

Avian Influenza – A primer

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AIV Baby Basics

Waterfowl are considered natural reservoir of AIV

Historically, AIV rarely caused issues for wild birds.



LPAI vs HPAI

- Pathogenicity is defined by the impact on domestic poultry
- Low pathogenicity avian influenza
 - Doesn't really cause disease in domestic birds
- HPAI – can kill >75% of infected domestic birds.
 - Only H5 and H7 are considered HPAI.
 - But, not all H5 or all H7 ARE HPAI.
- Flu viruses readily reassort/evolve, so a low-path H5 may easily become a high-path H5.
- Though human infections w/ HPAI are rare, when they do occur, mortality can be high.
 - E.g., H5N1 has ~50% mortality rate.



Image credit: Wisconsin Humane Society



Why do we care about HPAI so much?

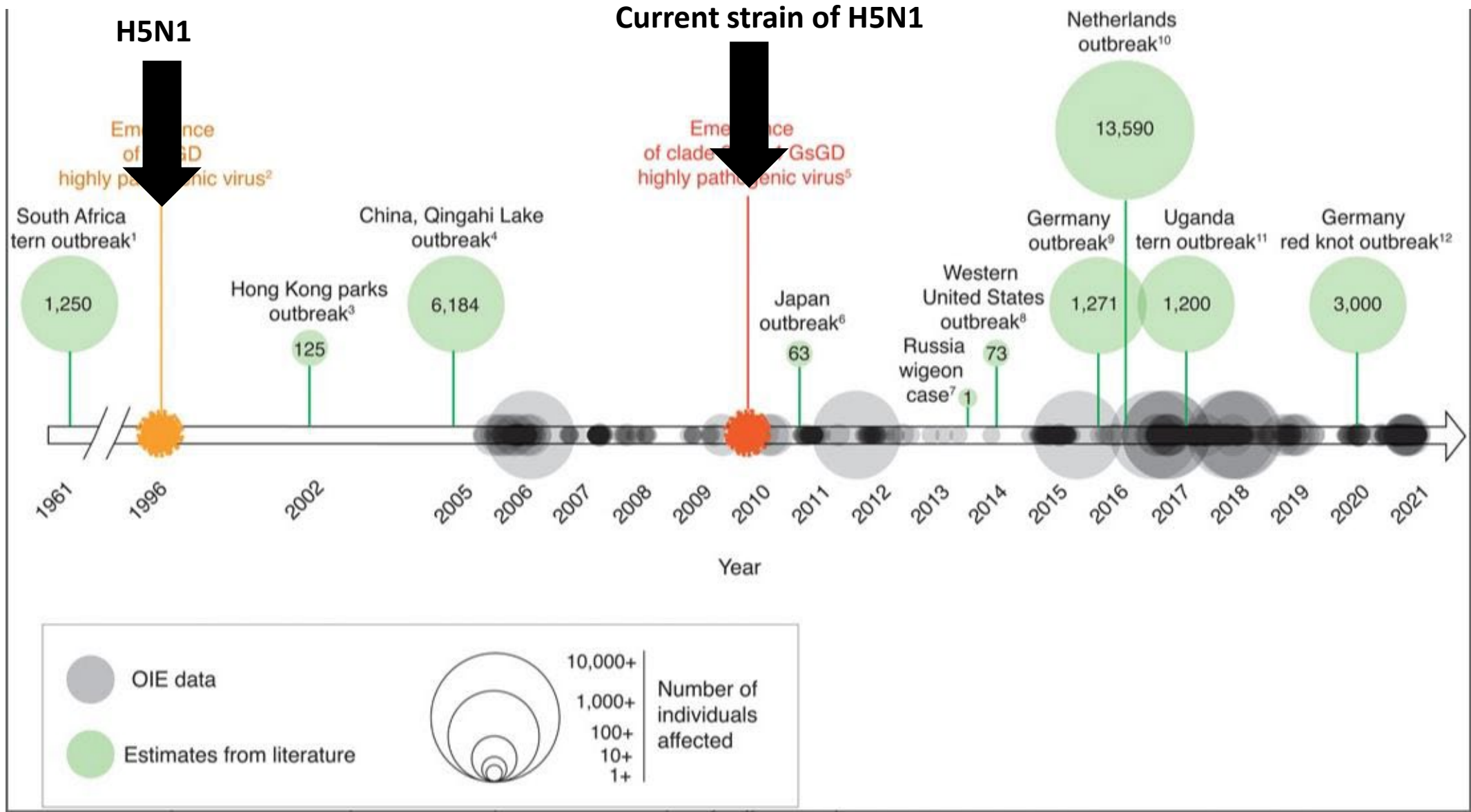
- Agricultural impact(s)
 - >58 million domestic birds since 2022
- Also, AIV can infect humans
 - Zoonotic disease
- Recombination of bird IA-V with Human IV-A is of concern
 - 1918 Spanish Flu pandemic was an AIV (H1N1)
- Hence the interjurisdictional nature of HPAI response and management



Image credit: Ducks Unlimited



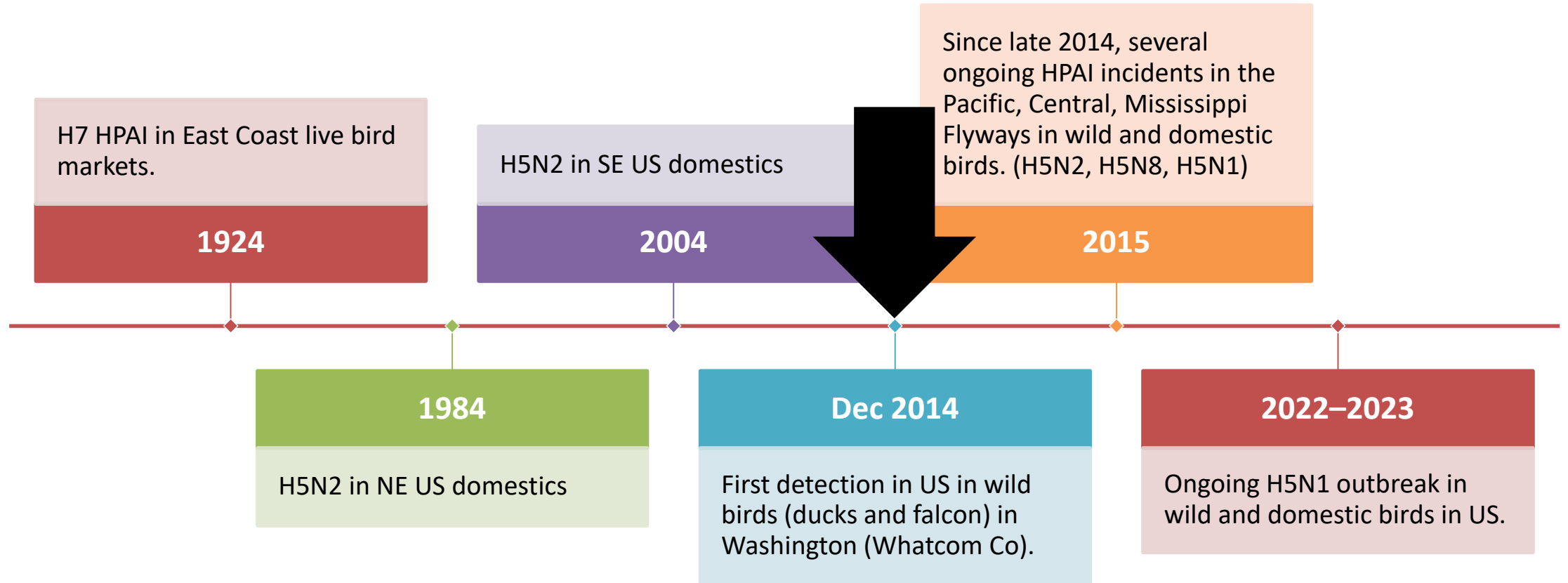




Ramey et al., 2021



History of HPAI in the US



Important take home – HPAI has changed

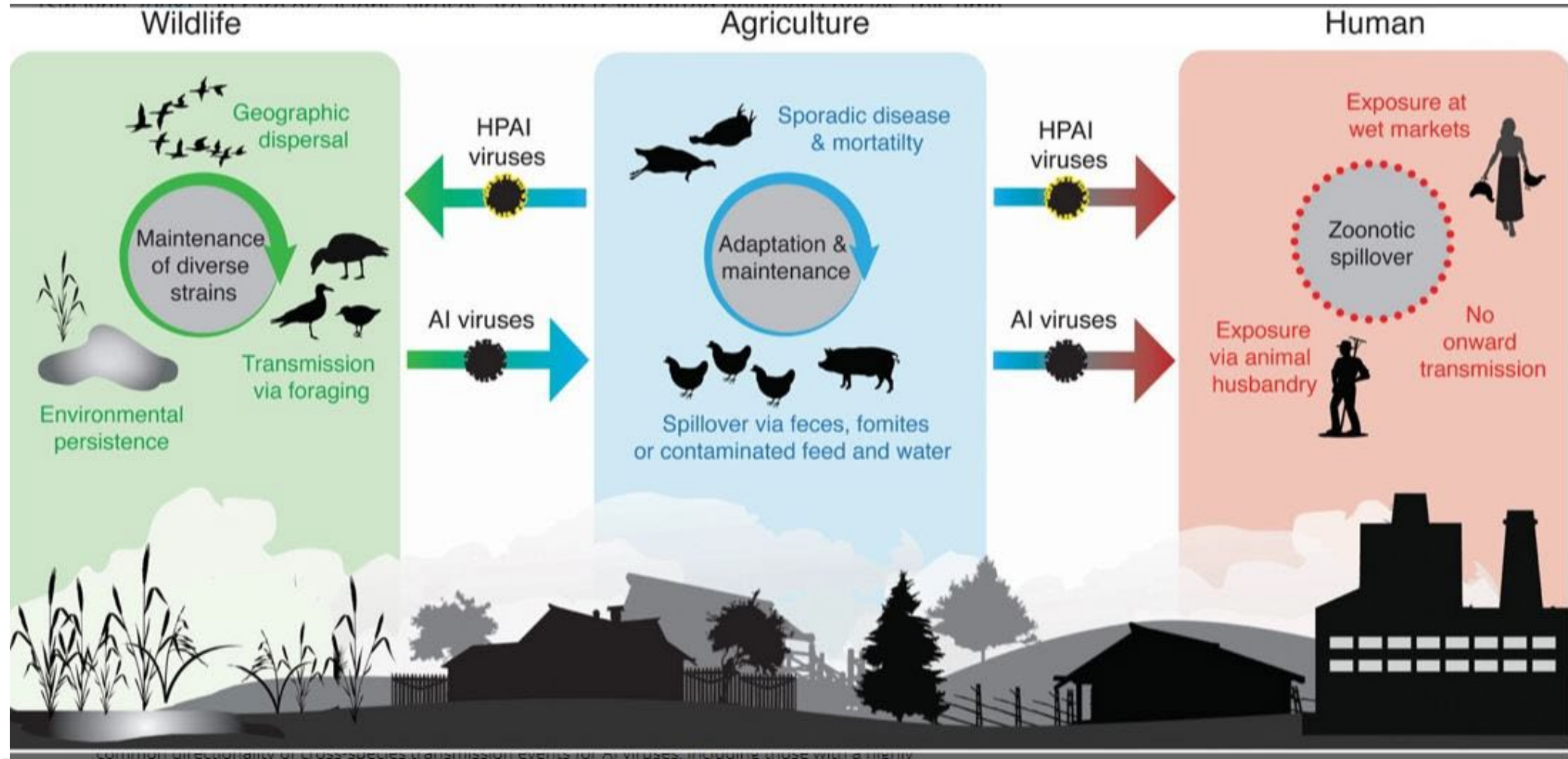
Historically, HPAI infections were associated with domestic birds!



Image credit: Science News



Is HPAI H5N1 an emerging disease threat for wild birds?



Common bidirectionality of cross-species transmission events for AI viruses, including those with a highly

Ramey et al., 2021



H5N1 (EA 2.3.4.4b) in Washington

- 1 March 2022 – 1st case in WA
- Greater white fronted goose
- Walla Walla Co



Since then....

- Monitoring reports sick/dead wild birds
- Submit priority suspect cases for testing
- Working closely with wildlife rehabilitators
- Regular coordination calls with state and federal partners



HPAI sampling and confirmed cases in WA

- 206 cases submitted
 - Lots more recorded as “suspect”
- 112 confirmed H5N1
 - NVSL does confirmation testing
- Various birds and mammals tested
 - Only raccoons and bobcat positive (so far) in WA

Raccoon	Bobcat	Greater white fronted goose	Snow goose	Bald Eagle
Sandhill crane	Trumpeter Swan	Red-Tailed hawk	Peregrine Falcon	Canada Goose
Raven	Crow	Mallard	Great Horned Owl	Cackling Goose
Ross’s Goose	Tundra Swan	Bufflehead	Gull	Caspian Tern
White Pelican	Turkey Vulture	Great blue heron	Cooper’s Hawk	Barn owl
Gadwall	Dunlin	Sanderling	Short-eared owl	





Side note: H5N1 can infect and kill marine mammals



The impact in WA?

- Unfortunately, we don't really know.
- Biased monitoring approach
- Limited resources (\$, staff time)
- Some species impact may be rather large – e.g., Caspian terns



Globally, estimated >75,000 wild birds have died due to H5N1 2.3.4.4b. Most of these are colonially nesting marine birds.



Rat Island outbreak - ongoing



- First H5N1 event in marine environment (in WA)
- >1224 dead Caspian terns
- >158 dead Gulls
- Huge effort for carcass removal
 - >30 people days
- Long-term impacts?



When is such effort warranted?

- Setting – is it feasible?
- Benefit vs cost
- Scale of mortality
- Likelihood of exposure to other wild birds and mammals
- Access
- Disposal
- Public health reasons
- Adequate resources



Photo credit: Scott Pearson



H5N1 in Washington – next steps

- Continue surveillance
- Identify reservoir(s)
- Data-driven risk assessments
- Science-driven management recommendations

Pending resources.



Closing thoughts

The New York Times

An Even Deadlier Pandemic Could Soon Be Here

Feb. 3, 2023



- This highlights the importance of our interjurisdictional collaborations.
- HPAI overlaps many jurisdictions:
 - WDFW
 - DOH / Public Health
 - WS Dept of Ag
 - USDA APIHS
 - USFWS
 - NOAA




Take home points...

H5N1 is different

H5N1 may be “emerging” in
wild birds

H5N1 in impacts in Washington
have been HARD to quantify



A close-up photograph of a bald eagle perched on a branch. The eagle has a white head and neck, a yellow beak, and dark brown feathers on its wings and back. It is looking towards the right of the frame. The background is a clear blue sky with some blurred branches.

This strain of HPAI (EA H5N1) is more
deadly to wild birds

Photo credit: Mike Segar



Questions?

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Image Credit: American Oceans

