Challenges of Climate Change 2019–2021

a Science Art-Nature project

Carel Pieter Brest van Kempen

Ann Geise

Jonathan Minshull

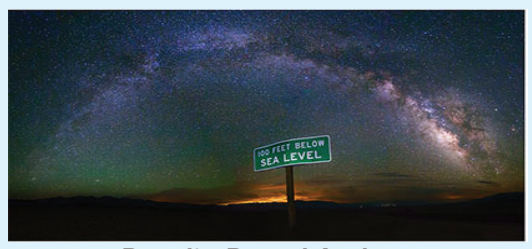
Linda Besse

Top five entries from the first two years of the exhibit

Michele Guieu

Chris Bacon

Mark Everett Larson



Rogelio Bernal Andreo

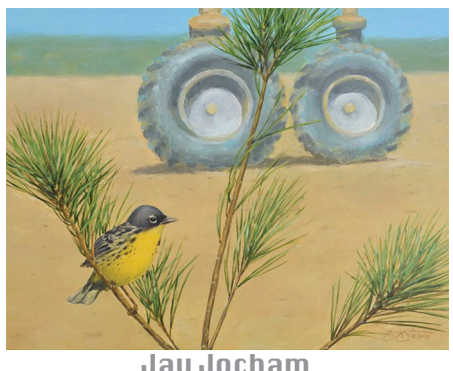
Linda Besse (3), Chris Bacon (1), Mark Everett Larson (4), Michele Guieu (2), Rogelio Bernal Andreo (5)

A VIRTUAL EXHIBIT

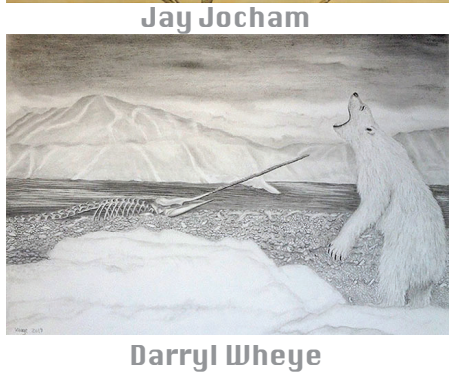
Thomas Anderson

Tony Angell

Andrew Denman



Jay Jocham



Darryl Wheye

Guy Coheleach

The exhibit is dedicated to SA-N founding Board member and first Chair Donald Kennedy, who died of Covid-19 in 2020.

To see the exhibit, visit **Science Art-Nature.org**

Jay Jermyn Johnson

Thomas Anderson *Rousseau Walks on Trumpet Paths* **Species:** Ridgway's rail (*Rallus obsoletus*)
The Ridgway's rail is a near-threatened species unique to California's coastal saltwater wetlands, a habitat mostly lost to waterfront developments and marinas. A small population breeds successfully at the Bolsa Chica Ecological Reserve near my home. Coastal saltwater wetlands exist where land meets the tides, and the rising sea level will further threaten these and other creatures that are dependent upon the wetlands. Artist's website: thomasanderson.net

Tony Angell *Emissaries* **Species:** common raven (*Corvus corax*) **Location:** Mt. Baker Ski Area Entry, Whatcom County, WA USA
Throughout history ravens have maintained a close association with humankind. From native cultures in the Pacific Northwest to the traditions of Nordic myths people listened to the wisdom they believed the raven spoke to them. Consider what these birds are telling us today of what we face in the challenges of climate change and a disregard of sustaining and restoring wild Nature. Artist's website: tonyangell.net

Rogelio Bernal Andreo *Below and Above*
Below and Above conveys intertwining narratives: As the human-made sign calls to mind Earth's rising sea level in response to human activity, the vast arch of the Milky Way reminds viewers "down here" of our place in the Universe, while demonstrating how much of the night sky we're losing to light pollution. (Who looks up, when there's so little left to see?). Astrophotography, as this image shows, can simultaneously encourage us consider the effects of sea level rise, such as the 3-inch inundation of salt water into coastal habitats since1993 and the loss of the night sky and its possible influence, for example, on nocturnal migrants, like songbirds. Artist's website: deepskycolors.com

Chris Bacon *Study For A Day In May* **Species:** blue damselfly (*Enallagma cyathigerum*)
Because of their genetic makeup, damselflies have the ability to evolve rapidly and adapt to climate-driven changes in their environment. Genes that govern heat tolerance and vision, for example, may help them cope with extreme temperatures and hurdles in finding food and mates as populations shift to novel areas. Artist's website: chrisbacon.com

Linda Besse *Ice Bear* **Species:** polar bear (*Ursus maritimus*)
Historically, polar bears have conducted winter hunting from sea ice, capturing fat-rich seals. With the loss of sea ice to warming oceans, however, they have a much harder time fattening up for the long summer. There is a ray of hope, though: Hudson Bay, where the bears have learned to hunt beluga whales entering the bay spring through fall. Using the 14-foot tidal change, polar bears will climb the glacial erratics and leap onto the whales as they come into shallow water. Many summer and fall bears walk around with a full belly that will reduce the stress of the winter hunting season. While the Hudson Bay polar bears can rely on beluga whales, many Arctic regions lack alternative high-fat prey. How will the bears adapt in those regions? Artist's website: besseart.com

Carel Brest van Kempen *Instant of Opportunity–Spiny-headed Treefrog and Emerald Toucanets* **Species:** spiny-headed treefrog (*Anotheca spinosa*), emerald toucanet (*Aulacorhynchus prasinus*)
Cloud forests are tropical montane ecosystems that are regularly shrouded within a cloud. Because of their small size and fragmented nature, they share many characteristics with island ecosystems, including high rates of plant and animal speciation and endemism. With the advance of climate change, the weather patterns that form cloud forests are expected to shift, with an attendant loss of biodiversity and possible total extinction of many of these forests. Artist's website: cpbrestvankempen.com

Guy Coheleach *At Ease* **Species:** cheetah (*Acinonyx jubatus*)
The estimated 7,000 cheetahs that remain are restricted to less than 10 percent of their historical range. Three-quarters live outside of protected areas. The cats are at risk to multiple threats including habitat loss, declining prey (such as favored Thomson's gazelle) and reproductive constraints. Climate change exacerbates the on-going pressures. Caption provided by the curator. Artist's website: guycoheleachart.com

Andrew Denman *Totem #6: Teton Totem, Stacked Ungulates with Ravens and Bald Eagle* **Species:** American bison (*Bison bison*), moose (*Acles acles*), elk (*Cervus candensis*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*), bald eagle (*Haliaeetus leucocephalus*), common raven (*Corvus corax*)
My Totem Series is about the delicate balance of wild things and wild places, especially in light of human-caused challenges. Mountain habitats that are subject to extreme seasonal changes are especially susceptible to climate change. The range of many of iconic North American mammals--including those portrayed here, which are found in and around the Grand Tetons of Wyoming--are already shifting. Artist's website: andrewdenman.com

Ann Geise *Yellow-bellied Sunbird-Asity* **Species:** yellow-bellied sunbird-asity (*Neodrepanis hypoxantha*)
A Madagascar endemic, the yellow-bellied sunbird-asity is a colorful, elfin bird that feeds in a hyperactive manor on nectar and insects. Its range is restricted to the higher elevation scrubby woodlands of the island's eastern highlands. While this habitat has low economic value it's on a projectory of steady decline and fragmentation due to tree clearing and grassland burning for agriculture. A 2013 study predicts climate change will be extremely problematic for this species, projecting the loss of as much as 98 percent of its ecological niche by 2050. Artist's website: anngeiseart.com

Michele Guieu *Plankton, Our Invisible Foundation* **Species:** phytoplankton--dinoflagellates and diatoms; zooplankton--copepods, radiolarians, isopods, jelly medusas, amphipods, cryptomonas, choaetoeros, melosira **Photo courtesy Andy Morris © 2019** This immersive installation is about making phytoplankton and zooplankton visible. Phytoplankton, the base of the marine food web, provide about 50 percent of the oxygen we breathe. They are responsible for a large part of the transfer of carbon dioxide from the atmosphere to the ocean. As climate change increases the concentration of carbon dioxide in the atmosphere, it increases the acidification of the ocean. As acidification impacts plankton, it impacts the entire marine ecosystem, and beyond. Interactive components invite the public to learn about these amazing organisms, create images of plankton using reflective paper stickers, and add images to the luminescent mural. Venues have included Tech Interactive (San Jose, CA 2019) and the Santa Cruz Museum of Art (Santa Cruz, CA 2015, 2018). Artist's website: micheleguieu.com

Jay Jocham *There Goes the Neighborhood* Species: Kirtland's warbler (*Setophaga kirtlandii*)
The links between industrial agriculture (large-scale farming, often utilizing chemicals) and climate change are multi-fold: Production is typically large-scale, energy-intensive and fossil-fuel based and thus contributes significantly to the warming of the planet. In central Wisconsin where I live, many fields cleared for farming were once thriving forests and home to carbon-capturing trees. Today, species such as the Kirtland's warbler that breeds there are now severely endangered. Science Art note by the curator: The Kirtland's warbler also breeds in Michigan and Ontario, Canada exclusively in stands of young, dense, scrubby jack pine forest at least 80 acres in size that are at risk to fire suppression policies. Artist's website: jayjocham.com

Jay Jermyn Johnson *Royal Albatross Approaching Land* **Species:** northern royal albatross (*Diomedea epomophora*)
Northern royal albatross are slow to reproduce. They lay just one egg every other year and the survival of that egg is put at risk by increasing global temperatures. At Taiaroa Head in New Zealand, where nesting albatross are carefully monitored, both egg and chick mortality due to heat stress has been steadily increasing.
Artist's website: Johnson page in Artists For Conservation

Mark Everett Larson *Seven Halos* **Species:** lion (*Panthera leo*), greater flamingo (*Phoenicopterus roseus*), rufous hummingbird (*Selasphorus rufus*)
The 50,000-acre 2017 Columbia Gorge fire in Oregon's Columbia River Gorge National Scenic Area inspired this painting, which won the Haynes Galleries Award in the 14th annual Art Renewal Center International Salon. A lion, flamingos and hummingbirds take refuge high above the blaze in this imaginary setting borrowed in part from the artist's travels in Italy. Although this fire was human-caused, the drying effects of climate change doubled the amount of large forest fires from 1984 to 2015, and is projected to increase the size and severity of future fires. Science Art note on halos by the curator: In nature, halos are optical phenomena that are the result of light (usually from the sun or moon) interacting with ice crystals suspended in the atmosphere. They vary from white to various colors and from rings to arcs to spots. In art, the halo (or nimbus) conveys a symbol of light, and appears in pagan Hellenistic Greek and Roman art, and later in Christian art, and in Buddhist art in India. Artist's website: marklarsonart.com

Jonathan Minshull *Twilight Prayer* **Species:** Eurasian badger (skull) (*Meles meles*)
This image expresses compassion for the species losing their lives and habitats to urban sprawl and expanding land use for agriculture and livestock and calls attention to the Eurasian badger. To reduce the incidence of bovine tuberculosis in cattle, badgers are culled regularly. Although the efficacy of this practice is questioned, badger culls are widely considered cruel and inhumane, and vaccination is seen as a preferred long-term strategy. Southwestern populations of Eurasian badgers are facing range pattern shifts from both landscape and climate change. The girl in the painting is gently holding and contemplating a badger skull as fire destroys a forest. Artist's websites: jonathanminshull.com

Darryl Wheye *Polar Bear and Spent Narwal Carcass* **Species:** polar bear (*Ursus maritimus*), narwhal (*Monodon monoceros*)
Polar bears, which once got through times of scarcity by scavenging whale carcasses, are running out of this critical stopgap thanks to climate change.
Artist's website: darrylwheye.com