Goals & Objectives

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MSAB
May 2017

IPHC-2017-MSAB09-08-Rev1

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Goals & Objectives

- Purpose
  - Review the MSAB Goal & Objectives
  - Add new goals or objectives where desired
  - Remove outdated goals or objectives where desired
  - Update goals or objectives as necessary
  - Link objectives to performance metrics

From Goals to Performance Metrics

Goal
Biological Sustainability

Measurable Objective
Maintain a minimum spawning stock biomass

Threshold

1. *Outcome*: Spawning stock is less than $0.20B_0$

Phrased as risk

Now or later

2. *Time-frame*: Evaluate over *X* years, long-term

Metric type

3. *Probability*: At most 5% of the time

Risk tolerance

From Goals to Performance Metrics

Goal

Biological Sustainability

Measurable Objective

Maintain a minimum spawning stock biomass

1. *Outcome*: Spawning stock is less than $0.20B_0$
2. *Time-frame*: Evaluate over *X* years, long-term
3. *Probability*: At most 5% of the time

Performance Metric

Probability that the spawning stock is less than $0.20B_0$ over a simulated *X* years 100 years in the future

Biological Sustainability

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Maintain a minimum of number of mature female halibut coast-wide	Number of mature female halibut less than a threshold	10 year period, long-term	0.01	$P(Y < X)$ $Y = SSB$ or RSB or $dRSB$
Maintain a minimum spawning stock biomass	RSB < 20% of unfished biomass	10 year period, long-term	0.05	$P(RSB < 20\%)$
Maintain a minimum spawning stock biomass	RSB < 30% of unfished biomass	10-year period, long-term	0.25	$P(RSB < 30\%)$
When Limit < Estimated Biomass < Threshold, limit the probability of declines	SSB declines when 20%<RSB<30%	10 year period, long-term	0.05 – 0.5, depending on est. stock status	$P(SSB_{i+1} < SSB_i)$ given $20\% < RSB < 30\%$
Spawning Biomass	An absolute measure	10 year period, long-term	NA	Median $\overline{RSB}$

Rephrase objectives?

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Maintain a minimum spawning stock biomass	RSB < 20% of unfished biomass	10 year period, long-term	0.05	$P(RSB < 20\%)$
Maintain a minimum spawning stock biomass	RSB < 30% of unfished biomass	10-year period, long-term	0.25	$P(RSB < 30\%)$

Rephrase

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Avoid very low stock sizes	dRSB < Limit of control rule	10 year period, long-term	0.05	$P(dRSB < Limit)$
Mostly avoid low stock sizes	dRSB < Threshold of control rule	10 year period, long-term	0.25	$P(dRSB < Threshold)$

Fishery Sustainability, Stability, and Access

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Maintain directed fishing opportunity	Fishery is open	Each year	0.05	$P(FCEY = 0)$
Maximize yield in each regulatory area		Each year	0.5	
Maintain median catch	Within ±10% of 1993-2012 average	Within 5 yrs, 10 yr per, long term		$P(FCEY > 110\% \text{ or } FCEY < 90\%$
Maintain average catch	> 70% of historical 1993-2012 average	10 year period, long-term	0.1	$P(FCEY < 70\%)$
Limit annual changes in TAC, coast-wide and/or by Regulatory Area	Change in FCEY < 15%	10 year period, long-term		$P\left(\frac{FCEY_{i+1} - FCEY_i}{FCEY_i} > 15\%\right)$
Absolute	FCEY	10 year period, long-term	NA	Median $\overline{FCEY}$
Absolute	Variability in FCEY	10 year period, long term		Average Annual Variability (AAV)

Catch statistics

- Bycatch not included in statistics
- AAV's over 10 year periods for the last 40 years, starting in 1977, were
  - 21%, 6%, 5%, and 10%.

Year	Commer	Wastage	Bycatch	Sport	Personal	Total
1993	59.27	2.05	15.96	7.73	0.93	69.98
1994	54.73	2.51	16.95	7.07	0.93	65.24
1995	43.88	0.93	15.93	7.46	0.54	52.81
1996	47.34	1.15	14.46	8.08	0.54	57.11
1997	65.2	1.45	13.51	9.03	0.54	76.22
1998	69.76	1.72	13.16	8.59	0.74	80.81
1999	74.31	1.65	13.54	7.38	0.75	84.09
2000	68.29	1.45	13.02	9.01	0.76	79.51
2001	70.7	1.69	12.88	8.1	0.77	81.26
2002	74.66	1.72	12.33	8.01	0.77	85.16
2003	73.14	2.08	12.31	9.35	1.38	85.95
2004	73.11	2.3	12.29	10.71	1.55	87.67
2005	71.82	2.22	12.97	10.86	1.54	86.44
2006	67.98	2.46	12.49	10.2	1.48	82.12
2007	62.87	2.59	11.31	11.47	1.49	78.42
2008	58.57	2.76	10.86	10.68	1.34	73.35
2009	52.05	2.94	10.54	8.79	1.31	65.09
2010	49.72	3.21	9.7	7.85	1.24	62.02
2011	39.51	2.46	8.47	7.1	1.14	50.21
2012	31.99	1.67	9.2	6.78	1.15	41.59
2013	29.04	1.43	8.83	7.63	1.13	39.23
2014	23.7	1.3	8.92	7.19	1.2	33.39
2015	24.67	1.28	7.49	7.46	1.2	34.61
2016	25.03	1.18	7.1	7.38	1.2	34.79
1993-2012	**60.4**	**2.1**		**12.6**	**1.0**	**72.3**

Minimize Wastage

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Wastage in the longline fishery	<10% of annual catch limit	10 year period, long-term	0.25	$P(wastage > 10\%FCEY)$
Absolute	Wastage	10 year period, long-term		Median $\overline{wastage}$

Minimize Bycatch and Bycatch Mortality

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics
Minimize Bycatch and Bycatch Mortality				

Serve Consumer Needs

Measurable Outcome	Outcome	Time-frame	Probability	Performance Metrics