

# A Path Forward for California's Freshwater Ecosystems

February 1, 2020

Jeffrey Mount

---

Supported with funding from the S. D. Bechtel, Jr. Foundation  
and the funders of the PPIC CalTrout Ecosystem Fellowship



**PPIC**

PUBLIC POLICY  
INSTITUTE OF CALIFORNIA

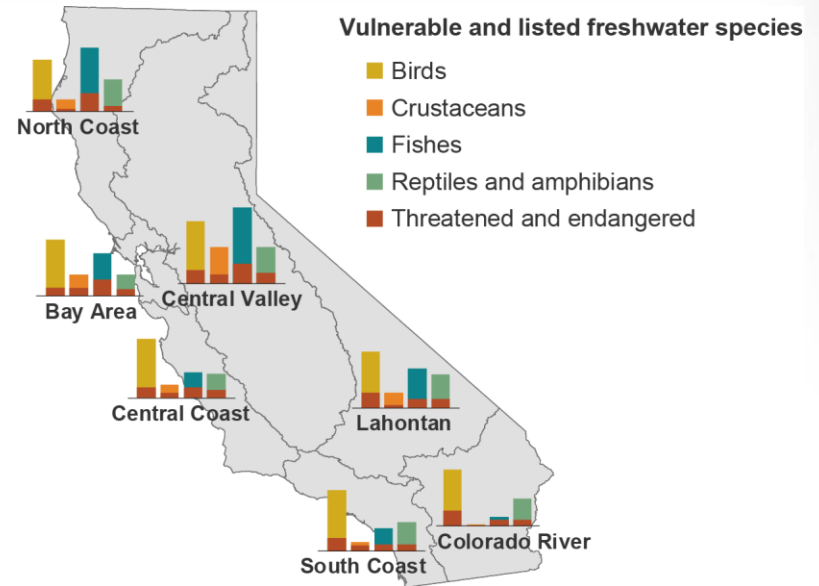
# Outline: Freshwater ecosystem-based management

- Current approach not working
- An alternative path forward
- Freshwater ecosystem-based management in practice
- The legal basis
- Recent progress
- Sustainable watershed management plans



# Freshwater ecosystem management is not working

- Multiple social, economic, environmental benefits of healthy ecosystems often overlooked
- Long-term decline of native biodiversity likely getting worse
- Vulnerable species vastly outnumber ESA-listed ones
- Over-reliance on state and federal ESAs to manage water



Source: Howard et al. (2015)

# An alternative path: Ecosystem-based management

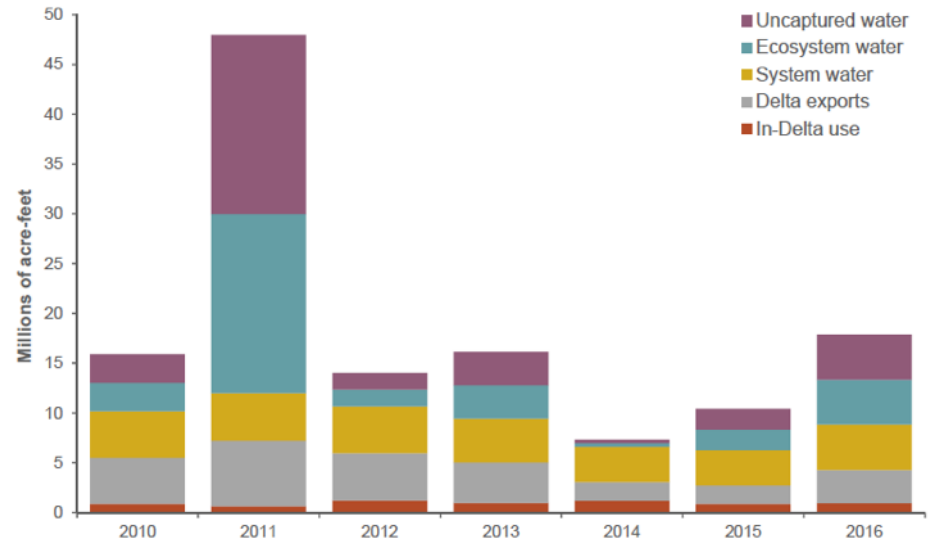
- Manages for *ecosystem condition* rather than listed species
- Integrates human uses and emphasizes multiple benefits
- Produces greater net benefits and reduces water conflict



# Freshwater ecosystem-based management in practice: Planning and governance frameworks are key

- Frameworks should include:
  - Desired ecosystem condition and beneficiaries
  - Metrics and performance measures
  - Scientific support
  - Regulatory alignment, transparent governance, comprehensive agreements
  - Reliable funding

Delta “system” water achieves multiple benefits

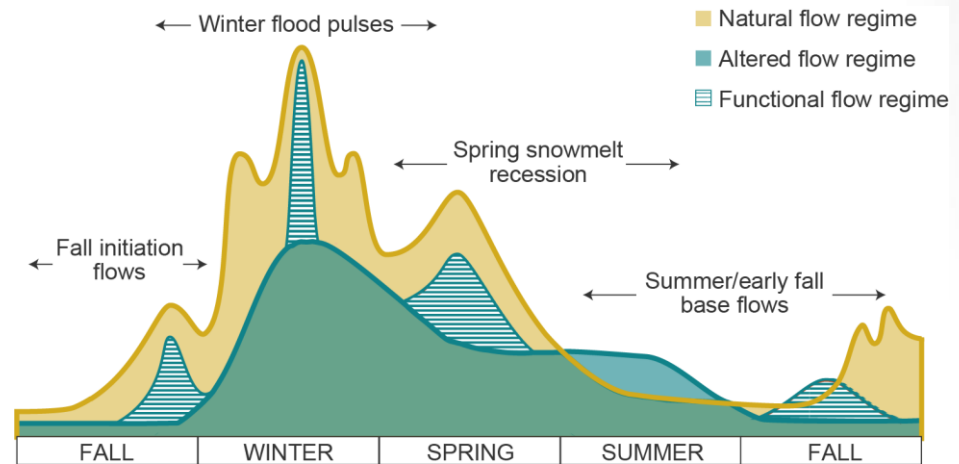


Source: Gartrell et al. (2017)

# Freshwater ecosystem-based management in practice: A suite of management actions

- Actions should include:
  - Ecosystem water budgets
  - Connecting structural habitat to functional flows
  - Co-managing water quality and quantity
  - Active management of native *and* non-native species
  - Managing at appropriate scale

Ecosystem water budgets can improve functional flows



Source: Mount et al. (2019)

# Ecosystem-based management is consistent with ESAs, other state and federal laws

- Water quality and right laws
  - Clean Water Act/Porter-Cologne Act
  - Public trust and reasonable use
- Federal and state ESAs
  - More flexible than currently implemented
  - HCPs/NCCPs

## Other Relevant Laws

Fish and Game Code § 5937

Clean Water Act § 404

Federal Power Act

Habitat Restoration and Enhancement Act

Lake or Streambed Alteration Agreements

NEPA and CEQA

Regional Conservation Investment Strategies

Sacramento-San Joaquin Delta Reform Act

Sustainable Groundwater Management Act

# Recent progress: Programs worth watching

- Some species and water management programs already include approach elements
- 12 programs offer potential models
- We can improve existing programs and encourage more comprehensive ecosystem-based management plans

## 12 potential models from across California



Source: Mount et al. (2019)



# Plans and comprehensive agreements: Two ways forward

## 1) Incentivize Sustainable Watershed Management Plans

- State Water Board, with support of legislature, should:
  - Establish criteria
  - Encourage comprehensive agreements
  - Establish timelines, with regulatory backstops
  - Adopt agreements as water quality control plans



Source: Upper Santa Ana River Habitat Conservation Plan

# Plans and comprehensive agreements: Two ways forward

## 1) Incentivize Sustainable Watershed Management Plans

- State Water Board, with support of legislature, should:
  - Establish criteria
  - Encourage comprehensive agreements
  - Establish timelines, with regulatory backstops
  - Adopt agreements as water quality control plans

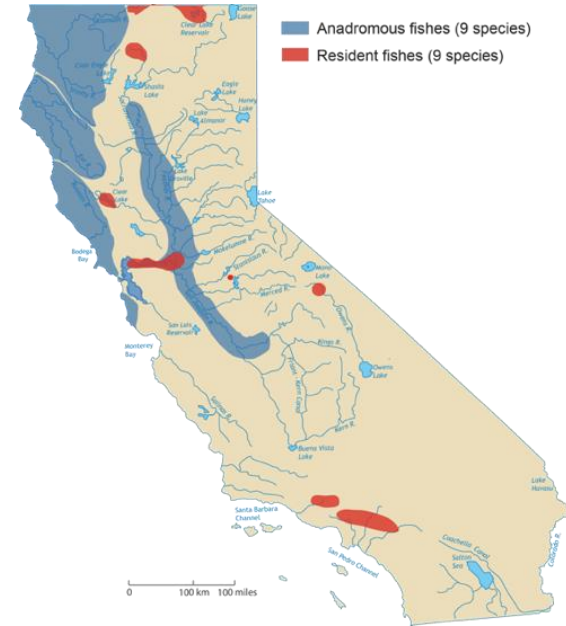
## 2) Mandate Sustainable Watershed Management Plans

- Model after Sustainable Groundwater Management Act
- Include these additional elements:
  - Define priority watersheds
  - Use water right and other regulatory authorities as backstop if local and regional organization fails

# Reasons to adopt ecosystem-based management

- Adaptable to changing conditions, new knowledge
- Anticipates and reduces new ESA listings while promoting recovery
- Integrates human uses of ecosystems with conservation objectives
- Aligns agency priorities and actions around multi-benefit projects

Half the fish at high risk of extinction in next drought are *not* listed under ESAs



Source: Hanak et al. (2015)

# Thank you



# A Path Forward for California's Freshwater Ecosystems

December 5, 2019

Jeffrey Mount

---

Supported with funding from the S. D. Bechtel, Jr. Foundation  
and the funders of the PPIC CalTrout Ecosystem Fellowship



**PPIC**

PUBLIC POLICY  
INSTITUTE OF CALIFORNIA

# About these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

Jeffrey Mount ([mount@ppic.org](mailto:mount@ppic.org), 415-291-4476)

Thank you for your interest in this work.