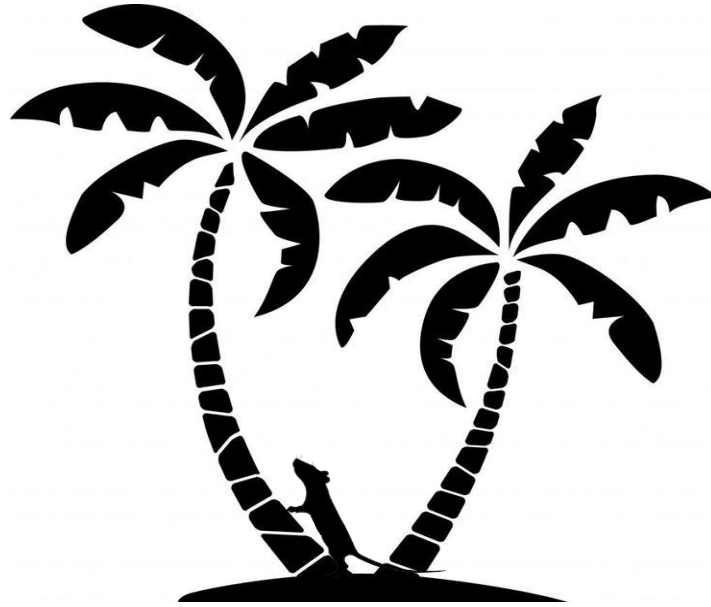


FINAL PROGRAM
29th VERTEBRATE PEST CONFERENCE

March 2-5, 2020
Santa Barbara, California



Conference Chair:
Stella McMillin

Program Chair:
Niamh Quinn

Includes special symposia:

Island Invaders
Predator Management

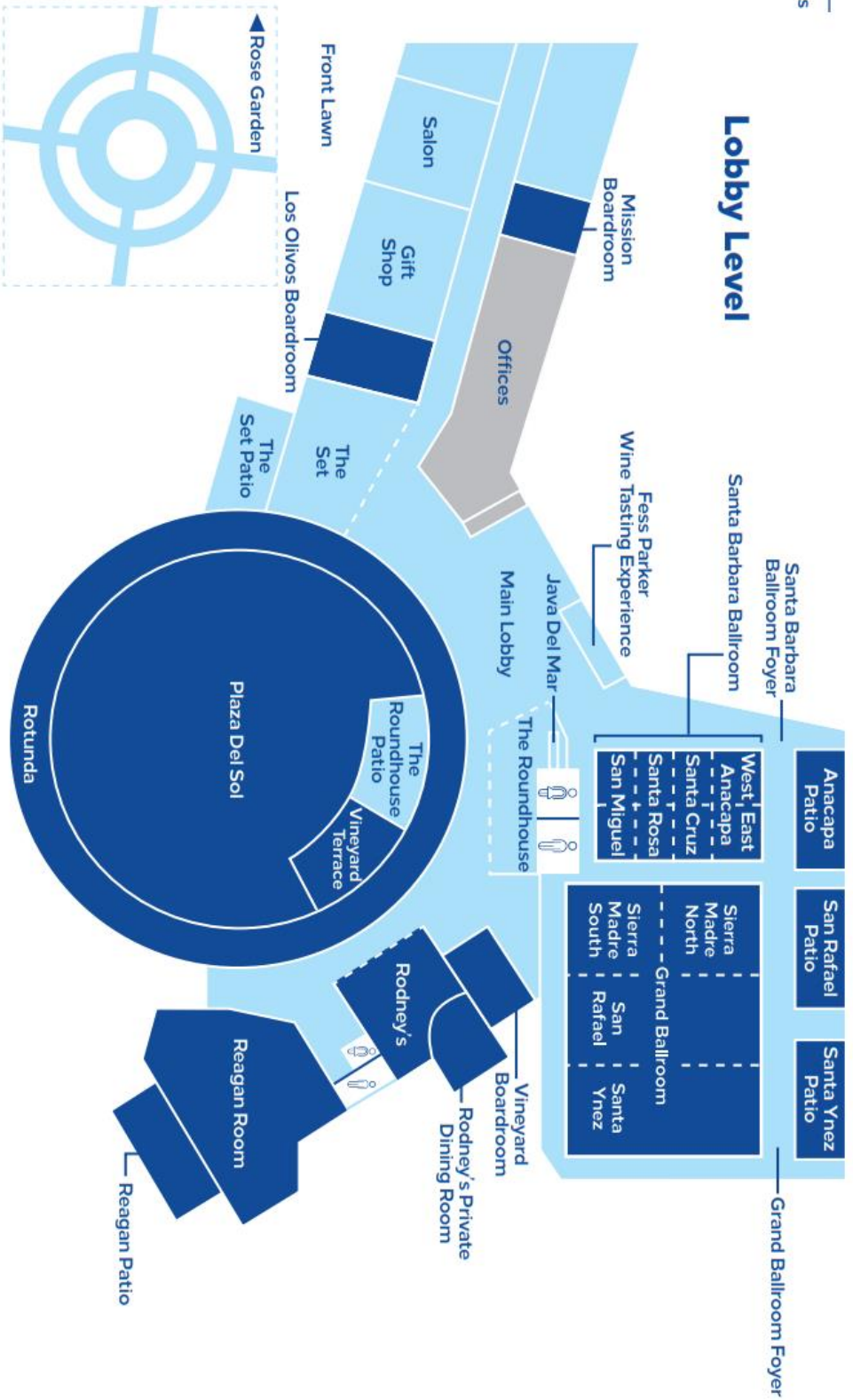
Organized by:
The Vertebrate Pest Council

Hilton Santa Barbara Beachfront Resort

633 E Cabrillo Blvd, Santa Barbara, CA 93103
 (805) 564-4333

FLOOR MAP KEY

- Meeting/Conference Rooms
- Amenities
- Public Space
- Private



WELCOME

Welcome to the 29th Vertebrate Pest Conference. We hope you find the conference to be enjoyable and educational. We are excited this year to once again present the Walter E. 'Howdy' Howard Lifetime Achievement Award for Excellence in Vertebrate Pest Management to honor those who have made significant contributions towards the advancement of the field.

We have worked over the years to keep this educational Conference the best of its kind. We welcome your comments (good and bad) concerning it. We are always looking for potential Conference speakers and would appreciate your suggestions for future speakers or program topics. Please contact the chairperson, Stella McMillin, (E-mail: Stella.McMillin@wildlife.ca.gov) with any feedback or questions.

CONFERENCE PROCEEDINGS

Print-on-Demand copies of the *Proceedings* of the 28th Vertebrate Pest Conference (2018) are now available at **Amazon.com** (\$8.99 + tax and shipping); at the website, simply search for "Vertebrate Pest Conference."

Individual papers from past Vertebrate Pest Conference *Proceedings*, Volume 9 (1980) through Volume 28 (2018), are available open-access and can be downloaded from the following website: **https://escholarship.org/uc/vertebrate_pest_conference**

ATTENTION TO PRESENTERS

Check in with your session chairperson at the beginning of your session and introduce yourself. Please be careful with your time and respectful of the session chairperson and your fellow speakers. Speakers will have 25 minutes to be introduced, present their talks, and field questions. Session chairpersons will keep speakers on time to ensure people attending concurrent sessions can hear papers presented at their published times.

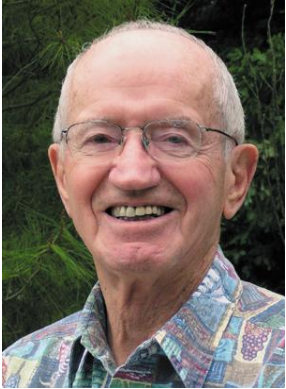
Practice Room: A computer will be available in the Vineyard Boardroom beginning Monday evening March 2 for speakers to review their PowerPoint presentations. Please review your file, preferably the day before your presentation, to ensure the file is compatible with our software and hardware.

Loading Presentations: A VPC representative or volunteer will be available to load your presentation in preparation for your session. Please bring your presentation loaded on portable storage device (e.g. thumb-drive) to facilitate this process to the Vineyard Boardroom at least one day before your session commences. We will transfer your presentation to our computer and return your storage device to you.

Walter E. 'Howdy' Howard Lifetime Achievement Award for Excellence in Vertebrate Pest Management

The Vertebrate Pest Council is pleased to announce the presentation of the Walter E. "Howdy" Howard Lifetime Achievement Award. This award was established to acknowledge the tremendous lifetime contributions of individuals in the Vertebrate Pest Management profession.

Walter E. 'Howdy' Howard



The Walter E. "Howdy" Howard Lifetime Achievement Award is named after a true pioneer and pillar in the vertebrate pest control profession. Born in 1917, Howdy's love for biology began as a young child. He graduated from U.C. Berkeley, served three years during WWII, primarily focusing on disease and parasite control, and completed his M.S. and PhD at the University of Michigan. He joined the faculty at U.C. Davis in 1947 as professor of Wildlife Ecology. During his lifelong tenure at Davis, he developed the field of vertebrate ecology including vertebrate pest control, making UC Davis a premier international research and teaching institute in this field. His research focused on rodents impacting agriculture and public health, predators (especially coyotes), and the politics of dealing with wildlife-human conflicts. He was committed to making state and federal agencies good stewards of wildlife populations and their habitats, and that the political structure ensures wildlife populations and humans coexist. Howdy was especially known for his perspective on the balance of nature and his direct challenge of the arguments posed by groups who are opposed to controlling problem wildlife. Howdy's impact on our profession and personal legacy live on today through the 44 Ph.D. and M.S. students he advised and mentored at U.C. Davis and the countless professionals influenced by his personal interactions and writing. Howdy passed away in 2018 at the age of 101. It is with great honor that we named this award after Howdy.

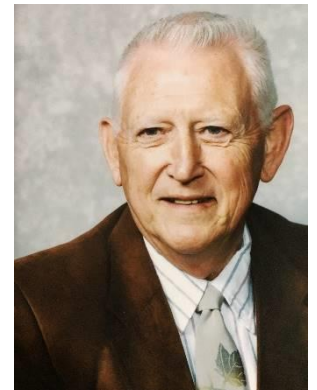
Kathleen A. Fagerstone

Kathy devoted her 42-year career to wildlife damage management and the National Wildlife Research Center (NWRC). She began working with the Denver Wildlife Research Center (predecessor to the NWRC) in 1971, becoming the first female physical science technician at the Center. She received her B.S. from Colorado State University in 1973 and her M.A. and PhD from the University of Colorado. During her 40 year career with the Center, Kathy advanced from technician, to wildlife biologist, to research scientist, to project leader, and finally to program manager before retiring in 2013. Throughout her career, she made a number of significant contributions in the areas of research, product development and registration of wildlife management products. Kathy also actively participated in the Vertebrate Pest Council for more than three decades. While serving as a Council member, she served as a chairperson for six conference sessions, a peer editor for seven Conference Proceedings, a co-editor for one Proceeding, was the keynote speaker in 2014, and eventually held all elected positions on the Council. She also published 17 first author manuscripts at the Conference and was co-author on dozens. Kathy has served as a mentor to many and a role model to many more.



James Miller

Jim was the National Program Leader in Natural Resources for the USDA-Cooperative State Research, Education and Extension Service in Washington, D.C. for 20 years and laid the foundation for hundreds of Extension Specialists in wildlife, fisheries, aquaculture, and natural resources across the nation who followed in his footsteps. He helped develop the Wildlife Damage Management Working Group of The Wildlife Society (TWS) and served in several leadership positions throughout the organization. Due in great part to Jim's efforts, wildlife damage management became recognized as an integral part of the wildlife profession. In recognition of his efforts, he received the TWS Aldo Leopold Award, the most prestigious award in the wildlife profession. In 2001, Jim was hired as a professor at the Mississippi State University Department of Wildlife and Fisheries to develop the new Natural Resource Enterprises Program. He retired in 2005 and continues to serve the profession as Professor Emeritus. In 2007, he was awarded the Governor's Conservationist of the Year Award from the Mississippi Wildlife Federation. Jim has been a devoted hunter for over 70 years.



**The Vertebrate Pest Conference
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Conference At-A-Glance

Monday, March 2 Optional Field Trip, 9:10 AM - 5 PM

Tuesday, March 3

Opening Plenary Session <i>San Rafael/Santa Ynez</i> 9:00 AM– 12:00 PM
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Lunch (*on your own*)

Santa Cruz-Anacapa -Posters and Commercial Exhibits open – 1:15

<i>Concurrent Session:</i> Vertebrate Pesticides & Repellents <i>San Rafael/Santa Ynez</i> 1:20 PM– 5:00 PM	<i>Concurrent Session:</i> Bird Management <i>Sierra Madre</i> 1:20 PM– 5:00 PM
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Santa Cruz/Anacapa-5:30 No-Host Welcoming Social

Wednesday, March 4

<i>Symposium:</i> Predator Management <i>San Rafael/Santa Ynez</i> 8:10 AM – 11:50 AM	<i>AM Symposium:</i> Island Invaders <i>Sierra Madre</i> 8:10 AM – 11:50 AM
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Lunch (*on your own*)

<i>Symposium:</i> Predator Management <i>San Rafael/Santa Ynez</i> 1:20 PM– 4:35 PM	<i>Concurrent Session:</i> General Pest Management <i>Sierra Madre</i> 1:20 – 5:00 PM
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Santa Cruz-Anacapa-6:30 PM: Hors d'oeuvres, Poster Session, and Vendors' Forum

Thursday, March 5

<i>Concurrent Session:</i> Rodent Management and Disease <i>San Rafael/Santa Ynez</i> 8:10 AM – 11:50 AM	<i>Symposium:</i> Island Invaders <i>Sierra Madre</i> 8:10 AM – 11:50 AM
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Lunch (*on your own*)

Posters and Commercial Exhibits conclude

<i>Concurrent Session:</i> Rodent Management and Disease <i>San Rafael/Santa Ynez</i> 1:20 PM– 4:10 PM	<i>Symposium:</i> Island Invaders <i>Sierra Madre</i> 1:20 PM– 3:05 PM
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CONTINUING EDUCATION

Attendees seeking Continuing Education credit must sign in and out at the event registration desk. All credits are approximations and are dependent upon your attendance. Please see registration desk for final hours approved.

California Department of Pesticide Regulation*:

Please see registration desk for final hours approved.

Monday, March 2 TBA

Tuesday, March 3 TBA

Wednesday, March 4 TBA

Thursday, March 5 TBA

**Note that Day 1 is Tuesday, March 3 for DPR*

California Department of Public Health:**

Day 1 (Field Trip), Date: March 2, 2020

Program Approval Number: 21-00080

CEU Approved: (CDPH units) No units approved

Day 2, Date: March 3, 2020

Program Approval Number: 21-00080

CEU Approved: (CDPH units) 2.25 Category D.

Day 3, Date: March 4, 2020

Program Approval Number: 21-00080

CEU Approved: (CDPH units) 0.75 Category D.

Day 4, Date: March 5, 2020

Program Approval Number: 21-00080

CEU Approved: (CDPH units) 2.25 Category D.

***Note that Day 1 is Monday, March 2 for CDPH*

CONFERENCE FIELD TRIP (Optional)

The Conference begins with an optional full-day field trip on Monday, March 2. The field trip departs from the Hilton Santa Barbara Beachfront Resort at approximately 9:10 AM. The field trip will include a beautiful boat ride to Anacapa Island and talks about their rat eradication efforts. Anacapa Island is part of the Channel Islands National Park. A lunch will be provided (included in cost). Buses will return to the hotel by approximately 5:00 PM.

Those who have pre-registered for the field trip should board the chartered buses in the parking lot of the hotel at 9:10 AM on Monday morning, March, 2. Layered clothing and rain gear are recommended.

Tuesday, March 3 (AM)

PLENARY SESSION
San Rafael/Santa Ynez

Session Chair: Stella McMillin
VPC Conference Chair
California Department of Fish and Wildlife, Gold River, CA

- 9:00 **Conference Welcome and Overview**
Stella McMillin, Vertebrate Pest Conference Chair
- 9:20 **Reflections on 25 Years of Global Conservation on Islands as we Enter Into the UN Decade of Restoration**
Gregg Howald, Island Conservation
- 10:05 **Break**
- 10:20 **Lifetime Achievement Award**
Stella McMillin, Vertebrate Pest Conference Chair
- 10:45 **A Retrospective Look at Mountain Lion Populations in California (1906-2018)**
Justin Dellinger, California Department of Fish and Wildlife, Rancho Cordova, CA
- 11:10 **Vector Control in Oakland's Homeless Encampments**
Michael Mooney, Alameda County Vector Control Services District, Oakland, CA
- 11:35 **Predator-Free New Zealand 2050 – Fantasy or Reality?**
James Ross, Lincoln University, Canterbury, New Zealand
- 12:00 **Session Close**



Tuesday, March 3 (PM)

CONCURRENT SESSION: VERTEBRATE PESTICIDES & REPELLENTS

San Rafael/Santa Ynez

- 1:20 **Session Welcome: Gary Witmer, Session Chair**
- 1:25 **Development of a Rodent Bait with Slug-Repellent Properties**
Tyler Bogardus, University of Hawai'i Office of the Vice President for Research and Innovation, Honolulu, HI
- 1:50 **Preliminary Field Efficacy of Anthraquinone Repellent to Reduce Drip Irrigation Line Damage by Cottontail Rabbits**
Christopher Anderson, University of California Agriculture and Natural Resources, Irvine, CA
- 2:15 **Evaluating the Efficacy of Carbachol at Reducing Corvid Predation on Artificial Nests**
Matthew P. Brinkman, Institute for Wildlife Studies, Blue Lake, CA
- 2:40 **A Field Evaluation of Candidate Repellents to Reduce Black Bear Damage to Western Larch Trees**
Gary Witmer, USDA, APHIS, WS, National Wildlife Research Center, Fort Collins, CO
- 3:05 **Break**
- 3:20 **Captive Canada Geese Acceptability and Toxicity Trials with Two Formulations of 0.005% Diphacinone Rodenticide Baits**
Gary Witmer, USDA, APHIS, WS, National Wildlife Research Center, Fort Collins, CO
- 3:45 **Zinc Phosphide Analysis in Vole: Revisiting An Old Technique**
Philippe Berny, Vetagro Sup, Marcy l'etoile, France
- 4:10 **Contrapest, a Rodent Fertility Control Product, that Does Not Bioaccumulate**
Brandy Pyzyna, SenesTech, Phoenix, AZ
- 4:35 **Brodifacoum and Diphacinone Exposure in Fetal Tissue of Pregnant Mountain Lions in California**
Jaime Rudd, California Department of Fish and Wildlife, Rancho Cordova, CA
- 5:00 **Session Close**
- 5:30 No-Host Welcoming Social - Santa Cruz-Anacapa

Tuesday, March 3 (PM)

CONCURRENT SESSION: Birds and their Management

Sierra Madre

- 1:20 **Session Welcome: Mike Taber, Session Chair**
- 1:25 **Rose-Ringed Parakeets in California: Established Populations and Serious Agricultural Threats**
Aaron B. Shiels, USDA, APHIS, WS, National Wildlife Research Center, Fort Collins, CO
- 1:50 **Utilizing Wireless Endoscopes to Capture Visual Nesting Data: An Affordable Time Efficient Solution**
Jason Thomas, University of Idaho, Rupert, ID
- 2:15 **Urban/Suburban Resident Goose Management: Insights from Colorado**
Kendra Cross, USDA Wildlife Services, Lakewood, CO

- 2:40 **Wild Turkey Use of Agricultural Fields in Southern Utah**
Nicki Frey, Berryman Institute, Utah State University, Cedar City, UT
- 3:05 **Break**
- 3:20 **Understanding and Preventing Bird Damage on Dairies**
Amber Adams Progar, Washington State University, Pullman, WA
- 3:45 **Pest Control by Generalist Predators Depends on Prey Density and Predator Effectiveness**
Elizabeth Hiroyasu, Bren School of Environmental Science & Management, University of California, Santa Barbara, CA
- 4:10 **Applying UAV Systems in Wildlife Management**
Matthew P. Brinkman, Institute for Wildlife Studies, Blue Lake, CA
- 4:35 **Vampire Bats: Preparing for Range Expansion into the US**
Michael J. Bodenchuk, USDA APHIS Wildlife Services, San Antonio, TX
- 5:00 **Session Close**
- 5:30 No-Host Welcoming Social - Santa Cruz-Anacapa

Wednesday, March 4 (AM)

SYMPOSIUM: PREDATORS AND THEIR MANAGEMENT

San Rafael/Santa Ynez

- 8:10 **Session Welcome: Dennis Orthmeyer, Session Chair**
- 8:15 **Does Aversive Conditioning Change Lake Tahoe (CA) Black Bear Behavior?**
Mario Klip, California Department of Fish and Wildlife, Mill Valley, CA
- 8:40 **A Case Study of the Eviction of a Female Bobcat and her four Kittens from a Suburban Backyard in Fremont, California**
Bridget C. Mooney, Alameda County Vector Control Service District, Alameda, CA
- 9:05 **Exploiting Olfactory Habituation with Unrewarding Prey Cues to Reduce Unwanted Predation**
Grant Norbury, Manaaki Whenua - Landcare Research, Alexandra, New Zealand
- 9:30 **Ten Years of Successful Management of the Invasive Raccoon Dog (*Nyctereutes procyonoides*) and the Evolution of a National Task Force for Invasive Alien Species: The Swedish Raccoon Dog Project**
P-A Åhlén, Swedish Association for Hunting and Wildlife Management, Ånäset, Sweden
- 9:55 **Break**
- 10:10 **M-44 Use by Non-USDA-Wildlife Services Applicators between 2006-2019 in Montana**
Stephen M. Vantassel, Montana Department of Agriculture, Lewistown, MT
- 10:35 **Paying for Prevention: Evaluating AZ Rancher Spending to Avoid or Reduce Conflicts with the Mexican Wolf**
Dari Duval, University of Arizona Cooperative Extension, Tucson, AZ
- 11:00 **The Wolf and Coyote Education Program**
Skie Bender, Wolf Haven International, Huntington Beach, CA

11:35 **Developing Alternatives to Protect Domestic Sheep from Predation in South Africa**
David L. Bergman, USDA APHIS Wildlife Services, Phoenix AZ

12:00 **Session Close**

Wednesday, March 4 (AM)

SYMPOSIUM: ISLAND INVADERS

Sierra Madre

8:10 **Session Welcome: Aaron Shiels, Session Chair**

8:15 **Large-Scale Aerial Baiting to Suppress Invasive Rats in Hawaii: Efficacy of Diphacinone and Associated Risks**
Aaron B. Shiels, USDA, APHIS, WS, National Wildlife Research Center, Fort Collins, CO

8:40 **Effectiveness of Automatic Traps for Landscape Level Rodent Control**
Tyler Bogardus, University of Hawai'i Office of the Vice President for Research and Innovation, Honolulu, HI

9:05 **Behavior of Invasive Ship Rats, *Rattus rattus*, on Goat Island around Self-Resetting Traps**
Markus Gronwald, University of Auckland, Auckland, New Zealand

9:30 **Do the Remains Remain? The Fate of Rat and Bird Carcasses in a Hawaiian Rainforest that is Managed for Rodents and Ungulates**
Abigail Kreuser, Kauai Forest Bird Recovery Project, Hanapepe, HI

9:55 **Break**

10:10 **Using AI to Improve Efficacy and Reduce By-Catch of A24 Traps in Hawaii**
Lisa H. Crampton, Pacific Cooperative Studies Unit, University of Hawaii and Hawaii Division of Forestry & Wildlife, Hanapepe, HI

10:35 **Trappability of Low Density Invasive Rats**
Markus Gronwald, University of Auckland, Auckland, New Zealand

11:00 **Proposed House Mouse Eradication from the South Farallon Islands, California USA**
Gerry McChesney, U.S. Fish and Wildlife Service, Fremont, CA

11:35 **The Lord Howe Island Rodent Eradication: Lessons Learnt From an Inhabited Island Rodent Eradication**
Grant Harper, Biodiversity Restoration Specialists, Murchison, New Zealand

12:00 **Session Close**

Wednesday, March 4 (PM)

SYMPOSIUM: PREDATORS AND THEIR MANAGEMENT

San Rafael/Santa Ynez

1:20 **Session Welcome: Robert Timm, Session Chair**

1:25 **At the Interface between Livestock and Predators: Reducing Depredation through Livestock Husbandry**
Martin H. Smith, College of Agricultural and Environmental Sciences, UC Davis, Davis, CA

- 1:50 **The Secret Lives of Livestock Guardian Dogs: Current Knowledge and Future Research**
Dan Macon, UC Cooperative Extension - Placer-Nevada-Sutter-Yuba Counties, CA
- 2:15 **The Need, Challenges, and Responsibility to Track Human-Coyote Conflicts in California**
Alex Heeren, California Department of Fish and Wildlife, Rancho Cordova, CA
- 2:40 **Do Coyotes Eat Mesocarnivores in Southern California? A Molecular Genetic Analysis**
Jennifer M. Shedden, Department of Biological Science, California State University, Fullerton, Fullerton, CA
- 3:05 **Break**
- 3:20 **Genetics and Movement: How Relatedness and Home Ranges of Feral Cats on Kaua'i Inform Management Strategies**
Alex Dutcher, Hallux Ecosystem Restoration LLC, Lihue, HI
- 3:45 **Are TNR Practices Increasing Conflicts Between Urban Coyotes and Free-Roaming Cats in Southern California?**
Danielle Martinez, Department of Biological Science, California State University, Fullerton, Fullerton, CA
- 4:10 **Measuring Density and Activity of Feral Cats on San Clemente Island Using Camera Traps**
Greg Gustafson, Institute for Wildlife Studies, San Diego, CA
- 4:35 **Session Close**
- 6:30 Hors d'oeuvres, Poster Session, and Vendors' Forum - Santa Cruz-Anacapa

Wednesday, March 4 (PM)

SYMPOSIUM: GENERAL PEST MANAGEMENT

Sierra Madre

- 1:20 **Session Welcome: Dirk Van Vuren, Session Chair**
- 1:25 **An Evaluation of Aggressive White-Tailed Deer Behavior on a College Campus**
George R. Gallagher, Department of Animal Science, Berry College, Mount Berry, GA
- 1:50 **Success of Anuran Traps Improved by Manipulating Acoustic Characteristics of Lures**
Benjamin J. Muller, University of Florida, Gainesville, FL
- 2:15 **Female Cane Toads Prefer Low Frequency, High Pulse-Rate Calls Globally**
Steve A. Johnson, University of Florida, Gainesville, FL
- 2:40 **Temperature and Humidity Variation Between Cage and Plastic-Walled Traps: Implications for Animal Welfare which used Cage and Box Traps**
Stephen M. Vantassel, Montana Department of Agriculture, Lewistown, MT
- 3:05 **Break**
- 3:20 **Feral Horse Use and Competition on Native Rangelands in Northeastern California**
Laura K. Snell, University of California Cooperative Extension, Modoc County, Alturas, CA
- 3:45 **The Pocatello Supply Depot: An Update**
Patrick Darrow, USDA WS Pocatello Supply Depot, Pocatello, ID

- 4:10 **Imperfect Data: Offering the Best Available Objective Data for NEPA Compliance**
Emily L. Blizzard, USDA Wildlife Services, Lakewood, CO
- 4:35 **Pilot Studies Keep Me Flying High**
Scott Hygnstrom, Wisconsin Center for Wildlife, University of Wisconsin-Stevens Point, Stevens Point, WI
- 5:00 **Session Close**
- 6:30 Hors d'oeuvres, Poster Session, and Vendors' Forum - Santa Cruz-Anacapa

Thursday, March 5 (AM)

CONCURRENT SESSION: RODENT MANAGEMENT AND DISEASE

San Rafael/Santa Ynez

- 8:10 **Session Welcome: Roger Baldwin, Session Chair**
- 8:15 **Flea Abundance, Species Composition, and Prevalence of Rickettsioses from Urban Wildlife in Orange County, CA, 2015-2019**
Amanda Penicks, Orange County Mosquito and Vector Control District, Garden Grove, CA
- 8:40 **No Clear Path toward Prevention: Lessons Learned from Fifteen Years of Investigating Flea-Borne Rickettsioses in Orange County, California**
Robert Cummings, Orange County Mosquito and Vector Control District, Garden Grove, CA
- 9:05 **Live-Trapping Norway Rats in Homeless Camps in Oakland, California, and the Implications for Public Health**
Adena Why, Alameda County Vector Control Service District, Alameda, CA
- 9:30 **Homeless Encampments Location Critical in Vector-Borne Disease Potential**
Daniel Wilson, Alameda County Vector Control Service District, Alameda, CA
- 9:55 **Break**
- 10:10 **Proposed Methods for Detecting Nutria (*Myocastor coypus*) in California Using Environmental DNA**
Michael R. Buchalski, Genetics Research Laboratory, California Department of Fish and Wildlife, Sacramento, CA
- 10:35 **Assessing Beaver Occupancy and Dam Building Potential: A Case Study in the Umpqua Watershed of Southwestern Oregon**
Vanessa Petro, Oregon State University, Corvallis, OR
- 11:00 **Bait Station Placement as a Method to Reduce Wildlife Exposure to Rodenticides**
Christopher B. Burke, Department of Biological Science, California State University, Fullerton, CA
- 11:25 **Potential Secondary Toxicity Risk Associated with Differing Application Strategies of Diphacinone-Treated Grain for California Ground Squirrel Control**
Roger A. Baldwin, Department of Wildlife, Fish, and Conservation Biology, University of California, Davis, CA
- 11:50 **Session Close**

Thursday, March 5 (AM)

SYMPOSIUM: ISLAND INVADERS

Sierra Madre

- 8:10 **Session Welcome: Aaron Shiels, Session Chair**
- 8:15 **Factors Leading to Successful Island Rodent Eradications Following Initial Failure**
Araceli Samaniego, Independent Island Restoration Consultant, Auckland, New Zealand
- 8:40 **If at First You Don't Eradicate: Remediating Rat Eradication Failure on Wake Atoll**
Peter J. Kappes, USDA APHIS Wildlife Services National Wildlife Research Center, Hilo, HI
- 9:05 **Tropical Island Rat Eradication Failures – Hope for the Future**
Grant Harper, Biodiversity Restoration Specialists, Murchison, New Zealand
- 9:30 **The Effectiveness of Long-Term Adaptive Predator Control Programs for the Protection of Endangered Seabirds on Kaua'i**
Kyle Pias, Hallux Ecosystem Restoration LLC, Lihue, HI
- 9:55 **Break**
- 10:10 **Modeling the Management of Non-Native Game Mammals to Reduce Future Conflicts with Native Plant Conservation in Hawai'i**
Steven C. Hess, U.S. Geological Survey, Pacific Island Ecosystems Research Center, Hawai'i National Park, HI
- 10:35 **Flavor Preference of Oral Rabies Vaccine Baits by Small Indian Mongooses (*Herpestes auropunctatus*) in Southwestern Puerto Rico**
Are R. Berentsen, USDA APHIS WS National Wildlife Research Center, Fort Collins, CO.
- 11:00 **Evaluating the Airsoft Electric Gun for Control of Invasive Reptiles: Ballistic Tests and Impact on Brown Treesnakes**
Adam Knox, Maui Invasive Species Committee, Wailuku, HI
- 11:25 **Automated Aerial Baiting for Invasive Brown Treesnake Control: System Overview and Program Status**
Shane R. Siers, USDA APHIS Wildlife Services, National Wildlife Research Center, Barrigada, Guam
- 11:50 **Session Close**

Thursday, March 5 (PM)

CONCURRENT SESSION: RODENT MANAGEMENT AND DISEASE

San Rafael/Santa Ynez

- 1:20 **Session Welcome: Jim Hartman, Session Chair**
- 1:25 **Integrated Pest Management Strategies for Round-Tailed Ground Squirrels**
Shaku Nair, University of Arizona, Maricopa, AZ
- 1:50 **Estimating the Number Rodents Killed by Barn Owls Nesting in Boxes on Winegrape Vineyards**
Dane St. George, Humboldt State University, Arcata CA
- 2:15 **Use of Self-Resetting Traps for California Ground Squirrel (*Otospermophilus beecheyi*) Control**
Kenneth Gilliland, University of California, Santa Barbara, CA.

- 2:40 **Sustained Release Long-Life Lures and Bait Consumption Motivators for Rats**
Michael Jackson, Victoria University of Wellington, Wellington, New Zealand
- 3:05 **Break**
- 3:20 **Carbon Monoxide (CO) to Control Gophers and Ground Squirrels: An Alternative to Anticoagulant Rodenticides**
Rebecca Dmytryk, Humane Wildlife Control Association, Moss Landing, CA
- 3:45 **Evaluating Habitat Manipulation as a Strategy for Rodent Control in Agricultural Ecosystems of Pothwar Region, Pakistan**
Department of Wildlife Management, PMAS-Arid Agriculture University Rawalpindi, Rawalpindi, Pakistan
- 4:10 Session Close

Thursday, March 5 (PM)

SYMPOSIUM: ISLAND INVADERS

Sierra Madre

- 1:20 **Session Welcome: Aaron Shiels, Session Chair**
- 1:25 **Field Efficacy Following Re-Development of the Rat-Specific Toxin Norbormide**
Michael Jackson, Michael Jackson, Victoria University of Wellington, Wellington, New Zealand
- 1:50 **Island Eradications of the Future: RNAi as a Selective Tool**
Katherine Horak, USDA APHIS WS NWRC, Fort Collins, CA
- 2:15 **Efficacy of Snap Traps and Automatic Traps for Rodent Removal in Montane Rainforests on Kaua'i**
Tara Mojzuk, Hallux Ecosystem Restoration LLC, Lihue, HI
- 2:40 **Overview of wildlife damage management in the Caribbean**
Alan Shane McKinley, USDA, APHIS, Wildlife Services Alabama, Puerto Rico, Virgin Island State Program, Caribbean District
- 3:05 **Break**
- 3:20 **Towards a Predator Free New Zealand**
Grant Norbury, Manaaki Whenua - Landcare Research, Alexandra, New Zealand
- 3:45 **Session End**

POSTER SESSION
Wednesday, March 4 (6:30-8:00 PM)
Santa Cruz-Anacapa
Session Chair: Roger Baldwin

Using Camera Traps to Assess the Effects of Predator Urine on Potential Nuisance Wildlife

Cara Yocom-Russell, Missouri University of Science and Technology, Rolla, MO

Benefits of Sewer Baiting to Decrease Norway Rat Population

Celina Guerra-Martinez, Alameda County Vector Control Services District, Oakland, CA

Age Distribution of Urban Coyotes in Southern California: A Comparison of Tooth Wear and Cementum Annuli Methods

Ariana Mc Kenzie, Department of Biological Science, California State University, Fullerton, CA

Avian Pests of Cereal Crops in Rainforest and Savanna Agro-Ecological Zones, Ondo State, Nigeria

Oluwadunsin Adekola, Federal University of Technology, Akure, Nigeria

What's in the Box? The Essentials for a Successful Barn Owl Nest Box

Rebecca Dmytryk, Humane Wildlife Control Inc., Moss Landing, CA

The Effects of Feral Cat Feeding on Urban Wildlife and their Human Neighbors in Alameda County

Valerie Winters, Alameda County Vector Control Services District, Oakland, CA

Skunk Exclusion at County of Santa Clara Vector Control District: A Demonstration Project

Beverly Perez, Santa Clara County Vector Control District, San Jose, CA

Keeping an Eye on Human Wildlife Conflict and Vertebrate Pests in Southern California: The Wildlife Watch Program

Alexander Heeren, California Department of Fish and Wildlife, Rancho Codova, CA

Novel Methods for Barn Owl Hunting Within the Hawaiian Islands

Elizabeth Baxter, Hallux Ecosystem Restoration LLC, Lihue, HI

Consumption of Rat Carcasses as a Pathway of Rodenticide Exposure of Wildlife in Southern California

Brandon Lotts, Department of Biological Science, California State University, Fullerton, CA

Exclusive Residential Exclusion

Gary Kunselman, Alameda County Vector Control Services District, Oakland, CA

Common roof rat (*Rattus rattus*) Plant Associations Observed in Alameda County California

Flora Kwan, Alameda County Vector Control Services District, Oakland, CA

A Holistic Approach to Nuisance Wildlife

Rebecca Dmytryk, Humane Wildlife Control Inc., Moss Landing, CA

**Commercial Exhibits
(Tuesday – Thursday)**

Automatic Trap Company

Ty Huggins

ty.huggins@automatictrap.com

Liphatech Inc.

Ross Horn

hornr@liphatech.com

Motomco Ltd.

Sherry Lockrem

slockrem@motomco.com

National Wildlife Control Training Program (NWCTP)

Kirsten Smith

kirsten@nwctp.com

National Wildlife Control Operators Association (NWCOA)

Christie Meresse

christie@nwcoa.com

Senestech

Ryan McMillan

ryan.mcmillan@senestech.com

The Berryman Institute

Dr. Nicole Frey

Nicki.frey@usu.edu

Tomahawk Live Trap Co.

Kyle Smith

kyle@livetrap.com

RCO International

Doug Freeman

rcoinc@earthlink.net

VM Products

Debra Wright

dwright@vmproducts.com

29th VERTEBRATE PEST CONFERENCE

CONFERENCE CHAIR:

Stella McMillin, California Department of Fish and Wildlife
(916) 358-1987; Email: stella.mcmillin@wildlife.ca.gov

PROGRAM CHAIR:

Niamh Quinn, University of California Cooperative Extension
(949) 301-9182; Email: nmquinn@ucanr.edu

REGISTRATION:

Jennifer Gonzalez and **Lillian Mignella**, Target Specialty Products.
(831) 562-802; Email: jennifer.gonzalez@target-specialty.com, lillian.mignella@target-specialty.com

LOCAL ARRANGEMENTS:

Greg Hacker, California Department of Public Health
(916) 686-8083; Email: Greg.Hacker@cdph.ca.gov

FIELD TRIP:

Mike Taber, Wildlife Control Technology
Email: miket@wildlife-control.com

COMMERCIAL DISPLAYS:

Aaron Shiels, USDA National Wildlife Research Center
(916) 445-4239; Email: aaron.b.shiels@usda.gov
John Eisemann, USDA National Wildlife Research Center
(970) 266-6158; Email: john.d.eisemann@aphis.usda.gov

POSTER AND STUDENT AWARD COORDINATOR:

Roger A. Baldwin, University of California, Davis
(530) 752-4551; Email: rabaldwin@ucdavis.edu

CONTINUING EDUCATION

Edmund Duarte, Alameda County Agricultural Commissioner's Office
(926) 245-0853; Email: ed.duarte@acgov.org

PUBLICITY:

Dirk VanVuren, University of California, Davis
(530) 752-4181; Email: dhvanvuren@ucdavis.edu

Plan to attend the
30th Vertebrate Pest Conference
March 7-10, 2022
Grand Sierra Resort, Reno, NV

Notes: