# Status Determination Criteria and Reference Points

Reef Fish Amendment 48/Red Drum 5

# Status Determination Criteria (SDC)

## What are they?

- Criteria used to determine condition of fish stocks and the fishery

## Why are they important to the Council?

- FMPs must define overfishing and overfished status
- Council must use measurable and objective criteria to do this

# What is MSY?

- MSY - Largest long-term average catch or yield that can be taken from a stock or stock complex.
- “Maximum” is rarely known with certainty due to lack of data, uncertainty, and poor spawner-recruit relationship.
- MSY is difficult to estimate because it depends upon a reliable stock-recruitment relationship, for which data is often sparse and/or highly variable.

# Action 1: Revisions

- Sub-Actions 1.1 – 1.3 (MSY Proxies) have been condensed into a single action (Action 1)
  - Fewer decision points
  - Retains use of stock complexes
  - Removes use of indicators for complexes
  - Goliath grouper and red drum addressed as alternatives within Action 1
  - Additional information on red drum escapement rates and the expected relationship to SPR

# Action 1 – MSY Proxies for Stock Complexes and Unassessed Stocks

| Alternative | Complex | Stock(s) |
|---|---|---|
| 2 | Shallow-water grouper | Scamp, black, yellowmouth, yellowfin |
| 2 | Deep-water grouper | Yellowedge, warsaw, snowy groupers, speckled hind |
| 2 | Tilefishes | Golden, blueline, goldface tilefish |
| 2 | Jacks | Lesser amberjack, almaco jack, banded rudderfish |
| 2 | Mid-water snapper | Wenchman, silk, blackfin, queen snappers |
| 2 | — | Cubera snapper |
| 2 | — | Lane snapper |
| 3 | — | Goliath grouper |
| 4 | — | Red drum |

# Action 1 – MSY Proxies for Stock Complexes and Unassessed Stocks

**Alternative 1**: No action. MSY undefined.

**Alternative 2:** The MSY proxy is the yield when fishing at:

- **Option 2a:** 20% spawning potential ratio ($F_{20\%\ SPR}$).
- **Option 2b:** 30% spawning potential ratio ($F_{30\%\ SPR}$).
- **Option 2c:** 40% spawning potential ratio ($F_{40\%\ SPR}$).

# Action 1 – MSY Proxies Cont.

**Alternative 3:** For goliath grouper, the MSY proxy is the yield when fishing at:

**Option 3a:** 30% spawning potential ratio ($F_{30\%\ SPR}$).

**Option 3b:** 40% spawning potential ratio ($F_{40\%\ SPR}$).

**Option 3c:** 50% spawning potential ratio ($F_{50\%\ SPR}$).

Goliath grouper is a stock that occurs in both the Gulf and South Atlantic Council's jurisdictions and is assessed as one stock throughout its range. The South Atlantic Council has established an MSY proxy of $F_{SPR\ 40\%\ SPR}$ for goliath grouper.

# Action 1 – MSY Proxies Cont.

**Alternative 4:** For red drum, the MSY proxy is:

**Option 4a:** the yield that provides for an escapement rate of juvenile fish equivalent to 30% of those that would have escaped had there been no inshore fishery.

**Option 4b:** the yield when fishing at 30% spawning potential ratio ($F_{30\%\ SPR}$).

Red Drum Amendment 2 (GMFMC 1988) assumed that a 30% escapement was approximately equivalent to $F_{20\%SPR}$, although the relationship between escapement and SPR is not well defined.

# Action 1 – MSY Proxies Cont.

**Alternative 5:** For future assessments of reef fish stocks and red drum, the MSY proxy equals the yield produced by $F_{MSY}$ or $F_{PROXY}$ recommended by the Council's SSC and subject to approval by the Council through a plan amendment.

- Streamlined procedure to modify the MSY proxy based on new information and a recommendation from the SSC
- Retains Council's discretion to set the MSY proxy
- If multiple MSY proxy recommendations are provided by the SSC, a plan amendment would be necessary to modify the MSY proxy

# Action 1: MSY Proxies for Stock Complexes and Unassessed Stocks

| Alt. | Stock or Complex | SPR 20% | SPR 30% | SPR 40% | SPR 50% |
|---|---|---|---|---|---|
| 2 | Shallow-water grouper | | | | |
| 2 | Deep-water grouper | | | | |
| 2 | Tilefishes | | | | |
| 2 | Jacks | | | | |
| 2 | Mid-water snapper | | | | |
| 2 | Cubera snapper | | | | |
| 2 | Lane snapper | | | | |
| 3 | Goliath grouper | | | | |
| 4 | Red drum | ~ 30% Escapement | | | |

# Action 2 – Defining MFMT

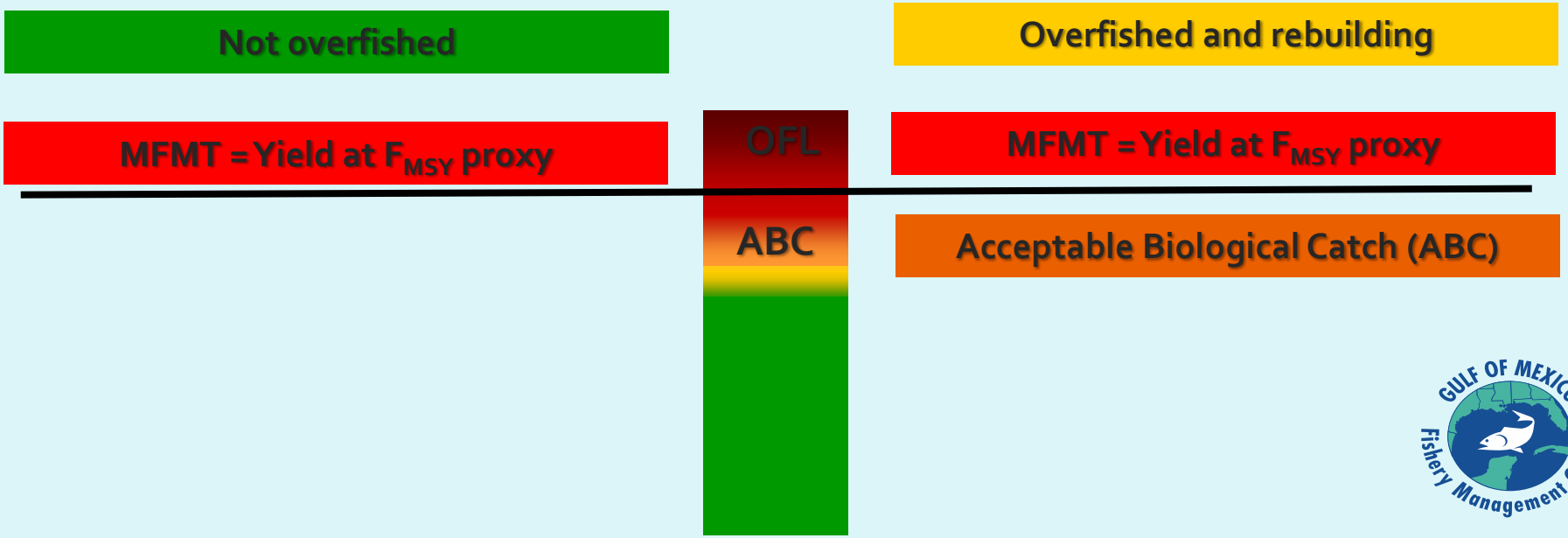
**Alternative 1**: No action. Maintain current definitions of MFMT. These are $F_{26\%SPR}$ for red and gray snapper, $F_{50\%SPR}$ for goliath grouper, $F_{MAX}$ for gag (where MAX is maximum yield per recruit), and $F_{26\%SPR}$ for all other reef fish stocks and red drum.

**Alternative 2**: For stock where an MSY proxy has not been defined, set the MFMT equal to the fishing mortality at the MSY proxy for each stock or stock complex as determined in Action 1.

**Alternative 3**: If a stock is in a rebuilding plan, set the MFMT equal to the fishing mortality rate that is projected to rebuild the stock to $B_{MSY}$ within the rebuilding time period ($F_{Rebuild}$). After the stock has recovered, the MFMT is equal to the fishing mortality at the stock's MSY proxy.

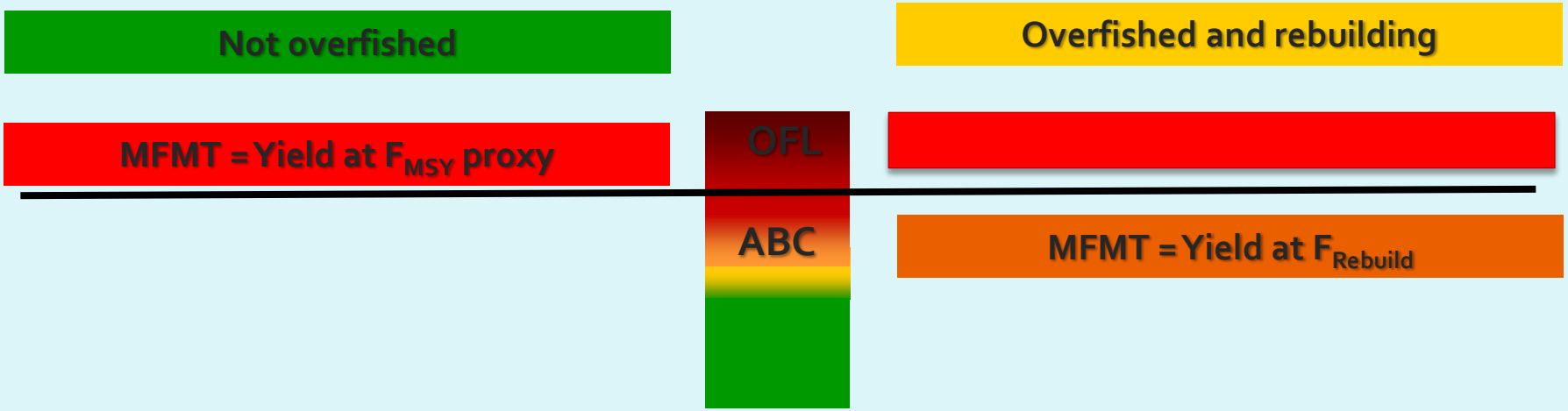
# Action 2 – Defining MFMT

**Alternative 2**: For stock where an MSY proxy has not been defined, set the MFMT equal to the fishing mortality at the MSY proxy for each stock or stock complex as determined in Action 1.



# Action 2 – Defining MFMT

**Alternative 3**: If a stock is in a rebuilding plan, set the MFMT equal to the fishing mortality rate that is projected to rebuild the stock to $B_{MSY}$ within the rebuilding time period ($F_{Rebuild}$).




*SEFSC has indicated that Alternative 3 is more conservative than required by MSA. Could exceed MFMT without exceeding the OFL.

# Action 3 – Defining MSST

**Alternatives apply to stocks and stock complexes in Action 1**

**Alternative 1**: No action. Do not define MSST. Stocks with established MSST will be retained for gag, gray triggerfish, greater amberjack, hogfish, red grouper, red snapper, vermillion snapper, and gray snapper.

**Alternative 2**: MSST = $(1-M)*B_{MSY\ proxy}$ where M is the natural mortality rate.

**Alternative 3**: MSST = $0.75*B_{MSY\ proxy.}$

**Alternative 4**: MSST = $0.50*B_{MSY\ proxy.}$

**Alternative 5**: For stocks assessed across the South Atlantic and Gulf Councils' jurisdictions (Goliath grouper, mutton snapper, yellowtail snapper, and black grouper). MSST for these species would use existing definitions of MSST defined by the South Atlantic Council.

Previous analysis by the SEFSC analysis showed that if the stock falls below 75% of $B_{MSY}$, then overfishing is likely occurring.

# Action 4 – OY Simplified

**Alternative 1**: No action. Do not define optimum yield (OY) for stocks and stock complexes in Action 1.

**Alternative 2**: For reef fish stocks where OY is undefined, with the exception of goliath grouper, OY, implicitly accounting for relevant economic, social, or ecological factors, would be the yield from fishing at:

- **Option 2a**. 50% of $F_{MSY\ proxy}$.
- **Option 2b**. 75% of $F_{MSY\ proxy}$.
- **Option 2c**. 90% of $F_{MSY\ proxy}$.

# Action 4 – OY Simplified

**Alternative 3**: For goliath grouper, OY, implicitly accounting for relevant economic, social, or ecological factors, would be the yield from fishing at:

**Option 2a**. 50% of $F_{MSY\ proxy}$.
**Option 2b**. 75% of $F_{MSY\ proxy}$.
**Option 2c**. 90% of $F_{MSY\ proxy}$.

**Alternative 4**: For red drum, OY, implicitly accounting for relevant economic, social, or ecological factors, would be the yield from fishing at:

**Option 2a**. 50% of $F_{MSY\ proxy}$.
**Option 2b**. 75% of $F_{MSY\ proxy}$.
**Option 2c**. 90% of $F_{MSY\ proxy}$.

# Action 4 – OY, an Even Simpler Option

**Alternative 2**: For reef fish stocks and red drum where OY is undefined, OY, implicitly accounting for relevant economic, social, or ecological factors, would be the yield from fishing at:

**Option 2a**. 50% of $F_{MSY\ proxy}$.
**Option 2b**. 75% of $F_{MSY\ proxy}$.
**Option 2c**. 90% of $F_{MSY\ proxy}$.

# Action 4 –Another possible OY option

- OY = (ACL/OFL) * $F_{MSY\ (or\ proxy)}$
  - Percentage range from 55.5% to 90.6%.
  - What to do about SWG and red drum?

| Species | OFL | ACL | ACL/OFL | notes |
|---|---|---|---|---|
| Shallow-water grouper | Not defined | 710,000 | | (ABC=ACL) |
| Deep-water grouper (2016+) | 1,220,000 | 1,105,000 | 0.906 | (OFL>ABC>ACL) |
| Tilefishes | 747,000 | 608,000 | 0.814 | (ABC=ACL) |
| Jacks complex | 372,000 | 312,000 | 0.839 | (ABC=ACL) |
| Mid-water snapper | 209,000 | 116,000 | 0.555 | (ABC=ACL) |
| Cubera snapper | 7,000 | 5,065 | 0.724 | (ABC=ACL) |
| Lane snapper | 358,000 | 301,000 | 0.841 | (ABC=ACL) |
| Goliath grouper | 0 | 0 | | (OFL=ABC=ACL) |
| Red drum | 0 | 0 | | No Fed harvest |

# Next steps

- Council to review revised actions and alternatives
- Discuss and take any necessary action to incorporate SSC suggestions
- Bring updated draft to October Council meeting

# Questions?

GULF OF MEXICO Fishery Management Council