

A brief history of the California Current Integrated Ecosystem Assessment

How we got here, what we've learned,
and where we're headed

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Outline

- Timeline of key events in the California Current IEA history
- Lessons learned from these events
- How we are applying these lessons now and going forward

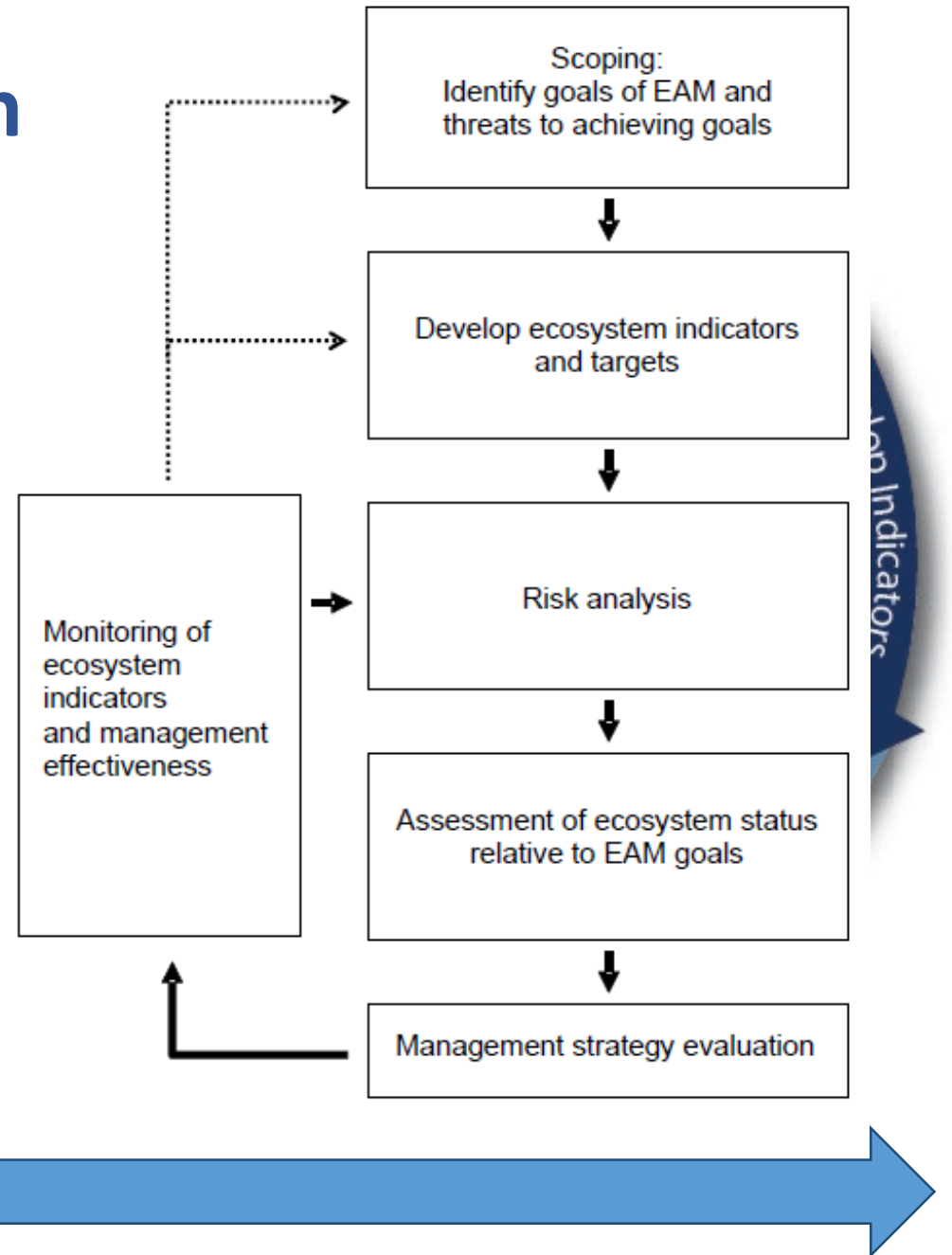


Evolution of the NOAA IEA program

- Following two influential reports (Pew 2003, USCOP 2004), NOAA forms External Ecosystem Task Team (eETT) to review NOAA's ecosystem science enterprise
- eETT report (Fluharty et al. 2006) recommends that NOAA form regional IEAs
- Tech Memo (Levin et al. 2008) outlines NOAA IEA framework
- Levin et al. (2009) published in PLoS Bio; definitive document on IEA framework in EBM context

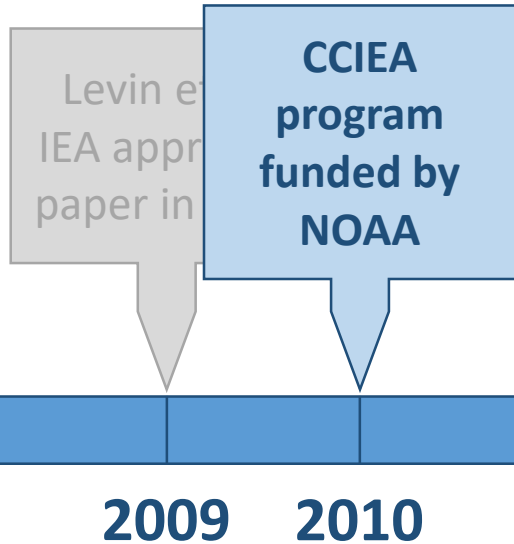
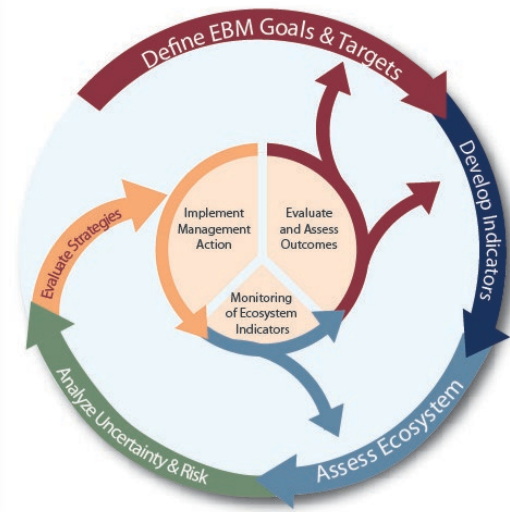
Levin et al.
IEA approach
paper in PLoS

2009



California Current IEA (CCIEA) is launched

- NOAA funds CCIEA in 2010; funds steady for 2010-2013
- Initial priorities
 - Developing comprehensive sets of indicators of ecosystem drivers, pressures and components
 - Developing analytical and modeling tools for assessing ecosystem risk assessment and evaluating management strategies
 - Establishing partnerships with fisheries managers, regional policy makers, and National Marine Sanctuaries



Natural scientists



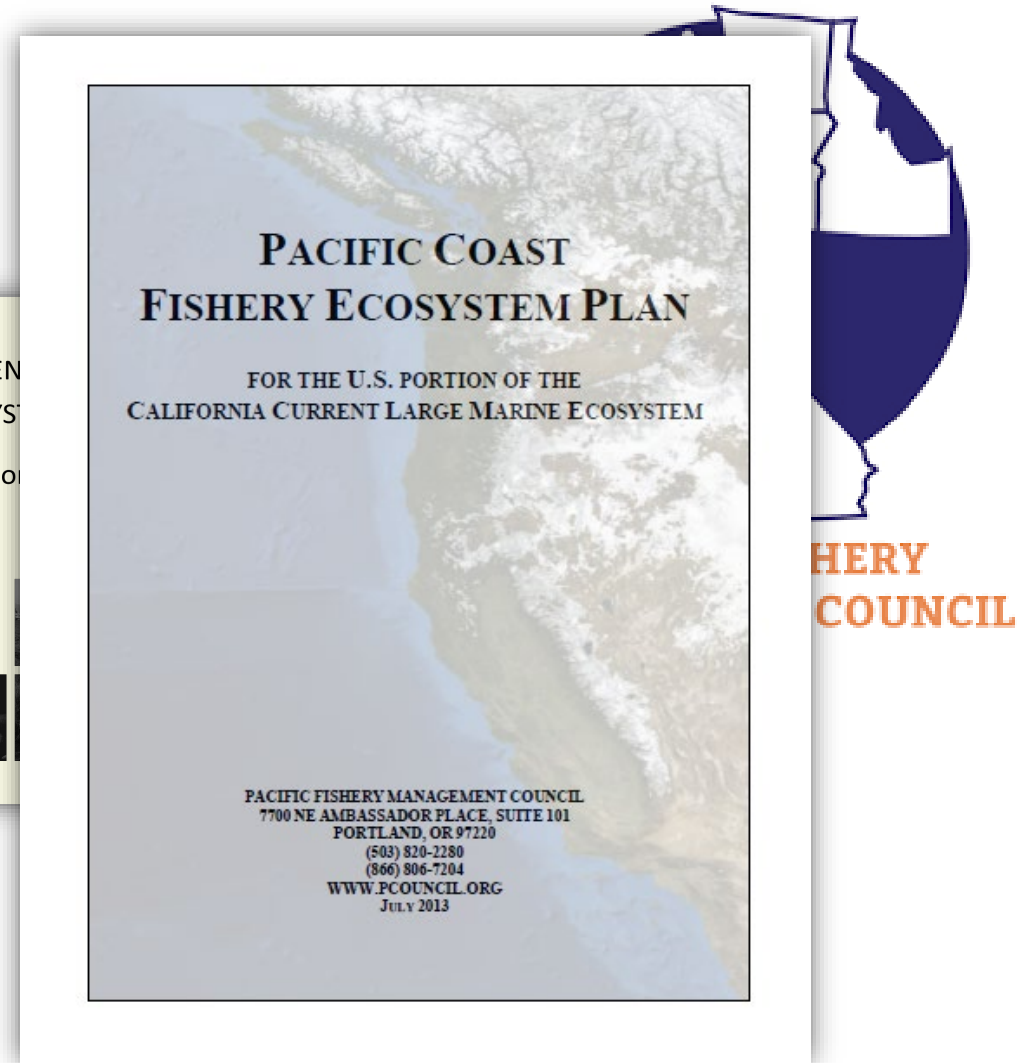
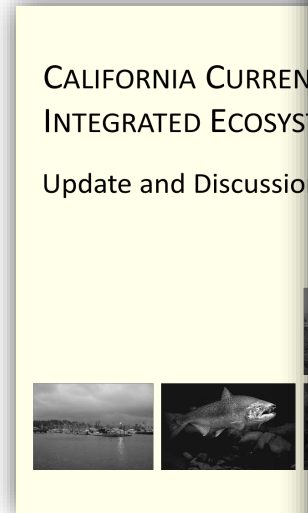
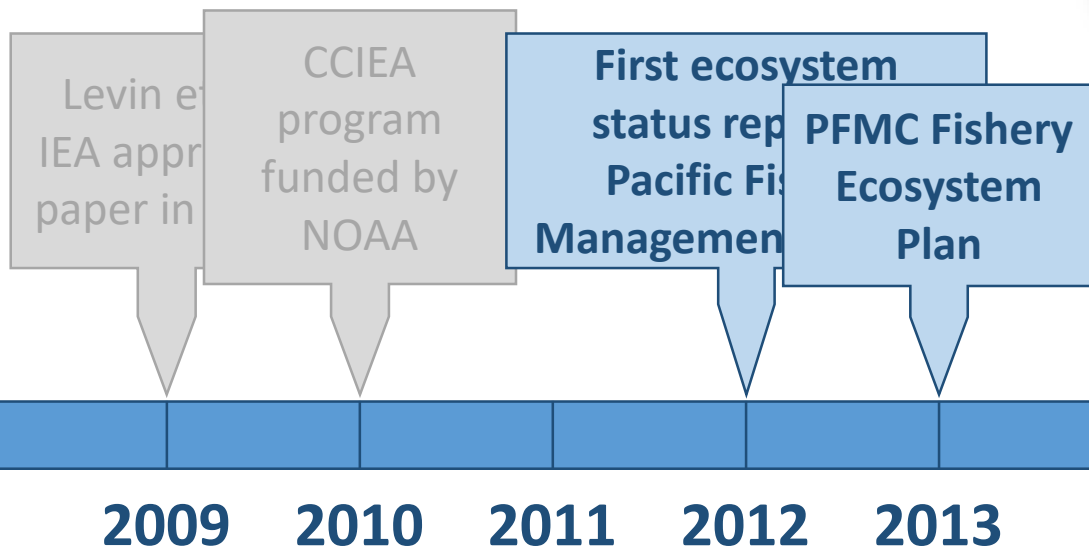
Modelers



Social scientists

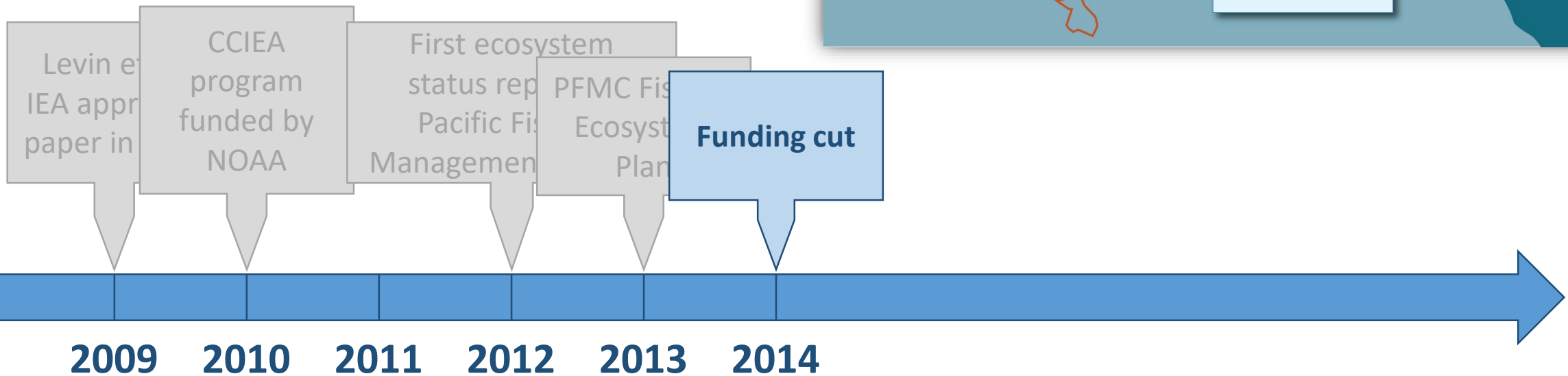
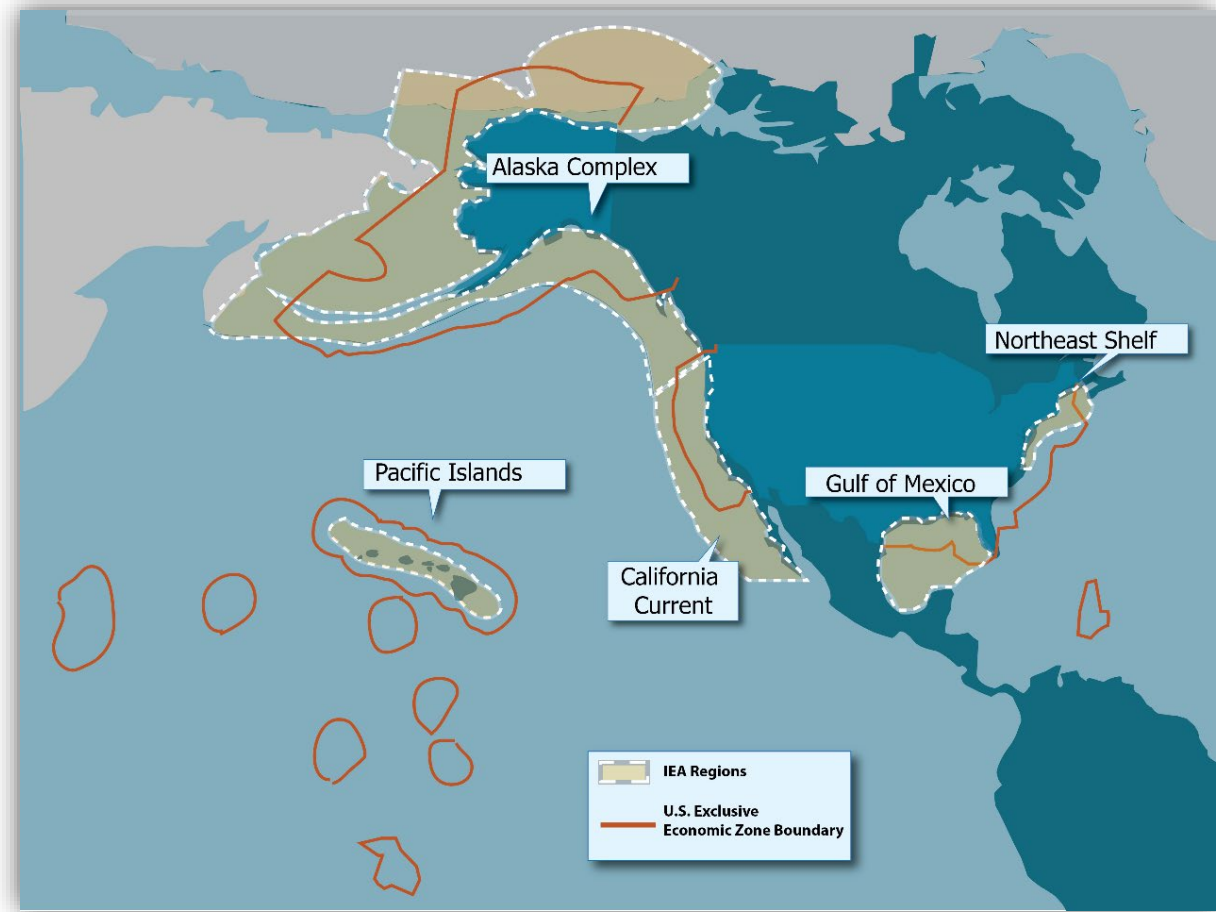
Partnership with Pacific Fishery Management Council (PFMC)

- CCIEA gives first presentation on California Current ecosystem status and condition at November 2012 PFMC meeting
- PFMC publishes Fishery Ecosystem Plan in 2013, which includes request for CCIEA to provide annual ecosystem status reports



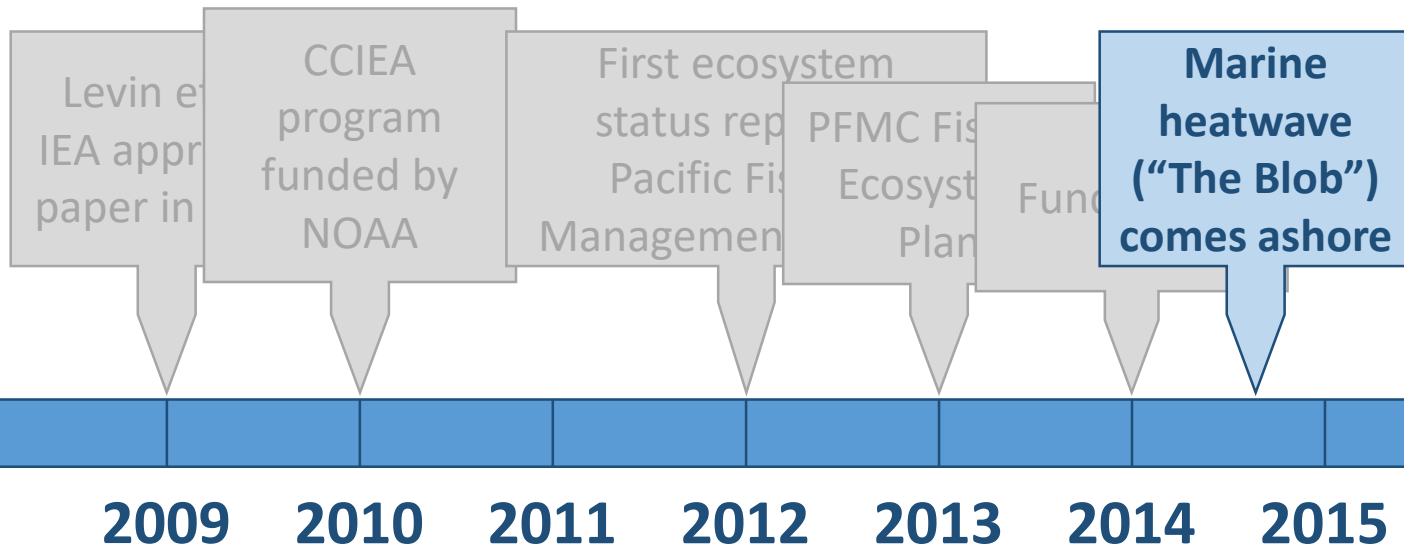
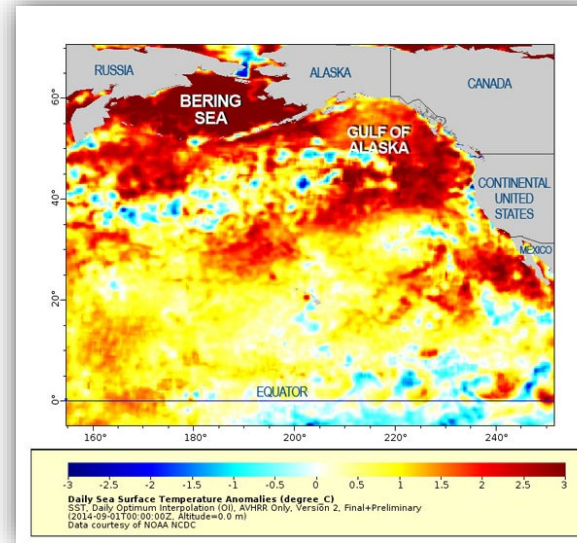
CCIEA funds cut by about 33%

- This was to better distribute funds to IEA programs in other regions (Alaska, Hawai'i, Gulf of Mexico, US Northeast Shelf)
- Key impact to CCIEA: loss of post docs, especially in non-economics social sciences



“The Blob” invades the California Current

- Massive marine heatwave that formed in the NE Pacific in 2013 came ashore in fall of 2014
- Changes in species distributions & community composition; poor productivity of copepods, forage, salmon, predators; HABs; poor snow pack; record rates of whale entanglement; etc.
- CCIEA described Blob and its impacts to PFMC in March 2015

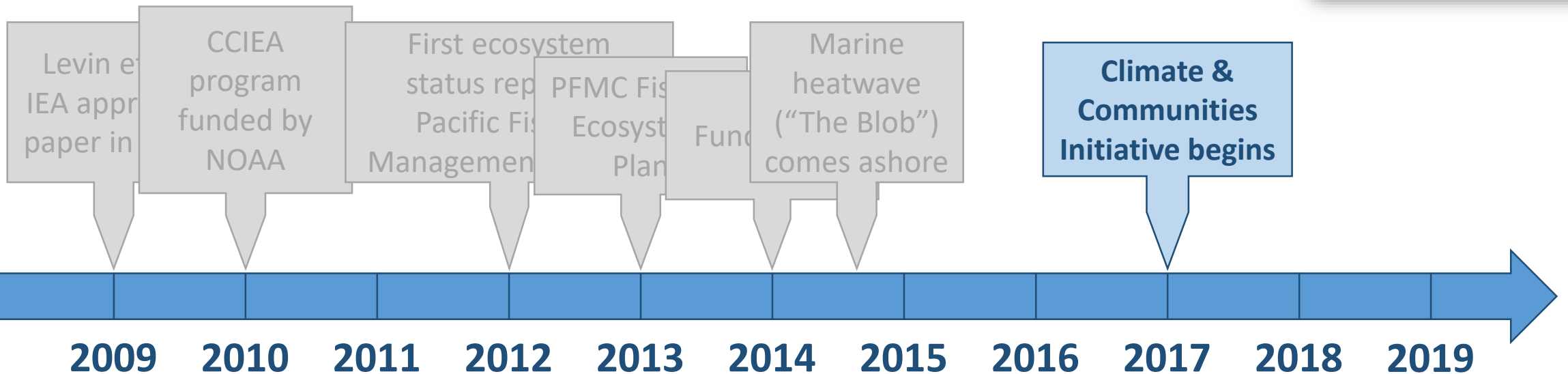
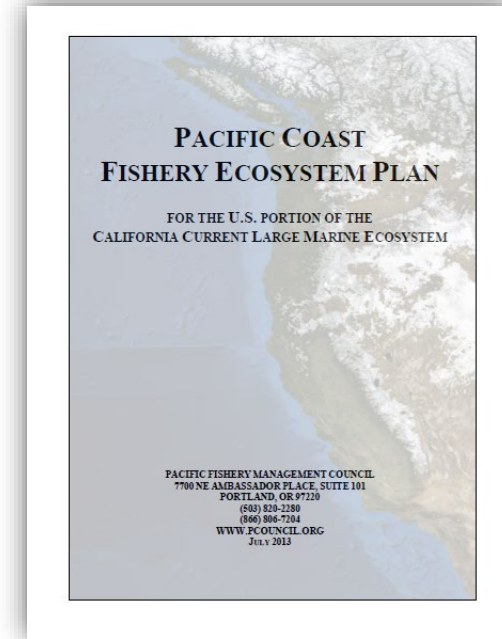


PFMC begins “Climate and Communities” Initiative

- An emerging ecosystem goal: fishing communities that are resilient to species distribution shifts, climate variability and climate change
- C&C Initiative will feature a scenario planning workshop, where participants will develop a set of realistic alternative futures (2040s)
- CCIEA team will develop MSEs to test performance current management and fishing practices under future scenarios



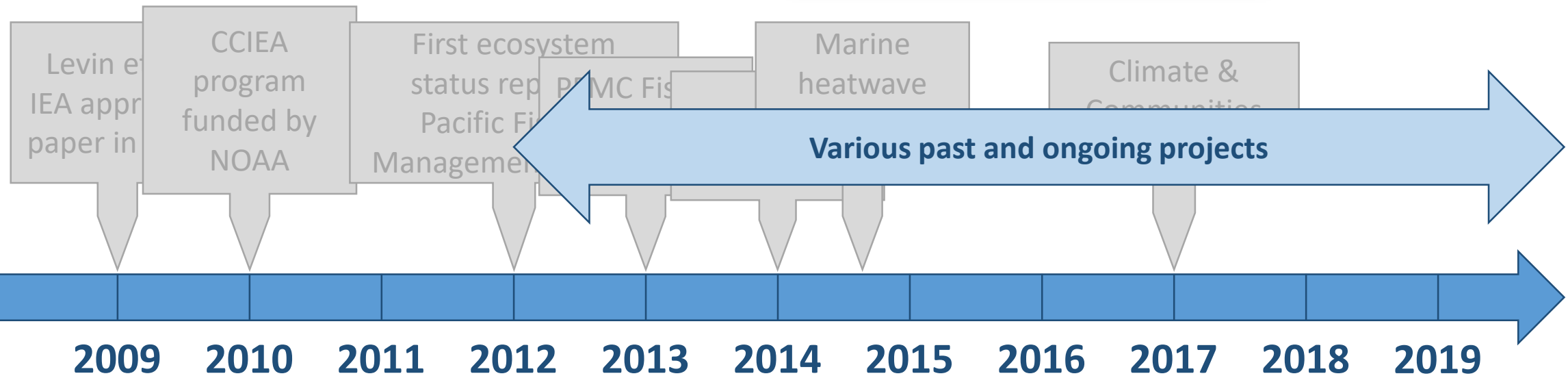
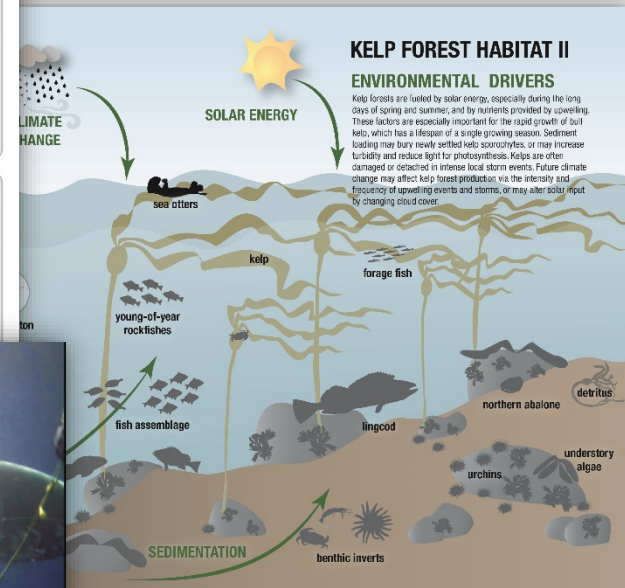
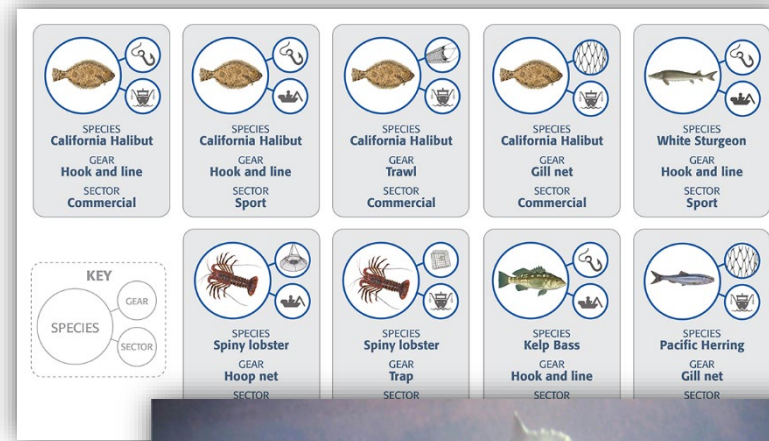
**PACIFIC FISHERY
MANAGEMENT COUNCIL**



Diversifying partnerships, synthesis products

Examples:

- We have been helping National Marine Sanctuaries to update “condition reports”
- We provided an ecosystem risk assessment to California for state fisheries management
- We have been working with fishers and managers to develop tools that reduce bycatch of protected species (e.g., turtles, whales), seasonal-2-climate projections (FUTURE SEAS)



A partial list of what we have learned

Part 1: The IEA process

Lesson	Comments
IEA is more a <i>process</i> than a <i>product</i>	<ul style="list-style-type: none">• The adaptable IEA framework is what defines our work• Products (reports, papers, tools, etc.) are part of the process
We don't have to study <i>everything</i> in the ecosystem to do IEA	<ul style="list-style-type: none">• IEA approach can be scaled to the specific need• This enables us to prioritize needs and undertake multiple IEA efforts at the same time
Relationship building in good times is helpful during bad times	<ul style="list-style-type: none">• We began working with Pacific Fishery Management Council prior to the "Blob," which helped them to trust our science during Blob years
Implementation of IEA science into management is slow	<ul style="list-style-type: none">• Management plans are hard to change and lack ecosystem objectives• This puts value on leading indicators & predictive models w/ uncertainty• Don't judge "success" based only on if management changed

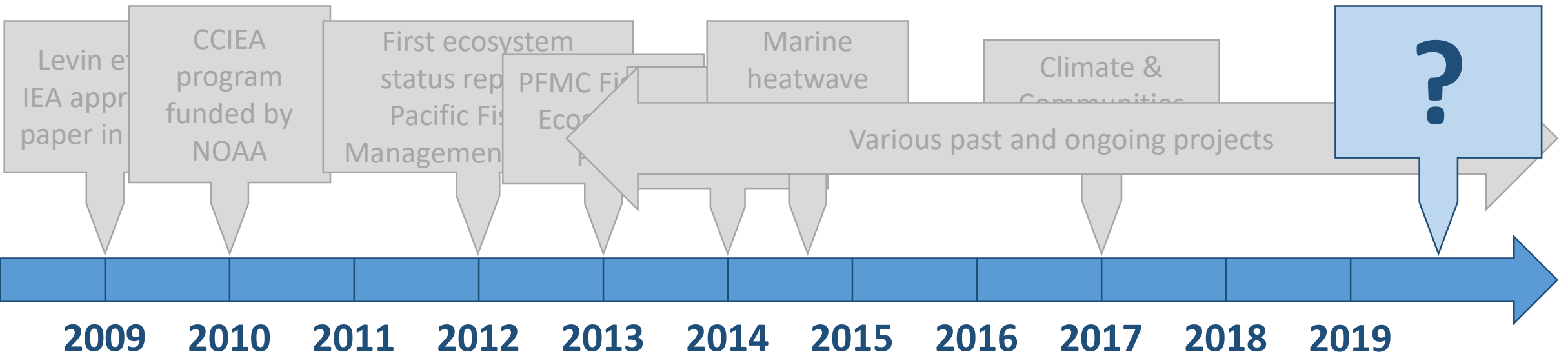
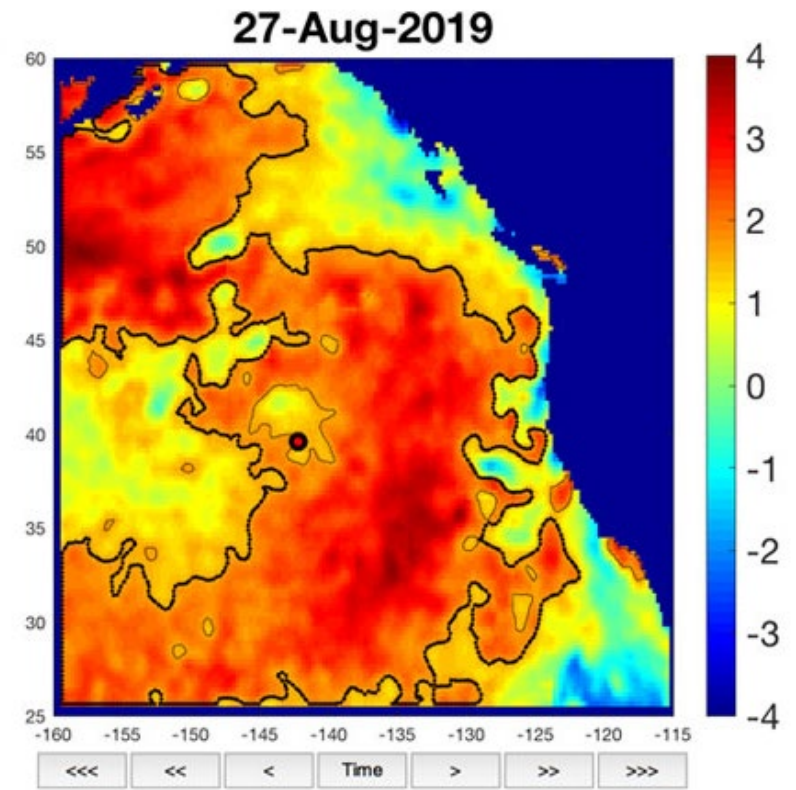
A partial list of what we have learned

Part 2: Building a sustainable IEA program

Lesson	Comments
Support of leadership is essential for long-term sustainability	<ul style="list-style-type: none">• We have had strong & engaged leaders, who have opened doors for us• When we effectively communicate our message to leaders, it becomes their message too, which increases its value and impact
Funds will always be limiting, so we must create opportunities	<ul style="list-style-type: none">• Collaborate with good people who can make in-kind commitments• Small regional workshops: inexpensive and productive• Apply for multiple grants for large synthesis projects
We need greater, permanent investment in social sciences	<ul style="list-style-type: none">• Our agency has very few social scientists and most are economists• Post-docs are great, but that's not the best way to develop long-term social science research in the program
We must develop diverse tools and products that can reach diverse audiences	<ul style="list-style-type: none">• Conceptual models and effective visualization of data & model output• Partnerships with communication and media experts• We're moving away from big reports toward web-based products

What's next?

- Provide science support during the new NE Pacific marine heatwave
- Develop ecosystem-scale tools to support the PFMC and related fisheries through the Climate and Communities Initiative
- Start to consider multi-sector problems (e.g., fisheries x offshore renewable energy)
- Participate in implementation of NOAA EBFM Policy and Climate Science Strategy
- Support regional leadership in determining research priorities and strategies



Thank you!

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