SPRING NEWSLETTER

HUDSON RIVER ENVIRONMENTAL SOCIETY

April 2021

NOTE FROM THE PRESIDENT

Dear HRES Members: 2020 was certainly a challenging year but we greet the spring of 2021 with a renewed optimism. In this issue of our spring newsletter: we celebrate the success of our five part webinar series entitled *Hudson River Fish in an Ever-Changing Ecosystem* that we presented to our members and friends in collaboration with the Hudson River Foundation; we have included an in-depth interview with the renowned fisheries science expert Dr. John Boreman; and we announce the HRES 2021 McKeon Research Grant student award winners.

As much as we have enjoyed keeping in touch with our members and friends through online and email communications, we look forward to the future when we will finally be able to get together for our HRES in-person events.

Thank you for your support.
Jim Morrison

HRES Membership: Remember that you can still become a 2021 HRES member.

Print out the application online at www.hres.org and mail with your check to: HRES, PO Box 279, Marlboro, New York 12542.

A CELEBRATION OF HUDSON RIVER FISH SCIENCE

The Hudson River fish community has long been an important social, economic, and ecological sector of life in the Hudson Valley. Climate change, invasive species, off-shore commercial fishing, surge barriers, and dams present real challenges for the propagation and survival of Hudson River fish species today. Over the course of 5 weeks in February and March, HRES and the Hudson River Foundation teamed up to present a series of two-hour webinars on Hudson River fish and the stressors affecting change. Attendance at this year's event ranged from 120 to over 200 per session.

"This year's symposium is a great example of how HRES can bring the latest science to the Hudson Valley and by working with HRF, can help fill crucial gaps in our knowledge. This symposium is a fitting tribute to Dennis Suszkowski, who loved to fish and dedicated his career to ensure the latest scientific understanding guided complex management decisions." Chuck Nieder, HRES Vice President.

"The HRES's annual gathering has long been a very important part of the rhythm of activities that enrich the work of the community of scientists, environmentalists, resource managers and others interested in the Hudson River. This year's symposium will stand as a particularly significant event in the history of that community's efforts to understand, restore and protect the River. The future work of the Hudson River Foundation and all institutions focused on environmental science in our region will be immeasurably enhanced by the guidance of the symposium leaders and other participants assembled under the HRES tent." Clay Hiles, HRF Executive Director.

Each of the five webinars are available for viewing on the HRES website: https://hres.org/conferences-and-events/upcoming/56-2021-symposium

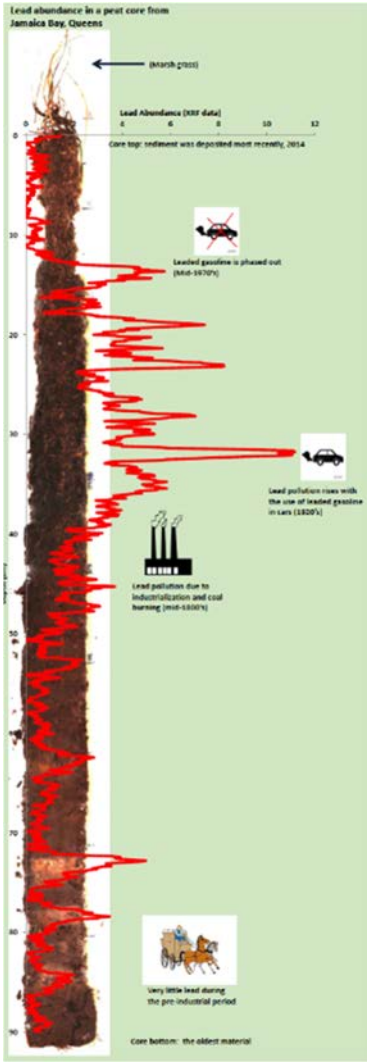
- Part One: Overview of the Fishes of the Hudson River Estuary and the Connected Waters
- Part Two: The Drivers of Change – Physical Alterations
- Part Three: The Drivers of Change – Climate and Introduced Species
- Part Four: The Drivers of Change – The Science of Harvest
- Part Five: Making Sense of it All

Because of the success of the webinar series, HRES is considering more regular webinars in 2022.

AND THE MCKEON RESEARCH GRANT AWARDS GO TO….

The HRES was pleased to receive nine proposals for the 2021 McKeon Research Grants: three from High School students, two from University/College Undergraduates and four from Doctoral Candidates. The proposals covered many research topics including, most prominently, water pollution (septic systems, SARS coV-2 and effects on Autism), Paleoecology and Environmental History and Cricket Frog Genetics and Oysters in NY Harbor.

After a detailed review of each proposal, the HRES McKeon Grant Committee, chaired by Lucy Johnson, Ph.D., recommended that HRES award two grants this year totaling $1,350. The two proposals that were awarded 2021 McKeon Grants were:



1. **Clara Chang**: *Teaching Hudson River Environmental History through Sediment Cores*. Affiliation: Lamont Doherty Earth Observatory. Project Advisors: Margie Turrin and Dorothy Peteet. Grant Requested: $500. Grant Awarded: $500.

   Proposal Overview: This project proposes building a new scientific exhibit within the Hudson River Field Station in **Piermont, NY**. The exhibit will feature the tidal wetland's environmental history, marsh sediment accretion, and vulnerability to sea level rise. As a central piece of this, Clara proposes to use the McKeon grant funds for scanning electron microscope (SEM) imaging of macrofossils (i.e., seeds, insect parts, wood) and individual quartz sand grains. This exhibit will feature a preserved sediment core accompanied by SEM images of seeds, insect parts, wood, and sand grains picked from the core. It will include an accompanying graph of elemental geochemical data from the core, measured using X-Ray Fluorescence Spectroscopy (XRF). These data will tell a story of the marsh's history and growth over time. Lead concentrations in sediment serve as a valuable age marker and show the rise of lead pollution in the 1800's and 1920s, as well as decline due to government regulation in the 1970's (see example figure to the right).

2. **Rylie Berwanger**: *Paleoecology of Manitou Marsh, Hudson River, New York*. Affiliation: Suffern High School. Faculty Sponsor: Dr. Dorothy Peteet. Grant Requested: $1,000. Grant Awarded: $850.

   Proposal Overview: Marshes with healthy biodiversity provide vital resources to the ecosystem by supplying and purifying water, serving as nursery grounds for fish, and providing protection for animals in periods of drought. Despite these significant functions, marshes are being negatively affected by human impact and climate change. Rylie's research aims to investigate how **Manitou Marsh** has been affected by human impact. Located on the eastern shore of the Hudson River in the Town of Manitou in Putnam County, Manitou is a brackish marsh, mainly dominated by narrow-leaf cattail (*Typha angustifolia*), and arrow arum (*Peltandra virginica*) in the low elevation zones. Sediment used for macrofossil analysis would be taken by a Dachonowski peat corer and analyzed for macrofossils such as seeds to see if the seed types have changed over time as well as the carbon content of the core.

View of Bear Mountain Bridge and Manitou Marsh in the background.

One of the prerequisites to receiving a McKeon Award is that the student(s) will prepare a poster for the Annual Hudson River Environmental Society Symposium, presenting the results of their research. Clara and Rylie will debut their projects at next year's HRES Symposium, tentatively scheduled for May 2022.

The notification for the 2022 McKeon Research Grant deadline will be announced in early 2022.

INTERVIEW WITH DR. JOHN BOREMAN

Dr. John Boreman, **Ph.D.** was a featured speaker in HRES's Webinar Series *Hudson River Fish in an Ever-Changing Ecosystem*. His presentation focused on Impacts of Power Generation on Fisheries Sustainability in the Hudson River. He is a renowned and accomplished expert in the field of fisheries science. He completed his undergraduate degree at the SUNY College of Forestry (now ESF), and his graduate work at Cornell University. He began professional employment as a member of the National Power Plant Team of the US Fish and Wildlife Service, and spent most of his career employed by the National Marine Fisheries Service, achieving the positions of Director of the Northeast Fisheries Science Center and Director of the Office of Science and Technology before he retired in 2008. He is currently adjunct professor in the Department of Applied Ecology at North Carolina State University. He is also past president of the American Fisheries Society and an AFS Fellow. He was also a 10-year member of the board of directors of the Hudson River Foundation.

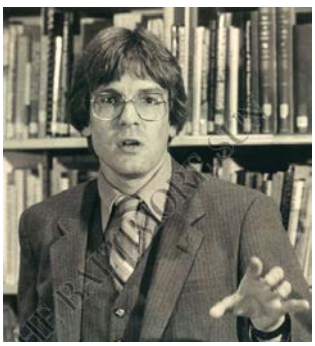
HRES: Dr. Boreman, we are very pleased at HRES to speak with you for our Spring 2021 Newsletter.

Q: What factors led you to choose a career in fisheries science at the start of your professional career?

A. The National Environmental Policy Act (NEPA) was passed by Congress in 1969, around the same time that I was planning to attend graduate school. NEPA indicated to me that the field of fisheries and wildlife conservation was going to expand, with jobs focused on environmental impact assessment. Also, Dr. Bob Werner, my undergraduate advisor at ESF moved to Cornell that year to head up the Finger Lakes Fisheries Investigation funded by NYDEC. I applied to Cornell and Bob accepted me as a student; however, Bob returned to ESF the following year but I remained at Cornell, studying under Dwight Webster for my Masters and Bill Youngs for my PhD. Dr. Webster was an outstanding field biologist, but Dr. Young's approach to fisheries science was more quantitative, which I felt I needed for working on environmental assessments. In my fourth year at Cornell, I applied for a position in nearby Cortland, NY, as Northeast Power Plant Specialist for the US Fish and Wildlife Service (USFWS). Within a year I became a member of the USFWS's newly-formed National Power Plant Team.

Q: As a member of the National Power Plant Team of the USFWS, what was your involvement in the initial discussions of the anticipated impacts to the Hudson River and Valley from the operation of the Indian Point Nuclear Power Station?

A: Dr. Phil Goodyear, co-member of the National Power Plant Team, and I were asked to assist the EPA Region II in preparing their case for the hearings on Section 316(b) of the Clean Water Act that involved permitting of the power plants on the Hudson, including Indian Point Units 1 and 2. Our role was to provide scientific support in interpreting the utilities' arguments against EPA's requirement for cooling towers at Indian Point, Roseton, and Danskammer, assist the EPA attorneys in cross-examining the utilities' expert witnesses, and provide our own testimony in support of EPA's position.



Dr. Boreman c1982 near the time of the Hudson River Settlement Agreement for an interview with the Baltimore Sun.

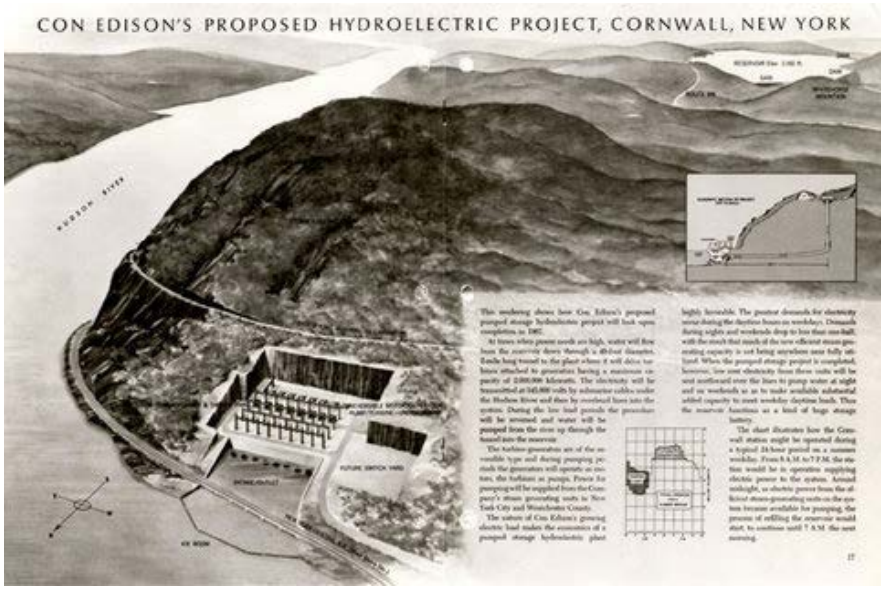
Q: Were you involved with any of the proposed Storm King Pump Storage Facility negotiations?

A: My first job as NE Power Plant Specialist for the USFWS was to coordinate a scientific team providing support to the Department of Interior. The department was a party to remanded hearings being conducted by the Federal Power Commission to determine if the proposed Storm King (Cornwall) Pumped Storage Facility would seriously impact striped bass in the Hudson River. The remand was because initial estimates of the impact of the proposed facility did not take tidal movement of the Hudson River at Storm King into account. The remand hearings were suspended by the Federal Power Commission when the EPA Hudson River Power Case was initiated.

Q: What were the challenges/stressors that you faced during the early days on the Hudson River?

A: Our biggest challenge in the early days was wading through the immense number of exhibits and associated reports produced by the utility companies and their consultants in support of their 316(b) demonstration of no significant impact. We needed to determine the foundation of their argument and develop counter-arguments, if appropriate. This exercise touched on all aspects of possible power plant impacts, including physical modeling of the Hudson River system, life histories of important fishes in the Hudson, intake technology, thermal discharge effects, and even fish stocking as a mitigation tool.

As so-called expert advisors to EPA, we also needed to help the EPA attorneys prep for cross-examination of the utilities' expert witnesses, as well as prepare our own testimony that was subject to cross by the utility attorneys. At one point during the §316(b) hearings, I was on the witness stand by myself for an entire week, being cross-examined on my testimony regarding life histories of the seven fish species serving as the focus of the case. The attorneys agreed to extend the cross-examination into the early evening on Thursday so they could finish my cross on Friday. At around 5PM on Thursday, having been testifying continuously since Tuesday, my tongue literally gave out. We had to take a short recess until I could talk again!



Testifying in these types of hearings is stressful, to say the least. Adding to the stress is the preparation of testimony and cross-examination rehearsals with your attorneys so you can be prepared for any question that might be asked. Although I thought I was really making a direct contribution to the case and moving the science forward, it was one of the most stressful conditions I have ever experienced; I was literally putting my scientific reputation and future career on the line.

Q: What do you see as some of the big issues still facing us today on the Hudson River: the most critical areas to focus on for Hudson River research?

A: Fossil fuel and nuclear power plants have been on the decline in the Hudson River watershed since the 1980s, but alternative means of power generation, such as tidal power and transmission associated with offshore wind farms, have been on the increase. These new forms of power production create a new suite of potential impacts to the river's living resources. Additionally, I have learned that impacts on early life stages of fish populations need to be placed in a broader context, including other risks of mortality such as those induced by fishing on the populations or changes to their habitat caused by ecosystem-level disturbances. Another aspect of the science associated with the Hudson River Power Case that has yet to be fully resolved is the role that the Hudson River plays in the productivity of coastal and marine fish populations. Bay Anchovy, for example, are a key forage species in the river, yet the riverine portion of the stock is but a small fraction of the coastal population. Studies are still need to determine the effects of localized depletion of Bay Anchovy on the Hudson River food web, as well as the exchange between the riverine and coastal segments of the stock (i.e., the ability of the coastal portion of the stock to replenish the locally depleted portion).

Q: Looking back, what were the "Lessons Learned" during your long career that you wished you had known when you were starting out in the field of fisheries science?

When I began my professional career, my attitude was one of arrogance and I was intolerant of opposing opinions. I felt that I was one of the good guys, fighting the evil forces that were promoting projects that would endanger fisheries conservation efforts. Over the years, however, I grew to appreciate and respect the positions of scientists, developers, industrialists, harvesters, etc., although I did not necessarily agree with them. Understanding the basis and motivation for opposing views makes it much easier to develop counter arguments and jointly arrive at solutions amenable to all parties. This is the philosophy I tried to imbue in my students when I taught at UMass and NC State.

Q: What advice would you have for students entering college now who are interested in pursuing a career in fisheries science or the environmental sciences.

A: Realize that about 95% of what you communicate to others will be in writing; therefore, focus on developing good writing skills. I was more fortunate than most because I got to work directly with attorneys for my first six years in the government, which helped me immensely in honing my written communication skills. I would encourage students to write every day, and work with fellow students in critiquing each other's written products – not just the content, but also the way it's presented and its grammatical correctness.

Also, take every opportunity you are afforded to try out your leadership skills. Readily volunteer for "acting" positions in your organization, and take advantage of leadership opportunities available through professional societies, such as HRES, the American Fisheries Society, and the American Institute of Fishery Research Biologists. These organizations will allow you to test your leadership and teamworking skills without being judgmental. The same advice goes for public speaking skills: seize every opportunity to speak so you can get past the anxiety. This was especially important for me to do, for I am a life-long stutterer.

Finally, find something in the broad field of fisheries you like to do and learn the skills to do it well. Focus on enhancing your strengths more than overcoming your weaknesses, but recognize both in choosing a career path. This will be your ticket to a successful, rewarding, and enjoyable career.

We need your help. Interested in volunteering your time to support the HRES mission?

Do you have a raffle item or know a donor willing to support the McKeon Student Travel Fund?

Contact an HRES Board Member today!

2021 HRES AWARDS DINNER

The HRES board is still evaluating our options for holding our annual HRES Awards Dinner this fall when we once again hope to enjoy the ambiance and good food at River Station in Poughkeepsie to celebrate the careers of our selected 2020 and 2021 award honorees.

The Hudson River Fisheries team runs a beach seine in Haverstraw Bay gathering fish community data for fisheries management.

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Founded in 1970, the Hudson River Environmental Society is a nonprofit, non-advocacy organization that delivers the science behind Hudson Valley issues to citizens, scientists, and decision makers. We enable objective discussions, provide forums for rigorous science, connect disparate views, and showcase the region's natural heritage. We are academic researchers, government officials, nonprofit scientists, private consultants, teachers, students, and interested residents who find real solutions.