Planetary Health Report Card (Veterinary Medicine):

University of California Davis School of Veterinary Medicine

2023 Contributing Team:

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Land acknowledgement:

The University of California, Davis acknowledges the land on which we are gathered. For thousands of years, this land has been the home of Patwin people. Today, there are three federally recognized Patwin tribes: Cachil DeHe Band of Wintun Indians of the Colusa Indian Community, Kletsel Dehe Wintun Nation, and Yocha Dehe Wintun Nation.

The Patwin people have remained committed to the stewardship of this land over many centuries. It has been cherished and protected, as elders have instructed the young through generations. We are honored and grateful to be here today on their traditional lands.

Summary of Findings

Overall	B

Curriculum	D+

- The University of California, Davis School of Veterinary Medicine does include planetary health in the curriculum, but it is not longitudinally integrated, with the majority of the planetary health curriculum concentrated in VET 414 (Population Health), the population health week of VET 401 (Basic Foundations), and some lectures in VET 406 (Pharmacology, Toxicology, Nutrition). Students who elect to participate in the Zoo Track in their third year also receive more robust instruction about planetary health.
- **Recommendations:**
    - **Plan for planetary health concepts to be integrated more longitudinally into the curriculum, including a faculty person assigned to oversee this process.**
    - **Add more clear links to climate change.** There are many instances where the curriculum mentions climate-related health impacts (for example, heat-related illness, wildfire exposure, expanding ranges of tick-borne diseases, etc.) without a mention of these health impacts having links to climate change. This represents one relatively simple opportunity to bring climate into the curriculum with a small verbal or written amendment (for example, briefly mentioning that the incidence of heat related illness is likely to increase with climate change). One possibility would be to add a standardized set of visual cues throughout the curriculum that flags subjects related to planetary health, climate change, etc.
    - **Consider incorporating clinical sustainability into the didactic curriculum and modeling clinical sustainability in students' clinical years.** Consider the idea of the veterinary teaching hospital (or externships with sustainable operating practices) as a "living lab" showcasing sustainable operations that students can carry with them into their careers. This model could build a tangible culture of sustainability and teach students habits to carry forward in their careers. It would be meaningful to include examples of clinical sustainability in the didactic curriculum, so that students are aware of the hospital's/externships' sustainability practices and ready to participate when they reach their clinical year.
    - **Incorporate access to care clinic learnings into the curriculum.** Many UC Davis School of Veterinary Medicine faculty and students are deeply involved in access-to-care clinics intended to serve marginalized populations whose human and non-human animal members are more vulnerable to the impacts of climate change and environmental degradation. There is an opportunity for faculty involved in these clinics to incorporate learnings from that work and from those communities' lived experiences with the health impacts of climate change, extreme weather, environmental toxins, etc. into the curriculum.
    - **Include animal welfare and climate change in the first-year ethics course.** First year veterinary students participate in an Ethics course, which invites students to develop a personal framework for working through ethical dilemmas in veterinary medicine. The course is a mixture of lecture and small group conversation about a variety of facets of animal ethics. There is an opportunity to include lecture and discussion about the health impacts of climate change as an animal welfare issue into this course, and for students to engage in small group discussion about this topic to come to a personal understanding of how climate change impacts animal welfare.
    - **Mention human-caused environmental threats in the Davis area.** Teaching students to consider human-caused environmental threats around their veterinary school community will give them the tools and intellectual pathways to do the same assessment in whatever community they end up practicing in, so that they can holistically understand potential impacts to their patients' health.

Interdisciplinary Research	A-

- The University of California, Davis School of Veterinary Medicine's One Health Institute is a centralized hub at the veterinary school for research on the intersection between animal, human, and planetary health. The institute conducts regular planetary health-related research, actively involves communities disproportionately impacted by climate change and environmental degradation in research direction and decision-making, hosts an annual symposium on topics related to planetary health, and is a member of the Planetary Health Alliance.
- **Recommendations**: The One Health Institute is an invaluable resource for our veterinary school community, and for the veterinary community at large. A handful of recommendations for further bolstering interdisciplinary research include:
    - Pursuing research in sustainability in the veterinary medical field.
    - Consider implementing a formal process whereby communities disproportionately impacted by climate change and environmental injustice can give input or make decisions about research foci within the veterinary school.

Community Outreach and Advocacy	B+

- University of California Davis School of Veterinary Medicine is currently engaged in meaningful community outreach and advocacy related to planetary health, through efforts like the Knight's Landing One Health Clinic and the Summer Work Experience Program. The veterinary school offers some educational events that relate to planetary health (like the annual One Health Symposium and Wildlife and Aquatic Animal Medicine symposiums) and there are relatively robust, client-facing written materials related to health impacts of climate change. However, there are many opportunities for the veterinary school to further engage in planetary health partnership and leadership via outreach and advocacy.
- **Recommendations**: There are many opportunities for enhanced partnership with community organizations and planetary health educational efforts by the UC Davis SVM.
    - **Modify the annual One Health Institute Symposium to be more accessible for a community audience**, via enhanced advertisement of this symposium to the general public and designing some aspect of the symposium with the general public in mind.
    - **Create a client-facing educational flier specific to the myriad health impacts of climate change.**

Support for Student-Led Initiatives	A

- The UC Davis SVM and UC Davis as a greater institution provides significant support for student-led planetary health initiatives. There are two grant programs for students interested in pursuing planetary health projects, and students interested in pursuing research in planetary health have resources in the STAR research program and the One Health Institute. The Green Task Force is a student-led group focused on planetary health work within UC Davis SAVMA, within which Green Task Force is a voting member. UC Davis as a wider university offers a wealth of co-curricular planetary health programs and initiatives, to which veterinary students have access.
- **Recommendations:** Overall, the veterinary school and UC Davis as a whole provides great support for student-led initiatives. One suggestion for improvement:
    - **Assign a faculty mentor to the Green Task Force.** While the Green Task Force has unofficial support from veterinary school faculty, it lacks some structure that a formal faculty mentor could provide.

Campus Sustainability	A-

- Overall, UC Davis has robust campus sustainability policies and programs in place, supported by an Office of Sustainability. All schools within the UC system have a plan for carbon neutrality by 2025, and UC Davis specifically has a Fossil Fuel-Free Pathway Plan. While the campus' energy mix is not currently more than 20% renewable energy, the university has concrete plans in pursuit of a near total renewable energy mix. While only one building on the veterinary school campus is LEED-certified, there is significant

remodeling and new construction planned for the campus, all of which will be LEED Gold-certified or higher. The UC Davis campus as a whole invests heavily in bicycling infrastructure, and offers no-cost public transportation options. Composting and recycling are available throughout the vet school campus, and UC Davis as an institution is engaged in efforts to increase food and beverage sustainability.

- **Recommendations**: Opportunities for improvement include:
    - **Appointing a staff person in charge of sustainability at the veterinary school** specifically.
    - **Promoting bicycling as a form of transportation** within the veterinary school community specifically.
    - **Requiring adherence to green event guidelines** for events at the veterinary school.

Statement of Purpose

Planetary health is animal health.

The Planetary Health Alliance describes planetary health as "a solutions-oriented, transdisciplinary field and social movement focused on analyzing and addressing the impacts of human disruptions to Earth's natural systems on human health and all life on Earth." This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanization, biodiversity shifts, natural disasters, climate change, changing land use and land cover, global pollution, and changing biogeochemical flows. The health of all species is dependent on our environment, and our environment is changing rapidly and in disastrous ways. The World Health Organization has called climate change "the greatest threat to global health in the 21st century," and health professionals need to be prepared to respond to this growing threat.

A fundamental component to this preparation lies in the hands of the institutions providing our professional training. It is imperative that we hold our institutions accountable for educating students about the health impacts of climate change and other anthropogenic environmental changes, generating research to better understand health impacts and solutions, supporting related student initiatives, embracing sustainable practices, and engaging with surrounding communities that are most affected by environmental threats. Because climate change and environmental threats disproportionately affect vulnerable populations (for example, communities of color, older adults sensitive to health threats, and individuals in low-resource settings), these issues are inherently ones of equity and justice.

With the purpose of increasing planetary health awareness and accountability among medical schools, a Planetary Health Report Card (PHRC) tool was developed by medical students that could be used to grade and compare their home institutions on an annual basis. The original PHRC has since been adopted by other allied health professions, including veterinary medicine. This student-driven initiative aims to compare veterinary schools nationally and internationally on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in animal health and environment, 3) university support for student planetary health initiatives, and 4) community outreach centered on environmental health impacts 5) veterinary school campus sustainability.

Definitions & Other Considerations

Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as "the health of human civilization and the state of the natural systems on which it depends." For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional 'environmental health' examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of veterinary medical education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term "planetary health" to satisfy the metric.

- **Sustainable vetcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimizes use of healthcare services. For this veterinary specific assessment we have modified this language to 'sustainable vetcare'.

- **Education for Sustainable Vetcare (ESV):** is defined as the process of equipping current and future veterinary professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable vetcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESV is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3. For veterinary medicine these have been expanded to include both domestic and wild animal species:

    1. Describe how the environment and health interact at different levels.

    2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.

    3. Discuss how the duty of a veterinarian to protect and promote health is shaped by the dependence of health on the local and global environment.

- **Veterinary School vs. Institution:** When "veterinary school" is specified in the report card, this only refers to curriculum and resources offered by the School of Veterinary Medicine and does not include offerings from other parts of the university (e.g., undergraduate departments

(USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when "institution" is specified in the report card, we are referring to the university more broadly. Any resource reasonably accessible by veterinary students, no matter where in the institution the resource comes from or if it is specifically targeted for veterinary students, can meet this metric.

- **Environmental history (Metric #22 in Curriculum Section):** This is a series of questions providers are taught to ask during medical encounters that elicit patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mold after flooding. Key components include place of residence over the life course, 'occupational' history, food and water sources, and exposure to air pollution.

- **Elective:** The word "elective" refers to an optional course or lecture series that a veterinary student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school. Some schools may not have elective courses.

- **Clinical rotation:** This is a term used in the USA to refer to placements that veterinary students go on (e.g., ophthalmology, surgery, cardiology).

Other considerations:

- If there are more than one "tracks" at your veterinary school with two different curricula (for example, Virginia-Maryland College of Veterinary Medicine offers students to track in small animal, food animal, or equine at the end of their first year), you can choose to fill out a report card for each track, or fill out just one report card and average the scores received by each track in cases where the scores are different.

Added to our resources in 2022, Planetary Health Report Card Literature Review by Metric collates the evidence behind each of the metrics in the Planetary Health Report Card. It serves as a collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions. Please take note this has not yet been updated for veterinary medicine.

Planetary Health Curriculum

Section Overview: ***This section evaluates the integration of relevant planetary health topics into the veterinary school curriculum.*** *Today's veterinary students will be on the frontlines of tackling the animal and public health effects of climate and other environmental changes. Therefore, it is critical that veterinary students are trained to understand the health effects of these changes, as well as planetary health issues and principles more broadly. Topics like the 7 exposure pathways (ie: air, temperature, extreme events/ disasters, food, water, vector-borne diseases, and animal welfare), environmental health inequities, and disaster response principles must be part of every veterinary school's core curriculum.*

Curriculum: General

1. Did your veterinary school offer elective courses (student selected modules) to engage students in Education for Sustainable Vetcare or Planetary Health in the last year?	
3	Yes, the veterinary school has offered **more than one** elective whose primary focus is ESV/planetary health in the past year.
2	Yes, the veterinary school has offered **one** elective whose primary focus is ESV/planetary health in the past year.
1	The veterinary school does **not** have any electives whose primary focus is ESV/planetary health, but there are one or more electives that include a **lecture** on planetary health.
0	No, the veterinary school has **not** offered any electives on planetary health or electives that include ESV/planetary health topics in the past year.
Score explanation: ***1 point.*** By the stated definition of electives, UC Davis School of Veterinary Medicine (SVM) does not offer electives or access to electives in other parts of the institution with these sustainability themes incorporated. However, there is one lecture in the core curriculum on Planetary Health.	

Curriculum: Health Effects of Climate Change

2. Does your veterinary school curriculum address the relationship between increasing temperatures and animal health?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** by the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.
Score explanation: ***3 points.*** In Vet 414 (Population Health), Lecture 21: Climate Change and One Health consisted of a half lecture (25 minutes) with 6 slides covering extreme heat and impacts to small animals (canine heat injury, e.g.	

heatstroke) and large animals (appetite suppression, reduced growth and milk production, and decreased conception rates in livestock). Explicit links were made to climate change.
Vet 411 (Dermatology), CBL 1: Skin and its Function includes one slide that discusses the unique impacts of increasing temperatures on amphibians, including loss of habitat, immune system disruption, and desiccation.

3. Does your veterinary school curriculum address the impacts of extreme weather on animal health and veterinary systems?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** by the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***2 points.***
In many cases, extreme weather was discussed but not linked back to climate change. This represents an opportunity for improvement in the development of these topics.
Examples included: Vet 413 (Immunology/Infectious Disease), Lecture 12: Trematodes - one slide about flooded fields leading to fluke infestation; Vet 413, Lecture 62: Small Animal Zoonoses - one slide about how Leptospirosis spreads more easily in flood events. The driving cause behind changes in precipitation leading to increased incidence of flooding is not identified to be climate change. Vet 411 (Dermatology), CBL 1: Skin and its Function - includes a section of 21 slides about wildfire and burn impacts on the skin of various species, but no link to climate change.
Vet 414 (Population Health), Lecture 21: Climate Change and One Health - included one slide on wildfires and two on storm surges and flooding, both linked to climate change.

4. Does your veterinary school curriculum address the management of animals during climate associated disasters?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***2 points.***
Vet 414 (Population Health), Lecture 22: One Health Problem Solving - included 17 slides providing an overview of how to manage animals in a large-scale disaster. An activity associated with that lecture, Vet 414, PBL 1: One Health Emerging Issue, asked students to use the information from Lecture 22 to assemble a plan for animal management. While the scenario presented to students was an earthquake, the management techniques could be applied to climate associated disasters. This presents an opportunity for instructors to mention that students can apply lessons learned from the earthquake scenario to other types of disasters, including climate-related disasters.

Vet 414 (Population Health), Animal Welfare Mini-Conference - ⅕ of students (30 students) were tasked with researching, writing a short paper about, and presenting on AB1648, a new California law requiring kennels to have a disaster plan for evacuation.
UC Davis School of Veterinary Medicine's Student Veterinary Emergency Response Team (sVERT) is a student-led, faculty-advised organization that hosts a series of 6 dinner talks per semester related to animal management in disasters, with previous topics including themes like "Client Education in a Disaster Setting," "Burns and Bandaging," "Search and Rescue," and "Small Animal Emergency Shelter Medicine."

5. Does your veterinary school curriculum address the impact of climate change on the changing patterns (e.g., distribution and prevalence) of vector-borne diseases*?*

3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***3 points.***
Vet 414 (Population Health), Lecture 21: Climate Change and One Health - included a table of vector-borne diseases whose distribution was changing due to climate change, and a slide each about the changing distribution of ticks that carry the bacteria that causes Lyme Disease and mosquitoes that carry West Nile virus.
Vet 413 (Infectious Disease), Lecture 31: Wildlife Zoonoses - included one slide on climate change and vector-borne disease, relating to the changing distribution of tick populations.
Vet 414, Lecture 11: Emerging Zoonoses - included one slide titled "Drivers of Disease Emergence," with a figure that emphasized climate and weather as a primary driver of emerging disease.
Vet 414, Lecture 26: Disease Emergence - included a slide that alludes to climate change in the epidemiological triad.

6. Does your veterinary school curriculum address the health effects of climate change and air pollution?

3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** by the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***1 point.***
Vet 408 (Cardiopulmonary), Lecture 6: Heart Vessels and Nerves - included a slide about tobacco smoke exposure and the effects on aortic valves of rats. This provides an opportunity to link to wildfire smoke.

Vet 414 (Population Health), Lecture 21: Climate Change and One Health - included one slide on the health impacts of air quality as impacted by wildfire smoke and aeroallergens, whose production increases with increased CO_2 in the atmosphere and changing timing of seasonal transitions.
sVERT (a disaster response student club) offered a lecture on burn patient management, which included a discussion on the effects of smoke inhalation.

7. Does your veterinary school curriculum address the relationship between animal welfare and the effects of environmental degradation and climate change?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** by the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***1 point.***
Vet 414 (Population Health), Lecture 21: Climate Change and One Health - included one slide stating "climate change is an animal welfare issue."
There is an opportunity to include climate change impacts in UC Davis SVM's Ethics course, which teaches students about the 5 Freedoms and the Domains of Welfare.

8. Does your veterinary school curriculum address how animal health is impacted by climate-related changes in water availability and quality?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** by the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***2 points.***
Vet 401 (Basic Foundations), Lecture 67: Veterinary Public Health - includes one slide that mentions how water resources are finite and threatened by climate change.
Vet 406 (Pharmacology and Toxicology), Lecture 6: Toxic Plants - mentions drought as a contributing factor to plant poisoning in grazing animals with explicit mention of pyrrolizidine alkaloids generally only being consumed in drought conditions.
Vet 406 (Pharmacology and Toxicology), Lecture 39: Algal Toxins - includes one slide covering how climate change is a cause of harmful algal blooms.
Vet 413 (Infectious Disease), Lecture 22: Protozoa Part 2 - mentions contaminated water and food as a source of protozoal disease, but no link to climate change (i.e., how drought conditions can force consumption of water that animal would have otherwise avoided).
Vet 414 (Population Health), Lectures 9 & 10 - frequent mention of how contaminated water can lead to diarrhea, but no link to climate change (i.e., how drought conditions can force consumption of water that animal would have otherwise avoided).

Vet 414, Lecture 21: Climate Change and One Health - includes one slide on water quality, focused on harmful algal blooms.
Vet 435C, Water Quality and Life Support Systems - a lecture only available to students in their third year who have chosen the Zoo Track.

9. Does your veterinary school curriculum address how climate change can threaten the production, quality, and access to food for animals?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***1 point.***
Vet 401 (Basic Foundations), Lecture 67: Veterinary Public Health - includes one slide that mentions how water resources are finite and threatened by climate change, and subsequent impacts on food security.
Vet 406 (Pharmacology and Toxicology), Lecture 6: Toxic Plants - mentions drought as a contributing factor to plant poisoning in grazing animals with explicit mention of pyrrolizidine alkaloids generally only being consumed in drought conditions.
Vet 406 (Pharmacology and Toxicology), Lecture 6: Mycotoxins - lists climate change as one contributing factor to mycotoxins in food.

10. Does your veterinary school curriculum address the outsized impact of *climate change* on marginalized populations (e.g., low SES, women, communities of color, Indigenous communities, children, unhoused populations, and older adults) and indirectly the animals in their care?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***0 points.***
There is no mention of this subject in the curriculum.

11. Does your veterinary school curriculum address the unequal regional health impacts of climate change globally?	
3	This subject was addressed **in depth** by the **core** curriculum.

2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***1 point.***
Some lectures reference regional disease (e.g. "Ebola is prevalent here.") but not a relationship to climate change. Examples of this, Vet 401 (Basic Foundations), Lecture 63: Mechanisms of Disease and Transmission and Vet 414 (Population Health), Lecture 11: Emerging Zoonoses.
Vet 414, Lecture 26: Disease Emergence in the 21st Century - one slide discussing that the burden of zoonotic disease falls on poor livestock keepers.

12. Does your veterinary school curriculum address how climate change can affect inherently vulnerable animal populations (e.g., endangered species, immunocompromised species, fragmented wildlife populations)?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***1 point.***
Vet 401 (Basic Foundations), Lecture 67: Veterinary Public Health - includes one slide about biodiversity and ecosystem services and mentions threatened species.
Vet 414 (Population Health), Lecture 1: Vaccination as a Conservation Tool for the Endangered Hawaiian Monk Seal - includes one slide that mentions rising sea levels and inadequate prey availability as reasons for poor juvenile survival, along with other factors that are the result of human actions.

Curriculum: Environmental Health & the Effects of Anthropogenic Toxins on Human Health

13. Does your veterinary school curriculum address the health effects of anthropogenic toxins (e.g., pollution, pesticides) on animal health?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).

0	This subject was not covered.

Score explanation: ***3 points.***
Vet 411 (Dermatology), CBL 1: Skin and its Function - includes one slide about how pollutants can be absorbed through amphibian skin, and a 14-slide section about oil spills and their health impacts on birds.
Vet 406 (Pharmacology & Toxicology), Lecture 22: Toxicology: Minerals and Metals - mentioned anthropogenic sources of metal exposure. Includes some example cases with animals accessing toxic levels of metals by eating from litter heaps from broiler chicken farm (caused by human dumping behavior), environmental zinc exposure due to mine tailings, lead from lead shot impacting condors, crankcase oil burning that causes lead intoxication in steer.
Vet 406 (Pharmacology and Toxicology), Lecture 39: Algal Toxins - includes multi-slide discussion about impacts of climate and fertilizer runoff on harmful algal blooms.
Vet 435C, Lectures on Wildlife Toxicology: Natural and Non-Natural Toxins; Wildlife Toxicology: Microplastics; and a Lab on Oiled Wildlife Triage and care. These learning experiences only available to students in their third year who have chosen the Zoo Track.

14. Does your <u>veterinary school</u> curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, <u>or</u> in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***0 points.***
The curriculum does not cover this subject.

15. Does your <u>veterinary school</u> curriculum address the outsized impact of anthropogenic environmental toxins on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, Indigenous populations, and older adults and indirectly the animals in their care?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, <u>or</u> in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.

Score explanation: ***0 points.***

The curriculum does not cover this subject.

Curriculum: Sustainability

16. Does your <u>veterinary school</u> curriculum address educating clients on environmental and health co-benefits of a healthy animal's diet (e.g., seaweed in ruminant diets to reduce methane emissions, the difference between CO2 emissions in production of dry vs. wet dog food)?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, <u>or</u> in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.
Score explanation: ***1 point.*** Vet 406 (Nutrition and Pharmacology), Lecture 31-32: Introduction to Ruminant Nutrition - explored high-forage diet vs. high-grain diet and their respective methane emissions but was not explicitly linked to climate change and greenhouse gasses.	

17. Does your <u>veterinary school</u> curriculum address the carbon footprint of vetcare systems?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, <u>or</u> in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.
Score explanation: ***1 point.*** Vet 415 (Clinical Skills), Lecture 35: Anesthesia Maintenance Agents - includes one slide about how the use of inhaled anesthetics for anesthesia induction releases greenhouse gasses into the environment. Throughout Vet 415, instructors emphasize the importance of scavenging systems to prevent greenhouse gas off-gassing.	

18. Does your <u>veterinary school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (points for each)	
2	The health **and** environmental **co-benefits** of **avoiding** over-medicalisation, over-investigation and/or over-treatment

2	The environmental impact of **pharmaceuticals** and over-prescribing as a cause of climate health harm. Alternatively teaching on **deprescribing** where possible and its environmental and health co-benefits would fulfill this metric.
1	The health **and** environmental **co-benefits** of **non-pharmaceutical management** of conditions where appropriate such as exercise, physical therapy, mental stimulus, and enrichment.
1	Environmental impact of **surgical** healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of **anesthetic** gasses on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anesthesia or choosing less environmentally harmful anesthetic gas options with reduced greenhouse gas emissions
1	The impact of **veterinary-medicine-produced toxins** on the environment (e.g. barbiturates from buried animals, drugs used in food animals)
1	**Waste production** within healthcare **clinics** and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)

Score explanation: ***4 points.***
Vet 406 (Pharmacology, Toxicology, and Nutrition), Lecture 33-34: Toxicology of Insecticides - mentions that pesticides impact the environment but does not specify what those impacts are beyond a picture of the book "Silent Spring."
Vet 414 (Population Health), Lecture 6: Food and Feed, Additives to Control Pathogens - discusses antibiotic stewardship and the increase in antimicrobial resistance due to antibiotic use in livestock.
In Vet 417 (Professional and Clinical Skills), a reading assignment titled "Euthanasia in Veterinary Practice" discusses the risk of environmental contamination when disposing of an animal euthanized using controlled drugs, including groundwater contamination and potential for wildlife death and disease.
Vet 415 (Clinical Foundations), Lecture 34: Drug Induction - mentions that anesthetic gasses are greenhouse gasses and emphasizes the importance of scavenging systems to prevent pollution.

19. To what extent does your <u>veterinary school</u> emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
3	Indigenous knowledge and value systems are **integrated throughout** the veterinary school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included at **a moderate depth** in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included **briefly** in the core curriculum or in any depth in **elective** coursework.
0	This topic was **not** covered.

Score explanation: ***0 points.***
Not covered in the curriculum.

20. Does your veterinary school curriculum address/demonstrate how to be environmentally sustainable in your hospital operations?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.
Score explanation: ***0 points.*** Not covered in the curriculum.	

21. Does your veterinary school curriculum address the impact of climate change on access to veterinary care?	
3	This subject was addressed **in depth** by the **core** curriculum.
2	This subject was **moderately** addressed by the **core** curriculum.
1	This subject was addressed **briefly** in the **core** curriculum, or in any depth by other non-core learning experiences (e.g., elective coursework).
0	This subject was not covered.
Score explanation: ***0 points.*** Not covered in the curriculum.	

Curriculum: Client Communication Applications

22. Does your veterinary school's curriculum introduce strategies to have conversations with clients about the health effects of climate change?	
2	Yes, a **comprehensive list of strategies** are introduced for having conversations with patients about climate change in the **core** curriculum.
1	Yes, some strategies are introduced for having conversations with patients about climate change in the core coursework, or at any depth in elective coursework.
0	No strategies introduced for having conversations with patients about climate change
Score explanation: ***0 points.*** Not covered in the curriculum.	

23. In training for client encounters, does your <u>veterinary school's</u> curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the **core** curriculum includes a **comprehensive** exploration of strategies for taking an environmental history.
1	Yes, the **core** curriculum includes **some strategies** for taking an environmental history (or in any depth in the elective curriculum).
0	No, the curriculum does **not** include strategies for taking an environmental history.
Score explanation: ***2 points.*** In Vet 400 (Doctoring Course), there are a series of lectures on history-taking in preparation for client simulation labs. These lectures encourage students to ask clients questions about place of residence over the animal's life, travel history, visits to locations with other animals (i.e., dog parks), toxin exposure, tick exposure, and diet history. However, there isn't content explicitly encouraging students to ask about water sources or exposure to air pollution.	

24. Does your veterinary school's curriculum introduce strategies to discuss protection of animals from environmental harms? (eg: disaster planning preparedness, animal management during smoke events)	
2	Yes, the **core** curriculum includes strategies for discussing protection of animals from environmental harms.
1	Yes, the **core** curriculum includes **some strategies** for discussing protection of animals from environmental harms.
0	No, the curriculum does **not** include strategies for discussing protection of animals from environmental harms.
The examples here were the same as the examples from #22.	
Score explanation: ***0 points.*** Not covered in the curriculum.	

Curriculum: Administrative Support for Planetary Health

25. Is your <u>veterinary school</u> currently in the process of implementing or improving Education for Sustainable Vetcare (ESV)/planetary health education?	
4	Yes, the veterinary school is currently in the process of making **major** improvements to ESV/planetary health education.

2	Yes, the veterinary school is currently in the process of making **minor** improvements to ESV/planetary health education.
0	No, there are **no** improvements to planetary health education in progress.

Score explanation: ***0 points.***
To our knowledge, there are no plans in place to broaden the planetary health offerings in the veterinary school curricula.

26. How well are the aforementioned planetary health/Education for Sustainable Vetcare topics integrated longitudinally into the core curriculum?	
6	Planetary health/ESV topics are **well integrated** into the core veterinary school curriculum.
4	**Some** planetary health/ESV topics are appropriately integrated into the core veterinary student curriculum.
2	Planetary health/ESV is not integrated and is primarily addressed in **(a) standalone lecture(s).**
0	There is **minimal/no** education for sustainable healthcare.

Score explanation: ***2 points.***
The majority of the lectures that address planetary health are concentrated in VET 414 (Population Health), the population health week of VET 401 (Basic Foundations), and some lectures in VET 406 (Pharmacology, Toxicology, Nutrition). Students who elect to participate in the Zoo Track in their third year also receive more robust instruction about planetary health.

27. Does your veterinary school employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable vetcare as a theme throughout the course?	
1	**Yes,** the **veterinary school** has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	**No**, the **veterinary school** does **not** have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.

Score explanation: ***0 points.***
Although UC Davis' SVM has a Planetary Health Center of Expertise Team as part of the One Health Institute, these faculty members do not give input into the SVM curriculum that we are aware of, and are instead more focused on research and curating elective, extracurricular educational experiences for interested students.

Section Total (31 out of 86)	**36%**

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Interdisciplinary Research

Section Overview: ***This section evaluates the quality and quantity of interdisciplinary planetary health research at the veterinary school and broader institution.*** *Interactions between health and the environment are complex and multifactorial. While climate change has been extensively studied from an environmental science perspective, planetary health is an emerging field. As leading health institutions with talented researchers and research resources, veterinary schools should fund research studying the health effects of climate change and anthropogenic environmental toxins. This obligation is particularly strong because the public and policymakers are more attentive to climate change when its implications for human health are emphasized.*

1. Are there researchers engaged in planetary health research and vetcare sustainability research at your veterinary school?	
3	Yes, there are faculty members at the **veterinary school** who have a **primary** research focus in planetary health **or vet**care sustainability.
2	Yes, there are individual faculty members at the **veterinary school** who are conducting research **related** to planetary health or vetcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or vetcare sustainability researchers at the **institution**, but none associated with the veterinary school.
0	No, there are **no** planetary health and/or vetcare sustainability researchers at the **institution** or **veterinary school** at this time.
Score explanation: ***3 points****.* UC Davis' School of Veterinary Medicine's One Health Institute is a very robust research entity; the One Health Institute "is active all over the world, working at the interface of animals, people, plants, and the environment to solve complex problems that impact health and conservation." Researchers throughout this institute are working on issues of planetary health as they relate to animal and human health.	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?	
3	There is **at least one** dedicated department or institute for interdisciplinary planetary health research.
2	There is **not currently** a department or institute for interdisciplinary planetary health research, but there are **plans** to open one in the next 3 years.
1	There is an **Occupational and Environmental Health department**, but no interdisciplinary department or institute for planetary health research.
0	There is **no** dedicated department or institute.
Score explanation: ***3 points.***	

The UC Davis School of Veterinary Medicine One Health Institute is an institute for interdisciplinary planetary health research.

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your veterinary school?	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have **decision-making power** in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice **advise** the climate + environmental research agenda.
1	**No**, but there are **current efforts** to establish a process for community members to advise or make decisions on the research agenda.
0	There is **no** process, and **no** efforts to create such a process.

Score explanation: ***0 points.***
There is not currently a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at the veterinary school.

However, there are individual projects and initiatives within the One Health Institute that have processes through which disproportionately impacted communities can give input and make decisions about the research agenda. Examples are mentioned in the list below. These projects set a valuable example for how a larger effort to gather community feedback to set the school's research agenda could be structured.

- The HALI Project: "The Health for Animals and Livelihood Improvement (HALI) Project is a collaborative research and capacity-building program investigating the interactions among humans, animals, and their shared environments in Tanzania…An international team of researchers, professionals, students, volunteers and community members, HALI is led by Drs. Brian Bird, Woutrina Smith, and Rudovick Kazwala."
- Crimean-Congo Hemorragic Fever Virus Ecology, Detection, and Modeling: "Led by the One Health Institute, this project builds scientific workforce capacities through training in vector, livestock, and wildlife sampling and surveillance for Crimean-Congo hemorrhagic fever virus (CCHFV) and other high-priority zoonotic pathogens in partnership with the United States Department of Agriculture National Bio and Agro Defense Facility (NBAF)."
- Lead Pollution from Ammunition in Argentina: "Lead pollution from hunting ammunition is increasingly recognized as a significant local problem, impacting wildlife, aquatic and terrestrial habitats, and extending to vulnerable human rural communities…In our study sites, communities are acutely aware of daily shootings from hunting, but much less so about the negative impacts that current unsustainable practices are having on their natural surroundings and their own health. Hence, over time we have [bolstered] efforts to build a knowledgeable community-based constituency. The expectation is that these empowered and conservation-minded communities will then push the lead-ammunition agenda forward from a genuine and locally embedded concern about their immediate environs. Our community interventions take place under the Community-based Territory Conservation Program (CTCP)...The program's focus is on wetlands at risk from anthropogenic actions, including but not limited to unsustainable hunting. Wetlands are used as open classrooms to develop ecological literacy, thus positively reinforcing community ownership and enabling explicit participatory and community-driven interventions to halt pollution and biodiversity loss."

- One Health Workforce: Next Generation: "The One Health Workforce-Next Generation project supports the Africa One Health University Network (AFROHUN) and Southeast Asia One Health University Network (SEAOHUN) in building scalable and sustainable systems that train and empower human resources to combat complex and dynamic global health threats in the world's most vulnerable areas for disease emergence."

4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?	
3	There is an **easy-to-use, adequately comprehensive** website that **centralizes** various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that **attempts to centralize** various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The **institution** has an **Office of Sustainability website** that includes **some** resources related to health and the environment.
0	There is **no** website.
Score explanation: ***3 points.*** See the UC Davis School of Veterinary Medicine's One Health Institute website. There is also a website for the University of California Center for Planetary Health.	

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	Yes, the **veterinary school** has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the **institution** has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the **institution** has hosted a conference on topics related to planetary health in the past three years.
1	The **institution** has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the **institution** has not hosted a conference on topics related to planetary health in the past three years.
Score explanation: ***4 points.*** In October 2023, the One Health Institute and the UC Davis SVM Students for One Health Club co-hosted their 10th Annual One Health Symposium, with the subject "Together, Student Leaders Face the Climate Crisis."	

6. Is your veterinary school a member of a national or international planetary health or ESV organization?	
1	Yes, the veterinary school is a member of a national or international planetary health **or** ESV organization
0	No, the veterinary school is **not** a member of such an organization
Score explanation: ***1 point.*** The UC Davis One Health Institute is a member of the Planetary Health Alliance.	

Section Total (14 out of 17)	**82%**

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Community Outreach and Advocacy

Section Overview: ***This section evaluates veterinary school engagement in community outreach and advocacy efforts associated with planetary health.*** *Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of color. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.*

1. Does your veterinary school partner with community organizations to promote planetary and environmental health?	
3	Yes, the **veterinary school** meaningfully partners with **multiple** community organizations to promote planetary and environmental health.
2	Yes, the **veterinary school** meaningfully partners with **one** community organization to promote planetary and environmental health.
1	The **institution** partners with community organizations, but the veterinary school is not part of that partnership.
0	No, there is **no** such meaningful community partnership.

Score explanation: ***3 points.***
The veterinary school has multiple initiatives that rely on meaningful partnerships with community organizations to promote planetary and environmental health.

- Many of the access to care clinics that the veterinary school organizes include environmental health as one of the foci for the preventative medicine and care that they offer to clients and patients. The Knight's Landing One Health Clinic is one example of such a partnership. The Knight's Landing One Health Clinic was born thanks to "Grupo de Mujeres, a Knights Landing women's group that came together to discuss and advocate for the needs of their community." This group first advocated for a human health care clinic; this clinic grew to include veterinary care shortly thereafter. The veterinary school offers no-cost veterinary care to clients and patients in this community. Dr. Kristin Jankowski, medical director for the Knight's Landing Clinic and Access to Care service chief at the UC Davis veterinary hospital, has intentionally partnered with the One Health Institute to incorporate environmental health into the considerations of care that patients at this clinic receive.
- The Summer Work Experience Program is "is coordinated by the UCGHI Planetary Health Center of Expertise at the UC Davis One Health Institute, in partnership with the University of California Division of Agriculture and Natural Resources (UC ANR) Cooperative Extension and other host organizations." In partnership with a variety of community organizations, this program offers veterinary students (and graduate students in other programs) an opportunity to work in their communities "on projects related to natural resources, agriculture, climate change, health and nutrition, youth development and environmental policy." Examples of previous projects within this program include:

- "Developing and delivering outreach and educational material for youth, families, and community programs.
- Assisting with research to investigate vector borne diseases, assess resource utilization and improve farming practices in California."

2. Does your veterinary school offer community-facing courses or events regarding planetary health?	
3	The **veterinary school** offers community-facing courses or events at least once every year.
2	The **veterinary school** offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The **institution** has offered community-facing courses or events, but the **veterinary school** was not involved in planning those courses or events.
0	The **institution/veterinary school** have not offered such community-facing courses or events.

Score explanation: ***2 points.***
The One Health Institute's Annual Symposium is an open-access, virtual event, but it is not primarily created for a community audience. The symposium is offered in a virtual format to facilitate people joining from international communities. Sustainable UC Davis (the sustainability entity for the university as a whole) does offer some events for community involvement, like regular tabling at the local farmer's market, Earth Day and Earth Week events, and regular town hall events.

3. Does your veterinary school have regular coverage of issues related to planetary health and/or sustainable vetcare in university update communications?	
2	Yes, all students **regularly** receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are **sometimes** included in communication updates.
0	Students **do not** receive communications about planetary health or sustainable healthcare.

Score explanation: 2 ***points.***
The UC Davis SVM One Health Institute employs a staff person whose role is to ensure news from the One Health Institute reaches students in the veterinary school and beyond. This individual, Eunah Cho Preston, includes issues related to planetary health in channels across the veterinary school, from e-newsletters to social media and beyond.
UC Davis SVM community members receive regular "SVM in the News" e-mail updates, which occasionally include planetary health topics. For example, the July 26th, 2023 edition included an article about heat related illness in pets.

4. Does the institution or main affiliated hospital trust engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable vetcare remain up to date during their professional career?	
2	Yes, the **institution** or **main affiliated hospital trust** offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the **institution** or **main affiliated hospital trust** offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers.
0	There are **no** such accessible courses for post-graduate providers

Score explanation: ***1 point.***
UC Davis SVM hosts an annual Wildlife and Aquatic Animal Medicine Symposium, where post-graduate attendees can receive continuing education credits for attending. There is, on average, one planetary health focused session included in this symposium per year. Examples of past sessions related to planetary health include: "A One Health Perspective on Wildlife Disease Surveillance" and "Oil Spill Medicine: Lessons Learned."

5. Does your veterinary school or its primary affiliated hospital have accessible educational materials for patients about environmental health exposures?	
2	Yes, **all** affiliated hospitals have accessible educational materials for patients.
1	**Some** affiliated hospitals have accessible educational materials for patients.
0	**No** affiliated veterinary centers have accessible educational materials for patients.

Score explanation: ***0 points.***
The UC Davis Veterinary Medical Teaching Hospital has a number of resources available for clients related to environmental health exposures in their animals. Some examples are listed below.

- Heat Related Illness in Dogs
- Rocky Mountain Spotted Fever in Dogs (with mention of climate change expanding disease range)
- Wildfire Smoke and Horses
- Equine Neuroaxonal Dystrophy (eNAD) and Equine Degenerative Myeloencephalopathy (EDM) (mention of Vitamin E sources in pasture decreasing in drought)
- Raptors and Rodenticides
- Keeping Horses Healthy in Hot Weather

6. Does your veterinary school or its primary affiliated hospital have accessible educational materials for patients about climate change and health impacts?	
2	Yes, **all** affiliated hospitals have accessible educational materials for patients.
1	**Some** affiliated hospitals have accessible educational materials for patients.

0	**No** affiliated hospitals have accessible educational materials for patients.

Score explanation: ***1 point.***
There are client-facing educational resources that mention climate change as a driver for the health impact that the educational material covers (see examples below), but no resources that we are aware of with climate change as the primary subject of the resource.

- Rocky Mountain Spotted Fever in Dogs (with mention of climate change expanding disease range)

There are other available client resources where the condition mentioned is related to, and will become worse, with climate change, but the resource does not mention climate change. There are therefore opportunities to improve these resources and empower clients with information about how these conditions will become more severe with time. Examples: Heat Related Illness in Dogs; Wildfire Smoke and Horses; and Keeping Horses Healthy in Hot Weather.

Section Total (11 out of 14)	**79%**

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Support for Student-Led Planetary Health Initiatives

Section Overview: ***This section evaluates institutional support for student-led planetary health initiatives, such as funding, fellowships, programming, and student groups.*** *Planetary health is a young field and, as young people facing a future deeply shaped by climate change, students are often some of the first at an institution to engage with it. Institutions should provide support for students to engage in sustainability quality improvement (QI) initiatives, discover mentors in their area of interest, and receive funding for planetary health projects.*

1. Does your veterinary school or your institution offer support for veterinary students interested in enacting a sustainability initiative/QI project?	
2	Yes, the **veterinary school** or **institution** *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum.
1	The **veterinary school** or **institution** encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, **but** there is no student funding available and there is no requirement to participate.
0	No, **neither** the veterinary school or the institution offer opportunities or support for sustainability initiatives or QI projects.
Score explanation: ***2 points.*** Through the Green Initiative Fund, UC Davis Sustainability offers grants for members of the UC Davis community to enact a sustainability project. The project must benefit undergraduate students, but graduate and professional students, as well as faculty and staff, may apply. The UC Davis Global Affairs office, with other offices on campus, offer grants for large-scale sustainability projects via the Advancing UN Sustainable Development Goals program.	

2. Does your institution offer opportunities for veterinary students to do research related to planetary health and/or sustainable vetcare?	
2	The **institution** has a **specific** research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these **require student initiative** to seek these out and carry them out in their spare time.
0	There are **no opportunities** for students to engage in planetary health/sustainable healthcare research.
Score explanation: ***2 points.*** UC Davis SVM offers the Students Training in Advanced Research (STAR) grants over the summer. A student can choose to do their research in a sustainability-related project. Sustainability-related areas of research available include Aquatic Health/Ecotoxicology and Global Health. Additionally, students can do research throughout the school year at their own initiative, with labs studying a variety of sustainability topics - the UC Davis School of Veterinary Medicine One Health	

Institute in particular conducts significant research in sustainability. Specific training programs within the One Health Institute include Rx One Health and a One Health Fellowship.

3. Does the veterinary school have a webpage where veterinary students can find specific information related to planetary health and/or sustainable vetcare activities and mentors within the veterinary school? For example, projects achieved, current initiatives underway at the veterinary school and/or contact of information of potential mentors.	
2	The **veterinary school** has a webpage with specific information related to planetary health or sustainable healthcare that includes up-to-date information on relevant initiatives and contact information of potential mentors.
1	There is a **veterinary school** webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the veterinary school, but it lacks key information.
0	There is **no veterinary-school** specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.
Score explanation: ***2 points.*** The UC Davis SVM STAR Research Program webpage allows users to sort potential mentors by research topic. For example, students interested in ecotoxicology can sort results to include only profiles for the faculty currently accepting mentees. This webpage details each faculty person's research interests and active projects.	

4. Does your veterinary school have registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?	
2	Yes, there is a student organization **with faculty support** at my veterinary school dedicated to planetary health or sustainability in vetcare.
1	Yes, there is a student organization at my veterinary school dedicated to planetary health or sustainability in vetcare but it **lacks faculty support.**
0	No, there is **not** a student organization at my institution dedicated to planetary health or sustainability in vetcare.
Score explanation: ***1 point.*** Green Task Force is a student-led sustainability task force operating within the UC Davis chapter of the Student American Veterinary Medical Association (SAVMA). This task force works with students, faculty, and staff to improve the sustainability of vet school operations, and to increase student awareness about the relevance of sustainability to the veterinary profession. The Green Task Force also works to builds partnerships with local sustainability organizations, like the Putah Creek Council and the Davis Bike Collective. While the Green Task Force does not have an assigned faculty mentor, there are faculty who partner with students to support Green Task Force initiatives, like Dr. Karl Jandrey.	

5. Is there a student liaison representing sustainability interests who serves on a veterinary school or institutional decision-making council to advocate for curriculum reform and/or sustainability best practices?	
1	Yes, there is a student representative that serves on a veterinary school or institutional decision-making council/committee.
0	No, there is no such student representative.
Score explanation: ***1 point.*** Green Task Force is a member of the UC Davis SVM SAVMA Board, and has one vote at monthly meetings and other as-needed voting events.	

6. In the past year, has the institution had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)	
1	Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.
1	Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
1	Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.
1	Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
1	Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)

Score explanation: ***6 points.***

- UC Davis has a student farm, whose mission is to "hold a space where students can learn, practice, and model an ecologically, socially, and economically sustainable agriculture and food system. The Student Farm welcomes all students to build this more equitable and just farm and food system by cultivating student initiatives, leadership, experiential learning, and inclusive communities."
- In 2024, the UC Davis SVM Students for One Health Club hosted a "Pandemic Night" event with a climate change focus: "Pandemic Night is an opportunity for students to learn about climate change, sustainability, and public health in relation to veterinary medicine directly from veterinarians involved in One Health. This event will feature a guest speaker, Dr. Diccon Westworth BVSc, DACVIM (Neurology), Director of Veterinary Sustainability Alliance. Dr. Westworth will be giving a presentation on sustainability in veterinary practice, the effects of climate change on the profession, and the impact of healthcare on the environment."
- The UC Davis Environmental and Climate Justice Hub "provides a central place to coordinate and enhance research, teaching, and outreach activities that address environmental and climate

change injustices – with a focus on building collaborations with Indigenous communities and Nations. Our goal is to offer students unique experiential learning opportunities that encourage them to develop new skills and engage in meaningful scholarship."

- UC Davis Sustainability has intermittent art events related to planetary health; examples include:
    - Sketch Sustainability with Pete Scully - "Since 2019, UC Davis Sustainability has celebrated Earth Month with a Sustainability Sketch Crawl. Participants enjoy a short sketching tutorial with renowned urban sketch artist Pete Scully, and then sketch things around them related to sustainability.
    - Tempestry Textile Art Display - UC Davis Sustainability recruited volunteers to create a textile display that represents 50 years of climate change from 1970 to 2020. Each temperature tapestry represents a year of daily high temperatures in Davis, CA.
- The Climate Reality Project at UC Davis offers a variety of projects for UC Davis community members to volunteer locally to build community resilience to anthropogenic environmental impacts. Example projects include:
    - K-12 Climate Education at Cesar Chavez Elementary and MLK High School
    - Climate victory garden establishment and maintenance
    - Plant Powered People - an initiative to encourage UC Davis dining to offer more plant-based meal options
- UC Davis Campus Center for the Environment offers opportunities for students to volunteer in support of their sustainability initiatives, which includes Project Compost, Project Challenge (a climate education initiative), and ASUCD Gardens (a sustainable gardening initiative).
- UC Davis has an outdoors club for outdoor activities, a birdwatching club, and several other similar organizations. Also, the UC Davis Recreation Center offers subsidies for students to take hiking, backpacking, kayaking, trips etc. at no cost.

Section Total (14 out of 15)	**93%**

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Campus Sustainability

Section Overview: ***This section evaluates the support and engagement in sustainability initiatives by the veterinary school and/or institution.*** *The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavor, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinizing every aspect of how our systems operate, from where we source our energy, to how we build our infrastructure, to what companies we invest in. Our veterinary schools, clinics, and hospitals must set the standard for sustainable practices, and show other sectors what is possible when it comes to minimizing environmental impact.*

1. Does your veterinary school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is **at least one designated staff member** for sustainability at the hospital and/or veterinary school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but **no specific staff member** in charge of veterinary school and/or hospital sustainability.
1	There are **no salaried sustainability staff,** but there is a sustainability task force or committee
0	There are **no** staff members **or** task force responsible for overseeing campus sustainability
Score explanation: ***2 points.*** UC Davis main campus has an office of sustainability (UC Davis Sustainability) with three full time staff people and 8 part time student staff people. UC Davis Health (the MD program) has an office of sustainability (UC Davis Health Sustainability) staffed by a Director of Sustainability. There is no Office of Sustainability specific for the School of Veterinary Medicine.	

2. How ambitious is your institution/veterinary school plan to reduce its own carbon footprint?	
5	The institution/veterinary school has a **written and approved plan** to achieve carbon neutrality by **2030**
3	The institution/veterinary school has a **written and approved plan** to achieve carbon neutrality by **2040**
1	The institution/veterinary school has a stated goal of carbon neutrality by **2040** but has **not created a plan** to reach that goal or the **plan is inadequate**
0	The institution/veterinary school does **not** meet any of the requirements listed above
Score explanation: ***5 points.*** All University of California schools have plans to be carbon neutral by 2025. UC Davis has written and approved plans specific to the school. As of December 2023, UC Davis has a published Fossil	

Fuel-Free Pathway Plan,"the first of its kind undertaken by a University of California campus and one of the earliest comprehensive plans in the U.S. higher education sector."

3. Do buildings/infrastructure used by the veterinary school for teaching (not including the hospital) utilize renewable energy?	
3	Yes veterinary school buildings are **100%** powered by renewable energy
2	Veterinary school buildings source **>80%** of energy needs from off-site and/or on-site renewable energy.
1	Veterinary school buildings source **>20%** of energy needs from off-site and/or on-site renewable energy.
0	Veterinary school buildings source **<20%** of energy needs from off-site and/or on-site renewable energy.
Score explanation: ***1 point.*** Of the four buildings used for teaching veterinary students, only one (Gladys Valley Hall) is LEED certified, with a requirement that at least 20% of its energy sources come from renewable energy. The veterinary school campus' energy mix mirrors that of the main campus, where 57% of electricity is sourced from renewable resources (wind, solar photovoltaic, and hydro), with 41% coming from "unspecified generation sources from utilities, including Western Area Power Administration, with which UC Davis contracts for a portion of our total electricity procurement." In contrast, 99.66% of the energy used for heating campus buildings comes from natural gas sources - UC Davis is actively working to replace its heating system with one that runs on renewable energy rather than natural gas, via a project called The Big Shift.	

4. Are sustainable building practices utilized for new and old buildings on the veterinary school campus, with design and construction of new buildings and remodeling of old buildings conforming to a published sustainability rating system or building code/guideline?	
3	Yes, sustainable building practices are utilized for new buildings on the veterinary school campus and the **majority** of old buildings **have been retrofitted** to be more sustainable.
2	Sustainable building practices are utilized for new buildings on the veterinary school campus, but most old buildings have **not been retrofitted.**
1	Sustainable building practices are **inadequately or incompletely** implemented for new buildings.
0	Sustainability is **not considered** in the construction of new buildings.
Score explanation: ***2 points.*** All recent construction on the veterinary medicine campus is LEED certified gold or higher - per University of California policy that requires this of new construction. The majority of buildings on the veterinary campus require retrofitting to meet LEED standards, and the university is actively working on major updates to most campus buildings under the Veterinary Medical Center project.	

5. Has the veterinary school implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?	
2	Yes, the veterinary school has implemented strategies to encourage and provide **environmentally-friendly transportation options** such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The veterinary school has implemented **some** strategies to provide environmentally-friendly transportation options, but the options are **unsatisfactorily** accessible or advertised.
0	The veterinary school has **not** implemented strategies to encourage and provide environmentally-friendly transportation options.

Score explanation: ***2 points.***
There is excellent biking infrastructure in Davis, and there are ample bike racks outside of all buildings on the vet school campus. However, there are not active initiatives to promote bicycling among students by the veterinary school. The UC Davis campus as a whole, however, does have a robust program to support biking among students: an on-campus Bike Barn sells bicycles and offers repair services; there is an annual bicycle auction where abandoned bicycles are auctioned at affordable prices; and the Helmet Hair, Don't Care program offers students free bicycle helmets.
There are no transit passes available through the veterinary school. UC Davis Transportation Services offers the Causeway Connection, a free zero-emissions bus service connecting UC Davis main campus and the UC Davis medical school campus in Sacramento.
The veterinary school does not specifically offer carpooling support. The Green Task Force and the Shelter Medicine Club (both veterinary student-led initiatives) have joined forces and received funding from UC Davis SAVMA to pilot a program where students who carpool to access to care clinics are reimbursed for their fuel costs.

6. Does your veterinary school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?	
2	Yes, the veterinary school has both compost and recycling programs accessible to students and faculty.
1	The veterinary school has **either** recycling **or** compost programs accessible to students and faculty, but not both.
0	There is **no** compost or recycling program at the veterinary school.

Score explanation: ***2 points.***
There are recycling bins available throughout the veterinary school campus, paired with garbage bins in almost every instance. There are organics recycling bins in the on-campus veterinary cafe (paired with garbage and recycling bins), but no organics recycling bins available anywhere else on campus. There are also two "recycling multi-bins" on the veterinary campus, which accept electronic waste like batteries, defunct electronics, and inkjet cartridges for recycling.
There is a plan for medical waste management for all UC Davis medical facilities (MD, nursing, and DVM programs) as well as a specific plan for the Medical Center (part of the MD program) sewage waste. However, these plans are primarily for biomedical waste management, and are written with the intention to mitigate hazards rather than to reduce waste produced.

7. Does the veterinary school apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
3	Yes, the veterinary school has **adequate** sustainability requirements for food and beverages, including meat-free days or no red-meat, and **is engaged** in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are **insufficient or optional**. The veterinary school **is engaged** in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are **insufficient or optional.** The veterinary school is **not** engaged in efforts to increase food and beverage sustainability.
0	There are **no** sustainability guidelines for food and beverages.

Score explanation: ***3 points.***
The UC Davis SVM only has one food option on campus, Scrubs Cafe. Scrubs Cafe is overseen by Student Housing and Dining Services. The below information therefore extends to operations at Scrubs Cafe.
In fiscal year 2021-22, 10.22% of UC Davis food and beverage expenditures were on sustainable or ethically produced products, and 34.11% were on plant-based foods. UC Davis is a certified Fair Trade Campus. The UC Davis Student Housing and Dining Services "have developed a relationship with local farmers and the UC Davis Student Farms, to make organic and locally-grown fruits and vegetables available to customers whenever possible."
By 2030, UC Davis has a goal for 25% of food service spending to be for sustainable food products.

8. Does the veterinary school or institution apply sustainability criteria when making decisions about supply procurement?	
3	Yes, the veterinary school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The veterinary school is **engaged** in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The veterinary school is **not engaged** in efforts to increase sustainability of procurement.
0	There are **no** sustainability guidelines for supply procurement.

Score explanation: ***3 points.***
Per the University of California Sustainable Procurement Guidelines, UC schools can only procure supplies from vendors that have sustainability certifications acceptable to the school. Vendors not meeting these standards will not be used by any UC school.

9. Are there sustainability requirements or guidelines for events hosted at the veterinary school?	
2	Every event hosted at the veterinary school **must** abide by sustainability criteria.
1	The veterinary school **strongly recommends or incentivizes** sustainability measures, but they are **not required.**
0	There are **no** sustainability guidelines for veterinary school events.

Score explanation: ***1 point.***
Sustainable UC Davis has a Green Events Checklist to guide event planning with sustainability in mind. This is not a guide specific to the veterinary school, but it is available for the veterinary school to reference.

10. Does your veterinary school have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
2	Yes, the veterinary school has **programs** and **initiatives** to assist with making lab spaces more environmentally sustainable.
1	There are **guidelines** on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are **no** efforts at the veterinary school to make lab spaces more sustainable.

Score explanation: ***2 points.***
UC Davis has a number of initiatives to support labs in improving the sustainability of their operations. Some examples include:

- Green Workplace Certification program: a UC Davis-wide program where labs (and other workspaces) perform a self-assessment and goal-setting exercise with support from Sustainable UC Davis. On the veterinary school campus, labs in the One Health Institute are Gold-level Certified Green, and labs within Campus Veterinary Services are Bronze-level Certified Green.
- The UC Davis Office of Sustainability supports interested labs in enrolling in the annual Freezer Challenge, "an international challenge to improve cold storage management practices for lab freezers and reduce associated energy demand."
- UC Davis has designed, and sells, fume hood sash stickers "to encourage people to 'shut the sash' for both safety and energy savings."
- UC Davis Sustainability has a goal to implement a more robust Green Lab assessment program, and assess three research groups for Green Lab-specific certification.

11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
4	The institution is **entirely divested** from fossil fuels **and** has made a **commitment to reinvest divested funds** into renewable energy companies or renewable energy campus initiatives.
3	The institution is **entirely divested** from fossil fuels.

2	The institution has **partially divested** from fossil fuel companies **or** has made a **commitment to fully divest**, but **currently** still has fossil fuel investments.
1	The institution has **not divested** from fossil-fuel companies, but faculty and/or students are **conducting organized advocacy** for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been **no efforts** to change that.

Score explanation: ***4 points.***
As of May 19, 2020, the University of California is divested from fossil fuels. The University of California sold "holdings in companies that earn more than 10 percent of their revenues from exploring and extracting oil, gas and thermal coal."
The University of California has also made a commitment to reinvest divested funds into renewable energy: "Also in 2019, UC made significant progress toward its five year 2020 goal of investing $1 billion targeting clean energy solutions…UC's commitment of over $725 million over the past four years has contributed to the installation of 4.9 gigawatts of solar and wind generation in the U.S., Canada, Japan, India, the United Kingdom and Mexico."

Section Total (27 out of 32)	**84%**

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Grading

Section Overview
This section focuses on the grading of the report card. The institution received a grade for each of the individual sections as well as an overall institutional grade. Section point totals were tallied, divided by the total points available for the section, and converted to a percentage. The overall institutional grade is a weighted average of the section grades, with curriculum receiving a higher weight owing to its larger number of metrics. Letter grades for each section and the institution overall were then assigned according to the table below.

Letter Grade*	Percentage
A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	0% - 19%

Planetary Health Grades for the UC Davis School of Veterinary Medicine
The following table presents the individual section grades and overall institutional grade for the UC Davis School of Veterinary Medicine on this veterinary-school-specific Planetary Health Report Card.

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	31 (36.0%)	D+
Interdisciplinary Research (17.5%)	14 (82.4%)	A-
Community Outreach and Advocacy (17.5%)	11 (78.6%)	B+
Support for Student-led Planetary Health Initiatives (17.5%)	14 (93.3%)	A+
Campus Sustainability (17.5%)	27 (84.4%)	A-
Institutional Grade	**70.07%**	**B**