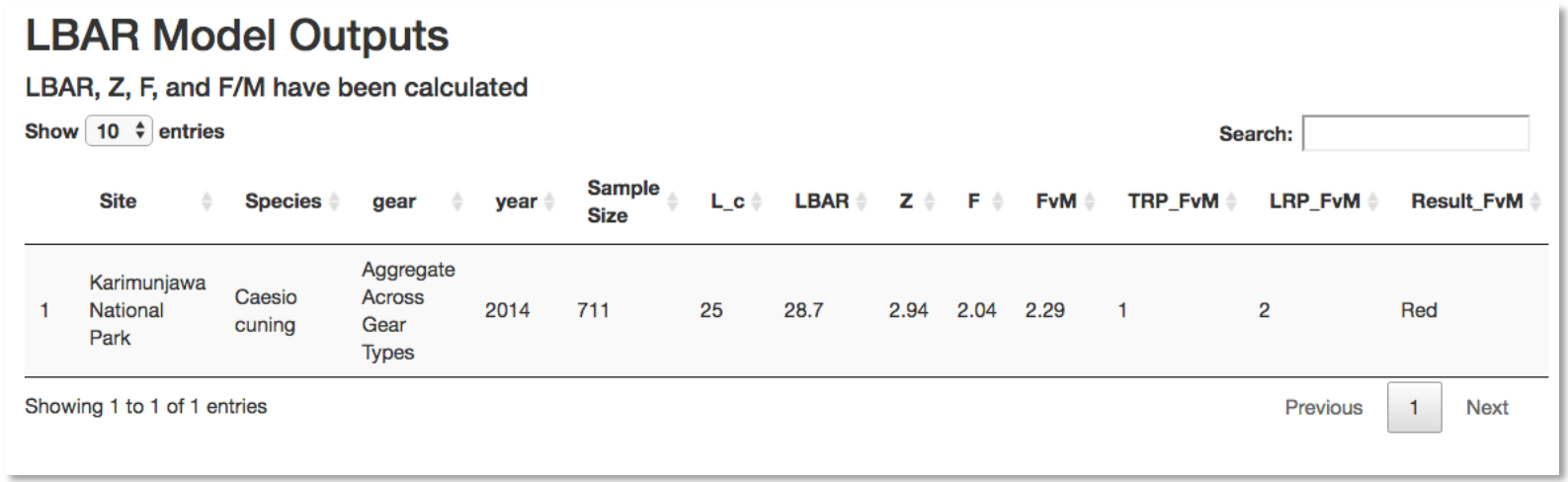
Fishing Mortality from Average Length (LBAR)

- Dashboard calculates performance indicator automatically, and compares it with reference points



LBAR Model Outputs

LBAR, Z, F, and F/M have been calculated

Show 10 entries

Search:

	Site	Species	gear	year	Sample Size	L_c	LBAR	Z	F	FvM	TRP_FvM	LRP_FvM	Result_FvM
1	Karimunjawa National Park	Caesio cuning	Aggregate Across Gear Types	2014	711	25	28.7	2.94	2.04	2.29	1	2	Red

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Fishing Mortality from Catch Curve

Catch Curve Model Outputs

Z, F, and F/M have been calculated

Show 10 entries Search:

	Site	Species	gear	year	Sample Size	SL50	SL95	Z	F	FvM	FvMCC_TRP	FvMCC_LRP	Result_CC
1	Karimunjawa National Park	Caesio cuning	Aggregate Across Gear Types	2014	711	29.9	35.1	2.35	1.45	1.63	1	2	Yellow

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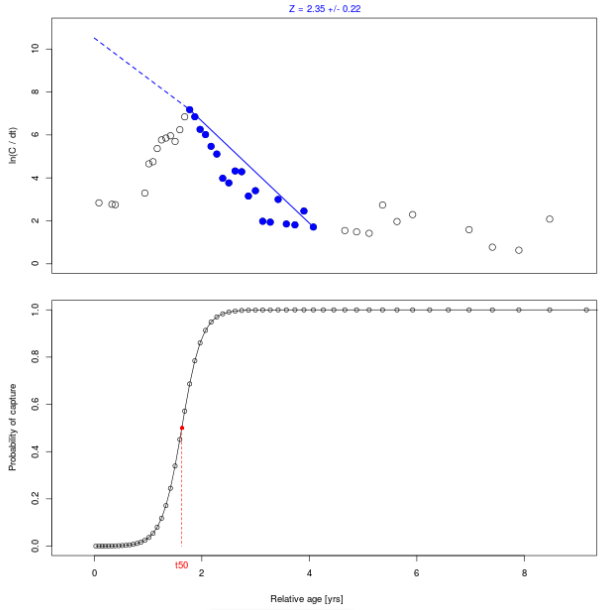
Below are the results of the model fit to the length data (top) and the calculated selectivity curve (bottom).



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Spawning Potential Ratio (SPR)

SPR Model Outputs

SPR and the selectivity parameters have been calculated using the provided inputs

Show 10 entries Search:

	Site	Species	SL50	SL95	FvM	SPR	TRP_SPR	LRP_SPR	Result_SPR
1	Karimunjawa National Park	Caesio cuning	21.5	26.6	1.77	0.24	0.4	0.2	Yellow

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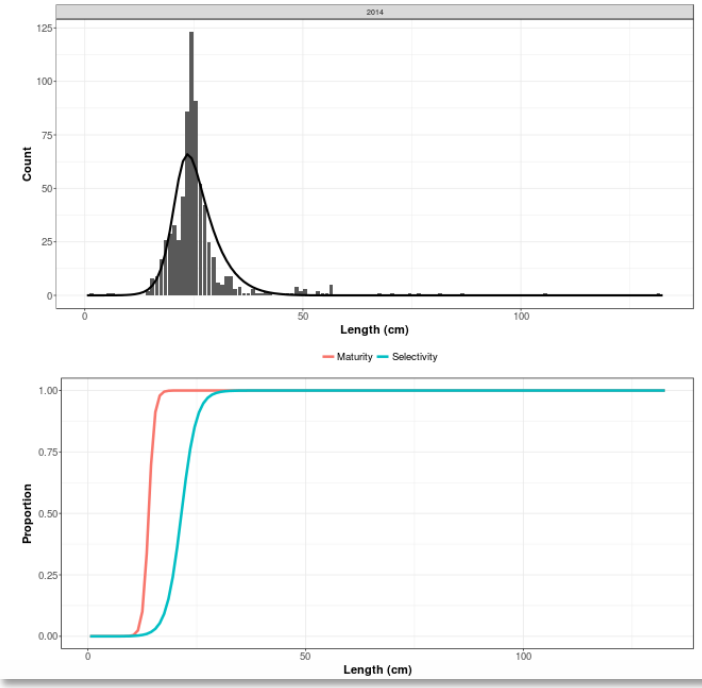
Below are the results of the model fit to the length data (top) and the calculated maturity and selectivity curves (bottom).



Froese Sustainability Indicators

Froese Model Outputs

L_Mature, L_Optimal, L_Mega, Percent Mature, Percent Optimal, and Percent Megaspawner have been calculated

Show 10 entries Search:

	Site	Species	gear	year	Sample Size	L_Mature	L_Opt	L_Mega	Percent_Mature	Percent_Opt	PercentMega	Result	Selectivity	Status
1	Karimunjawa National Park	Caesio cuning	Aggregate Across Gear Types	2014	711	15.9	32.2	35.5	99.3	7.03	6.05	Green	Fish maturity ogive	Spawning biomass above reference point

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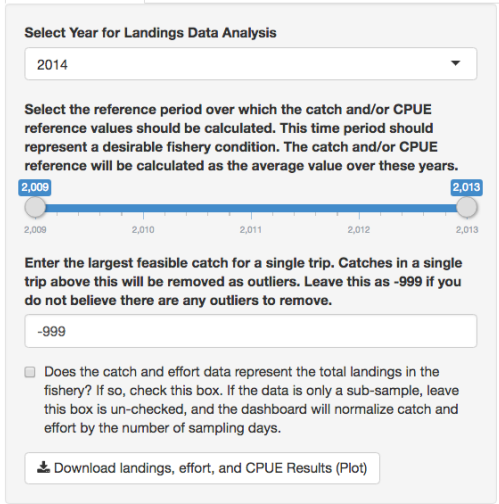
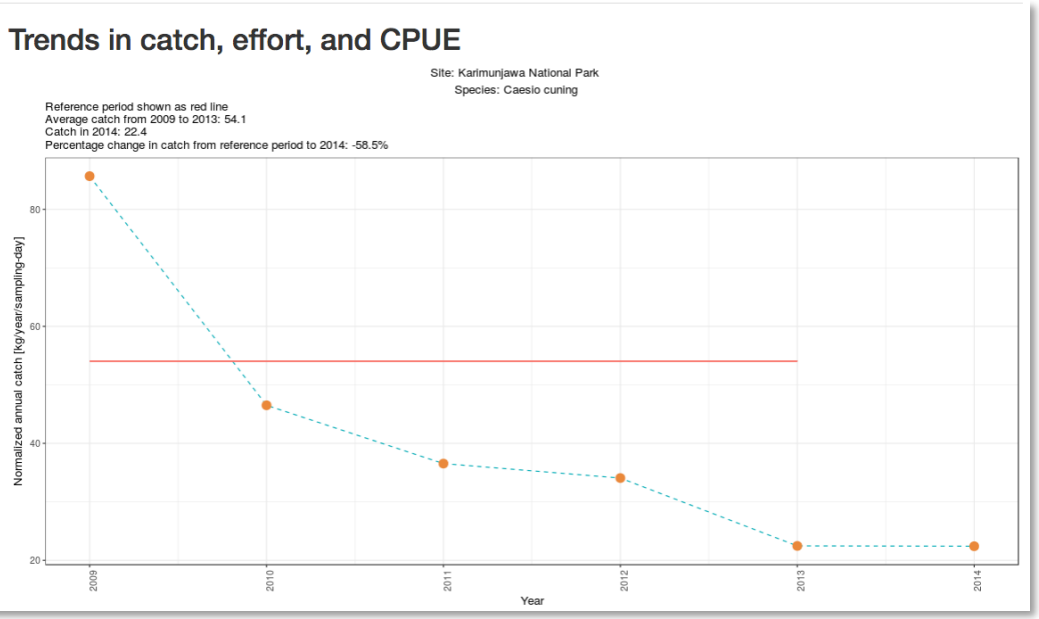
Catch and CPUE data

- First, simply visualize data
- Next, select the reference period over which the catch and/or CPUE reference values should be calculated. This time period should represent a desirable fishery condition.
- Then, turn to assessment methods





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Trends in Catch

- Dashboard calculates performance indicator automatically, and compares it with reference points

Below are the results of the landings assessment.

Show 10 entries Search:

	Site	Species	Change_In_Landings	landings_TRP	landings_LRP	Result_Landings
1	Karimunjawa National Park	Caesio cuning	-58.5	0	-50	Red

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Trends in CPUE

Below are the results of the CPUE assessment.

Show 10 entries Search:

	Site	Species	Change_In_CPUE	CPUE_TRP	CPUE_LRP	Result_CPUE
1	Karimunjawa National Park	Caesio cuning	-15.7	0	-50	Yellow

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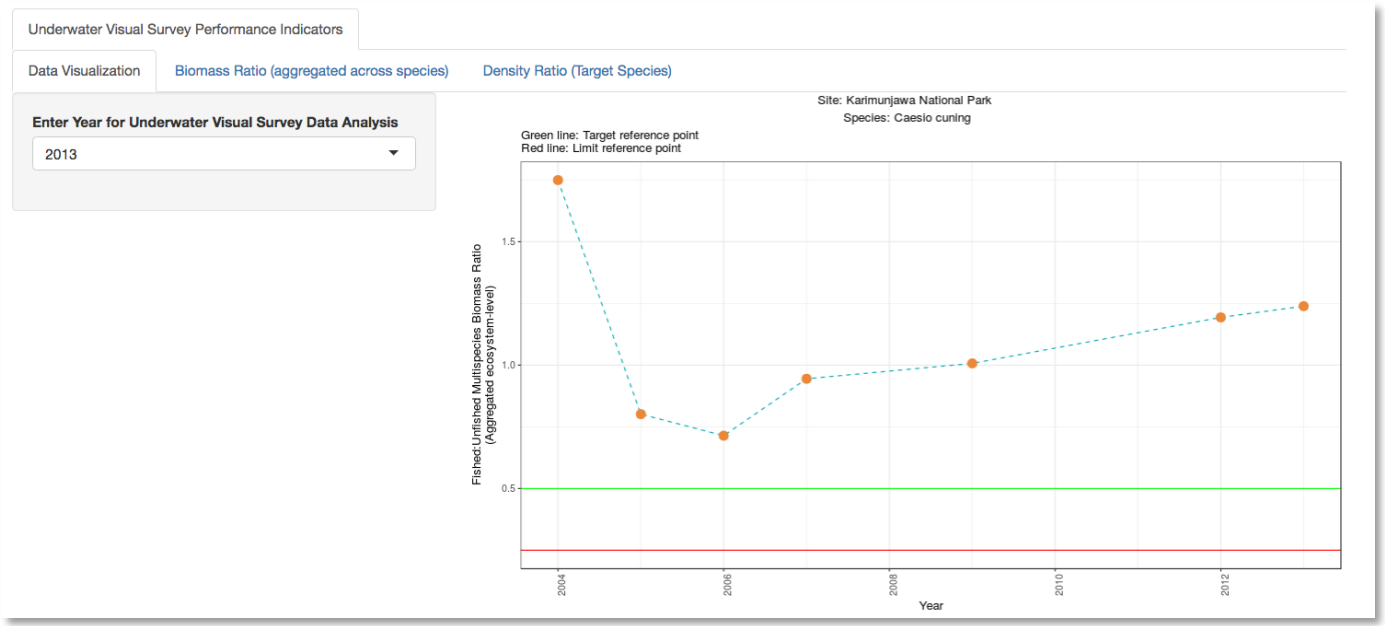
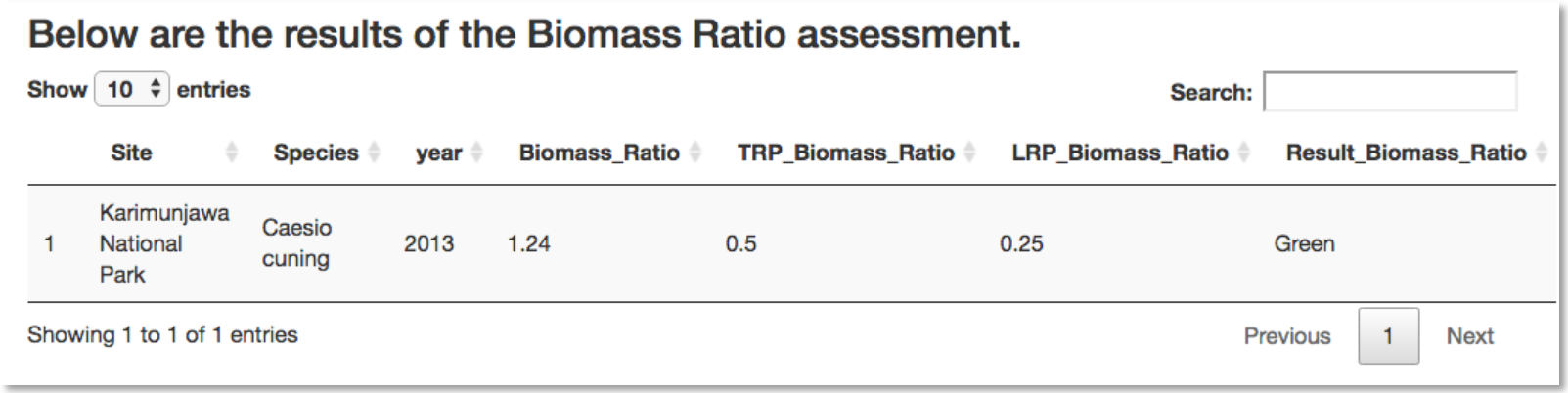
Underwater visual survey data

- First, simply visualize data
- Next, enter year for analysis
- Then, turn to assessment methods



Fished:unfished biomass ratio

- Dashboard calculates performance indicator automatically, and compares it with reference points



Below are the results of the Biomass Ratio assessment.

Show 10 entries

Search:

	Site	Species	year	Biomass_Ratio	TRP_Biomass_Ratio	LRP_Biomass_Ratio	Result_Biomass_Ratio
1	Karimunjawa National Park	Caesio cuning	2013	1.24	0.5	0.25	Green

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Fished:unfished density ratio

Below are the results of the Density Ratio assessment.

Show 10 entries Search:

	Site	Species	year	Density_Ratio	TRP_Density_Ratio	LRP_Density_Ratio	Result_Density_Ratio
1	Karimunjawa National Park	Caesio cuning	2013	1.3	0.6	0.4	Green

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Group Breakout Activity

- Using AFAM Guidance Document, look through instructions and references for Step 5

- Perform assessments using AFAM Toolkit Online Dashboard

- Record results in Your AFAM Toolkit Worksheet

Thank you!