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# Potential Data Streams for Red Abalone Fishery Management Plan

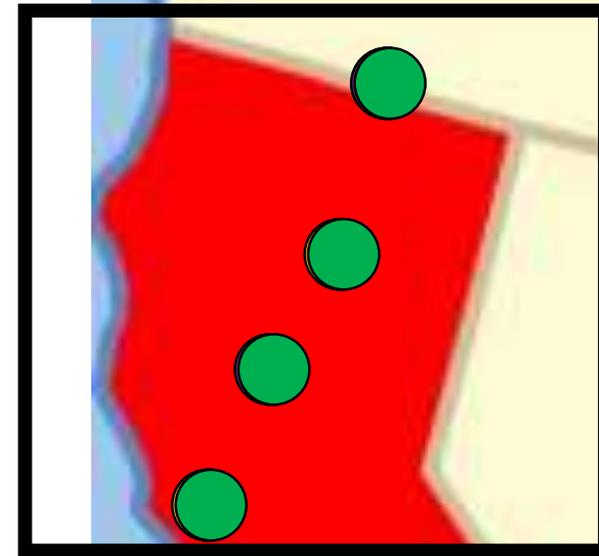
Red Abalone FMP Project Team Meeting  
July 18, 2019

# Data Streams Agenda Item

Initiate discussions regarding trade-offs associated with evaluating which data streams to use in managing the North Coast recreational fishery

## Management Area: Northern California

- Spatial Coverage – more sites across more of the action area
- Temporal Coverage – length of time series for data collected
  - = 1990 to present
  - = 2008 to present
- Frequency of Sampling – how often and consistently data is being collected
  - = sampled annually
  - = sampled every 5 years



# WHAT IS NEEDED AND CAN BE AFFORDED?

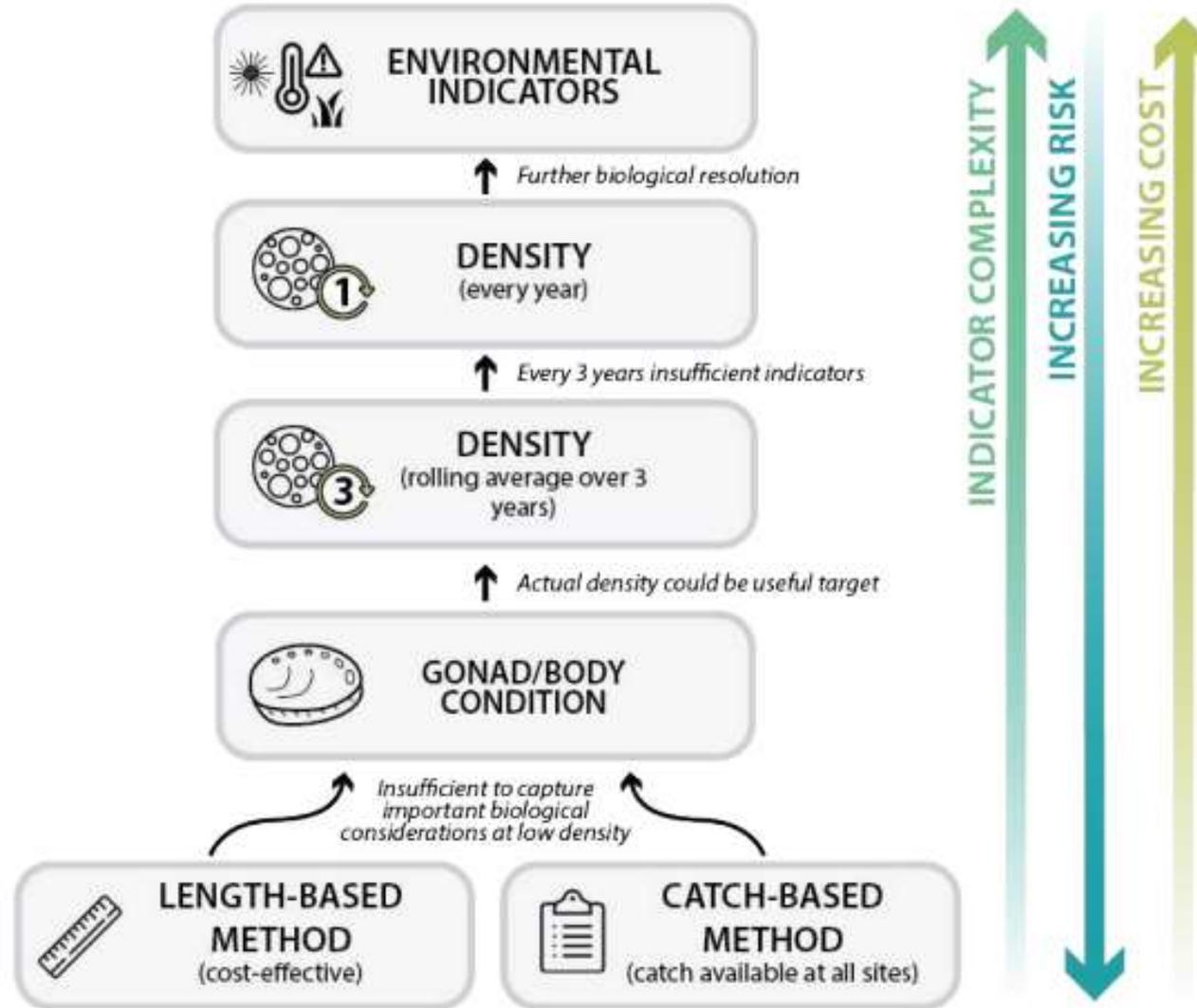


Figure 1 from OST Peer Review Report  
(October 2018)

# Today's Discussion

- Compiled a data stream comparison table as a reference
- There may be greater flexibility in changing or adjusting certain data streams to better fit the needs of future abalone management in the future
- Hope to gain better understanding of Project Team concerns and priorities around available data streams

# Discussion Questions

- What are some immediate observations? Are there any obvious data streams that can be removed from this list?
- Which data streams seem most cost effective (e.g. most sites covered at lowest cost)?
- Which data streams are collected most frequently across the largest number of sites?
- From the modeler perspective, what other considerations should be made as these data streams relate to the calculation of indicators?
- How can we better coordinate and maximize data collection efforts among multiple sampling entities?

## **Immediate Next Steps –**

- Incorporate feedback from today's Project Team discussion

## **Midterm Next Steps –**

- Increase understanding of differences in survey design for duplicate data streams
- Project Team to inform selection of data streams/indicators (Admin Team and modelers to develop rubric)

# Data Stream Table Content

	<b>Data Stream [Source/ Associated Survey]</b>	<b>Sampling Entity</b>	<b>Length of Data Set [# years]</b>	<b>Landing Sites Sampled [# sites]</b>	<b>Frequency of Sampling</b>	<b>Cost of Survey [per year]</b>	<b>FTE [full time employee]</b>
<b>RED ABALONE DATA [FISHERY-DEPENDENT]</b>							
<b>1</b>	<b>Catch [Report cards]</b>	Divers	16	53	Annually	\$6,000 *	???
<b>2</b>	<b>Catch [Telephone surveys]</b>	CDFW	30	53	Sporadic (pre- 2002); Annually (2002-2016)	\$10,000 **	???
<b>3</b>	<b>Length [Creel Survey]</b>	CDFW/ Divers	42	10	Annually (pre- 2003); Every 2 years (2003 onward)	???	0.5 FTE (900 hrs/yr)

<b>4</b>	<b>Catch [Creel Survey]</b>	CDFW/ Citizen Scientists	42	10	Annually (pre- 2003); Every 2 years (2003 onward)	???	0.5 FTE (900 hrs/yr)
<b>5</b>	<b>Gonad index [Creel Survey]</b>	CDFW	10	2	Every 2 years	Cost included in total survey estimate in Row 4	Included in FTE estimate in Row 4
<b>6</b>	<b>Body condition [Creel Survey]</b>	CDFW	3-4	10	Every 2 years	Cost included in total survey estimate in Row 4	Included in FTE estimate in Row 4
<b>7</b>	<b>Sub-legal abalone mortality [Creel Survey]</b>	CDFW/ Citizen Scientists	42	10	Annually (pre- 2003); Every 2 years (2003 onward)	Cost included in total survey estimate in Row 4	Included in FTE estimate in Row 4

**RED ABALONE DATA [FISHERY- INDEPENDENT]**

<b>8</b>	<b>Abundance ^ [Subtidal survey]</b>	CDFW	5-29	3-15 ^^^	Sporadic (pre-2002); Every 3 to 4 years (2002-2018)	\$61,000 ***	0.7 FTE (1400 hrs/yr)
<b>9</b>	<b>Abundance ^ [Subtidal survey]</b>	Reef Check	13	15	Annually (since 2007)	\$30,000 ++	1 FTE plus part-time contractor +++
<b>10</b>	<b>Abundance/ Counts [Intertidal plot survey]</b>	MARINe/ PISCO UCSC	1-17	4-11	Annually (for 4 funded sites); Sporadic (7 additional)	\$32,000 ^^	2 FTE
<b>11</b>	<b>Abundance ^ [Intertidal swath survey]</b>	MARINe/ PISCO UCSC	1-7	31	Every 3-5 years	\$49,600 ^^	2 FTE

<b>12</b>	<b>Length [Subtidal survey]</b>	CDFW	5-29	3-15 ^^^	Sporadic (pre-2002); Every 3 to 4 years (2002-2018)	Cost included in total survey estimate in Row 8	Included in FTE estimate in Row 8
<b>13</b>	<b>Length [Subtidal survey]</b>	Reef Check	3	20	Annually	Cost included in total survey estimate in Row 9	Included in FTE estimate in Row 9
<b>14</b>	<b>Length [Intertidal plot survey]</b>	MARINe/ PISCO UCSC	1-17	4-11	Annually (for 4 funded sites); Sporadic (7 additional)	Cost included in total survey estimate in Row 10	Included in FTE estimate in Row 10
<b>15</b>	<b>Length [Intertidal swatch survey]</b>	MARINe/ PISCO UCSC	1-7	31	Every 3-5 years	Cost included in total survey estimate in Row 12	Included in FTE estimate in Row 12

<b>16</b>	<b>Recruitment module [Juvenile stage recruitment] +</b>	CDFW	18	1	Annually	Cost included in total survey estimate in Row 8	Included in FTE estimate in Row 8
<b>17</b>	<b>Recruitment [Plankton tow] +</b>	CDFW	10	2-3	Every 3 to 4 years (2002-2018)	Cost included in total survey estimate in Row 8	Included in FTE estimate in Row 8
<b>18</b>	<b>Recruitment [Boulder sampling] +</b>	CDFW	10	2-3	Every 3 to 4 years (2002-2018)	Cost included in total survey estimate in Row 8	Included in FTE estimate in Row 8

## OTHER BIOLOGICAL AND/OR ENVIRONMENTAL DATA

<b>19</b>	<b>Kelp Abundance [Aerial survey]</b>	CDFW	12	53	Sporadic (annually in 2008, 2014- 2016)	\$250,000 **	???
<b>20</b>	<b>Kelp Abundance ^ [Subtidal survey]</b>	Reef Check	13	15	Annually (since 2007)	Cost included in total survey estimate in Row 9	Included in FTE estimate in Row 9
<b>21</b>	<b>Pacific Decadal Oscillation</b>	NOAA Fisheries	129	---	Annually	---	---
<b>22</b>	<b>Urchin Abundance ^ [Subtidal survey]</b>	CDFW	5-29	3-15 ^^^	Sporadic (pre- 2002); Every 3 to 4 years (2002- 2018)	Cost Included in total survey estimate in Row 8	Included in FTE estimate in Row 8

<b>23</b>	<b>Urchin Abundance ^ [Subtidal survey]</b>	Reef Check	13	15	Annually (since 2007)	Cost Included in total survey estimate in Row 9	Included in FTE estimate in Row 9
<b>24</b>	<b>Urchin Abundance/ Counts [Intertidal Plot Survey]</b>	MARINe/ PISCO UCSC	1-7	13	Annually (for 9 funded sites); Sporadic (4 additional)	\$20,800 ^^	2 FTE
<b>25</b>	<b>Urchin Size [Intertidal Plot Survey]</b>	MARINe/ PISCO UCSC	1-7	13	Annually (for 9 funded sites); Sporadic (4 additional)	Cost included in total survey estimate in Row 24	Included in FTE estimate in Row 24
<b>26</b>	<b>Water Temperature</b>	CDFW	12	1	Annually	Cost included in total survey estimate in Row 8	Included in FTE estimate in Row 8
<b>27</b>	<b>Water Temperature</b>	Reef Check	2	~10	Every 15 min (Year round)	\$2,000	Included in FTE estimate in Row 13

## Data Stream Comparison Table Key

?? Denotes estimates still forthcoming from sampling entity

\* Cost is likely higher than listed amount; reflect cost of printing and maintenance of report cards in Abalone Landings Data System (ALDS) but does not account for costs associated with data entry and QA/QC

\*\* Cost is likely higher than listed amount

\*\*\* Cost likely higher than listed amount; reflect transect survey costs (e.g. survey operations and staff compensation beyond regular work hours) but does not account for costs associated with data entry and QA/QC

+ Data streams under development

++ Includes costs for all data collected by Reef Check (including length [i.e. “random swimming”] and density survey for kelp forest community)

+++ Reflects FTE for all data collected by Reef Check

^ Density is associated indicator

^^ Includes costs to survey all sites, travel, benefits, overhead, and database support

^^^ CDFW can either run the rapid assessments (i.e., 10 index sites per year) or the regular index site survey (i.e., 3 index sites per year) under this cost and FTE