

Feather Samples: A Useful Tool in Waterbird Research

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Uses for Feather Samples

- Source of DNA
 - Molecular sexing
 - Genetic studies
- Contaminant Studies
 - Heavy metals
- Stable Isotope Studies
 - Feeding ecology and habitat use
- Ectoparasite Studies
 - Feather lice

Why Use Feathers?

- Easy to take samples
- Less invasive than blood sampling
- Can store large numbers for a long time
- No hazardous waste
- Can compare wintering grounds to breeding grounds without traveling far
 - Nisbet et al. (2002) with common terns in Buzzard's Bay: Hg exposure, variation in diet

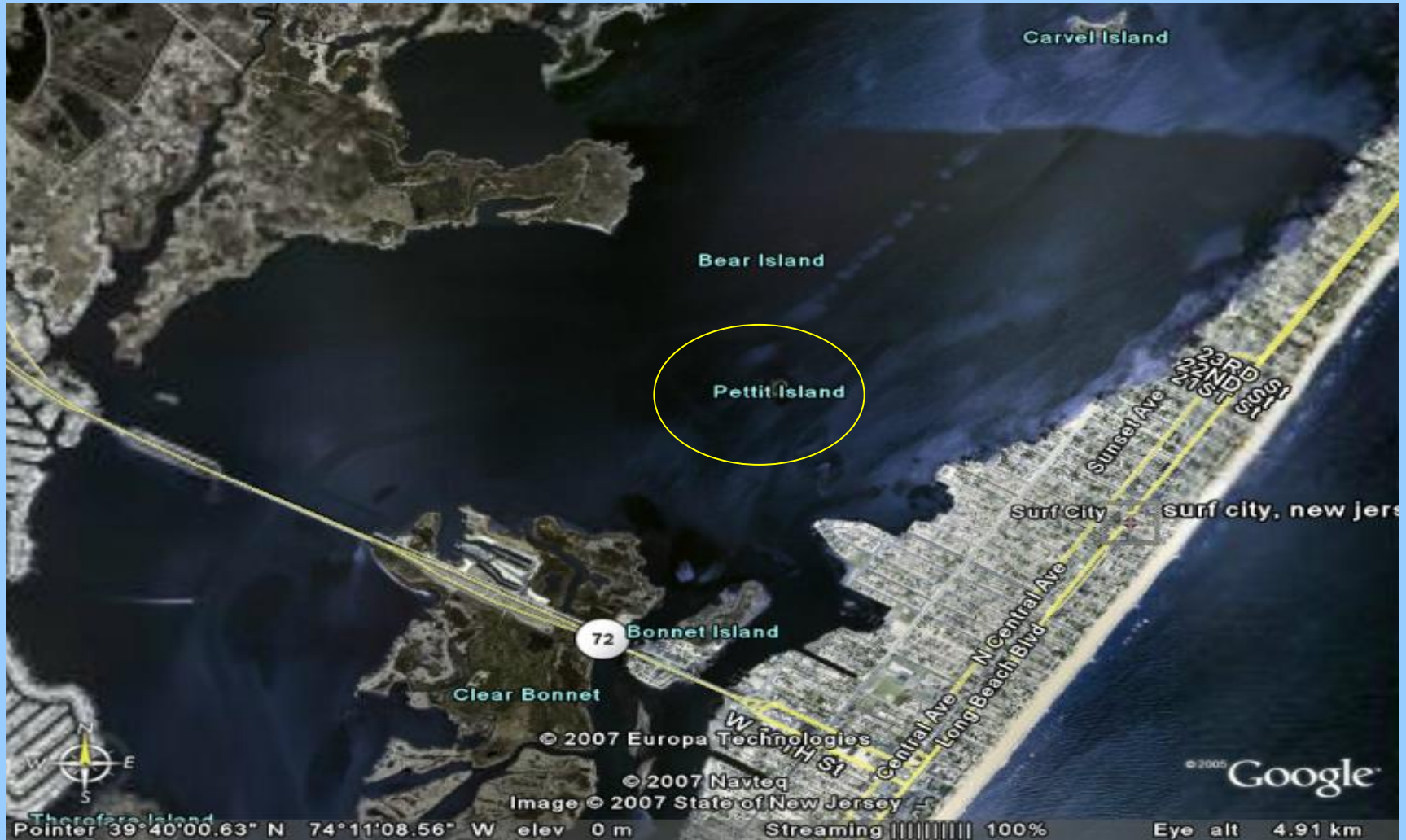
Drawbacks to Using Feathers

- Young chicks do not yet have true feathers
 - Most mortality occurs before feathers emerge
- Not sensitive to short-term changes, such as in hormone levels
- Provides less DNA than blood
- In contaminant studies, useful only for metals



**Common Tern (*Sterna hirundo*)
At Pettit Island, Ocean County, NJ**





Carvel Island

Bear Island

Pettit Island

Bonnet Island

Clear Bonnet

Surf City

surf city, new jersey

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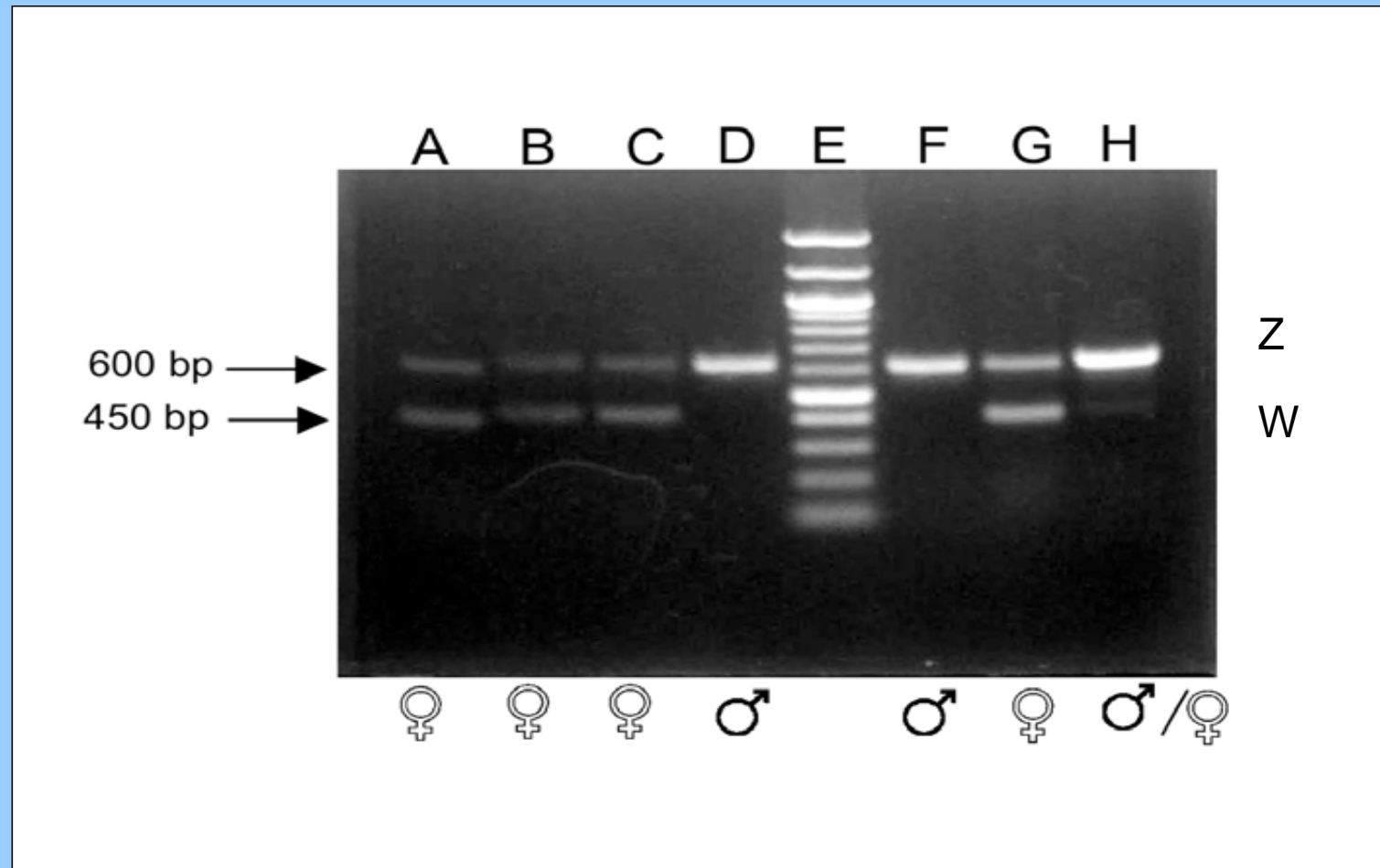
Therefore Island
Pointer 39°40'00.63" N 74°11'08.56" W elev 0 m Streaming 100% Eye alt 4.91 km



Pettit Island Feather Samples

- Contaminant studies (Joanna Burger & Mike Gochfeld)
- Molecular sexing (Jusuf Husic & Roy Mosher)
- Microsatellites to test for genetic mixing among populations (Patty Szczys)
- Ectoparasites (Jusuf Husic)

Molecular Sexing



Hatching Order	Male	Female
A	7	12
B	3	4
C	1	4

Overall 26 female (59%), 18 male (41%)

Responses of Tern Chicks to Feather Sample Removal

- Of 104 chicks, 74 showed no visible reaction and only 14 chicks ran
- Most likely to run if banded at the same time that feathers were removed: 5 of 12 ran, compared to 9 of 92 who were already banded
- Older chicks were more likely to run: only 2 of 50 chicks younger than 2 weeks ran, compared to 11 of 44 older than 2 weeks
- Those who ran once often ran again
- No evidence for effect of feather sample removal on survival

Methodological Recommendations

- For DNA research, store feathers at -80°C (or in alcohol)
- Limit additional handling (e.g. banding) while taking feathers
- Try to get samples when young

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