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2025

ANNUAL REPORT

RESEARCH,
EDUCATION,
AND OUTREACH



THE CENTER FOR
HUMAN-CARNIVORE COEXISTENCE

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The Center for Human-Carnivore Coexistence (CHCC), an institution housed at Colorado State University (CSU), is focused on integrating transformative science, education, and outreach to minimize conflict and facilitate coexistence between people and carnivores. This annual report summarizes our research, education, and outreach activities during 2025.



THE CENTER FOR
HUMAN-CARNIVORE COEXISTENCE

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CHCC TEAM

In total, 26 CSU faculty members across multiple departments and colleges were members of the CHCC in 2025.

CHCC LEADERSHIP TEAM

- **Director:** Kevin Crooks, Professor, Fish, Wildlife and Conservation Biology (FWCB); carnivore ecology
- **Co-Director:** Jonathan Salerno, Associate Professor, Department of Human Dimensions of Natural Resources (HDNR); human ecology
- **Co-Director:** Mireille Gonzalez; Research Associate, Center for Human-Carnivore Coexistence; Faculty Affiliate, HDNR; social psychology
- **Leadership Team:** Stewart Breck; Research Wildlife Biologist, USDA Wildlife Services; Faculty Affiliate, FWCB; carnivore ecology
- **Leadership Team:** Veronica Yovovich; Assistant Professor, FWCB; CSU Extension; wildlife conservation biology

CHCC FACULTY TEAM

- **Larissa Bailey:** Professor, FWCB; wildlife conservation biology
- **Meena Balgopal:** Professor, Department of Biology; science education
- **Joel Berger:** Barbara Cox Anthony University Chair in Wildlife Conservation, FWCB; wildlife conservation biology
- **Sara Bombaci:** Associate Professor, FWCB; wildlife conservation biology
- **Angela Bosco-Lauth:** Associate Professor, Department of Biomedical Sciences; veterinary and biomedical science
- **Paul Evangelista:** Senior Research Scientist, Natural Resource Ecology Laboratory; landscape ecology
- **Eduardo Gallo Cajiao:** Assistant Professor, HDNR; environmental governance
- **Brian Gerber:** Assistant Unit Leader, Colorado Cooperative Fish and Wildlife Research Unit, FWCB; wildlife ecology
- **Dana Hoag:** Professor, Department of Agricultural and Resource Economics; agricultural economics
- **Rick Knight:** Emeritus Professor, HDNR; wildlife conservation biology
- **Mike Manfredo:** Professor, HDNR; conservation psychology
- **Rebecca Niemiec:** Associate Professor, HDNR; conservation psychology
- **Barry Noon:** Emeritus Professor, FWCB; wildlife conservation biology
- **Courtney Schultz:** Director, School of Global Environmental Sustainability; Professor, Department of Forest and Rangeland Stewardship; political science
- **Ken Shockley:** Professor and Chair, Department of Philosophy, Holmes Rolston III Chair in Environmental Ethics and Philosophy; environmental philosophy
- **Tara Teel:** Department Head, Professor, HDNR; conservation psychology
- **Georgia Titcomb:** Assistant Professor, FWCB; wildlife disease ecology
- **George Wittemyer:** Professor, FWCB; wildlife conservation biology
- **Barb Wolfe:** Associate Professor, Department of Clinical Sciences; veterinary science
- **Robin Young:** Archuleta County Director/Agriculture and Natural Resources Extension Specialist, CSU Extension
- **Jill Zarestky:** Associate Professor, School of Education; adult education





CHCC POSTDOCTORAL FELLOWS AND RESEARCHERS

- **Redae Tesfai:** CHCC Research Associate. Natural Resource Ecology Lab, advised by P. Evangelista. Combating illegal cheetah trafficking for the pet trade.
- **Patricia Tricorache:** CHCC Research Assistant. Natural Resource Ecology Lab, advised by P. Evangelista. Combating illegal cheetah trafficking for the pet trade.
- **Rekha Warrier:** CHCC Postdoctoral Fellow. HDNR, advised by J. Salerno. Interactions among agropastoral households and their environment and the implications for large carnivore conservation in Tanzania.
- **Tom Yamashita:** CHCC Postdoctoral Fellow, FWCB, advised by G. Wittemyer. Human recreation patterns across the American West and its impact on human-wildlife conflict.

CHCC ASSOCIATES

- **Barbra De Mori:** CHCC Associate. Professor, Director, Ethics Laboratory for Veterinary Medicine, Conservation and Animal Welfare. Padua University, Italy. Wildlife and conservation ethics.
- **Mark Ditmer:** CHCC Associate. USFS Research Ecologist, Rocky Mountain Research Station, USFS. Spatial modeling of carnivore habitat suitability and conflict hotspots.
- **Anthony J. Giordano:** CHCC Associate. Chief Conservation Science Officer, S.P.E.C.I.E.S. International carnivore conservation practice and research.
- **Seth Wilson:** CHCC Associate. Executive Director, Blackfoot Challenge. Applied practitioner focused on human-carnivore coexistence.



SOCIAL AND ECOLOGICAL RESEARCH

Conflict between humans and carnivores results from the interaction between people and carnivores. Consequently, solutions to conflict require effective integration of both social and ecological science. A primary goal of the CHCC is to conduct social-ecological research to understand how and where humans and carnivores can coexist and to develop approaches to reduce conflict. We have developed research projects in a variety of systems where coexistence is proving difficult and there is substantial need for interdisciplinary, collaborative efforts to reduce conflict.

RESEARCH PROJECT HIGHLIGHTS

- Rancher sustainability in landscapes with predators, including wolves, bears, and mountain lions in the western U.S. and jaguars and pumas in Colombia
- The role of night-penning livestock for predation reduction
- Grizzly bear interactions with livestock in southwestern Montana
- Wolf and wolverine restoration in Colorado
- Human-black bear coexistence in urban areas in the Western US
- Community-based land stewardship and carnivore conservation in Guatemala
- Tiger, leopard, and sloth bear conflict in India
- Conflict between carnivores and livestock keepers in East Africa
- Tourism impacts on carnivore-prey interactions in South African food webs
- Combating illegal cheetah trafficking in the Eastern Horn of Africa
- Role of carnivores in Chronic Wasting Disease transmission dynamics
- Public perceptions of conflict with wolves in urban areas in Italy
- Co-producing a coexistence and conservation plan for jaguar, puma, hoary foxes, and maned wolves in Brazil
- Studies on the nature of environmental harm



28 SCIENTIFIC PUBLICATIONS

CHCC researchers published a total of 28 scientific publications on carnivores and coexistence in 2025 and over 150 scientific publications since the formation of the Center in 2020.

Abernathy, H. N., Ditmer, M. A., Hibbard, S. B., Lombardi, J. V., Stephenson, T. R., Squires, J. R., Zeller, K. A., Schwartz, M. K., & Wittemyer, G. (2025). A case for human mobility data applications in wildlife management. *Journal of Applied Ecology*, 62, 1636-1646.

Abernathy, H. N., Ditmer, M. A., Stoner, D. C., Hersey, K. R., Schoenecker, K. A., Jackson, P. J., Engebretsen, K. N., Young, J. K., & Wittemyer, G. (2025). Dynamic riskscapes for prey: Disentangling the impact of human and cougar presence on deer behavior using GPS smartphone locations. *Ecography*, e07626.

Benson, J. F., Keiter, D. A., Mahoney, P. J., Allen, B. L., Allen, L., Álvares, F., Anderson, M. L., Barber-Meyer, S. M., Barocas, A., Beasley, J. C., Behrendorff, L., ... & Patterson, B. R. (2025). Intrinsic and environmental drivers of pairwise cohesion in wild *Canis* social groups. *Ecology*, 106(1), e4492.

Breck, S. W., Davis, A., Oakleaf, J. K., Bergman, D. L., Greer, P., & Pipin, K. (2025). Collaboration is essential for reliable conservation modelling: Lessons from the Mexican wolf recovery program and a response to Louchouran et al. (2025). *Journal of Applied Ecology*.

Breck, S. W., Vorster, A. G., Krebs, C., Elzinga, G., Elzinga, C., Evangelista, E., Grandin, T., & Salerno, J. (2025). Transitory night-penning of sheep and cattle for predation protection: Costs, benefits, and challenges. *Rangelands*.

Chiaravalloti, R., Tomas, W., Leimgruber, P., Akre, T., & Giordano, A. J. (2025). Conservation science and practice in the Pantanal: From crisis to hope. *Conservation Science & Practice*, 7(7).

Concone, H. M., Bogoni, J. A., Alberici, V. R., Giordano, A. J., Oliveira-Santos, L. G. R., & de Barros Ferraz, K. M. P. M. (2025). Exploring the drivers of ocelot population density: A systematic review and meta-analysis of methodological and ecological influences. *Mammal Review*.

Cunningham, C. X., Windell, R. M., Wirsing, A. J., Newson, T. M., Ganz, T. R., & Prugh, L. R. (2025). Navigating the risks and rewards of scavenging in multi-predator, human-impacted landscapes. *Ecology*, 106(5), e70090.

Giordano, A. J., Gimenez Baez, D. G., & Mareco, M. (2025). The bush dog *Speothos venaticus* (Lund, 1824) in the Paraguayan cerrado: Recent camera-trapping records confirm presence and persistence in a nationally endangered habitat. *Canid Biology & Conservation*, 27(4).

Gonzalez, M. N., Quartuch, M., & Niemiec, R. (2025). Stakeholder engagement for Colorado wolf reintroduction: Stakeholder-derived measures of success. *Human Dimensions of Wildlife*, 1-17.

Gouda, S. & Giordano, A. J. (2025). Conservation of the sun bear (*Helarctos malayanus*) in northeastern India: The importance of evaluating outreach program effectiveness, and delivering tangible co-benefits to local communities. *Conservation Science & Practice*, e13305.

Grau Valenciano A., Salerno J., Lowasa A., Cotterill A., & Dickman A. (2025). Evaluating the effectiveness of fortified livestock enclosures as a human-carnivore conflict mitigation tool in Tanzania's Ruaha landscape. *Conservation Science and Practice*, e13299.

Hills, E., Penny, S., Chelysheva, E., Omondi, P., Ngene, S., Giordano, A. J., & Tolhurst, B. (2025). Leopard (*Panthera pardus*) population density and the impact of spotted hyaena (*Crocuta crocuta*) occurrence in the Maasai Mara ecosystem, Kenya. *African Journal of Ecology*, 63(2), e70025.

Hyde, M., Oakleaf, J. K., deVos, J., Bergman, D. L., Crooks, K. R., Young, J. K., Goljani Amirkhiz, R., Frey, J. K., & Breck, S. W. (2025). Food subsidies reduce livestock depredations by a recovering carnivore. *Animal Conservation*.

Jones, K. W., Evangelista, P., Durant, S. M., Young, N. E., Tesfai, R. T., Ali, A. H., et al. (2025). Attitudes, norms, and beliefs of pastoralists toward cheetahs in the Horn of Africa. *Frontiers in Conservation Science*, 6, 1630140.

Keske, C., Hoag, D. L., & Burkhardt, J. (2025). How sense of place influences willingness to pay for sustainable wolf populations. *Society & Natural Resources*, 1-17.

Mills, K. L., Leclerc, M., Ditmer, M. A., Steel, Z. L., Stoner, D. C., Sexton, J. O., ... & Carter, N. H. (2025). Long-term benefits of burns for large mammal habitat undermined by large, severe fires in the American West. *Ecography*, e08225.

Niemiec, R. M., Quartuch, M., Gonzalez, M., Champine, V., & Mertens, A. (2025). Social outcomes associated with a public and stakeholder engagement process for wolf reintroduction. *Conservation Science and Practice*, e70058.

Phosri, K., Tantipisanuh, N., Grainger, M., Gore, M., Gale, G., Giordano, A. J., & Ngoprasert, D. (2025). Population dynamics of the globally threatened fishing cat (*Prionailurus viverrinus*) in a coastal anthropogenic landscape of southern Thailand. *Global Ecology and Conservation*, 59, e03524.

Perez-Flores, J., Calme, S., Schmook, B., Oliva, M., Lecuyer, L., Cervantes, A., & Giordano, A. J. (2025). A land without veterinarians: Animal health practices among smallholders in the Selva Maya. *Tropical Animal Health and Production*, 57(217), s11250-025-04468-7.

Romero-Munoz, A., Benitez-Lopez, A., De Angelo, C., Giordano, A. J., Noss, A., Quiroga, V., Thompson, J. J., Torres, R., Villalba, L., & Kuemmerle, T. (2025). Hunting and habitat destruction drive the widespread functional loss of top predators in a global deforestation hotspot. *Diversity & Distribution*, 31(2), e70003.

Salerno, J., Aguirre, A. A., Aguirre, L. F., Bonacic, C., Bosco-Lauth, A., Breck, S. W., ... & Crooks, K. R. (2025). Transdisciplinary research priorities for a One Health approach to human–wildlife coexistence. *BioScience*, biaf026.

Salerno, J., Warrier, R., Breck, S. W., Carter, N. H., Berger, J., Barrett, B. J., Lukumay, J. R., Kaduma, J. F., Grau Valenciano, A., Dickman, A., & Crooks, K. (2025). Beneficial spillover effects of anti-predation interventions support human–carnivore coexistence. *Conservation Letters*, 18(2), e13085.

Shivakumar, S., Gonzalez, M. N., Athreya, V., & Karanth, K. (2025). Stories of coexistence: A narrative inquiry of leopard attacks on people. *People and Nature*, 7(10), 2532-2543.

Shockley, K. (2025). Environmental vulnerability: Disambiguations and possibilities for climate adaptation. *South African Journal of Philosophy*, 44(2), 285-297.

Venumière-Lefebvre, C. C., Johnson, H. E., Breck, S. W., Alldredge, M. R., & Crooks, K. R. (2025). Bears avoid residential neighborhoods in response to the experimental reduction of anthropogenic attractants. *Frontiers in Ecology and Evolution*, 13, 1657106.

vonHoldt, B. M., Blumstein, D. T., Berger, J., & Carroll, C. (2025). Species recovery as a half empty process: The case against ignoring social ecology for gray wolf recovery. *BioScience*, p.biael134.

Weiss, K. C. B., Larson, R. N., Sterner, B., Wierzbowska, I., Vandewoude, S., Crooks, K., Schipper, J., & Lewis, J. S. (2025). Diet of a widespread carnivore relative to predator-prey interactions in space and time. *Journal of Animal Ecology*, 94, 2504-2526.





SCIENTIFIC PRESENTATIONS

In total, CHCC faculty and students have delivered over 130 scientific presentations since the formation of the Center in 2020. Examples in 2025 include:

JANUARY: Shockley, K. (2025, January). Rethinking environmental harm. Boole Lectures in Philosophy, University College Cork, Ireland.

FEBRUARY: Shockley, K. (2025, February). Shared perspective, lived experience, and the pedagogies of field environmental ethics. John Dewey 90 Years Later: How the Liberal Arts Strengthen Democracy, Rollins College, Winter Park, FL.

FEBRUARY: Shockley, K. (2025, February). Environmental harm, What could it be? APPE (Association for Practical and Professional Ethics) Annual Meetings, Norfolk, VA.

MARCH: Brager, J., Yovovich, V., Gonzalez, M. (2025, March). Colorado rancher perspectives on nonlethal livestock protection approaches. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Burdick, E., Hallsworth, A., Wiske, J., Bailey, H., Hyde, M., Venumière-Lefebvre, C., Breck, S. (2025, March). Getting our bearings: Predictors of bear presence in the West Fork & Upper Ruby watersheds. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Gonzalez, M. (2025, March). Research-based best practices for effective stakeholder engagement: The case of wolf reintroduction in Colorado. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Hallsworth, A., Wiske, J., Burdick, E., Venumière-Lefebvre, C., Hyde, M., Breck, S. (2025, March). Taming tensions: Identifying conflict between livestock, carnivores, and native ungulates. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Purdy, C. H., Hyde, M., Diaz-Pulido, A., Lopez, E. H., Rojano, C. (2025, March). Factors mediating anteater distribution in the Colombian Llanos. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Windell, R.M., Malmberg, J.L., Fesmire, S., Simpson, S., Bailey, L.L., & Titcomb, G.C. (2025, March). Chronic wasting disease exposure risk to male cervids during the mating season in a multi-host community. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Windell, R.M., Titcomb, G.C., Gerber, B.D., Malmberg, J.L., Parrie, L.E., & Bailey, L.L. (2025, March). A (in progress) model to evaluate chronic wasting disease occurrence and infection stage. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Wiske, J., Burdick, E., Hallsworth, A., Bailey, H., Hyde, M., Venumière-Lefebvre, C., Breck, S. (2025, March). Grizzlies & black bears: Rivals or roommates in southwestern Montana?. Colorado Chapter of The Wildlife Society Annual Meeting, Fort Collins, CO.

MARCH: Yovovich, V., Serieys, L.K., Pearce, T., Kupar, C., Stratton, A., Bayrakcismith, R., Sager-Fradkin, K., Bergman, D., Ackerman, B., Phillips, K., Jones, G., Elbroch, L.M. (2025, March). Wild Felid anticoagulant rodenticide exposure in Washington. Mountain Lion Workshop, Albuquerque, NM.

JUNE: Camara, C. (2025, June). Age-defying conservation: Cogeneration from Boomers to Zoomers. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Camara, C. (2025, June). Generational conservation communication, social media, and political discourse surrounding wolves. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Camara, C. (2025, June). How you say it? From Boomers to Zoomers [Workshop]. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Camara, C. (2025, June). Shifting narratives through social media [Youth workshop]. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Camara, C. (2025, June). The wolf debate within dynamic politics, misinformation, and social media. [Conference panelist]. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Crooks, K., Gonzalez, M. (2025, June). Social-ecological insights into Colorado wolf reintroduction. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Gonzalez, M. (2025, June). Designing diverse social conflict resolution approaches to manage human-carnivore conflicts. [Workshop]. Wolves Across Borders, Lunteren, Netherlands.

JUNE: Salerno, J. (2025, June). Beneficial spillover effects of anti-predation interventions support human-carnivore coexistence. International Congress for Conservation Biology, Brisbane, Australia.

SEPTEMBER: M. Gonzalez and K. Crooks chaired a session at the 2025 Pathways Human Dimensions Conference in Estes Park, CO. The session, entitled A transdisciplinary One Health approach to human-wildlife coexistence, included the following presentations:

- A. Aguirre (Dean, Warner College of Natural Resources): Transdisciplinary One Health solutions to wicked environmental problems
- K. Crooks: A transdisciplinary One Health approach to human-carnivore coexistence
- T. Goldstein (Director, One-Health Institute): One Health surveillance of wildlife, people, and livestock
- A. Bosco-Lauth: Infectious disease at the human-livestock interface
- M. Hertel: Impact of predation deterrents on livestock welfare
- A. Whittaker: Framing tolerance for carnivores as a one-health issue
- M. Gonzalez: Reducing conflict and enhancing trust in coexistence decision-making

SEPTEMBER: Purdy, C. H. (2025, September). Social conflict about Colorado's wolf reintroduction. Pathways Human Dimensions Conference, Estes Park, CO.

SEPTEMBER: Camara, C. (2025, September). Talk wild to me [Workshop]. International Wildlife Congress, Lillehammer, Norway.

SEPTEMBER: CHCC hosted a seminar on ethical tools in wildlife conservation and coexistence by visiting scholar Simone Basile, a PhD student at the University of Padua.

OCTOBER: Brager, J. (2025, October). Understanding Colorado rancher perspectives on nonlethal livestock protection approaches [Thesis Defense]. Department of Human Dimensions of Natural Resources, Colorado State University, Fort Collins, CO.

OCTOBER: Giordano, A. J. (2025, October). Jaguars and IUCN Resolution (2021): Towards a continental strategy for jaguar conservation beyond the 2030 RoadMap [Conference Panel Moderator]. IUCN World Conservation Congress, Abu Dhabi, United Arab Emirates.

OCTOBER: Reed, K. (2025, October). Statewide education and outreach campaign on the restoration of wolverines to Colorado. CSU Extension Internship Symposium, Fort Collins, CO.

OCTOBER: Windell, R.M. (2025, October). Assigning probability of infection for ecological studies of chronic wasting disease. The Wildlife Society Annual Meeting, Edmonton, Canada.

NOVEMBER: Salerno, J. (2025, November). A One-Health approach reveals unexpected synergies in carnivore-livestock systems [Invited Talk]. One Health Institute Symposium, Colorado State University, Fort Collins CO.



2025 FUNDING BY THE NUMBERS



\$4,727,509

**TOTAL ONGOING CHCC FUNDING
ADMINISTERED THROUGH CSU**



\$3,974,493

EXTERNAL GIFTS & GRANTS



\$753,016

INTERNAL CSU FUNDS



\$7,479,616

**TOTAL ONGOING FUNDING FOR
CHCC AND PARTNERS**

EXTERNAL GIFTS: \$1,789,560 (ongoing in 2025)

Private Donor: Philanthropic gift to the Center for Human-Carnivore Coexistence. \$1,000,000. PI K. Crooks (2021-2026).

Donald Slavik Family Foundation: Fighting illegal trafficking of cheetahs in Somaliland through strategic capacity building in the classroom, field, and courts of law. \$100,000. PI P. Evangelista (2022-2025).

Eugene Decker Game Management Fellowship: Bay Area carnivore-livestock interactions project. \$8,200. PIs J. Raupp, V. Yovovich (2025).

Greater Yellowstone Coalition: Enhancing coexistence between grizzly bears and livestock in southwest Montana. \$10,000. PI S. Breck (2025).

Lordi Foundation: Improving the reproductive success in the ferret using new minimally invasive assisted reproductive techniques. \$500,000 PIs B. Wolfe, F. Hollinshead (2023-2028).

Riverstyx Foundation: Automated Mineral Bin (ABM) development for reducing predator-livestock conflict. \$50,000. PIs C. Krebs, S. Breck (2023-2025).

Riverstyx Foundation: Effective messaging and community engagement for carnivore coexistence: Wolf restoration in Colorado. \$50,000. PI C. Camara (2022-2025).

Various Donors: CSU Wolf Conflict Reduction Fund: \$52,360. PI K. Crooks (2022-2025).

Various Donors: Colorado Conflict Reduction Group: \$14,000. PI M. Gonzalez (2024-2025).

Y Cross Ranch Scholarship. Colorado rancher perspectives on livestock protection approaches. \$5,000. PIs: J. Brager, V. Yovovich (2025).

EXTERNAL GRANTS: \$2,184,933 (ongoing in 2025)

NSF Human-Environment and Geographical Sciences: Adaptive human migration in changing environments: Leveraging geographic sciences to advance new models of migration decision-making. \$399,940. PI: J. Salerno. Co-PIs: R. Boone, A. Gaughan, L. Hunter, J. Hartter (2021-2025).

USDA National Wildlife Research Center Cooperative Agreement: Non-lethal tool development and evaluation for predator management. \$110,000 PIs K. Crooks, S. Breck (2023-2025).

U.S. Fish and Wildlife Service. Combating illegal cheetah trafficking: An adaptive management strategy for building regional and national capacity in the Horn of Africa. \$1,000,000. PI: P. Evangelista (2022-2025).

USFS Rocky Mountain Research Station. Evaluating wildlife responses to recreation and other anthropogenic disturbances using novel data streams. \$540,000. PIs: G. Wittemyer, M. Ditmer (2022-2025).

U.S. National Park Service: Assessing fisher response and habitat use in relation to landscape change and human disturbance. \$35,000. PIs: G. Wittemyer, M. Ditmer (2024-2025).

Western Extension Risk Management Education Center. Risks and risk management for wolf-livestock conflicts in the West. \$99,993. PIs: D. Hoag, R. Young, V. Yovovich, S. Breck (2024-2025).

In total, since the formation of the Center in 2020, CHCC researchers have secured over \$6M of funding administered through CSU to support research, education, and outreach efforts. Funding sources have included a diverse portfolio from private foundations and donors, external grants from governmental agencies and non-governmental organizations, and internal CSU funds.

INTERNAL CSU FUNDS: \$753,016 (ongoing in 2025)

CSU 50% match to \$1M philanthropic gift: CSU Provost; Office of Vice President for Research; Warner College of Natural Resources; Department of Fish, Wildlife, and Conservation Biology; One Health Institute. \$500,000. PI: K. Crooks (2021-2026).

Center for Collaborative Conservation Fellowship Grants. Colorado ranchers' perspectives on proactive livestock protection tools to minimize wolf-livestock conflict. \$12,000. PIs: J. Brager, V. Yovovich, M. Gonzalez (2024-2025).

Center for Collaborative Conservation Fellowship Grants. Co-producing a coexistence plan for puma, jaguar, hoary foxes, and maned wolves with local communities in Goias, Brazil. \$16,016. PIs: B. Ferreira, F. Gemesio Lemos, F. Cavalcanti de Azevedo, M. Gonzalez (2024-2025).

Dean's Fund for Transdisciplinary Approaches to Solve Environmental Wicked Problems. A One-Health transdisciplinary approach to reducing wolf-livestock conflict in Colorado. \$49,500. PIs M. Gonzalez, V. Yovovich (2025-2026).

WCNR Hatch Competitive Grants Program. Impacts of livestock-carnivore conflict mitigation tools on rangeland ecology and management. \$175,500. PI: V. Yovovich (2023-2026).

FUNDING ADMINISTERED OUTSIDE CSU: \$2,752,107 (ONGOING IN 2025)

The Karis Foundation. Testing theoretical behavior change approaches in environmental education campaigns for wolverine reintroduction in Colorado. \$10,000. PIs: K. Schneider, M. Gonzalez; Collaborator: Defenders of Wildlife; administered external to CSU (2024-2025).

Midpeninsula Regional Open Space District: Bay Area, California Carnivore-Livestock Interactions Project. \$335,000. PI: V. Yovovich; administered external to CSU (2022-2027).

NOAA: Living Marine Resources Cooperative Science Center. Fisher perceptions of shark depredation: Insights for management and deterrent adoption. \$58,107. PI: A. Jimenez, CO-PIs: E. Babcock, M. Gonzalez; administered external to CSU (2025-2026).

Richard King Mellon Foundation: Bay Area, Bay Area Carnivore-Livestock Interactions Project. \$100,000. PI: V. Yovovich; Collaborator: Panthera; administered external to CSU (2024-2025).

Richard King Mellon Foundation: Bay Area, Bay Area Carnivore-Livestock Interactions Project. \$100,000. PI: V. Yovovich; Collaborator: Panthera; administered external to CSU (2025).

USDA-NRCS Regional Conservation Partnership Program (RCPP): Stewarding the working wild in MT, OR, and CO: Non-lethal predator risk management on agricultural operations. \$2,000,000. Collaborators: Heart of the Rockies, Western Landowners Alliance; administered external to CSU (2024-2029).

USGS: Understanding the perceived conditions for decision-making that enable or inhibit managed relocation. \$49,000. PI: N. Cole, M. Gonzalez; Collaborator: USGS; administered external to CSU (2025-2026).





STUDENT EDUCATION AND MENTORING

A key goal of the CHCC is educating and mentoring future leaders in the field of human-carnivore coexistence, including graduate students and undergraduate students from the U.S. and abroad. In addition, since 2020, the CHCC team has created a new undergraduate course and a graduate seminar in human-wildlife conflict and coexistence; delivered over 65 guest lectures in other courses; and developed experiential educational opportunities for undergraduate students, including the CHCC Undergraduate Research Experience and the CSU Handprint Challenge.

GRADUATE STUDENT MENTORING

The CHCC added two new graduate students in 2025. 13 graduate students were members of the CHCC in 2025 and 27 have been members since the Center's formation in 2020.

GRADUATE STUDENTS

- **Ashish Bista:** PhD, Graduate Degree Program in Ecology, advised by J. Salerno and K. Crooks. Coexistence with leopards and tigers in Northern India.
- **Jenna Brager:** MCL in Environmental Leadership, HDNR, advised by V. Yovovich and M. Gonzalez. Rancher perceptions of livestock protection and conflict mitigation tools.
- **Cassi Camara:** PhD Student, HDNR, advised by E. Gallo Cajiao. Analysis of outreach and messaging strategies regarding wolf reintroduction in Colorado.
- **Morgan Rae Hertel:** PhD Student, FWCB, advised by V. Yovovich. Direct and indirect impacts of wolves on livestock in Colorado.
- **Treana Mayer:** DVM/PhD. Microbiology, Immunology, Pathology, advised by S. VandeWoude. Emerging zoonotic disease at the wildlife-public interface; Echinococcosis in canids and people; spillover risk of Highly Pathogenic Avian Influenza.
- **Trent Pearce:** MS Student, FWCB, advised by S. Bombaci. The evolution and drivers of online opinion of the Colorado wolf reintroduction.
- **Camilla Price:** MS Student, Graduate Degree Program in Ecology, advised by V. Yovovich and J. Salerno. Social acceptance of endangered carnivores in Colorado; Carnivore response to non-lethal livestock protection tools.
- **Cole Purdy:** PhD Student, FWCB, advised by K. Crooks and M. Gonzalez. Reducing direct and social conflict between ranchers and large carnivores in the Rocky Mountain West.
- **Jamie Raupp:** MS Student, FWCB, advised by V. Yovovich. Carnivore and wildlife behavioral responses to predation deterrents and potential ecological implications.
- **Kaitlyn Reed:** MCL in Environmental Leadership, HDNR, advised by M. Gonzalez. Testing the efficacy of education programming for wolverine reintroduction in Colorado.
- **Cassandre Venumière-Lefebvre:** PhD Student, FWCB, advised by K. Crooks and S. Breck. Integrating social and ecological science to identify effective strategies for human-bear coexistence.
- **Abigail Whittaker:** PhD Student, HDNR, advised by J. Salerno. Facilitating increased human tolerance for carnivore conflicts under pressure from poverty and climate change in East Africa.
- **Becca Windell:** PhD Student, FWCB, advised by G. Titcomb, L. Bailey, and J. Malmberg. Behavioral responses, transmission hotspots, and disease-predation interactions in Chronic Wasting Disease infected mule deer.

CHCC GRADUATE STUDENT RESEARCH & OUTREACH MINI-GRANT

In March, CHCC announced the recipients of the annual CHCC Student Research and Outreach Mini-Grants (~\$2000 each).

- **Trent Pearce:** *Social signals of coexistence: Natural language processing approaches to human–carnivore conflict*
- **Kaitlyn Reed:** *Educational campaign on wolverine reduction to Colorado*
- **Abigail Whittaker:** *Understanding local definitions and drivers of tolerance for large carnivores in Tanzania*

CHCC UNDERGRADUATE RESEARCH EXPERIENCE

CHCC accepted the third cohort into the Undergraduate Research Experience (URE) program. The URE aims to provide applied, social-ecological research experiences and skills to undergraduates, while also engaging and supporting CHCC faculty, graduate students, and partners. In addition to their research, URE students participated in the CHCC Fall lab where they received mentoring and research design support.

- **Aidan Hallsworth:** Undergraduate mentorship in applied research to reduce human–carnivore conflict in the western United States (Advisors: C. Vennière-Lefebvre, M. Hyde, S. Breck, K. Crooks)
- **Veil Halligan:** Exploring carnivore tolerance through agropastoralist social networks (Advisor: J. Salerno)
- **Matalyn Garcia:** Qualitative analysis of Coloradan's perspectives toward wolverine reintroduction (Advisor: M. Gonzalez).
- **Noah Grube:** Bay Area carnivore-livestock interactions (Advisor: V. Yovovich).

CHCC INTERNATIONAL GRADUATE FELLOWS PROGRAM

The CHCC International Graduate Fellows Program aims to advance the mission of the CHCC by supporting social-ecological science and coexistence internationally. The Fellows Program provides small grants to support international graduate students working on coexistence challenges and solutions in their home country.

- **Simone Basile:** PhD student, Padua University, Italy. Advisor: Barbara di Mori. CHCC mentorship from M. Gonzalez. Exploring ethical perceptions of bold carnivores in urban settings.
- **Pratik Desai:** PhD Student, HNG University, Patan, India. Advisor: Nishith Dharaiya. CHCC mentorship from S. Breck. Human-sloth bear coexistence in Gujarat, India.
- **Elizabeth Ruiz Elejalde:** MS student, Javeriana University Bogota. CHCC mentorship from M. Hyde. Community ecology and mammal conservation in the Colombian Llanos.



TEACHING

CHCC faculty and students incorporate human-carnivore coexistence curriculum into coursework at CSU and other institutions. Examples in 2025 include:

- ▲ **JANUARY-MAY:** Yovovich, V. Taught upper division undergraduate course on human-wildlife conflict and coexistence. FW465 Human-Wildlife Conflict Management.
- ▲ **FEBRUARY:** Gonzalez, M. The human dimensions of wildlife management. Guest Lecture, FW465 Human-Wildlife Conflict Management.
- ▲ **FEBRUARY:** Gonzalez, M. Social science research on wolf reintroduction in Colorado. Guest Lecture, FW465 Human-Wildlife Conflict Management.
- ▲ **MARCH:** Yovovich, V. Human-wildlife conflict and coexistence. Guest Lecture, Introduction to Environmental Science, Allegheny College, Meadville, PA.
- ▲ **APRIL:** Brager, J., Hertel, M., and Raupp, J. Grad student stories and projects. Guest Lectures, FW465 Human-Wildlife Conflict Management.
- ▲ **APRIL:** Crooks, K. Social-ecological insights on wolf reintroduction to Colorado. FW260 Principles of Wildlife Management.
- ▲ **APRIL:** Crooks, K. Human-carnivore coexistence. Master Course on Integrated Wildlife Conservation, University of Padua, Italy (virtual).
- ▲ **APRIL:** Venumière-Lefebvre, C. Evaluating the behavioral response of black bears to management using a resource selection and movement analysis. Guest Lecture, ECOL620 Applications in Landscape Ecology.
- ▲ **JULY:** Gonzalez, M. Drivers of social conflict about wolf reintroduction in Colorado. Guest Lecture. Wildlife Law & Policy, University of Idaho.
- ▲ **JUNE-JULY:** Yovovich, V. Taught field course in Greater Yellowstone Ecosystem on wildlife conflict and conservation. Wildland Studies.
- ▲ **AUGUST-DECEMBER:** Gonzalez, M. CHCC Undergraduate Research Experience Fall Lab.
- ▲ **AUGUST:** Crooks, K. The Center for Human-Carnivore Coexistence. Guest Lecture, FW696 Department of Fish, Wildlife, and Conservation Biology Graduate Student Orientation.
- ▲ **SEPTEMBER:** Venumière-Lefebvre, C. Coexistence with black bears in Colorado. Guest Lecture, FW455 Principles of Conservation Biology.
- ▲ **OCTOBER:** Crooks, K. Led 2-week module of wolf reintroduction to Colorado, including multiple lectures and class debate. FW455 Principles of Conservation Biology.
- ▲ **OCTOBER:** Gonzalez, M. Drivers of social conflict about wolf reintroduction in Colorado. Guest Lecture, FW455 Principles of Conservation Biology.
- ▲ **NOVEMBER:** Brager, J. Social dimensions of human-wildlife coexistence. Guest Lecture, Parks, Forests, and Wildlife, Gonzaga University, Washington. Perspectives in Conservation.

OUTREACH AND ENGAGEMENT

A primary goal for the CHCC is to transform social and ecological science to real-world action to facilitate coexistence and minimize conflict around carnivores, including direct conflict between carnivores and people and associated social conflict among people about carnivores. Ultimately, through our outreach and engagement we strive to reduce impacts to both people and carnivores.



2025 HIGHLIGHT TIMELINE: OUTREACH AND ENGAGEMENT EFFORTS

JANUARY-DECEMBER:

The CHCC continued administration of the Wolf Conflict Reduction Fund through the CSU Foundation. Donations to the fund support efforts of CSU and partners to implement on-the-ground, non-lethal tools to prevent livestock losses to wolves in Colorado.



JANUARY-DECEMBER:

The CHCC continued to lead the Colorado Conflict Reduction Group. This is a collaborative working group of key stakeholders involved in reducing conflict with wolves in Colorado, including individuals from academia, state and federal wildlife management agencies, environmental NGOs, and ranching representatives.

JANUARY-FEBRUARY AND

DECEMBER: V. Yovovich, in collaboration with CSU Extension, Colorado Parks and Wildlife, Colorado Department of Agriculture, and USDA Wildlife Services, helped lead a traveling program to assist ranchers in reducing livestock losses to carnivores in Colorado. The group has hosted meetings for ranchers in six counties across Northern and Western Colorado to date, engaging over 500 ranchers.

JANUARY-DECEMBER:

M. Gonzalez continued her collaboration with the Fantastic Detectives project, which aims to promote coexistence between people and carnivores in the Cerrado of southeast Goiás, Brazil. This group conducted 9 workshops with local and agricultural communities in order to solicit community perspectives to co-produce a Regional Conservation and Coexistence Action Plan focused on puma, jaguar, hoary fox, and maned wolf. The project is led by the Programa de Conservação Mamíferos do Cerrado, a research group associated with the Federal University of Catalão.

FEBRUARY: K. Crooks and M. Gonzalez delivered a public seminar for the Monday Forum at the Denver Country Club entitled: From conflict to coexistence: research, education, and outreach at the CSU Center for Human-Carnivore Coexistence.



MARCH: The CHCC, in collaboration with CSU's One Health Institute, hosted a seminar by Dr. Mary Ann Ottinger (University of Houston) entitled: One health meets the exposome: Considering stressors and lifetime health.

APRIL-DECEMBER: S. Breck and K. Crooks served as members of the Colorado Parks and Wildlife Human-Bear Conflict Working Group. The purpose of the group is to facilitate statewide collaboration and coordination to reduce conflict between black bears and people in urban areas in Colorado.

MAY: M. Gonzalez facilitated a workshop for the Colorado Conflict Reduction Group. The workshop convened 21 participants from 12 organizations, including state and federal agencies, local government, ranching representatives, NGOs, and academic institutions to identify strategic conflict reduction priorities in 2026.



MAY-AUGUST: K. Reed and M. Gonzalez led 16 statewide public education events informing the Colorado public about upcoming wolverine reintroduction to the state. This included eight virtual events and eight in-person events in Denver, Fort Collins, Gunnison, Glenwood Springs, and Aspen, reaching 135 people.

JULY: P. Tricorache helped lead a workshop in Aden, Yemen for enforcement officials on combatting wildlife trafficking, focused on the illegal pet trade of cheetahs. Funding for the workshop was provided by the CHCC, the SPOTS Foundation (Netherlands), and the Yemeni Environmental Protection Authority.

JUNE-DECEMBER: V. Yovovich participated in a series of multi-stakeholder working group meetings focused on developing structures to help Colorado Parks and Wildlife and Colorado ranchers navigate livestock protection issues.

JUNE-DECEMBER: V. Yovovich participated in a series of multi-stakeholder working group meetings with the newly-formed Bay Area Campaign Against Wildlife Feeding to help Bay Area residents in northern California stop feeding wildlife.

OCTOBER: J. Brager and V. Yovovich collaborated with Defenders of Wildlife, Colorado Parks and Wildlife, Rocky Mountain Wolf Project, and North Park Stockgrowers Association to support a rancher-led workshop in North Park, Colorado about how to use trail cameras to monitor wolf activity on local ranches.

NOVEMBER: P. Evangelista hosted Dr. Mohamed Salub, President of the University of Hargeisa from the independent state of Somaliland. His visit to CSU was to expand ongoing academic collaborations between the two universities and to develop curricula on the investigation and prosecution of illegal cheetah trafficking at the University of Hargeisa's School of Law.

DECEMBER: P. Tricorache and various partner NGOs assisted cheetah range countries in the submission of draft amendments to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) at the the 20th CITES Conference of the Parties (CoP20) in Samarkand, Uzbekistan. Amendments focused on the illegal cheetah trade and included strengthening enforcement, enhancing collaboration throughout the supply chain for cheetahs, and setting deadlines for reporting on progress.

CHCC AND THE MEDIA

Media coverage of our research and education efforts has been extensive. The office of University Communications at CSU conducts an annual analysis of earned media coverage of human-carnivore coexistence featuring the CHCC and CSU.

282

media mentions from Jan. 1 – Dec. 31, 2025.

899M

readers, viewers, and listeners potentially reached.

\$8.35M

in advertising equivalency.

In total, since the formation of the Center in 2020, earned media coverage includes 1,697 media mentions with a cumulative potential audience of 3.98 billion and an advertising value equivalency of \$34.3 million.



SELECT MEDIA COVERAGE



Fisher, K. Feb 4, 2025. Discover these 5 hidden gem research labs at CSU. [Rocky Mountain Collegian](#).

Winchell, C. Feb 19, 2025. Part 1 Non-lethal wolf conflict reduction training discusses best practices for producers. [Ark Valley Voice](#).

Hagenbuch, T. Feb 25, 2025. Community Agriculture Alliance: Carcass management key to reducing wolf depredation. [Steamboat Pilot & Today](#).

Nakweya, G. March 31, 2025. Chain-link fencing protects livestock from big cat attacks in Tanzania. [Mongabay](#).

DeLoss, J. March 14, 2025. Good fences make good neighbors. [CSU Source](#).

Gajbhiye, S. March 17, 2025. Helping predators and livestock become better neighbors. [Earth.com](#).

Estes Park Watershed Coalition. Apr 30, 2025. From myth to reality: Wolves in modern ecosystems symposium. [Estes Park News](#).

Hartogh, F. May 2, 2025. Get wild: The wolverines are coming, eventually. [Summit Daily](#).

Giordano, J. May 7, 2025. Warner College of Natural Resources grad discovers career path at CSU. [CSU Source](#).

McQuail, M. May 22, 2025. Expanding One Health: Researching wildlife health will benefit everyone and the planet. [CSU Source](#).

Brasch, S. Jun 16, 2025. To protect livestock, Colorado might feed roadkill to its most problematic wolves. [Colorado Sun](#).

CSU MarComm Staff. May 30, 2025. Smartphones reveal hidden impacts of people on wildlife. [CSU Source](#).

Stingray, R. June 26, 2025. Aspen talks will address nearby wolverine reintroduction. [The Aspen Times](#).

Hitt, J. July 17, 2025. Study examines engagement outcomes for wolf reintroduction. [CSU Source](#).

Salerno, J., Dickman, A., Crooks, K., Warrier, R. & Breck, S. July 22, 2025. Livestock and lions make uneasy neighbours: How a fence upgrade helped protect domestic and wild animals in Tanzania. [The Conversation](#).

Ross, T. September 5, 2025. Compassion, coexistence with wolves stressed in animal-rights talk hosted by Colorado's First Gentleman. [The Colorado Sun](#).

Ross, T. October 8, 2025. Livestock guardian dogs bred in Colorado could be the nonlethal deterrent the USDA has been looking for. [The Colorado Sun](#).

Cahalan, R. December 4, 2025. Will wolves and ranchers ever be able to coexist? [5280](#).

CHCC 2026 GOALS



RESEARCH

Enhance transdisciplinary research on human-carnivore coexistence by strengthening collaborations across disciplines and academic units within CSU.

Develop and test new technologies and livestock management strategies for reducing human-carnivore conflict, including continued collaboration with ranchers in Oregon and Idaho.

Investigate social outcomes of stakeholder and public engagement, including social conflict, social learning, trust, and acceptability of management options regarding human-carnivore coexistence.

Investigate the behavior and ecology of large carnivores in relation to conflict and coexistence with people.

EDUCATION

Mentor postdoctoral fellows and graduate students on the social-ecological science related to human-carnivore coexistence.

Support graduate students via CHCC Student Research and Outreach Mini-Grants.

Engage undergraduate students in human-carnivore coexistence research and outreach, including via coursework and Undergraduate Research Experience.



OUTREACH

Advance partnership with CSU Extension to continue community-based outreach regarding conflict reduction with wolves and other carnivores in Colorado.

Advance partnership with The Blackfoot Challenge, Montana, to advance peer-to-peer learning and knowledge transfer among livestock producers regarding sustainable ranching in landscape with predators. Implement technology and tools for reducing human-carnivore conflict, including in partnership with CSU's Rapid Prototyping Lab.

Advance international collaborations to elevate global impact of the CHCC.

Disseminate social and ecological science related to human-carnivore coexistence to the general public, practitioners, and policy makers.

Develop events that bring diverse stakeholders together and elevate voices of traditionally marginalized groups to promote human-carnivore coexistence.

FINANCIAL

Pursue goal of ensuring long-term financial sustainability of the Center for Human-Carnivore Coexistence, including securing endowed funds.

Continue securing funding from a diverse portfolio of sources, including philanthropic gifts, external grants, fee-for-service contracts, and internal CSU funds.





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Join us in building a new era for human-carnivore coexistence, ensuring that humans and carnivores can live together with fewer impacts to both people and predators.

For more information, visit:

sites.warnercnr.colostate.edu/centerforhumancarnivorecoexistence/



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