

LONG ISLAND NATURAL HISTORY CONFERENCE

SCHEDULE of PRESENTATIONS

Friday March 24, 2017

- 8:00 - 9:00 Registration / set up
- 9:00 - 9:10 Welcoming Remarks: Tim Green, Environmental Compliance
Manager, Brookhaven National Laboratory
- 9:10 - 9:50 *Horseshoe Crabs: IUCN Red Listing and World Heritage Species
Designation for a Global Conservation Icon in Dire Straits.*
John T. Tanacredi, Ph.D.
Department of Biology, Chemistry and Environmental Studies, and
Director of CERCOM, Molloy College
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“Limulus in the Limelight” was published in 2001 as a result of several mini-symposia highlighting the work of Dr. Carl Schuster and the National Park Service. In 2007 with encouragement from Dr. Carl Schuster, Dr. Sylvia Earle, Dr. Mark Botton, and Dr. Koichi Sekiguchi, the first International Conference on the Biology and Conservation of Horseshoe Crabs was conducted with 45 scientists from 12 countries resulting in the first publication in 2009. Subsequently a second international meeting in 2011, held in Wetland Park, Hong Kong, in collaboration with Dr. Paul Shin and Dr. S. G. Cheung at City University Hong Kong, further revealed the increasing dilemma of conserving the 4 species of horseshoe crabs from the impacts of using them for bait; for blood extraction in the growing business of LAL (Limulus Amoebocyte Lysate); and their egg source of protein for millions of migrating birds. In 2012 the IUCN; SSG committee, prompted by considerable interest in the international sale of Horseshoe Crab’s to the USA for bait, an investigation revealed that in Indonesia, over 10,000 adult crabs were being harvested per day to bleed out for LAL/TAL production and then sacrificed for an exotic food demand. The IUCN Specialist Group for study of Horseshoe Crab’s established its goal to include all four species as Red Listed. In 2016, the SSG representatives (M. Botton, J. Mattei, P. Shin, and J. Tanacredi) prepared an e-poster and contributed a webpage on Horseshoe Crabs at the IUCN World Congress held in Hawaii. The Red List Report for Limulus prepared by the Red List Committee of the SSG for Horseshoe Crab chaired by D. Smith of USGS, was presented and accepted for detailed review by IUCN. This presentation outlines this global effort required and ultimately the actions necessary to protect Horseshoe Crab’s within their range and special emphasis is on Horseshoe Crab habitat on Long Island.

Dr. Tanacredi has published widely on conservation ecology, ecotoxicology and the horseshoe crab with over 55 peer reviewed scientific publications and five books. His most recent book, Conservation and Biology of Horseshoe Crabs, Springer, 2009 was one of the

initiating factors in conducting the first Asian Horseshoe Crab Conference in Hong Kong in 2011. He continues his horseshoe crab (HSC) inventory of some 111 locations on Long Island, tracking HSC breeding conditions and habitat. Other research activities include captive breeding techniques for aquacultured HSC's and Great South Bay shellfish restoration activities. He was the founding member of the IUCN-SSG for Horseshoe Crabs, coordinator of the 1st International Conference on Horseshoe Crab Conservation and Biology (2007), a committee member of the "International Workshop on the Science and Conservation of Horseshoe Crabs" and the IUCN-SSG Workshops in Sasebo-City, Japan (June 2015), and was part of the formal IUCN-World Congress in Hawaii, (September, 2016).

9:50 - 10:30 *Freshwater Fishes of Long Island: What are they and where did they come from?*
Chart Guthrie, Regional Fisheries Manager, NYSDEC, Stony Brook.
Chart.guthrie@dec.ny.gov

Long Island is surrounded by saltwater, so it is not surprising that the diversity of freshwater fishes on Long Island is low when compared with the rest of New York State. Unlike the 179 species listed in the recently released *Atlas of Inland Fishes of New York*, Long Island freshwaters have only about 38 species of fish with naturally reproducing populations. Of those 26 are native to Long Island. We will explore the freshwater fishes of Long Island, where they came from and how they got here, with special emphasis on the species that got here on their own. We will also look at why there are some species on Long Island that are found nowhere else in New York. Finally we will address some of the threats to freshwater fishes on Long Island and look at some of the things that are being or can be done to alleviate those threats.

Chart Guthrie is the Regional Fisheries Manager with the New York State DEC. He is in charge of freshwater fisheries management in DEC Region 1, Nassau and Suffolk Counties. Chart has a BS Degree in Environmental Science and Zoology from Michigan State University and an MS Degree in Aquatic Science from Cornell University. He has been managing the freshwater fisheries resources on Long Island for 35 years.

10:30 - 10:50 BREAK

10:50 - 11:30 *Restoring Tributaries and River Herring on Long Island*
Enrico Nardone, Esq., Executive Director
Seatuck Environmental Association
egnardone@seatuck.org

At one time all of Long Island's coastal tributaries hosted a spring spawning run of river herring. But dams and culverts took their toll, blocking the migratory fish from accessing freshwater habitat and largely extirpating them from the region. But over the past 15 years efforts have been made to restore these ecologically important fish. This work, which

has picked up steam in recent years, has been led by the Long Island Diadromous Fish Workgroup (DFWG), a coalition of government agencies and non-profits. Enrico Nardone, who chairs the DFWG, will bring us up to speed on the status of the restoration effort. He'll detail where the fish are known to exist on Long Island, where restoration projects are underway and how the public can get involved.

Enrico has been the director at Seatuck since 2001. Prior to joining the organization he practiced environmental and land use law for a private law firm and worked as a staff attorney at the National Audubon Society. In his career, he has also spent time at the Georgetown Environmental Law Institute and The Wilderness Society.

11:30 - 12:10 *Herpetofauna of the Northeast Coastal Region*
Alvin Breisch, Roosevelt Wild Life Station
College of Environmental Science and Forestry, Syracuse
arbreisch@yahoo.com

The northeast coastal region extends from the rocky shores of Maine to the sandy beaches of Cape Cod, Long Island, New Jersey, Delaware and Virginia. Coastal habitats include beaches, sand dunes, maritime forests, salt and freshwater wetlands, freshwater streams and ponds, and large areas of low lying uplands that often extend many miles inland. Coastal habitats support 106 of the 155 species of amphibians and reptiles native to the 11 coastal states of the northeast. At least 43 of these species are, or were previously, found on Long Island. My talk will focus on distribution, conservation efforts, and threats to a few of the species that are regionally significant or that are adapted to the well-drained sandy soils that are prevalent in the major coastal areas of the northeast. Two of these, the Eastern Tiger Salamander and the Eastern Mud Turtle, are listed as endangered in New York. The Eastern Cricket Frog is also listed as endangered and the Timber rattlesnake is listed as threatened, but both have been extirpated from Long Island.

Alvin Breisch is a collaborator with the Roosevelt Wild Life Station at the College of Environmental Science and Forestry in Syracuse. Previously he was the Amphibian and Reptile Specialist for the NYS Department of Environmental Conservation before retiring in 2009 after 29 years. He has served as co-chair of both the national steering committee for Partners in Amphibian and Reptile Conservation (PARC) and Northeast PARC. He is the director of the New York Amphibian and Reptile Atlas Project and is coauthor of [The Amphibians and Reptiles of New York State: Identification, Life History and Conservation and Habitat Management Guidelines for Amphibians and Reptiles of the Northeastern United States](#). His latest book: [The Snake and the Salamander: Amphibians and Reptiles from Maine to Virginia](#) was released by Johns Hopkins University Press in January.

12:10 - 1:30 LUNCH

1:30 - 2:10 *What's so special about the Long Island Dwarf Pine Plains?*
Jessica Gurevitch, Ph.D.

Department of Ecology and Evolution, Stony Brook University
jessica.gurevitch@stonybrook.edu

Dwarf Pine Plains exist on L.I. and in only a few other places where pitch pines exist. Ecological scientists, hikers, naturalists and environmentalists have been fascinated and charmed by the little pines ever since they became known. With a group of other researchers, I studied the recovery of the Dwarf Pines from the 1995 fire, following marked plants from germination to tree-hood until 2009. I will talk about some of the surprising results we found for growth rates, soils, survival, age to first cone production, and numbers of cones produced.

Jessica Gurevitch is a Professor in the Department of Ecology and Evolution at Stony Brook University. She is a plant ecologist, and has worked on plant populations and communities, plant demography, biological invasions, and research synthesis and meta-analysis, among other topics in ecology. She has carried out field research on Long Island and in the Adirondacks for many years. She wrote a textbook on plant ecology (*The Ecology of Plants*, by Gurevitch, Scheiner and Fox) as well as other books and scientific papers. Dr. Gurevitch did her undergraduate work in the College of Agriculture and Life Sciences at Cornell University, her Ph.D. at the University of Arizona, and postdoctoral research at University of Chicago. She has been a faculty member at Stony Brook University since the Paleozoic, and she enjoys the company of people as well as of plants.

2:10 - 2:50

The American beachgrass microbiome: spying on private conversations underground.

Javier A. Izquierdo, Ph.D.

Assistant Professor, Department of Biology, Hofstra University

Ammophila breviligulata, commonly referred to as American beachgrass, is considered an important sand dune architect of barrier islands and other coastal environments in the mid-Atlantic and Northeast. A variety of interesting adaptations allow it to colonize and trap sand in order to promote the formation of dunes that offer protection to these coastal ecosystems. When severe storms and events like Hurricane Sandy dramatically disturb or eliminate dunes, many efforts in ecosystem restoration are made to replant beachgrass in affected areas. However, many of these efforts are not successful due to a wide variety of biotic and abiotic factors. My research group is interested in the role that microbial communities, or microbiomes, play in healthy beachgrass growth. Microbes in terrestrial environments not only have intimate relationships and interactions with plants but also play a key role in nutrient cycling and chemical modifications of these environments. We have characterized the microbiomes associated with the soils and roots of beachgrass samples collected along the South Shore of Long Island comparing a variety of beachgrass growth conditions. We are learning that the microbial communities associated with beachgrass are not only very well structured but also extremely diverse. More importantly, we have also observed a variety of patterns in these microbiomes associated with the health of the plant. We have also been able to identify microbial species that could play a

key role in promoting root growth in their molecular signaling exchanges with beachgrass. This work will serve as the basis to identify and test the specific microbiome-beachgrass interactions that could be promoted in the wild and local coastal communities for successful beachgrass replanting efforts.

Dr. Javier A. Izquierdo is an Assistant Professor in the Department of Biology at Hofstra University. Research in Dr. Izquierdo's lab explores the metabolic diversity of microbial processes and the applications we can derive from them. He utilizes cross-disciplinary approaches incorporating microbiological, ecological, evolutionary, molecular and genomic techniques to 1) understand beneficial plant-microbe interactions promoting plant growth and health and 2) discover novel microbial applications for the production of biofuels. Dr. Izquierdo holds a B.Sc. in Biology from Case Western Reserve University and a Ph.D. in Microbiology from the University of Massachusetts Amherst.

2:50 - 3:30 *Plankton blooms, decreasing temperatures and recent fishkills: is there a connection?*
Sixto Portilla, The Graduate Center, CUNY
openwater.sixto@gmail.com

A series of recent publications by the speaker record the effect of some nutritional characteristics of marine plankton on the mortality of one local marine ectotherm, the hard clam, *Mercenaria mercenaria*, resulting from decreasing temperature. They describe the regulation of cell membrane viscosity in ectothermic organisms in response to decreasing temperature. More importantly, these works articulate the role of two dietary omega-3 fatty acids, EPA and DHA, abundant yet variable in our local phytoplankton, in facilitating successful acclimation of marine planktivores, like Atlantic menhaden, to decreasing temperature. The speaker has compiled records of plummeting atmospheric temperature, water temperature and the ephemeral presence of blooming phytoplankton to assemble a theory of the primary cause of recent, nuisance fishkills in New York waters and throughout New England.

Sixto Portilla began his graduate studies in 1996 in water resources; earning a Master of Science degree in Environmental Engineering from Manhattan College. He began studying estuarine ecology in 2007, and shortly afterwards, in 2008, began his doctoral work at the City University of New York. It is from his work on “the influence of diet on hard clam acclimation to decreasing temperature” that his topic for today’s discussion is derived.

3:30 - 4:00 Open Discussion / closing remarks

Saturday March 25, 2017

- 8:00 - 9:00 Registration / set up
- 9:00 - 9:10 Welcoming Remarks
- 9:10 - 9:50 *What Every Naturalist Should Know About the Geologic History and Glacial Geomorphology of Long Island*
Dr. J Bret Bennington, Department of Geology, Environment, and Sustainability, Hofstra University
J.B.Bennington@hofstra.edu

The Long Island that we know came into existence around 20,000 years ago at the peak of the Wisconsin Glaciation. All of Long Island's natural landscapes are in some way a product of the glacial and peri-glacial environments and processes of deposition at the margin of the Laurentide ice sheet. Recent investigations of Long Island's geomorphology based high resolution digital elevation data coupled with new observations from the field have significantly extended our understanding of the processes that produced Long Island's various landscapes and geomorphic features and led to modifications of our understanding of the formation of Long Island. New findings include the role of subglacial meltwater tunnels in carving the valleys of the western necks and depositing the intermorainal outwash plain, the incorporation by ice-thrusting of allochthonous blocks of coastal plain strata in the Harbor Hill moraine, the role of permafrost in the erosion of stream valleys south of the Ronkonkoma moraine, and the evidence for a true terminal moraine on the continental shelf south of the shoreline of Long Island. This presentation will review the most interesting and significant new findings about the geologic history and geomorphology of Long Island coming from a number of geoscientists, naturalists, and teachers on Long Island. I will also emphasize the connections between glacial features and modern habitats and ecosystems around Long Island.

Dr. J Bret Bennington is currently Professor of Geology and Chair of the Department of Geology, Environment, and Sustainability at Hofstra University where he has been teaching since 1993. His B.S. degree in biology/geology is from the University of Rochester (1985) and his Ph.D. in geology is from Virginia Tech (1995). His research in paleontology includes the quantitative analysis of the fossil record to learn about the evolution of ecological communities over long intervals of time, as well as the statistical analysis of fossil invertebrate assemblages and fossil footprints. Other research interests include the glacial history and glacial geomorphology of Long Island and the record of past hurricane and major storm events preserved in the marsh and bay sediments of southern Long Island. Bennington's teaching activities include courses in physical geology, historical geology, dinosaurs, hydrology, geomorphology, paleontology, and Charles Darwin and evolution. Dr. Bennington also co-directs a study abroad program in the Galápagos Islands and Ecuador. He is a member of the Geological Society of America, the

Paleontological Society, the Society for Economic Paleontology and Mineralogy, and a former board member of the New York State Council of Professional Geologists.

9:50 - 10:30 *From Plankton to Whales: Why our local waters are worth protecting.*
Christopher Paparo, Marine Sciences Center Manager,
Stony Brook University, School of Marine and Atmospheric Sciences
fishguyphotos@gmail.com

With endless stories and photos of fish kills, harmful algal blooms, oil spills, beach closures, etc. filling our daily newsfeeds, it appears that our environment is in a horrific state of “Doom and Gloom”. Although we do face many environmental challenges, this constant bombardment of negativity creates a lack of enthusiasm among local communities when it comes to protecting our environment. Regain your enthusiasm for protecting our marine environment by learning about some of the fascinating marine life that inhabits the waters of Long Island.

Born and raised on Long Island, Chris Paparo has been exploring the wilds of the island for over 30 years. As wildlife photographer, writer and lecturer, he enjoys bringing public awareness to the diverse wildlife that calls the island home. His passion for coastal ecology, fishing and the outdoors led him to obtain a B.S. in Marine Science from LIU/Southampton and currently manages the new Marine Sciences Center at the Southampton campus of Stony Brook University. An award winning member of the Outdoor Writers Association of America and the New York State Outdoor Writers Association, Paparo writes monthly columns for *On The Water Magazine* and *The Northforker*. Additionally, he is a freelance writer for several other fishing and wildlife related publications. Although his work tends to focus on marine life, everything in the natural world is fair game.

10:30 - 10:50 BREAK

10:50 - 11:30 *Atlantic Bluefin Tuna: A Fish Without a Country*
Bradley S. McHale, Northeast Branch Chief
National Marine Fisheries Service

Thunnus thynnus, otherwise know as Atlantic bluefin tuna, are one of the largest fish in the sea and can live upwards of 40 years. They can migrate across the vast oceans and can venture into the depths of the seas where even sunlight does not go. These majestic fish have a complex story, whether it be their biology, life history, cultural influences, or the challenges they pose to ensure they are managed and protected wherever they may roam.

Brad is a Fisheries Management Specialist of the Highly Migratory Species Management Division of NOAA Fisheries located in Gloucester, MA. The focus of his work is to develop, implement, and monitor effective fisheries management programs for tunas, billfish, swordfish, and sharks in the Atlantic, Gulf of Mexico, and Caribbean. Atlantic bluefin

tuna demands a significant portion of his time. Over the past 20 years Brad has worked with fishermen, scientists, environmentalists, academics, and members of the general public to better understand both the domestic and international management of Atlantic bluefin as well as the data collected on this species.

11:30 - 12:10 *Wicked Neat; the Natural History of Vernal Pools.*
Matthew R. Burne, Conservation Director, Walden Woods Project
mattburne@gmail.com

Vernal pools are typically small and many dry out and seemingly disappear by late summer each year, yet they are incredibly rich ecosystems with a plethora of interesting creatures and bizarre stories. We will explore the basic natural history and variety of vernal pools, and delve into the life history of some of the more unexpected organisms that rely on these temporary wetland habitats.

Matt Burne is the Conservation Director for the Walden Woods Project and Vice-president of the Vernal Pool Association. He has explored vernal pools since childhood, and been active in research and education on the topic of vernal pool ecology for many years. He is co-author of *The Field Guide to the Animals of Vernal Pools*, and conducted a state-wide survey of Potential Vernal Pools for the state of Massachusetts while working with the Natural Heritage & Endangered Species Program.

12:10 - 1:30 LUNCH

1:30 - 2:10 *Long Island's Role in the Comeback of the Great White Shark.*
Tobey H. Curtis, NOAA – National Marine Fisheries Service
and University of Massachusetts – Dartmouth
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Field research on U.S. Atlantic white sharks (*Carcharodon carcharias*) has historically been challenging due to their sparse distribution and rare occurrence. However, the recent recovery of the white shark population, and the re-emergence of aggregation sites, has presented exciting new opportunities for field work on this iconic species. White sharks spend their summer months off the northeast U.S., mostly between New Jersey and Massachusetts. A great deal of new research, including a variety of tagging and tracking efforts, has occurred off Cape Cod where the booming gray seal population has drawn numerous adult and sub-adult white sharks close to shore. However, there has been little research on newborn and juvenile white sharks in this region. Historical records suggest that these young white sharks are concentrated in the waters of the New York Bight, particularly the nearshore waters of Long Island's south shore. In 2015, in cooperation with the Long Island Shark Collaboration, we became the first to attach a satellite tag to a young-of-the-year (YOY) white shark in the Atlantic. Subsequently in 2016, with the assistance of the research and education organization, OCEARCH, an additional nine YOY white sharks were tagged off Montauk, providing our first insights

into their movements, habitat use, and migration patterns. The preliminary data from this research is revealing that the waters off Long Island are an important nursery area for white sharks, and therefore, plays a critical role in the recovery of their population. With a greater understanding of where, when, and how YOY and juvenile white sharks use Long Island coastal waters, we will be able to better assess the potential impacts of human activities, including commercial and recreational fisheries, energy development, and other habitat impacts on the overall population.

Tobey Curtis is a shark researcher and fishery management specialist for NOAA's National Marine Fisheries Service in Gloucester, Massachusetts. He received a B.Sc. degree in Marine Science from Long Island University – Southampton, New York, and received his M.Sc. in Fisheries Science from the University of Florida. Tobey is also currently a Ph.D. Candidate at the University of Massachusetts – Dartmouth, School for Marine Science and Technology. He has studied a variety of species including white sharks in the Pacific and Atlantic Oceans, bull sharks in Florida, and basking sharks, spiny dogfish, and skates off New England. His research has been featured in numerous local and national news media outlets. His main research interests are in using tagging and telemetry to study shark movements, ecology, and fisheries biology, but Tobey also plays an active role in the management of U.S. Atlantic elasmobranch fisheries. Recently, Tobey worked with a number of regional friends and colleagues to pool their skills and resources to establish the Long Island Shark Collaboration, a cooperative research and education platform aimed at improving our understanding of the sharks off Long Island's shores.

2:10 - 2:50

Salt Marshes: A Natural and Unnatural History.

Judith S. Weis

Dept. of Biological Sciences, Rutgers University, Newark NJ

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The talk will follow the sequence of topics covered by my book of the same name. We will initially discuss the structure and functions of salt marshes and the “ecological services” that marshes perform. Focusing mostly on salt and brackish marshes in the mid-Atlantic coast region, we will discuss the plants that are found at different elevations in the marsh and their adaptations to living part of the time in salt water. We will describe the important invertebrates found in Long Island salt marshes, such as ribbed mussels, fiddler crabs and other crustaceans, and how their activities can affect the health of the marsh plants and how they interact with each other. We will describe the important fishes that live near marshes and some of the birds that utilize our salt marshes. In the second half of the talk (“unnatural history”), we will discuss how humans have used and altered salt marshes physically (e.g. mosquito ditching, filling, sea level rise), chemically (pollution by toxic chemicals, plastic litter, and nutrients) and biologically (invasive species). We will discuss marsh restoration and different ways in which it can be done. Finally, we will discuss the decline and re-birth of a highly degraded marsh in urban New Jersey, the Hackensack Meadowlands.

Dr. Judith S. Weis is a Professor Emerita of Biological Sciences at Rutgers University, Newark. Her research focuses on estuarine ecology and ecotoxicology in the NY/NJ area and Indonesia and Madagascar. She has published over 200 refereed scientific papers, a technical book on marine pollution, and several books for the general public, on topics including salt marshes, fish, crabs, and marine pollution. She serves on the editorial board for BioScience, is a Fellow of the American Association for the Advancement of Science (AAAS), and chairs the Science Advisory Board of the NJ Department of Environmental Protection. In 2016 she received the Merit Award from the Society of Wetland Scientists.

2:50 – 3:30 *Plum Island: Biological Linchpin of an Archipelago*
Louise Harrison, New York Outreach Coordinator
Plum Island Campaign, Save the Sound
lharrison@savethesound.org

This presentation will include a short film, "Conservation on a Small Island," featuring actor Sam Waterston and numerous members of the Preserve Plum Island Coalition, and a "Virtual Tour" of Plum Island via Powerpoint, Louise will provide an update on the campaign to save Plum Island from sale by the federal government to the highest bidder. Louise also will highlight discoveries made by the New York Natural Heritage Program in 2015, during their four-season biodiversity inventory of the island.

Louise Harrison is a conservation biologist who has served on Long Island in federal, state, and county agencies as well as in leadership and consulting positions for not-for-profit environmental organizations. She has led task forces and community coalitions in protecting open space. She worked in Stamford, CT, as the U.S. Fish and Wildlife Service liaison to the Long Island Sound Study, where she concentrated on stewardship of Long Island Sound's ecosystems, habitat restoration projects, and invasive species control. She has extensive field experience working in Long Island's coastal communities and natural ecosystems, from the boroughs of New York City to Montauk and Orient Points and has received numerous awards for open space preservation efforts. Her work at Save the Sound is solely toward Plum Island conservation.

3:30 - 4:00 Open Discussion / closing remarks