

Izaak Walton League of America (IWLA) was the host organization of the 2022 Everglades Coalition Conference Jan 8-9. The IWLA has been advocating conservation since 1922, yes that is 100 years! The Manatee Chapter has focused on phosphate mining impacts and Martin Chapter helped get the Loxahatchee River designation as the Wild and Scenic River, Florida's first. The Keys Chapter formed 60 years ago advocating for fisheries and the Mangrove Chapter in the sixties and helped pass the 1968 bill creating Biscayne National Monument. Lloyd Miller passed away 2 years ago at age 100, he received the 54 Founders Award in 2013. In his honor for Florida conservation, the Lloyd Miller Conservation Award was created and went to Johnathan Ullman for his work on elevation of Tamiami Trail, keeping the River of Grass flowing south.



The 62 organizations of the Coalition met for 2 days in Duck Key and listened to advocates for the Key Deer, Restoration of the Everglades, Resilience efforts, Climate Solutions, Early Inhabitants of the Everglades, Climate Law and Collaboration, Federal Policy, Florida Bay Rising and Recovery Post Die-off.

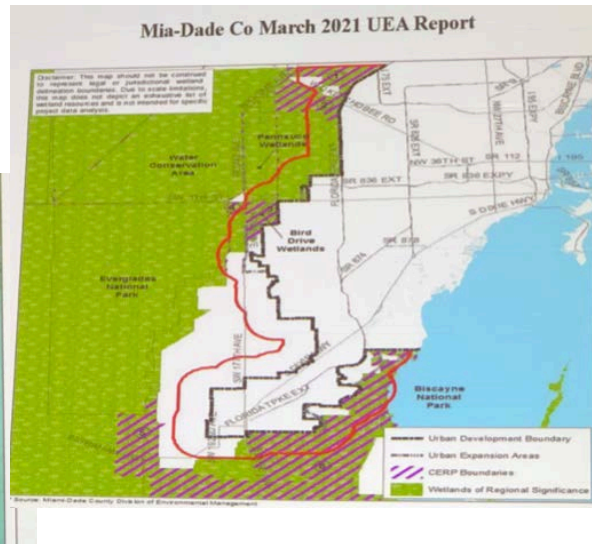
Resilience of Key Deer

Survived hurricane destruction for months without food and fresh water due to salt intrusion.

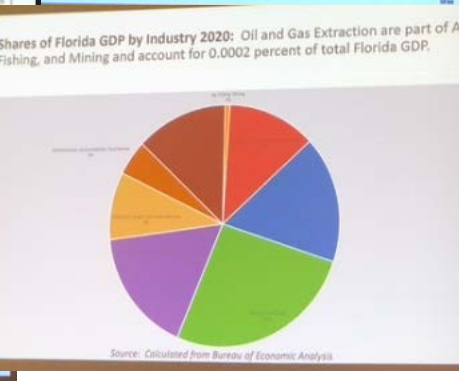
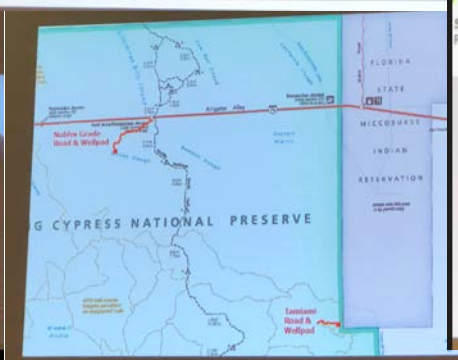
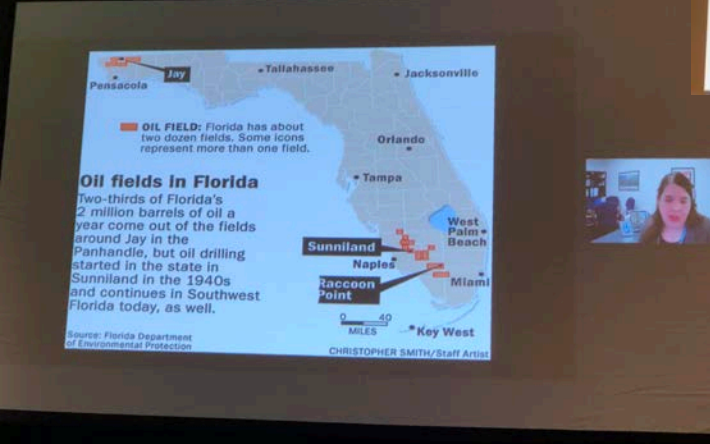
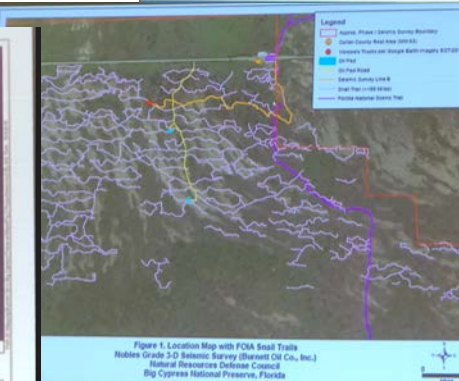
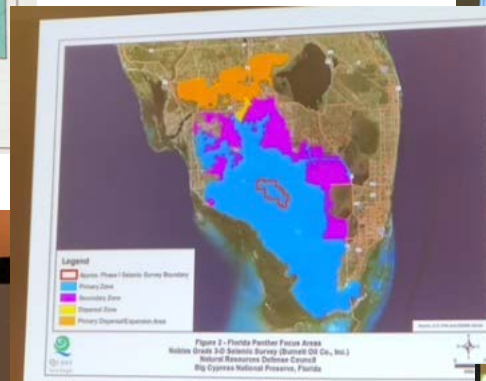
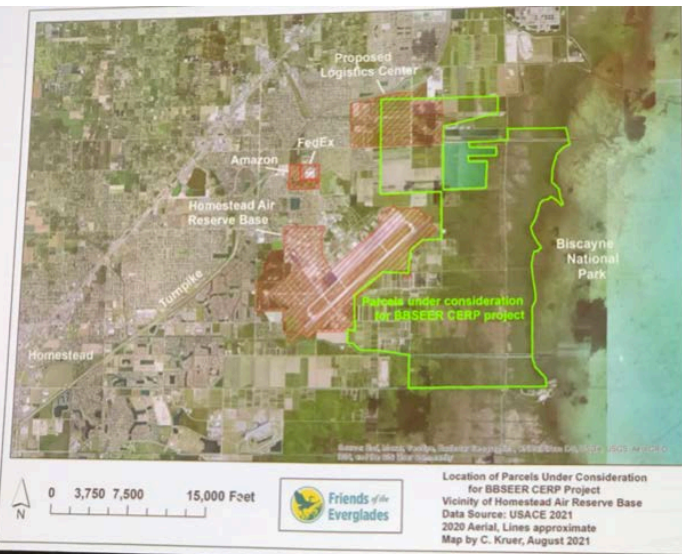
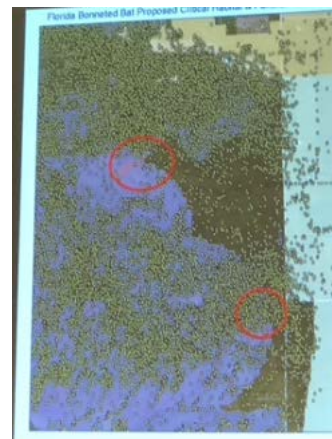
Many challenges: Auto hits, disease, habitat destruction, poor highway planning, human tourism and feeding inappropriate food items and habituating them to lose fear of humans. January Conservation Report details legal challenges.

Key slides of Conference

Planning Permits Challenges for Miami



Big Cypress Oil



Drilling in the Everglades Ecosystem

- Oil and gas production play a small role in the Florida economy and an even smaller role in the Everglades region.
- The Florida Panhandle oil fields produce about three-quarters of the state's oil and more than 99 percent of its gas.
- Raccoon Point and Bear Island, the two oil fields within Big Cypress, produced only 585 bbl/day in 2020, which is about one-seventh of the state total for the year.
- But proposed development of oil under Big Cypress threatens numerous ecosystem services.



Legacy Well Pad in Big Cypress. Credit: Lighthawk.org

Drilling (and Exploration) put Everglades Ecosystem Services at Risk

- Big Cypress basin is a vast hydrologic network and aquifer recharge area, providing over 40% of the water flowing into Everglades National Park.
- Home to a wide range of biodiversity, including a number of threatened and endangered species.
- Restoration of the Everglades is valued at \$47 billion in ecosystem benefits; carbon storage valued at over \$3 billion.



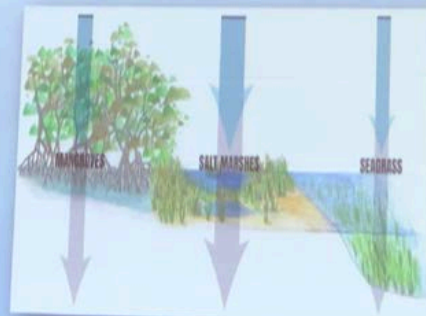
Off-road vehicles in the Everglades. Credit: Quest Ecology

Other Economic Issues to Consider for Drilling in the Everglades

- State criteria of issuance of permits (Section 377.241, Florida Statutes) and subpart 3: "The proven or indicated likelihood of the presence of oil, gas or related minerals in such quantities as to warrant the exploration and extraction of such products on a commercially profitable basis."
- Recent updates to National Park Service 98 rules is a start.
- Lack of national and local accounting of negative externalities such as the Social Cost of Carbon skew the economic arguments for oil development.
- Billions being spent on the restoration of the Everglades, but further degradation from oil and gas development is still occurring.
- Local bans on "acidizing" well stimulation techniques can limit future damages.

Role of Natural Systems in the Battle Against Climate Change

- Seagrass, mangrove & salt marsh ecosystems account for >50% of all carbon storage in ocean sediments.
- Mangroves in ENP provide up to \$3.4 billion worth of carbon storage (M. Jerath, 2017).
- Mangroves in ENP can absorb & store carbon equivalent to energy used by 20-24 million homes for 1-yr or 190-230 billion lbs of coal burned (Everglades Foundation).
- Central Everglades WCAs absorb & store carbon equivalent to 671 billion lbs of coal burned or 132 million passenger vehicles driven for 1-yr (Everglades Foundation).
- Seagrass beds in FL Bay absorb & store carbon equivalent to 9-11 billion gallons of oil consumed or 21-24 million passenger vehicles driven for 1-yr (Everglades Foundation).

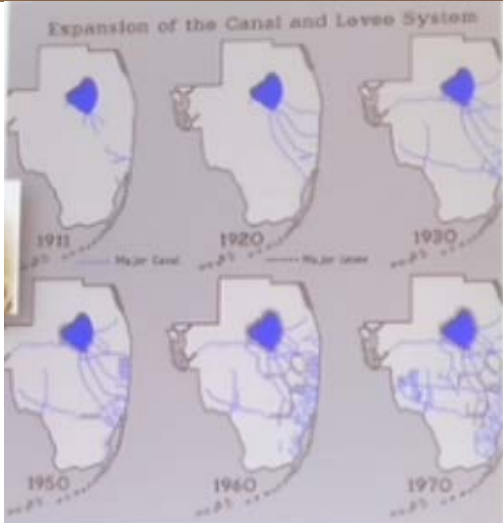


Oceanwealth.org



Connecting you to Nature

Lake O
Over
time



Opportunity for improvement: Conservation mode

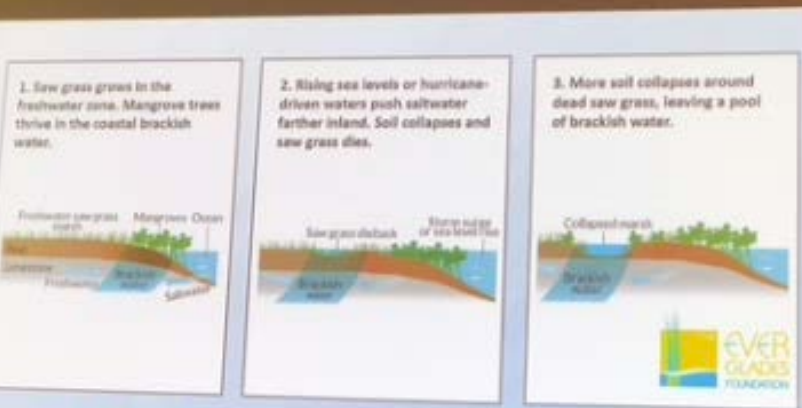
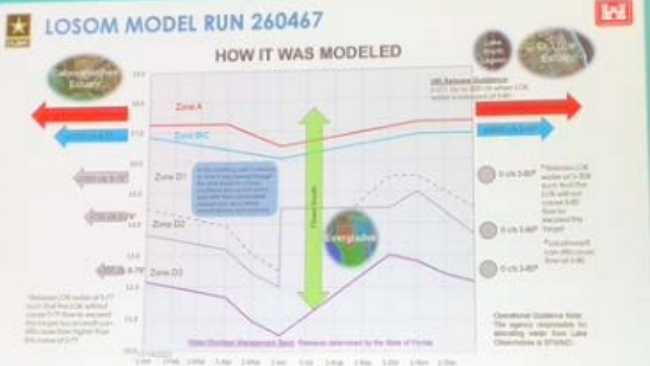


Fig. by S. Davis adapted from Science News



Connecting you to Nature

Impact of Water Management & Climate Change on our Shared Ecosystems



Credit: T. Tibbitts - Science News

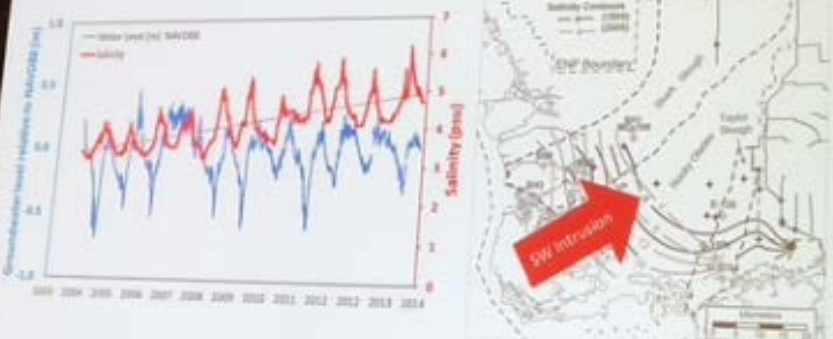


Connecting you to Nature

FINANCING STRATEGIES: A NEW WAVE OF LITIGATION

- Taxes** Local laws can impose taxes and surcharges on users, users' goods, and services, such as parking and dining, to raise revenues for parks, trails, and infrastructure.
- Assessments/Special Districts** Charge against property, including a special district and a tax assessment, to fund specific services or infrastructure.
- Bonding** General obligation (but often not an issue with taxing power) and revenue bonds are used to finance infrastructure.
- Impact Fees or TIF** Fees for the impact of new development (link between additional facilities and growth) or tax increment - the difference between the assessed value of the property before and after the development project.
- User Fees** Payments for voluntarily purchased services which benefit the specific individual to the exclusion of non-payers, such as wastewater utility.
- Grants** New funds include: disaster recovery funds for resiliency and infrastructure; additional fees to address stormwater, septic and water quality; moving from planning to implementation.

Sea level rise is causing saltwater intrusion into the Everglades interior



Slow SLR allows mangroves to move inland and build soils but rapid SLR into freshwater marshes causes soil collapse

→ Invading mangroves that build soil



← Degrading freshwater marshes where mangroves can't keep pace

Peat Soil Development and Loss

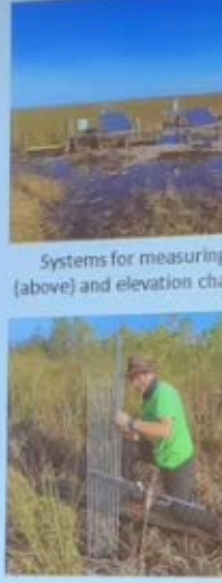


- In addition to the impact of drainage...
- Drought exacerbates peat soil degradation
 - Fire burns peat soil down to the limestone bedrock
 - Phosphorus pollution changes and degrades peat soils
 - Sea level rise catalyzes the rapid collapse of peat soils

Peat Soil Development and Elevation Change from Pre-drainage Everglades to Present

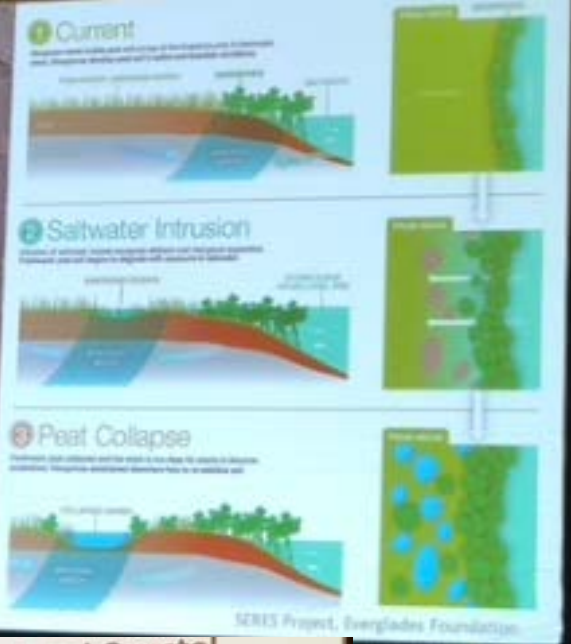


Nearly 3.5 billion metric tons of carbon dioxide have been lost to the atmosphere due to Everglades peat soil loss. To put this in perspective, this is similar to the annual CO₂ emissions of the European Union, a population of more than 0.5 billion.



Peat soil

- Freshwater peat soils are the foundation of key habitats. If lost, they can take millennia to reform.
- When dried due to drainage or exposed to saltwater due to sea level rise, they break down.
- This causes elevation loss and the release of carbon.
- Fire can burn peat soil to the limestone bedrock.



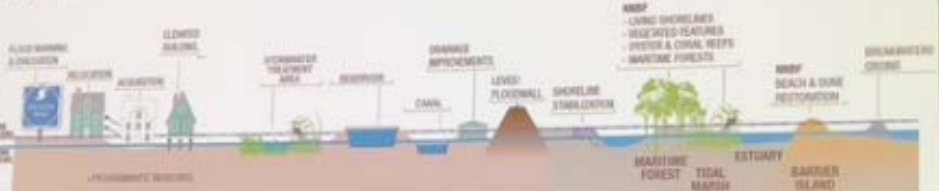
Florida's Future with SLR Sea Level Rise Adding another loop to more CO₂

Trends:
Warmer
More CO₂

Need More H₂O South!

Building Resiliency: Integrating Inland and Coastal Flood Mitigation and Ecosystem Restoration Strategies

POTENTIAL MEASURES TO IMPROVE RESILIENCY AND SUSTAINABILITY
Graphic modified from https://ewn.eLerdc.dren.mil/nmbf/other/5_ERDC-NMBF_brochure.pdf



1. Peat soils are made of dead plant matter that slowly accumulates and builds elevation in flooded marshes.
2. Elevation gains are important, especially as sea level rises. Salt exposure and drying reduces plant growth and causes peat soil collapse and elevation loss.
3. Freshwater restoration is urgently needed to reduce salinity stress to plants and maintain peat accumulation and elevation gains.