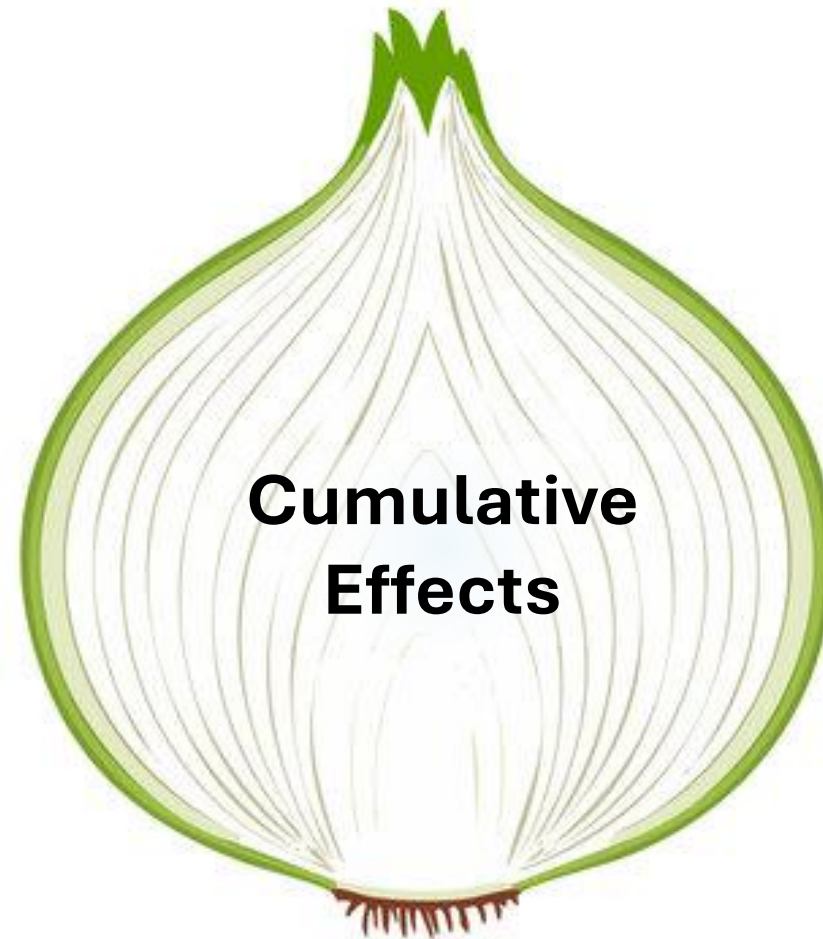


Cumulative threats, collaborative solutions: **Cumulative impacts as a wicked problem**

Jonathan Moore (Lead)
Tara Martin (co-lead)
Nigel Sainsbury (Project director)





SLIDO: Share your experience based on a salmon system you know.

In this system--have you witnessed harm to salmon or salmon habitats?

- Activity: What was the industry or human activity that caused harm?
- Stressor: What part of the habitat or ecosystem was harmed?
- Salmon: What part of the salmon life-cycle was being impacted?





Share your experience from a salmon system that you know:

What is an industry or human activity that caused harm to salmon or their habitats?



Share your experience from a salmon system that you know:

What part of the ecosystem or habitat was harmed?

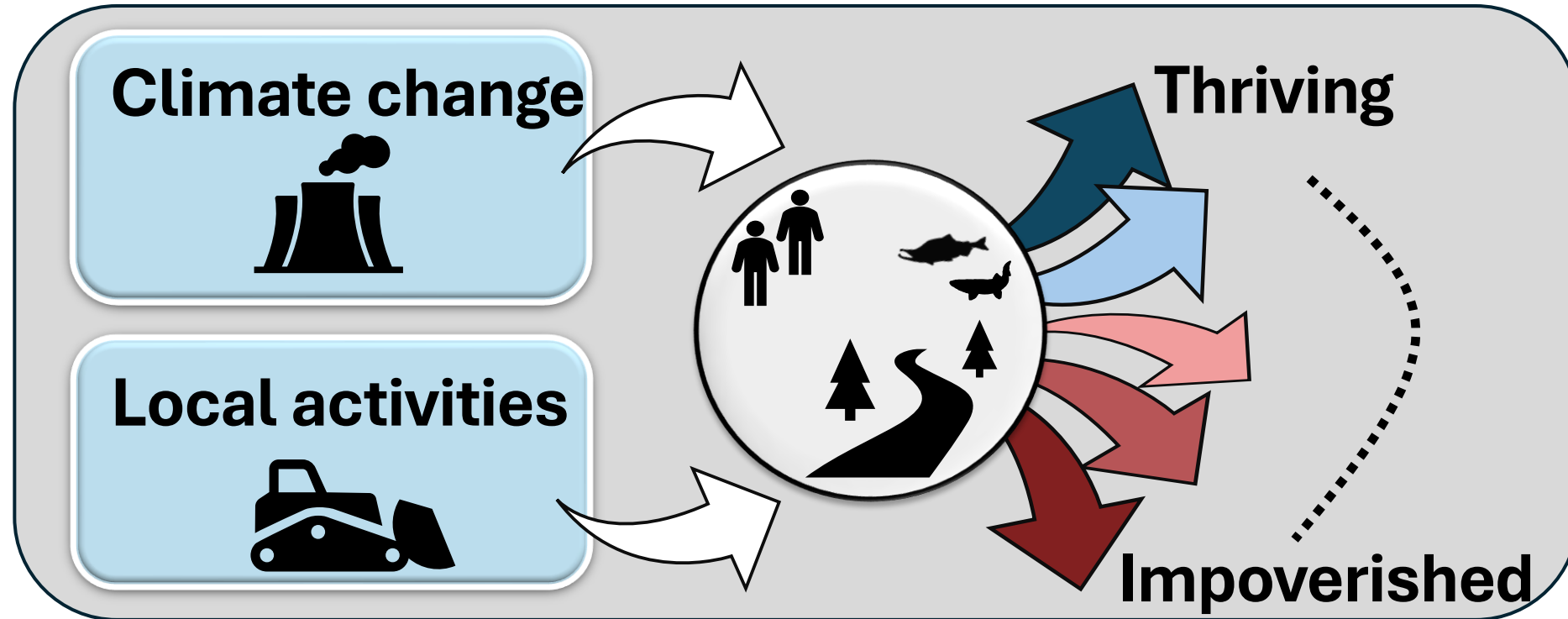


Share your experience from a salmon system that you know:

What part of the salmon life-cycle was being impacted?



The Challenge



- Spawner abundance decreased in 70% of assessed stocks

(PSF 2024)

- Commercial harvest declined ~70% over 40 years

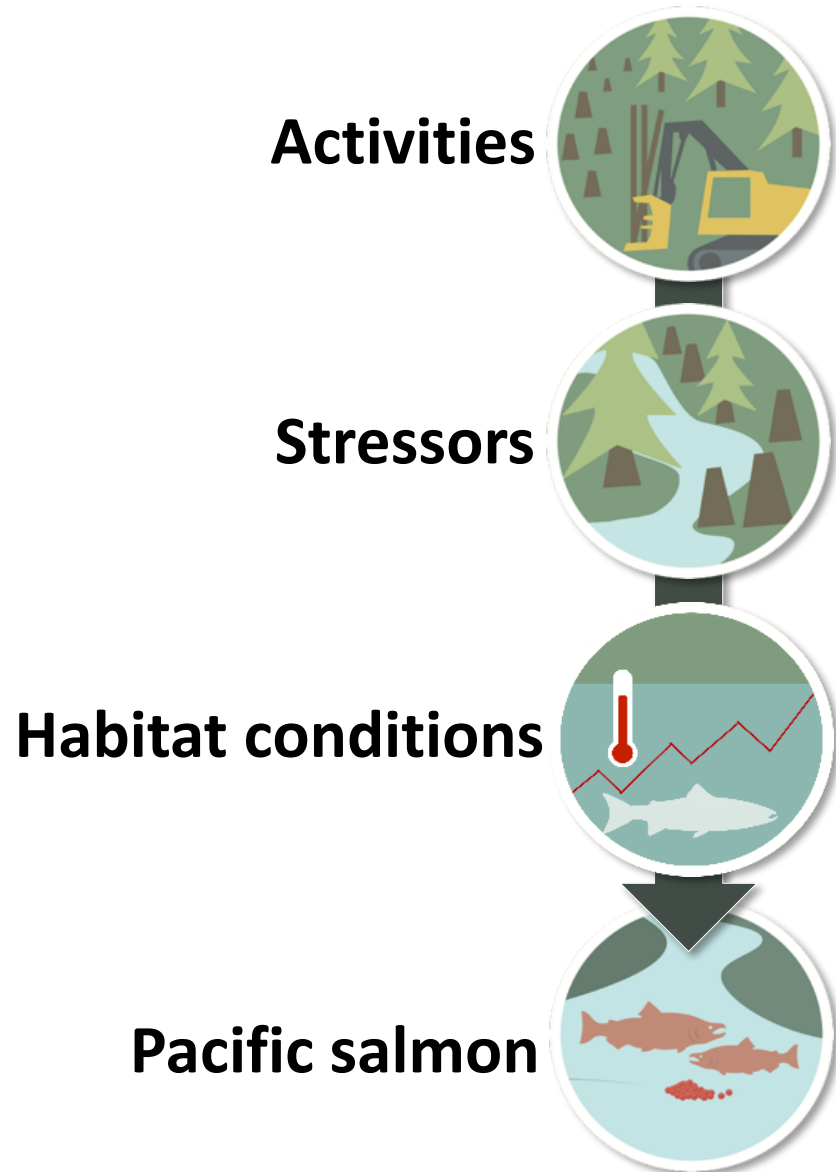
(Walters et al. 2019)

- Indigenous harvest declined >80% over last 50-70 years

(Reid et al. 2022)



Pathways of Effects





Logging in interior BC over 30+ years. Derived from Google Earth Engine by Joanne Hammond





NO 'SMOKING GUN' FOR ALASKAN CHINOOK DECLINES

October 12, 2020



Jones LA, Schoen ER, Shaftel R, Cunningham CJ, Mauger S, Rinella DJ and St. Saviour A. 2020. Watershed-scale climate influences productivity of Chinook salmon populations across southcentral Alaska. *Global Change Biology* **26**: 4919–4936.

PRIMARY RESEARCH ARTICLE



Marine and freshwater regime changes impact a community of migratory Pacific salmonids in decline

Kyle L. Wilson^{1,2} | Colin J. Bailey¹ | Trevor D. Davies³ | Jonathan W. Moore¹

REVIEW

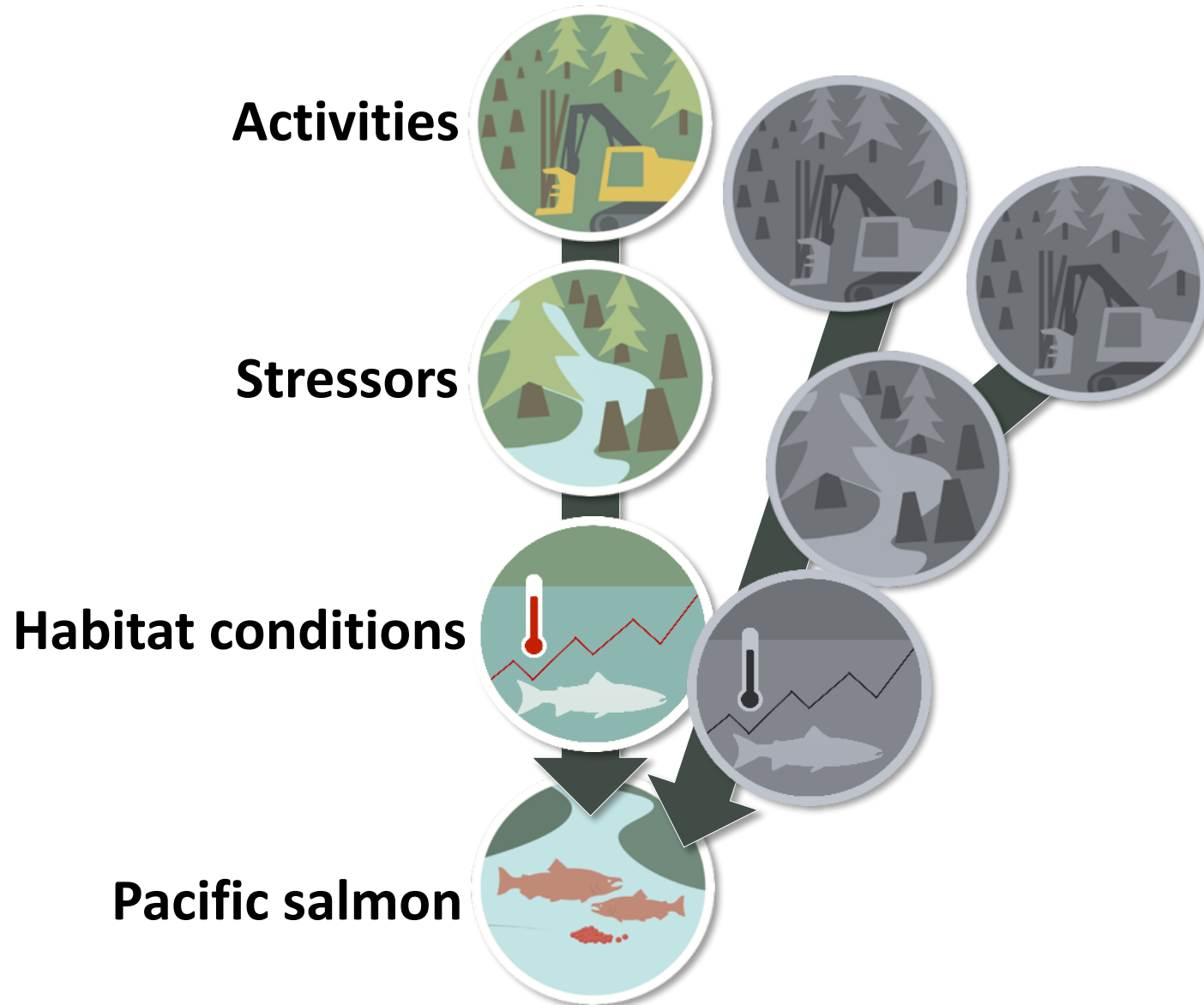
One hundred-seventy years of stressors erode salmon fishery climate resilience in California's warming landscape

Stuart H. Munsch , Correigh M. Greene, Nathan J. Mantua, William H. Satterthwaite

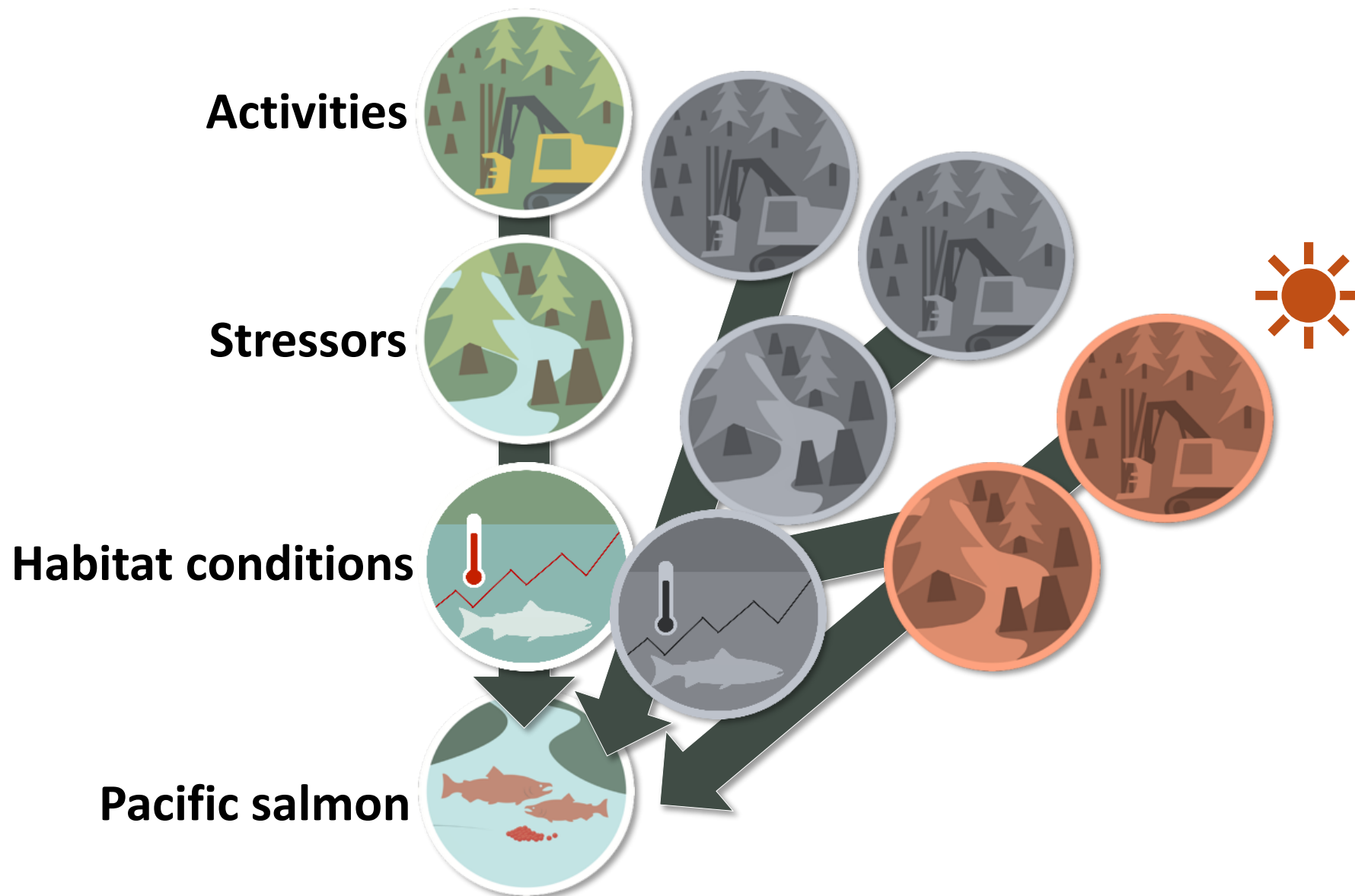
“...causes are rarely a single entity, event or condition. Rather, they are much more likely a complex interplay of factors.”

- Cohen 2012

Cumulative (pathways of) effects



Cumulative effects & climate change





WATERSHED FUTURES INITIATIVE



Salmon Watersheds Lab



Conservation Decisions Lab

<https://www.watershedfuturesinitiative.com/>

Canada
FISHERIES AND OCEANS



**NSERC
CRSNG**



MakeWay



sitka foundation



PACIFIC SALMON
FOUNDATION



WATERSHED FUTURES
INITIATIVE

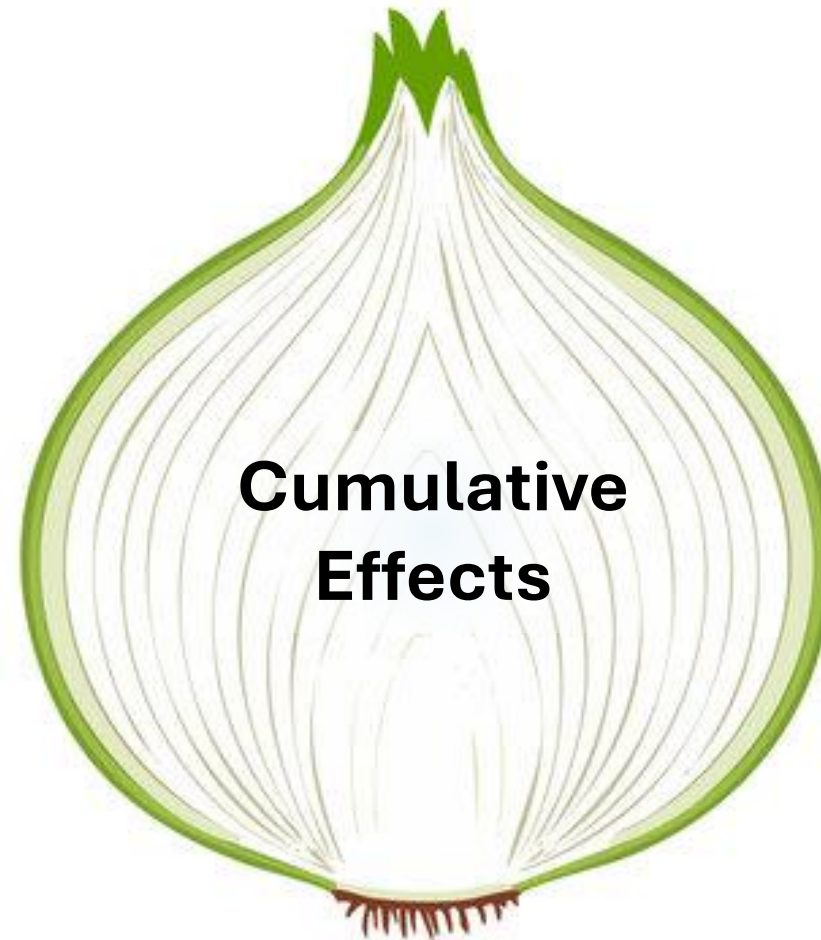
Goal: Improve the state of knowledge and effective management of cumulative effects

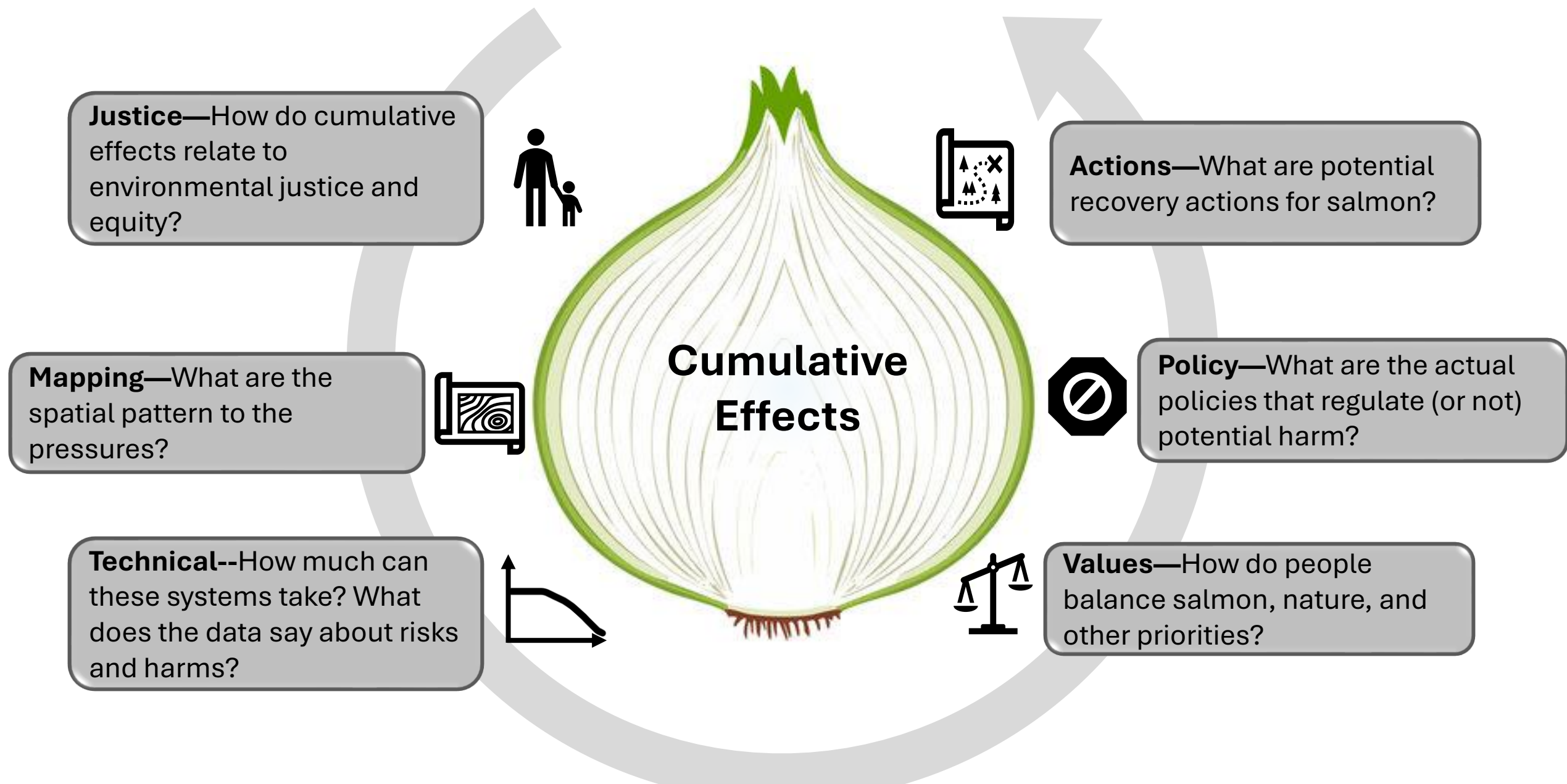
Science &
Understanding

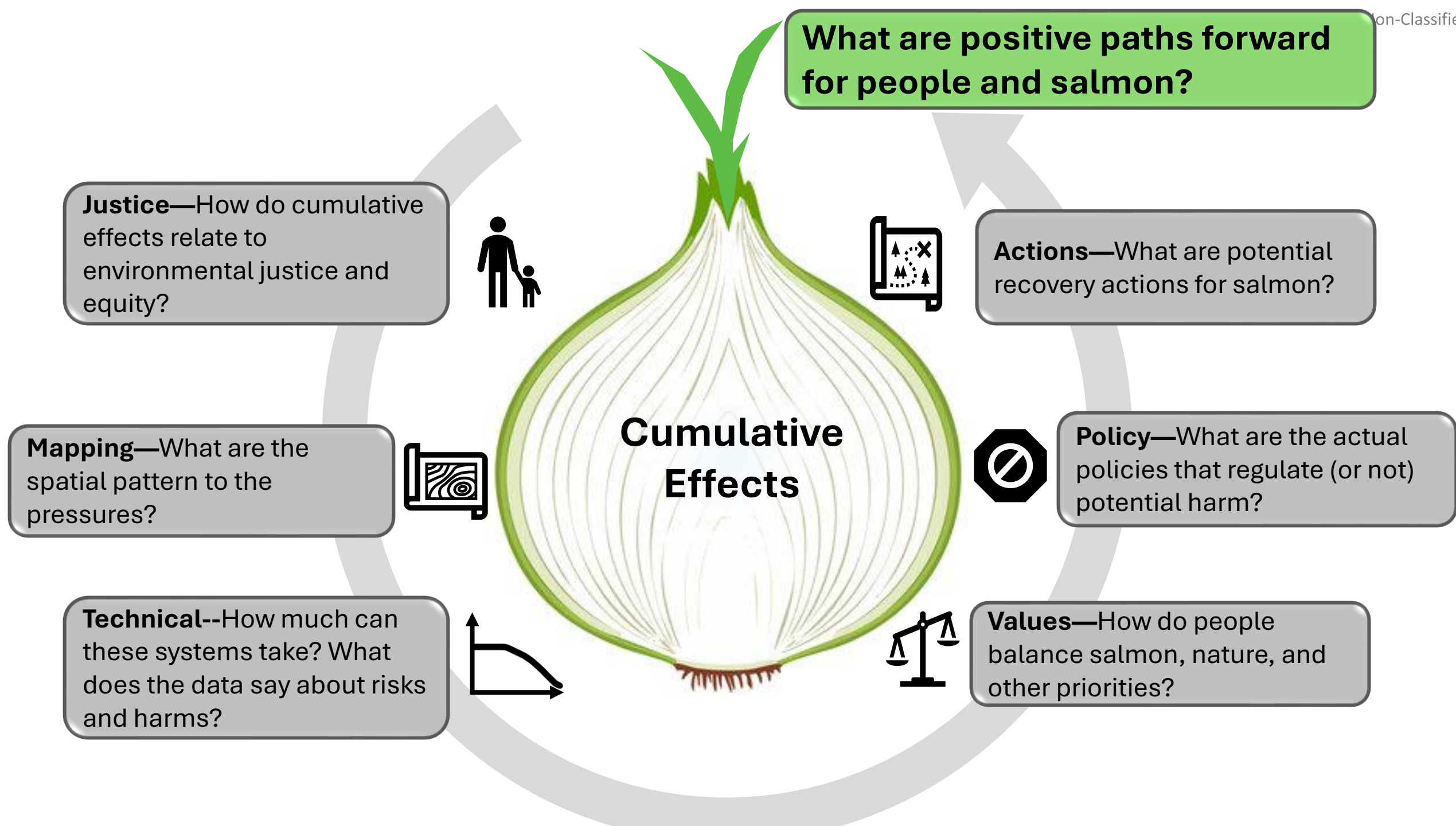
Community
connection

Informing
management

<https://www.watershedfuturesinitiative.com/>









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<https://www.watershedfuturesinitiative.com/>



SCAN ME