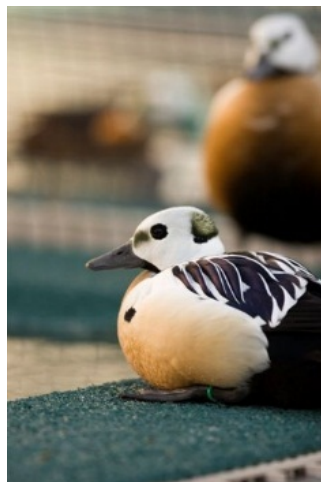




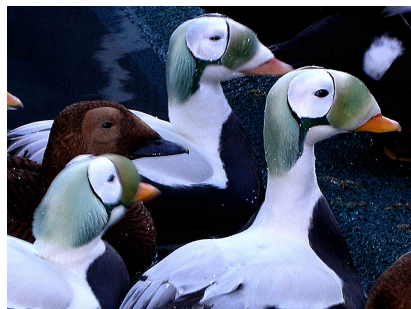
## From Tundra to Temperate Rainforest:

*Developing Steller's eider breeding  
productivity in a research setting  
utilizing a wild founding flock*

Kristen Pelo, Assistant Avian Curator  
Alaska SeaLife Center, Seward, AK  
kristenp@alaskasealife.org



## Our Program



Spectacled eider



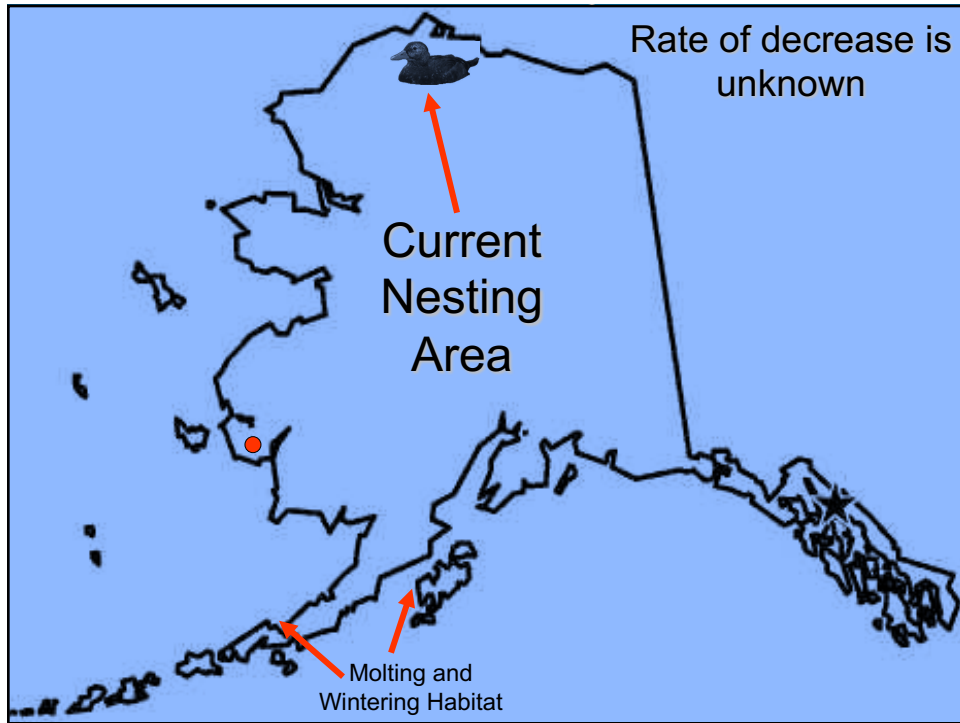
Steller's eider

## Steller's eiders are threatened

- Listed by USFWS in 1997 as threatened
- Current population is declining and is estimated to be about 150,000, majority of which nest in Russia.
- Less than 200 breeding pairs nest in Alaska
- They are the only members of the family Polysticta and are an important part of native tradition and folklore.

Photo by: Tasha DiMarzio





### Possible causes and obstacles of decline

The collage consists of five images. Top left: A fox with a chick in its mouth. Top middle: A duck swimming in water. Top right: A radiograph of a duck's body showing a 'Stainless steel tarsus band' and '2 - #4 Lead shot'. Bottom left: A map of Alaska with latitude and longitude coordinates. Bottom right: A photograph of a rocky coastline.

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## Steller's Eiders collected from wild

- 2003 wild adult STEI brought to ASLC
- 2005-2006 eggs collected from the wild, hatched at ASLC
- These individuals represent our founding flock for a captive breeding program

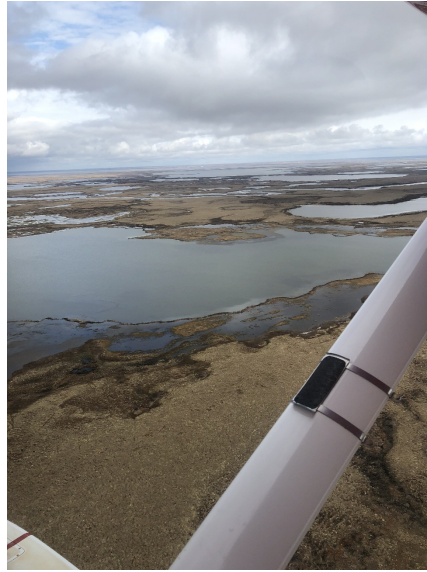


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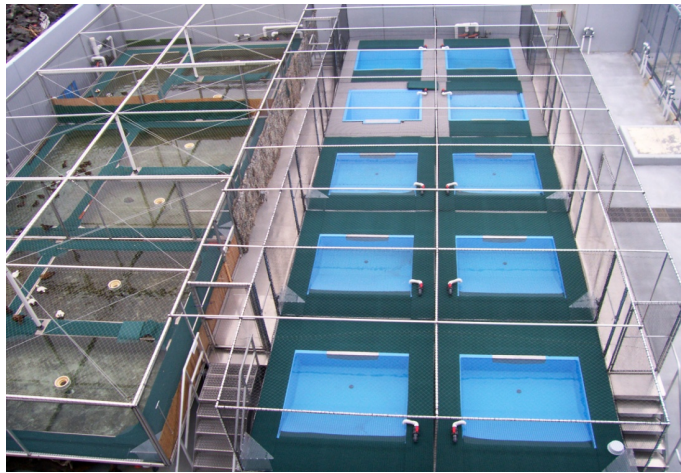


## Nesting habitat



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## Our facility



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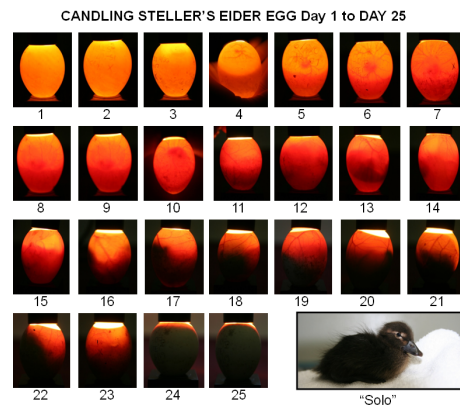
## How do we recreate the tundra?



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## Initial successes

- 2007 first juveniles starting to breed
- Fertility avg 25-50%
- 2007 first egg hatches artificially
- Documenting embryonic development



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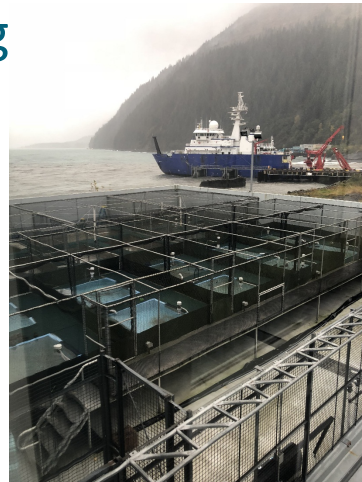
## Initial Breeding Challenges

- No incubating hens, no-little down pulled into nests
- Very large clutch sizes
- Adults collected from the wild not breeding



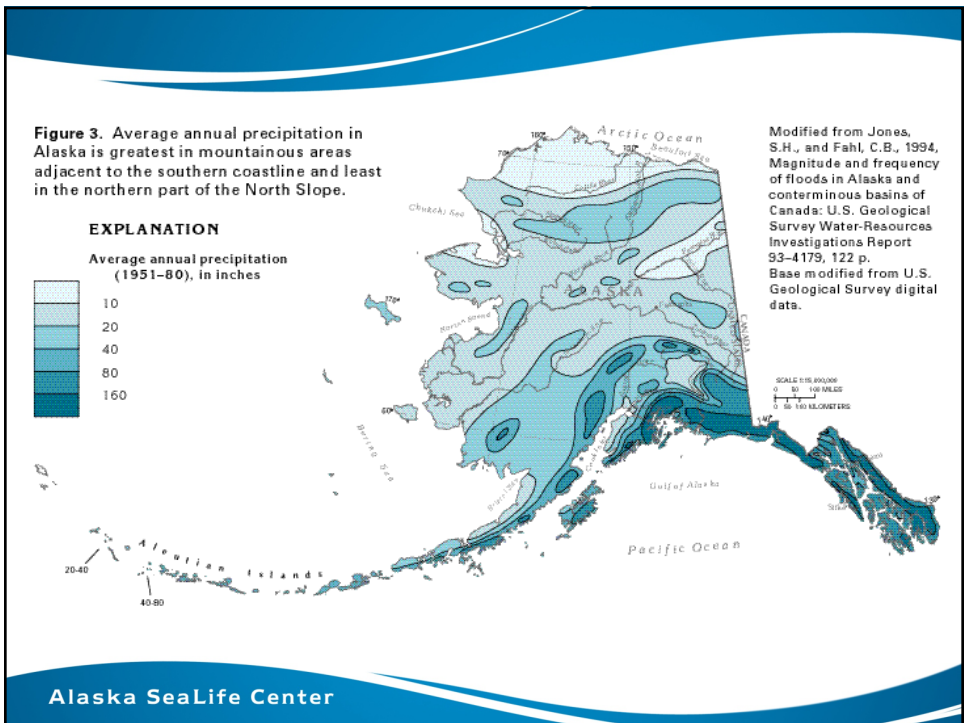
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## Challenge: Rain causing wet nest sites



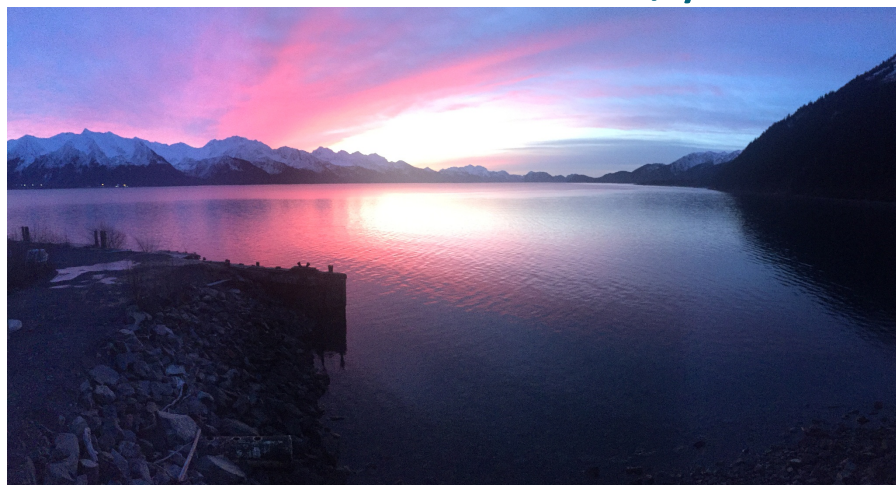
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Seward > 160 inches/year



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## New Nest Building Techniques



2007-2008: Flat, open, "tundra" nests

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## Breeding Behaviors not yet Developed



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## 2004-2008: Artificial Incubation Challenges

- Only one egg successfully hatches artificially
- Most other eggs suffer mortality in the last few days of incubation



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## 2009: Spectacled eider surrogate species for incubation



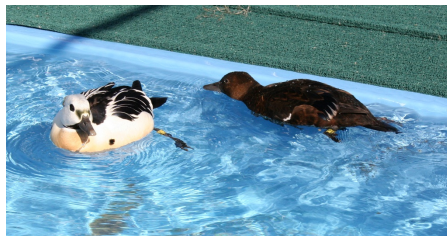
9 successfully hatch!



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## 2009: More privacy cover

- Slight improvement in fertility
- Drier nests
- Eggs fell through moss
- No down pulled



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## 2010: A better nest bowl?

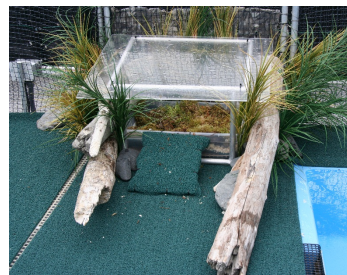
- Continue refining privacy cover with native plants
- Utilize pine shavings for nesting material
- Fertility dropped
- Nest sites very wet still



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## 2011: A brand new covered nest

- Utilize driftwood and fake plants
- Made plexi-topped covers to still provide a slight "tundra" feel
- Mixed moss and pine shavings for nest material
- Fertility plummeted



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## 2012-2013

- Continue to refine driftwood and fake plant blinds
- Improve behavioral monitoring of pairs
- Fertility rises
- Successfully hatch under SPEI hens
- Clutch sizes reach more normal levels



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## 2014-2018

- Create cavity nests instead of open tundra
- Multiple nests per single pair
- Each pair gets separate breeding unit



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## 2014-2018

- Second and Third generation birds start breeding
- Fertility increases substantially
- By 2018, most STEI hens incubate full term
- Use of artificial incubation is minimal
- Behavioral monitoring



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## Current Challenges

- Complicated nest sites require enormous physical effort in a very short building window
- The large scale use of driftwood resulted in two duckling mortalities in 2018
- Driftwood stays too wet in our climate
- 2018 first asper mortality in our alcid colony



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## Looking Forward

- Continue behavioral monitoring
- Reduce the number of nest sites
- Create nest structures with minimal driftwood
- Refine sanitation methods of nest sites



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## Thank you!



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