



Stanford University

Dr. Tyler N. McFadden, Lecturer  
Maria Viteri, Ph.D. Candidate  
Department of Biology

March 22, 2022

Secretary Wade Crowfoot  
Deputy Secretary Jennifer Norris  
California Natural Resources Agency  
715 P Street  
Sacramento, CA 95814  
[Californianature@resources.ca.gov](mailto:Californianature@resources.ca.gov)

**Subject: Support and Recommendations for Draft Pathways to 30x30 Strategy**

Dear Secretary Crowfoot and Deputy Secretary Norris:

We would like to thank you for your continued leadership on California's 30x30 initiative. We are writing as the instructors of Stanford University's new course ***Science for Conservation Policy: Meeting California's Pledge to Protect 30% by 2030***. This course introduced Stanford students to the science and methods of terrestrial conservation planning through the lens of 30x30. In addition to learning about 30x30, students developed original research projects which provided policy recommendations for implementing 30x30. **We are writing to share these student recommendations and some relevant take-aways from the course.**

The course ran from January through March 2022. Although the formal public comment period for the draft *Pathways to 30x30 Strategy* has passed, we hope that these comments may still be considered in the 30x30 planning process.

**About the class and student projects**

Our course used 30x30 as a lens for exploring current issues in conservation science and policy. Through lectures, labs, and field trips, students gained practical skills in ecology, protected area design, biodiversity modeling, and science communication. Students also interacted with conservation practitioners from California universities, NGOs, and land management agencies. These included several guest speakers who have been involved in the 30x30 planning process, including Matt Armsby (Resources Legacy Fund), Millie Chapman (UC Berkeley; technical writer for *Pathways to 30x30*), and Dr. Elizabeth Hadly (Stanford University). More information about the course is available on our website: <https://www.science4conservation.org>

For their final, **students designed original research projects that used publicly available data to inform 30x30**. Specifically, they examined how to implement 30x30 in a way that 1) conserves biodiversity, 2) builds climate resilience, and 3) expands equitable access to nature. **Students summarized their recommendations in 2-page policy briefs (attached for reference)**, which they presented to conservation professionals on March 16, 2022. Students produced briefs on the following topics:

- **Incorporating groundwater recharge into 30x30** (attached *Stanford\_Brief\_A.pdf*)
- **Conservation easements for connectivity in Salinas Valley** (attached *Stanford\_Brief\_B.pdf*)
- **Urban expansion and biodiversity in the southern Central Valley** (attached *Stanford\_Brief\_C.pdf*)
- **Grassland conservation under climate change** (attached *Stanford\_Brief\_D.pdf*)

**Each policy brief reports an original data analysis and associated recommendations for 30x30.** These projects were produced in four weeks by Stanford undergraduate and master's students. The specific maps and statistics should be interpreted as preliminary results, but the findings provide a unique and quantitative perspective. Below, we synthesize the big picture recommendations produced in these policy briefs and during other class activities.

**Recommendation #1: Incorporate groundwater recharge and resilience as a 30x30 priority.** Groundwater is critically important for both human use and groundwater-dependent ecosystems (e.g. vernal pools, wetlands, springs, etc.), which in turn provide important habitat for biodiversity. Land conservation can protect groundwater reservoirs from depletion and degradation, but the draft *Pathways to 30x30* does not specifically consider groundwater and its interplay with 30x30 objectives. One student project (*brief A*) identified regions of California with the highest groundwater vulnerability and value for groundwater-dependent ecosystems.

**Recommendation #2: Clarify the role of working lands and urban spaces in achieving 30x30 biodiversity, climate, and equity objectives.** The draft *Pathways to 30x30* strategy rightly recognizes working and urban lands as key for achieving 30x30 objectives. However, beyond conservation easements, it is unclear how these lands fit into the broader strategy. The strategy briefly discusses the potential inclusion of some working and urban lands as OECMs (Other Effective Area-based Conservation Measures), though the mechanism for evaluating and including the OECMs is unclear. Furthermore, working and urban lands make many indirect contributions to 30x30 objectives. For example, working lands may provide habitat or movement corridors for wildlife (e.g. *brief B*), while urban lands provide access to nature for the 95% of Californians who live in urban areas. Identifying opportunities and incentives for improving working and urban land contributions to 30x30 objectives is essential, even in cases where these lands don't directly count as 'protected'.

**Recommendation #3: Account for future shifts in the distributions of species and ecosystems due to climate change.** Climate change is already driving dramatic changes in the distribution of biodiversity in California. Two student projects (*briefs C and D*) used projected climate data from 2050-2070 to forecast changes in biodiversity distributions under climate change. Some species lost up to 40% of their range due to changing climate conditions. While the specific maps are preliminary and should therefore be interpreted with caution, these findings underscore the importance of accounting for climate-induced range shifts when assessing the contributions of protected areas to 30x30 goals.

**Recommendation #4: Consider the trade-offs in using species-based versus ecosystem-based approaches for identifying conservation priorities.** The placement of protected areas is often informed in part by either 1) the distribution of species of conservation interest (e.g. threatened or indicator species), or 2) the distribution of particular ecosystems of interest. These two approaches can produce very different prioritizations of which places to protect. For example, one student group (*brief D*) identified different locations for grassland conservation depending on whether they used an indicator species approach or an ecosystem-based approach.

**Recommendation #5: Partner with universities and community colleges to engage students in 30x30 planning and implementation.** California will need a diverse, informed, and impassioned community of environmental professionals to implement and sustain 30x30. Today's students will be early- to mid-career professionals in 2030 and will be key players for doing this. We have found 30x30 to be a powerful framework for engaging students in conservation science, practice, and policy. Classes such as ours can provide valuable stakeholder feedback while training the next generation of conservation professionals to engage and solve our most pressing environmental challenges.

In closing, we want to reiterate our support for 30x30 and commend you for your leadership on this important initiative. Developing the *Pathways to 30x30* strategy was a formidable undertaking, especially given California's ecological and socioeconomic diversity. We are grateful for the comprehensive, science-based approach and for the State's deliberate stakeholder engagement efforts. We support the objectives laid out in *Pathways to 30x30* and we look forward to contributing to these efforts.

Sincerely,

Tyler McFadden  
Maria Viteri