

Chesapeake Bay Forage Base: Waterbird Predation and Population Trends



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Assessing the Chesapeake Bay Forage Base: Existing Data and Priorities
Scientific and Technical Advisory Workshop

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Special thanks to:

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Paul Marban, USGS



Double-crested Cormorant

Phalacrocorax auritus



Depth: <8m

Distance to Shore: <5km

Size: 3-40cm (<15cm)

-Opportunistic, 250spp

-diurnal

Menhaden

Spot

Croaker

Many - opportunistic

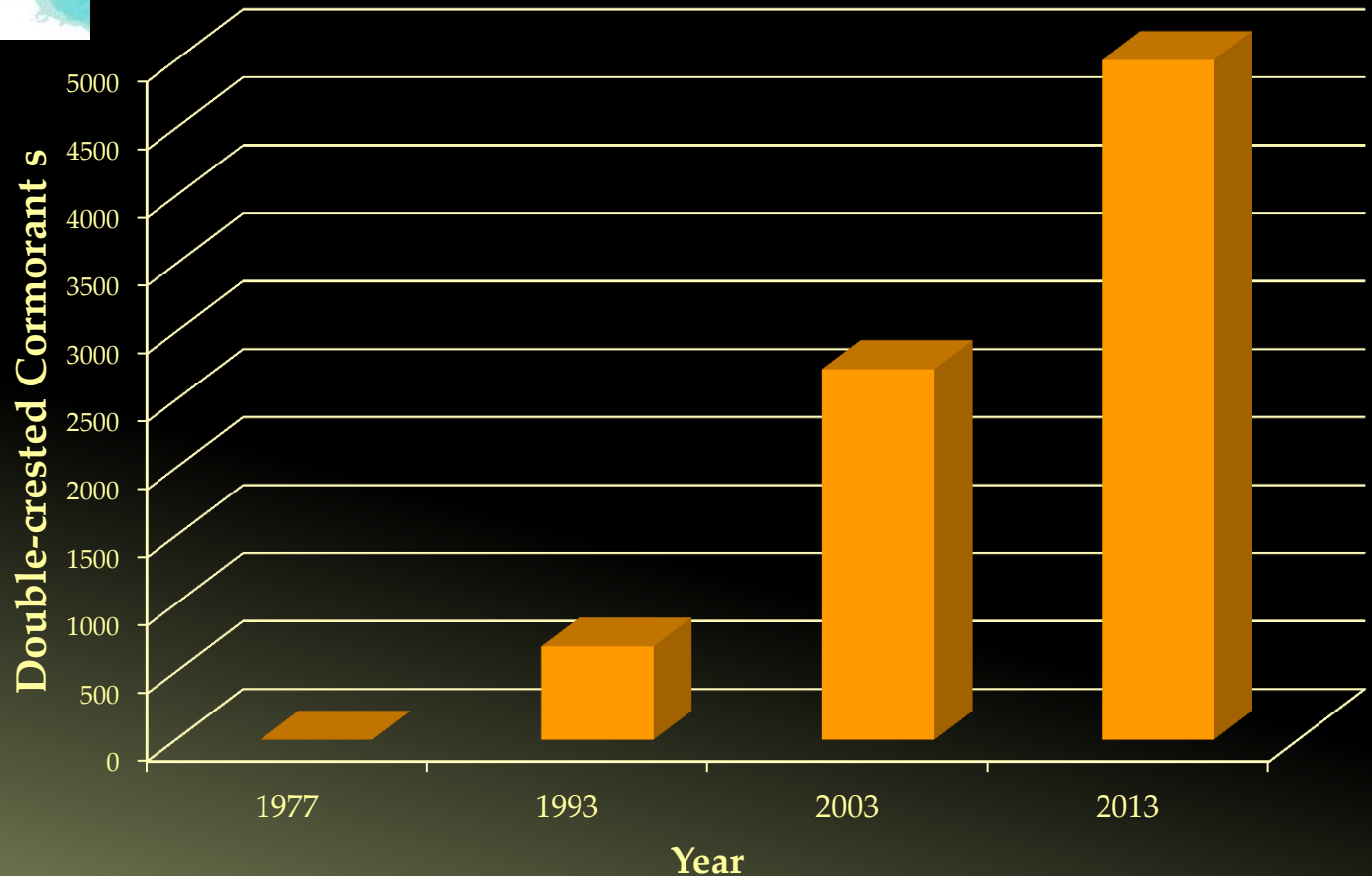
Double-crested Cormorant



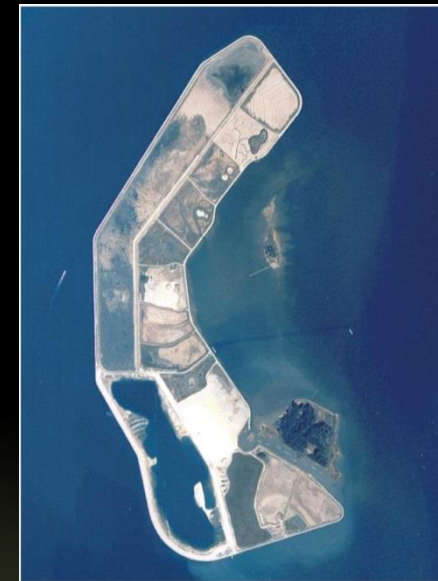
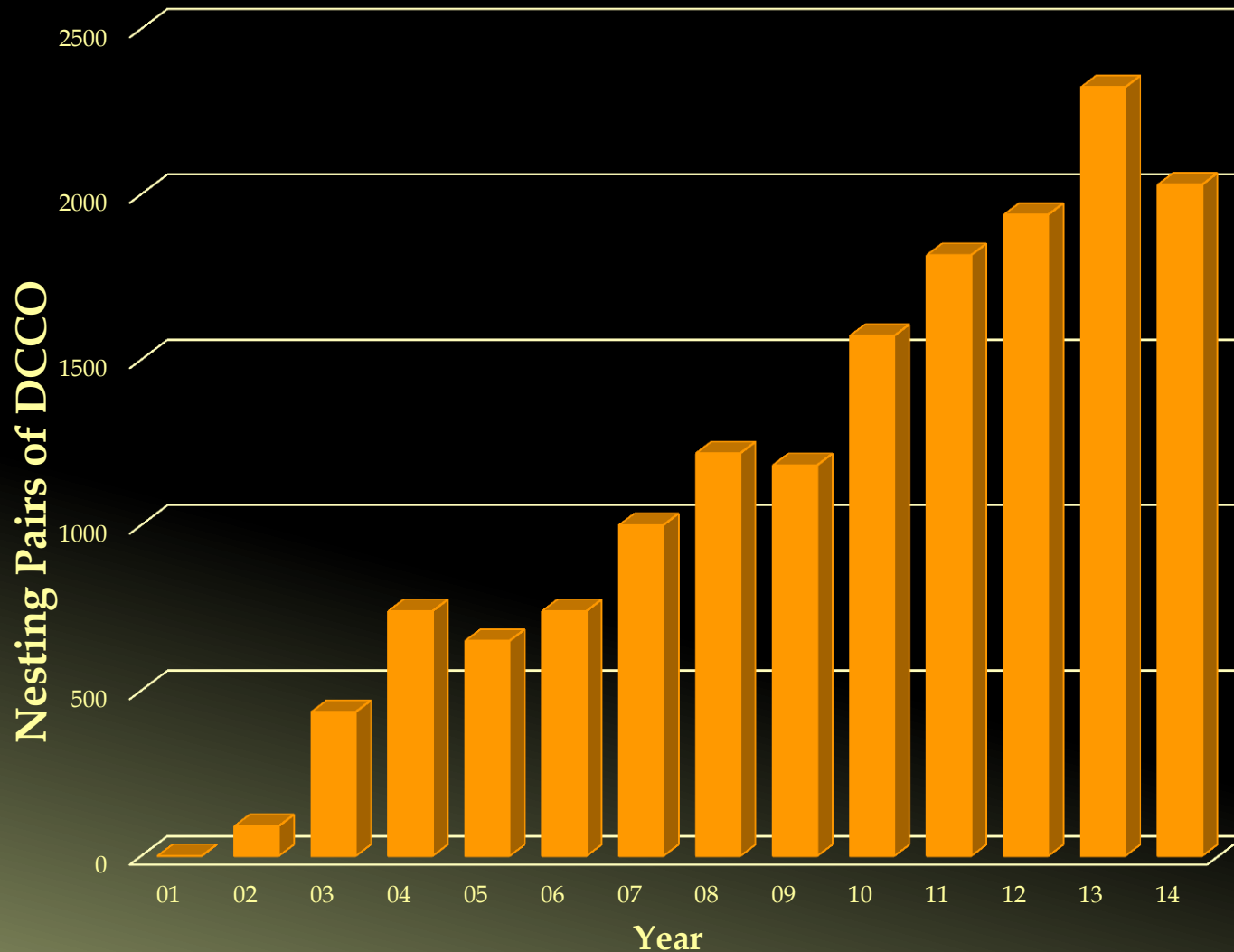
Global Population: 1-2M
Atlantic Coast (2010): 1M
Chesapeake Bay and Coast: >5K (CWM)

5K would consume an estimated 300 metric tons of fish annually

1978 first record of DCCO (6 pairs) in VA on James River



Nesting Pairs of Double-crested Cormorants (*Phalacrocorax auritus*) on Poplar Island, MD between 2001 and 2014



Also Smith Island, 2500 pairs in 2013 (354 pairs in 1993)

Brown Pelican

Pelecanus occidentalis

Depth: <150m

Distance to Shore: <20km

Size: 3-40cm (<20cm)



Photocredit: Marie Read gettyimages.com

Menhaden (75%)
Bay Anchovy (14%)
Herring
Silversides
Sheepshead

Brown Pelican fledging success has been shown to be dependent on food abundance (Anderson et al. 1980)

Brown Pelican

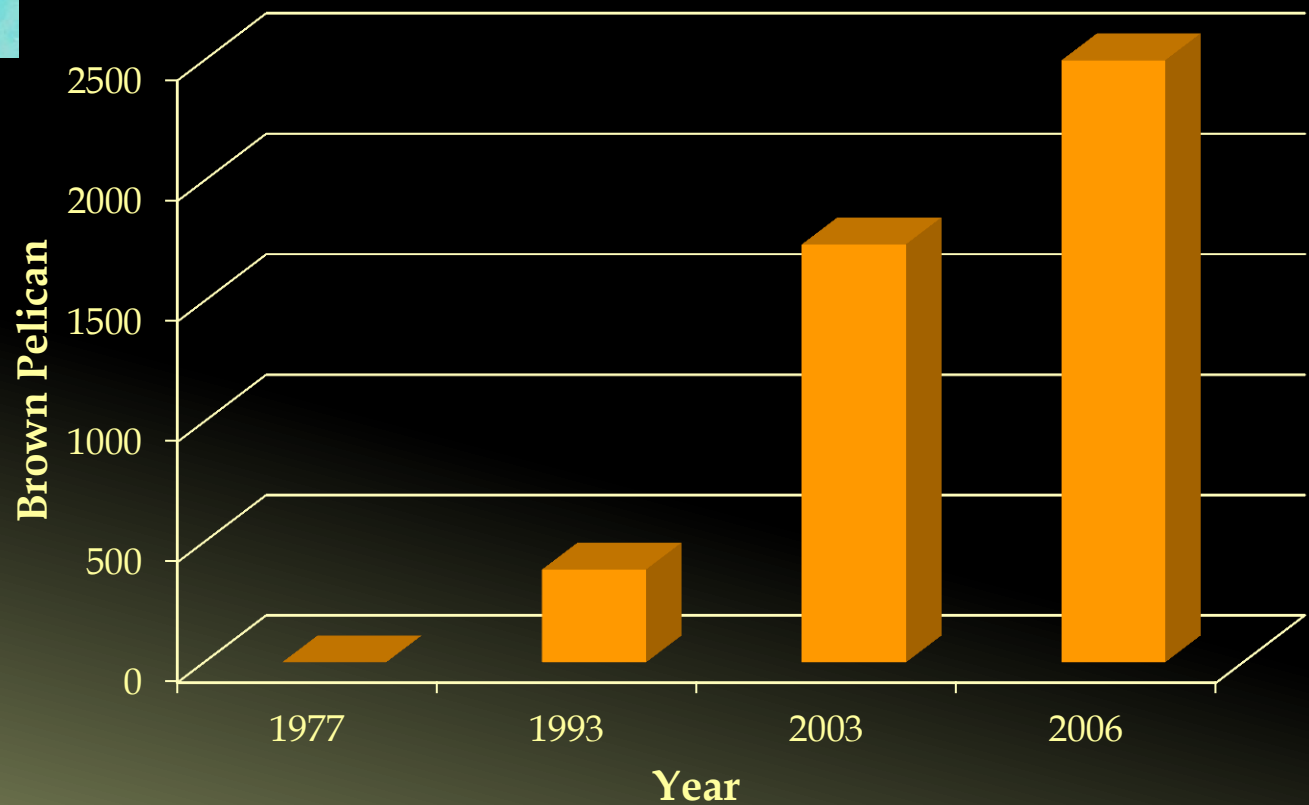
Global Population: 345K - 400K

Atlantic Coast (2010): 120K

Chesapeake Bay and Coast (2006): >2500



1987 first BRPE nest in Maryland Chincoteague Bay





Osprey

Pandion haliaetus

Depth: ≤1m

Distance to Shore: 1-5 km

Prey Items:

Menhaden

Striped Bass

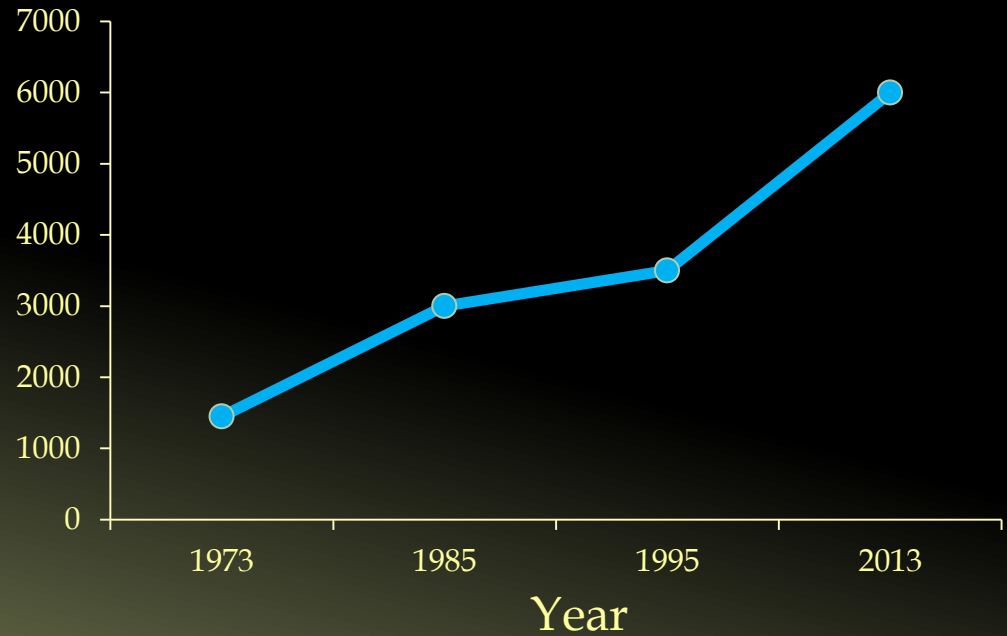
White Perch

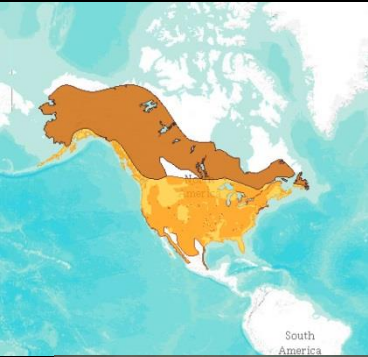
Winter flounder

Catfish



Number Breeding Pairs in Chesapeake Bay





Bald Eagle

Haliaeetus leucocephalus

Depth: surface

Distance to Shore: <500m



Prey Items:

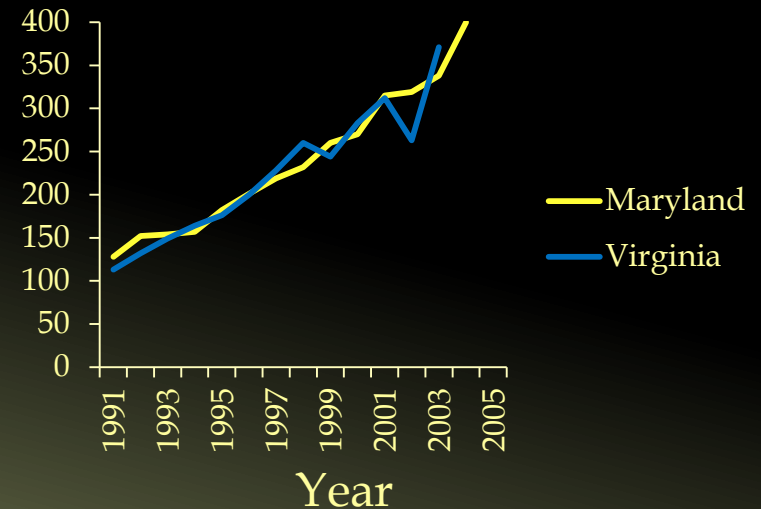
Opportunistic; carrion
fish (56%), birds (28%), mammals (14%)

Bass

Shad

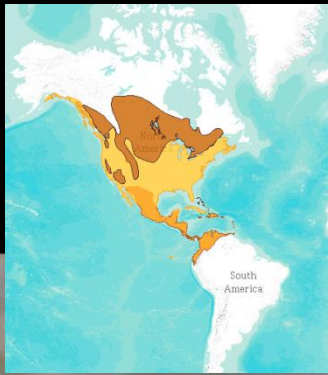
Catfish

Number Breeding Pairs, MD and VA



Great Blue Heron

Ardea herodias



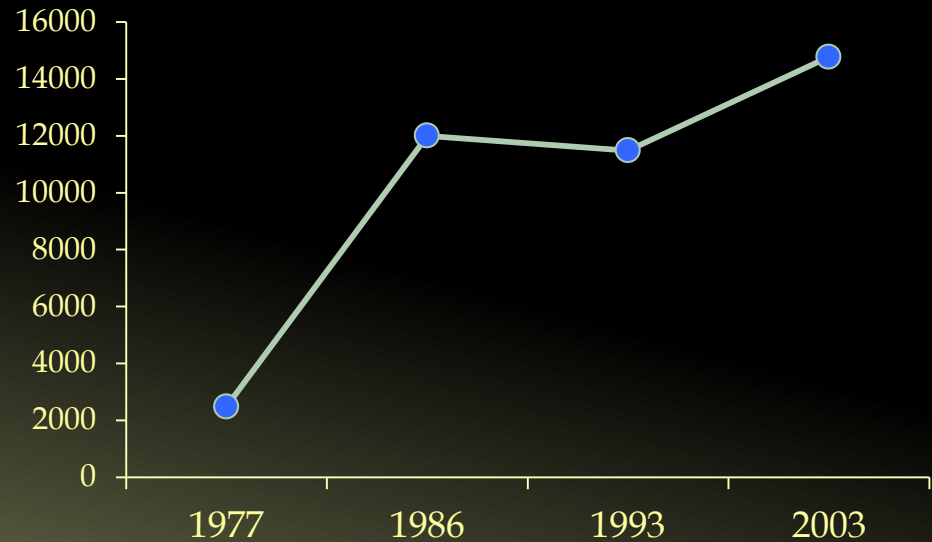
Depth: ≤ 0.5 m

Distance to Shore: < 50 m

Prey Items:

- Opportunistic
- Fish, amphibians, inverts, reptiles, birds

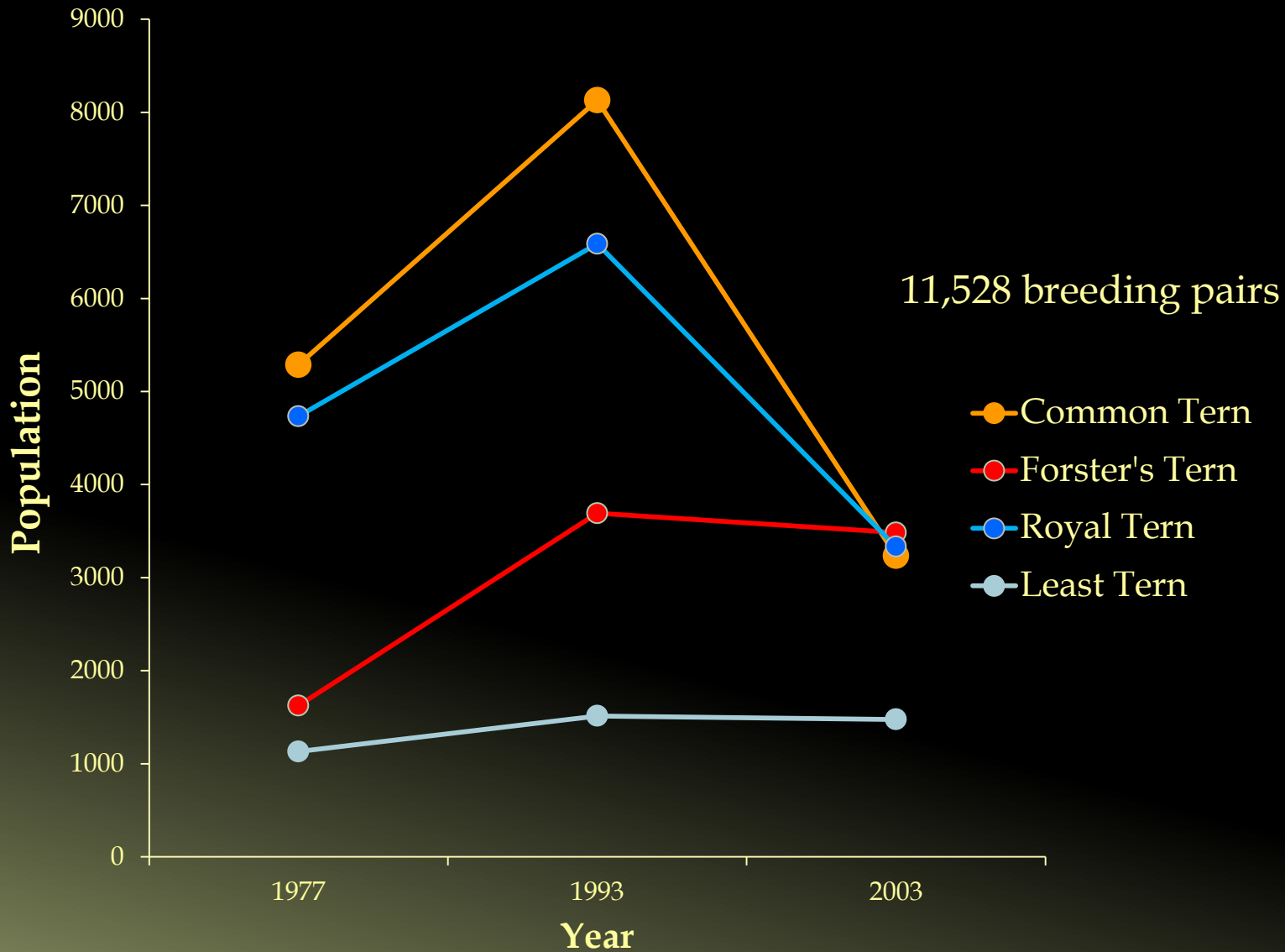
Number Breeding Pairs in MD and VA Bay



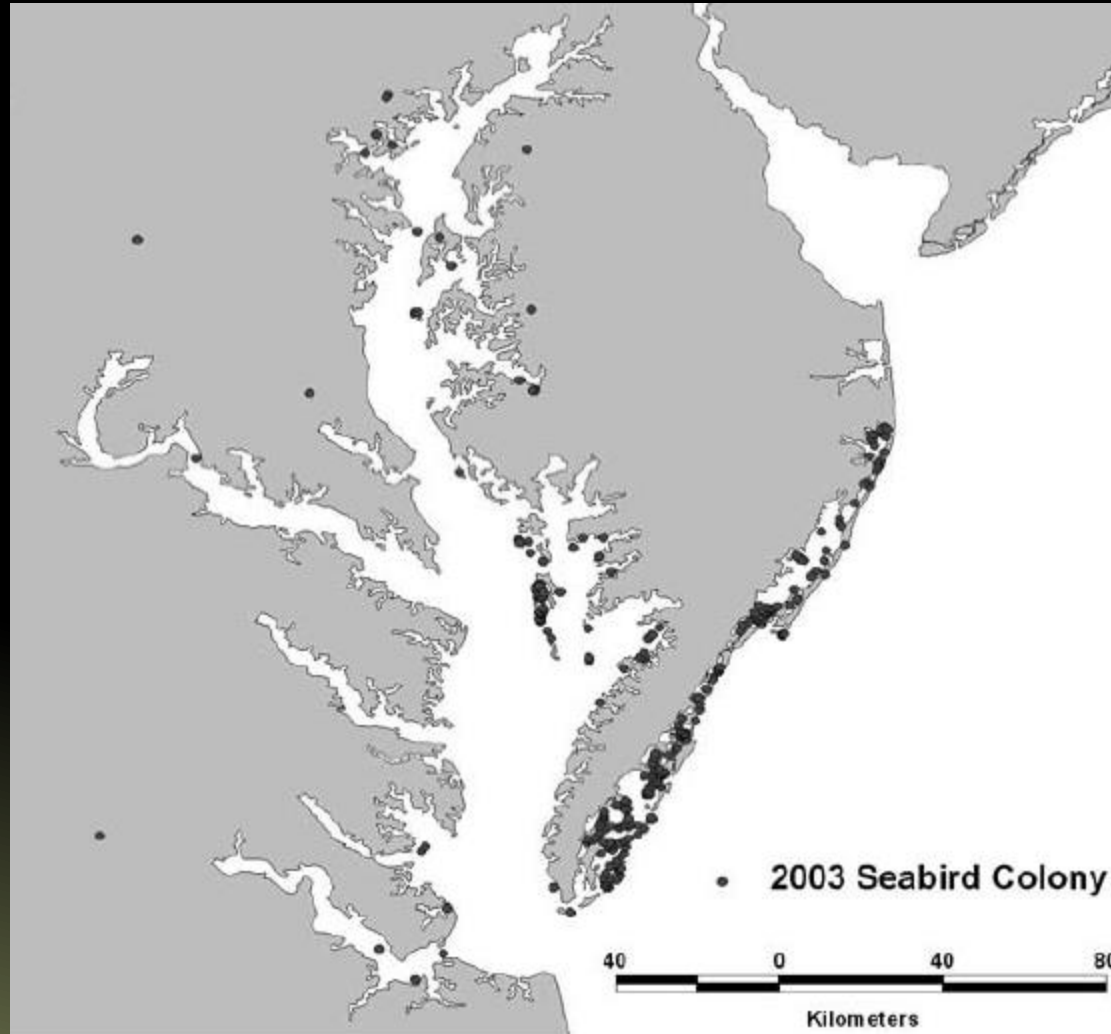
<i>Species</i>	<i>Foraging Depth</i>	<i>Foraging Distance from Shore</i>	<i>Size of Prey</i>	<i>Prey Items</i>
Common Tern	< 0.5 m	20km; < 1 km (100m)	< 1.5 cm	American Sand Lance, Atlantic Herring, Atlantic Silversides, Bluefish, Bay Anchovy
Least Tern	> 1 m	100 m	2.0-9.0 cm	American Sand Lance, Atlantic Herring, Hake, Atlantic Menhaden, Bay Anchovy
Forster's Tern	> 1 m	1.4 to 3.5 km	1.0-10 cm	Shiner, Northern Pike, Yellow Perch, Stickleback
Caspian Tern	0.5 to 5 m	< 100 m	> 5 cm	Yellow Perch, Alewife, Smelt
Royal Tern	≤ 10 - 20 m	100 m	> 5 cm	Silverside, Bay Anchovies, Atlantic Menhaden



Tern Populations in the Chesapeake Bay and Adjacent Coastal Watersheds

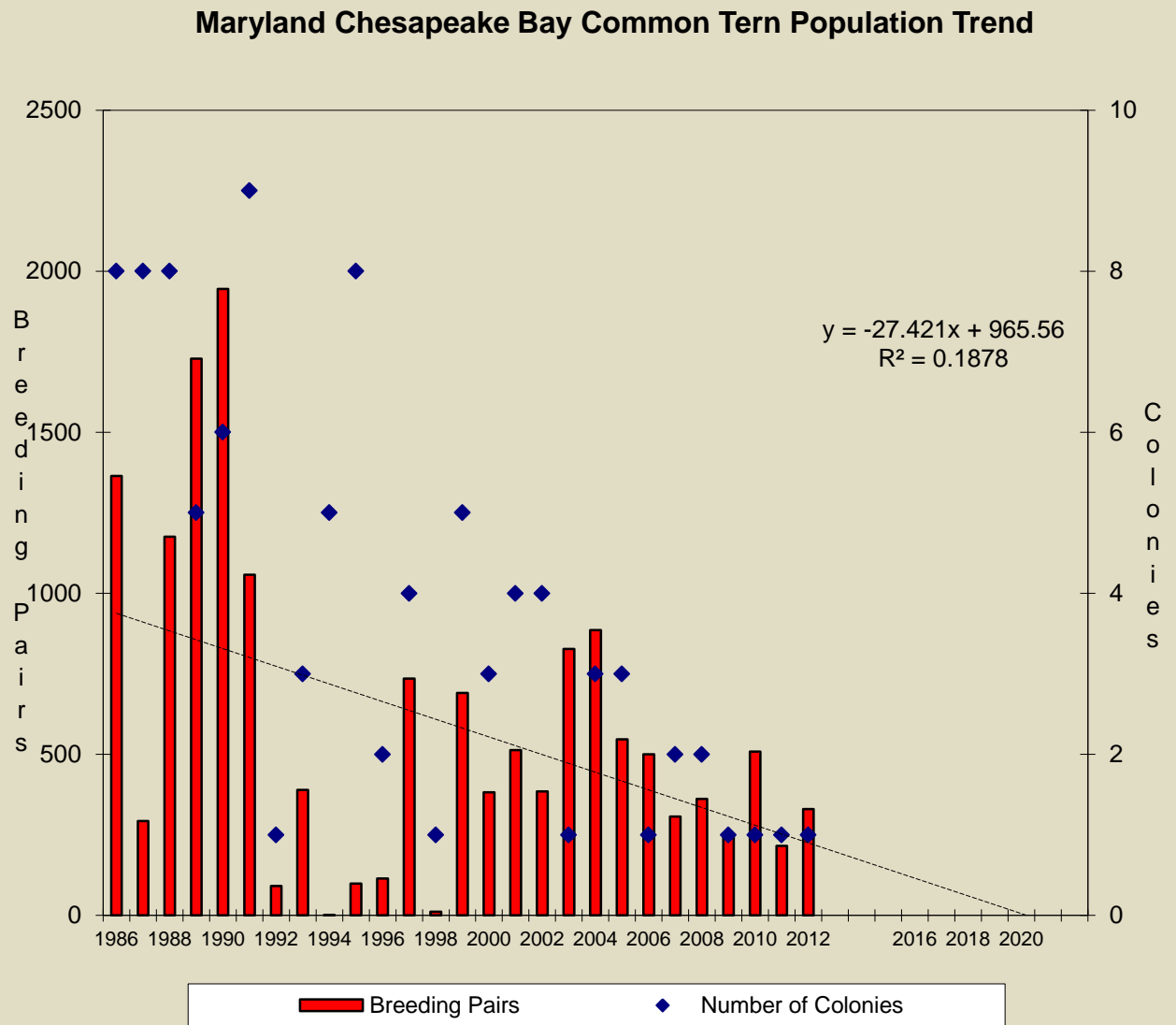


Seabird Colony Sites in the Chesapeake Bay and Adjacent Coastal Watersheds



Brinker et al. 2007

Common Tern Population Estimates, Maryland Portion of Chesapeake Bay



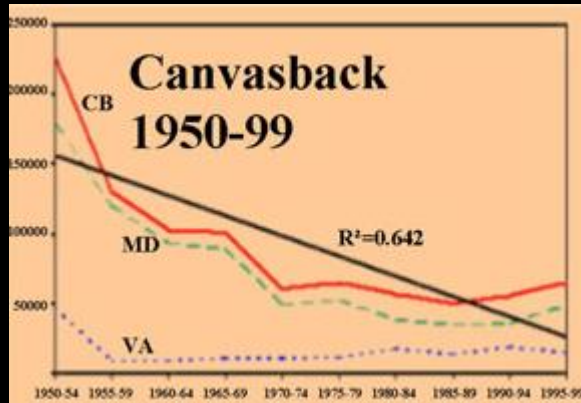
2014
205 pairs on
Poplar Island

Winter Populations - waterfowl



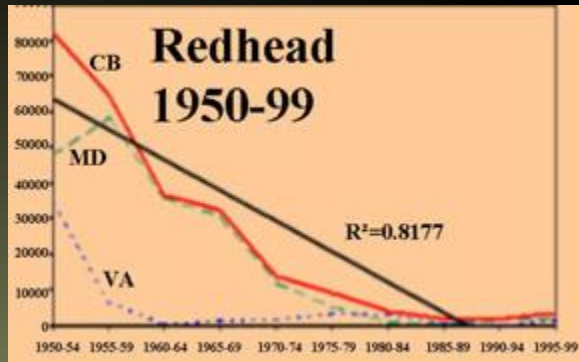
Pochards - Maryland and Virginia Midwinter Survey

Canvasback, *Aythya valisineria*



Switch
SAV to
bivalves

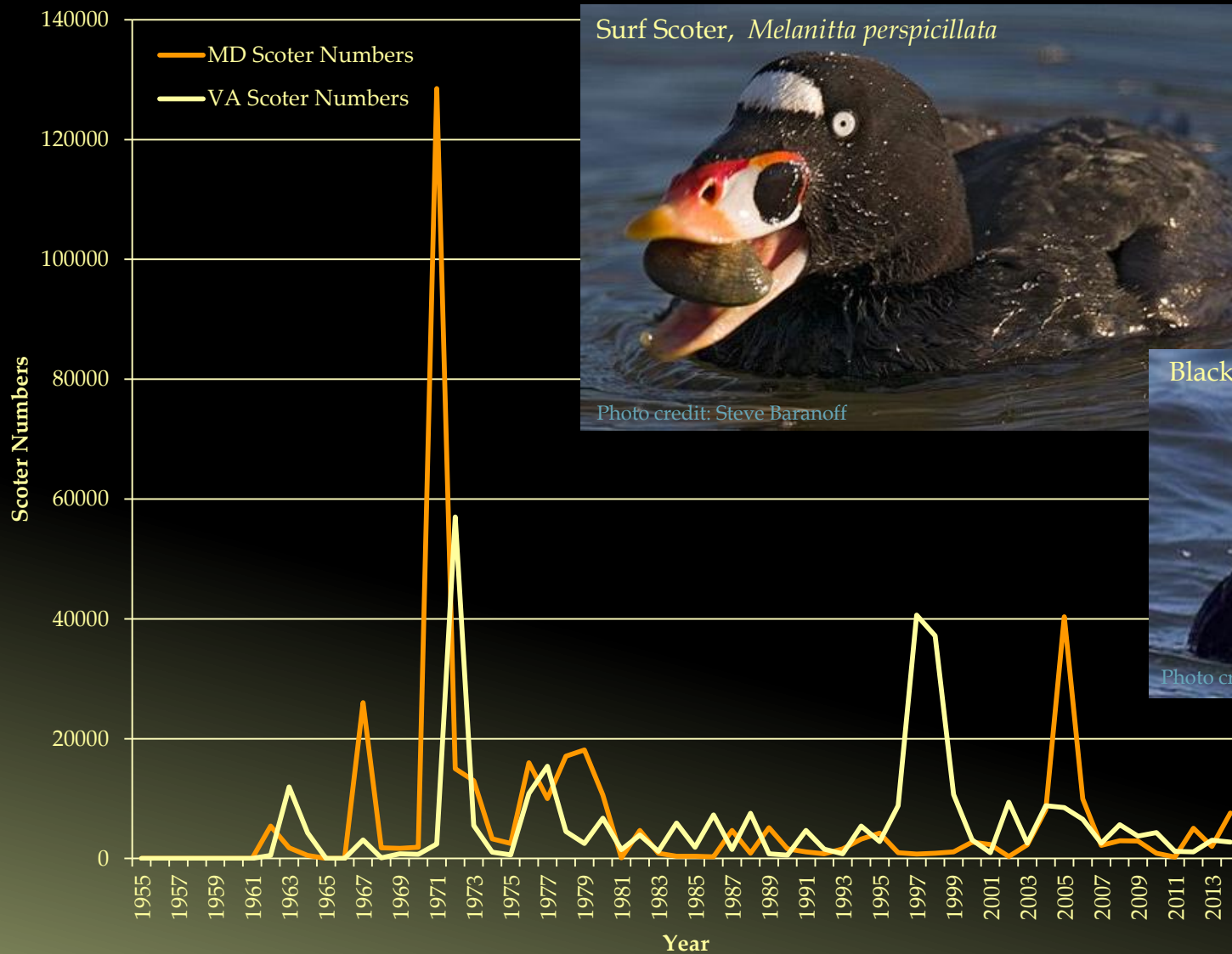
Redhead, *Aythya americana*



SAV only

Scoter Counts - Maryland and Virginia, 1955 to 2014

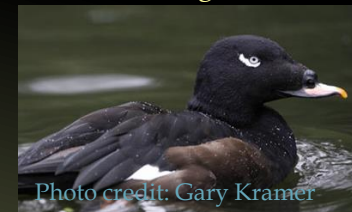
Midwinter Survey



7,203 scoters
(3yr average)



White-winged Scoter,
Melanitta delgandi



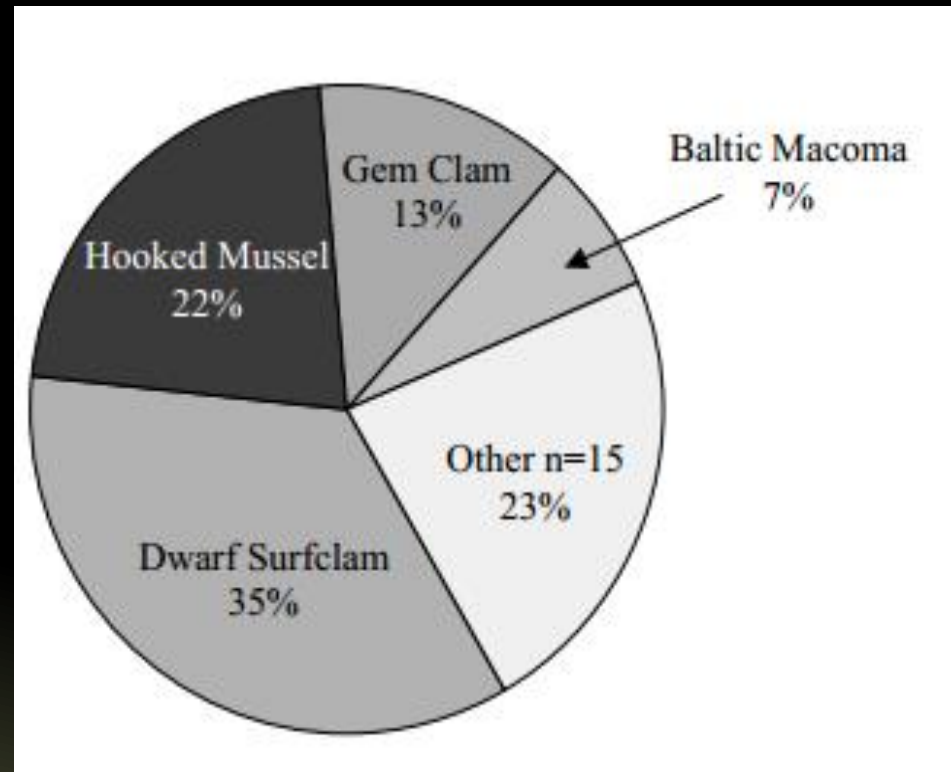
Food Habits of Scoters, Chesapeake Bay



Hooked Mussel
(*Ischadium recurvum*)



Dwarf Surfclam
(*Mulinia lateralis*)



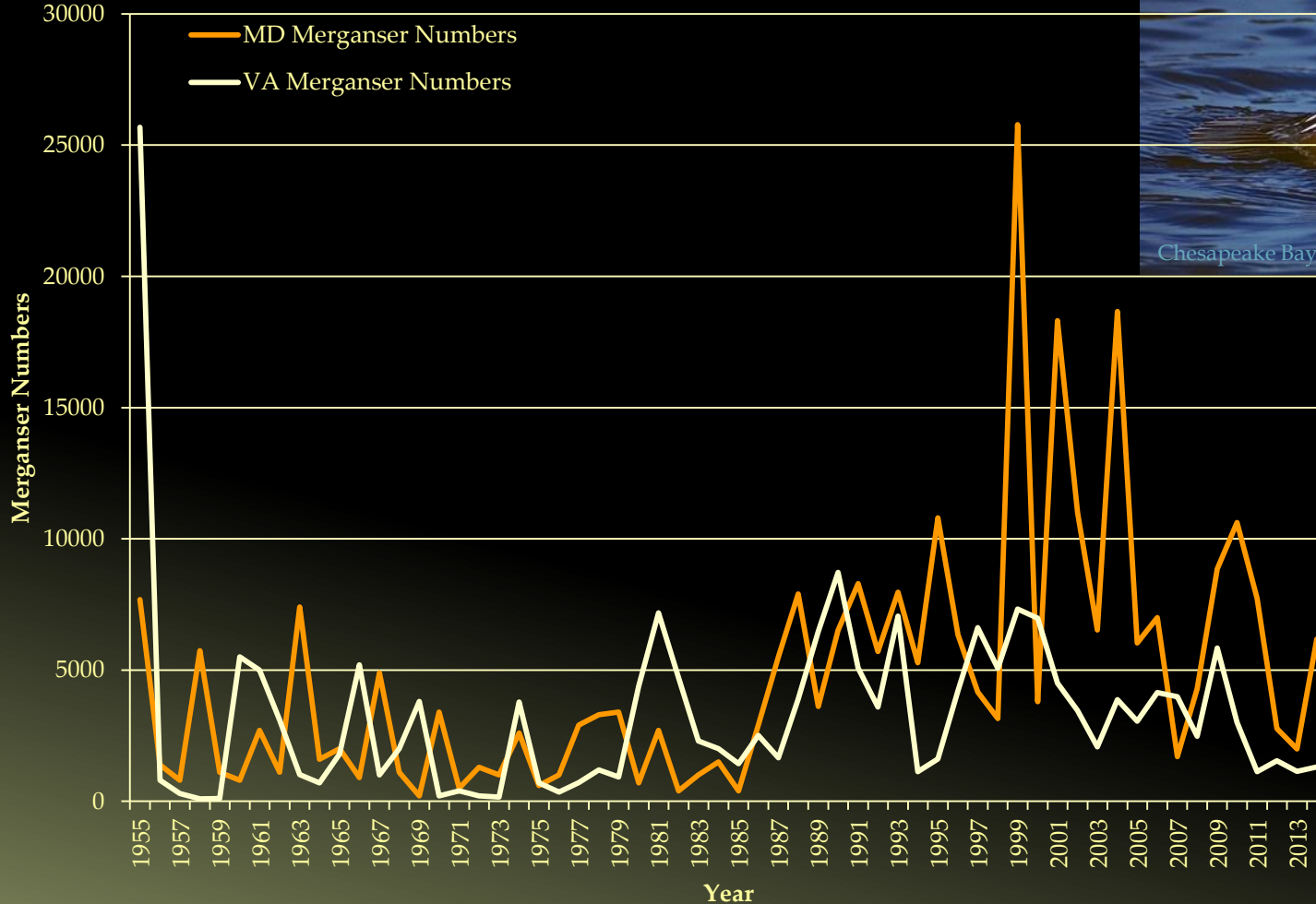
Baltic Clam
(*Macoma balthica*)

n=246 samples, gut contents

Perry et al. 2007

Mergansers- Maryland and Virginia, 1955 to 2014

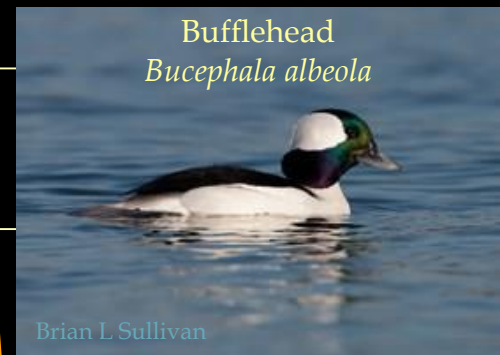
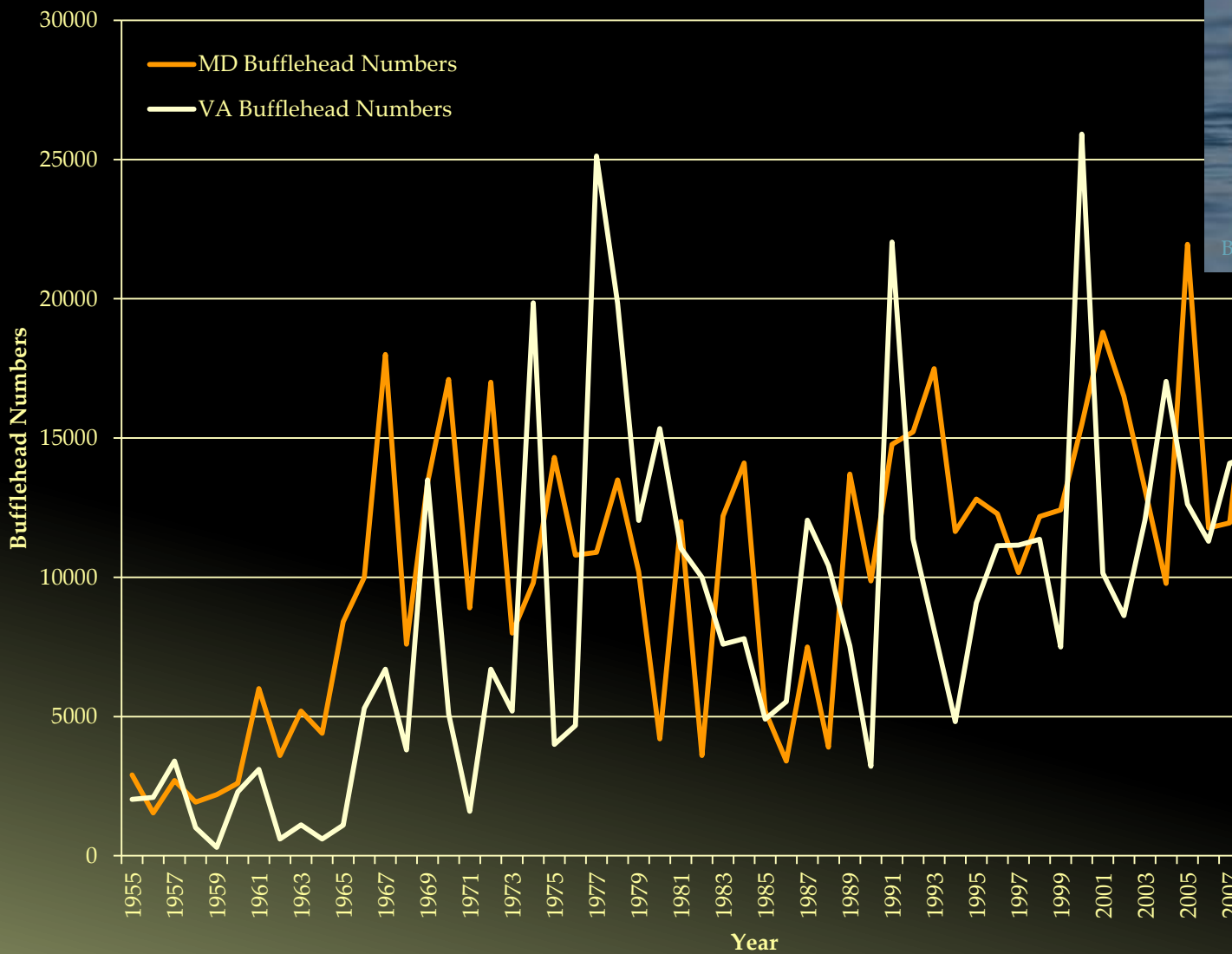
Midwinter Survey



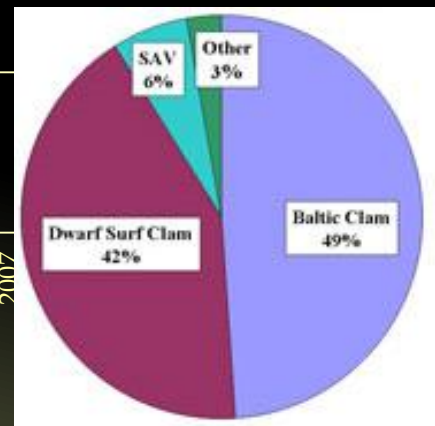
4,970 mergansers
(3yr average)

Bufflehead - Maryland and Virginia, 1955 to 2014

Midwinter Survey

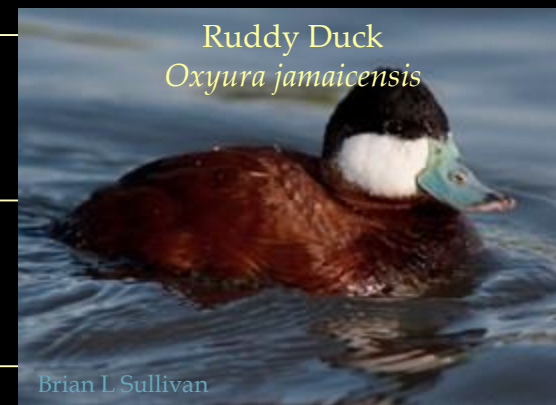
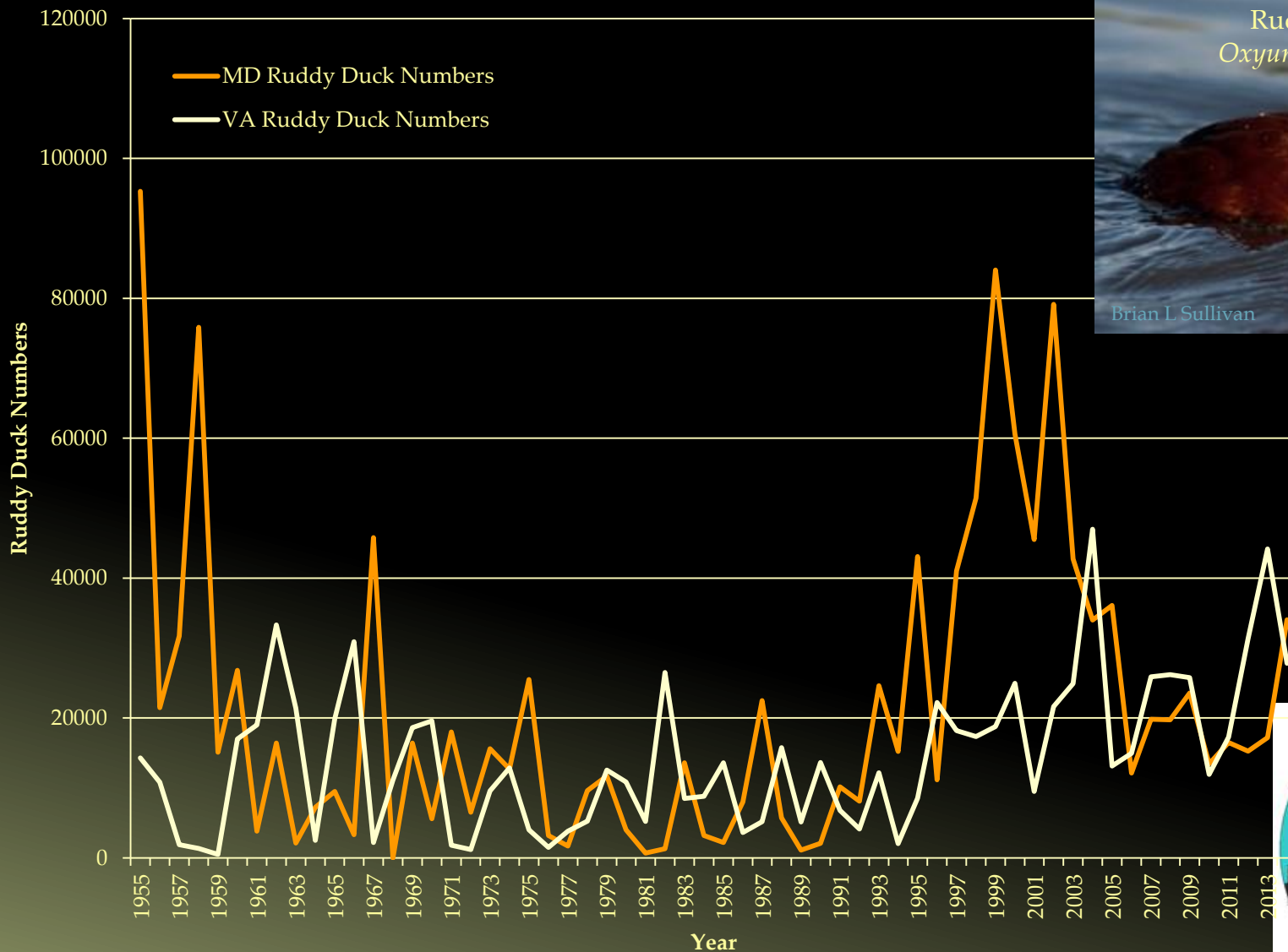


34,834 bufflehead
(3yr average)

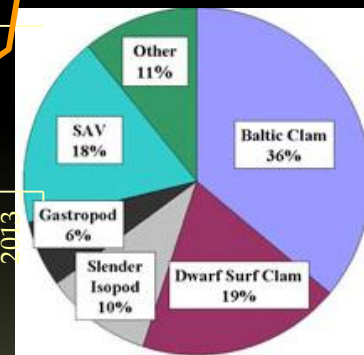


Ruddy Duck - Maryland and Virginia, 1955 to 2014

Midwinter Survey

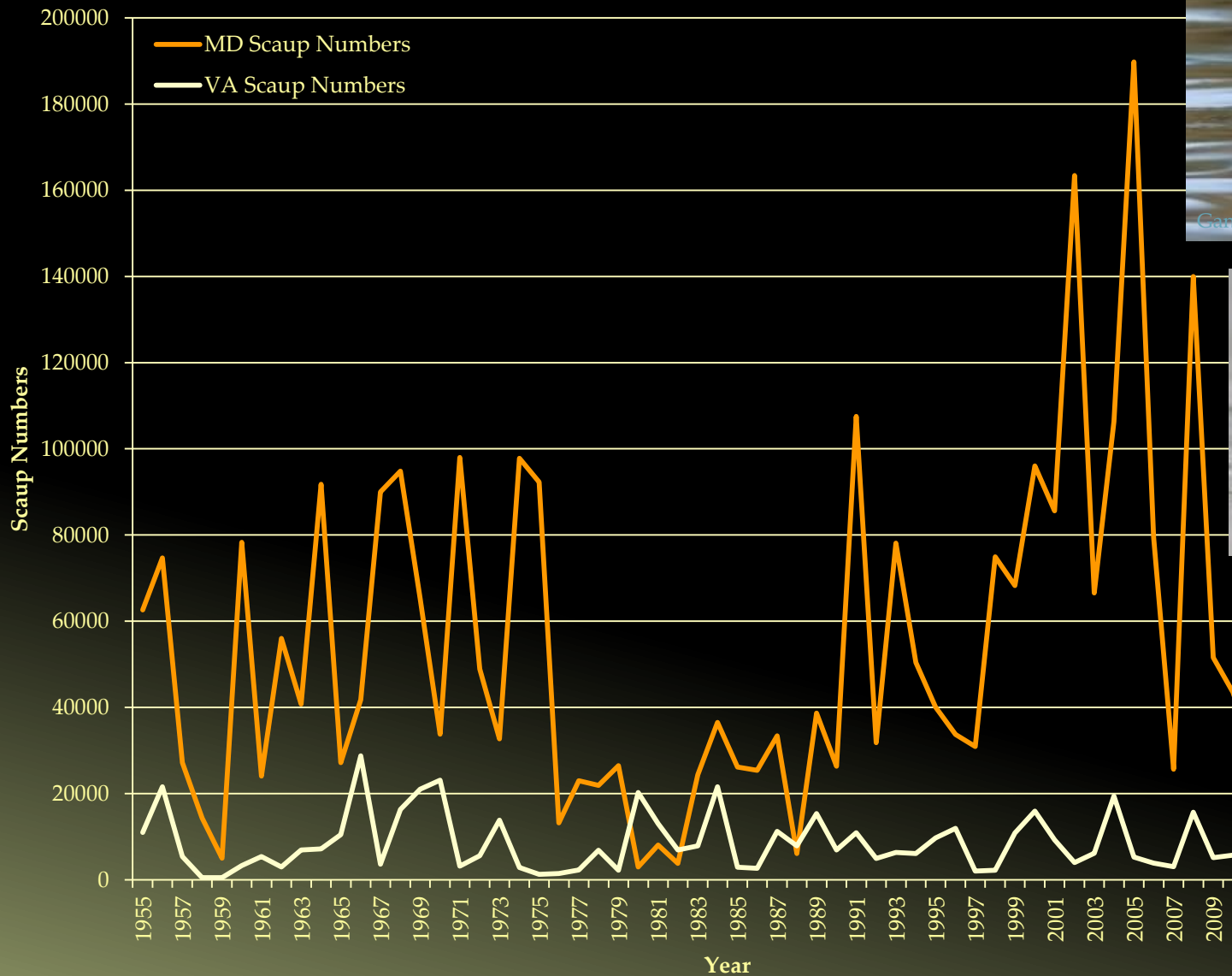


56,613 ruddy duck
(3yr average)

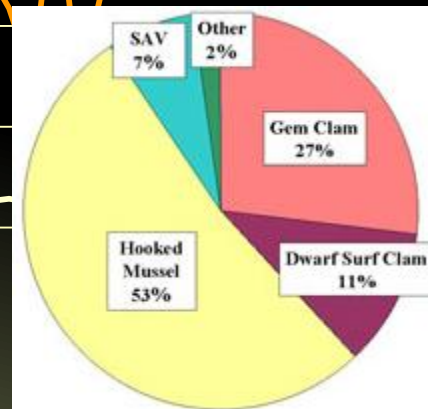


Scaup- Maryland and Virginia, 1955 to 2014

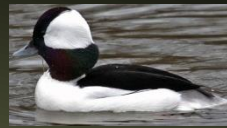
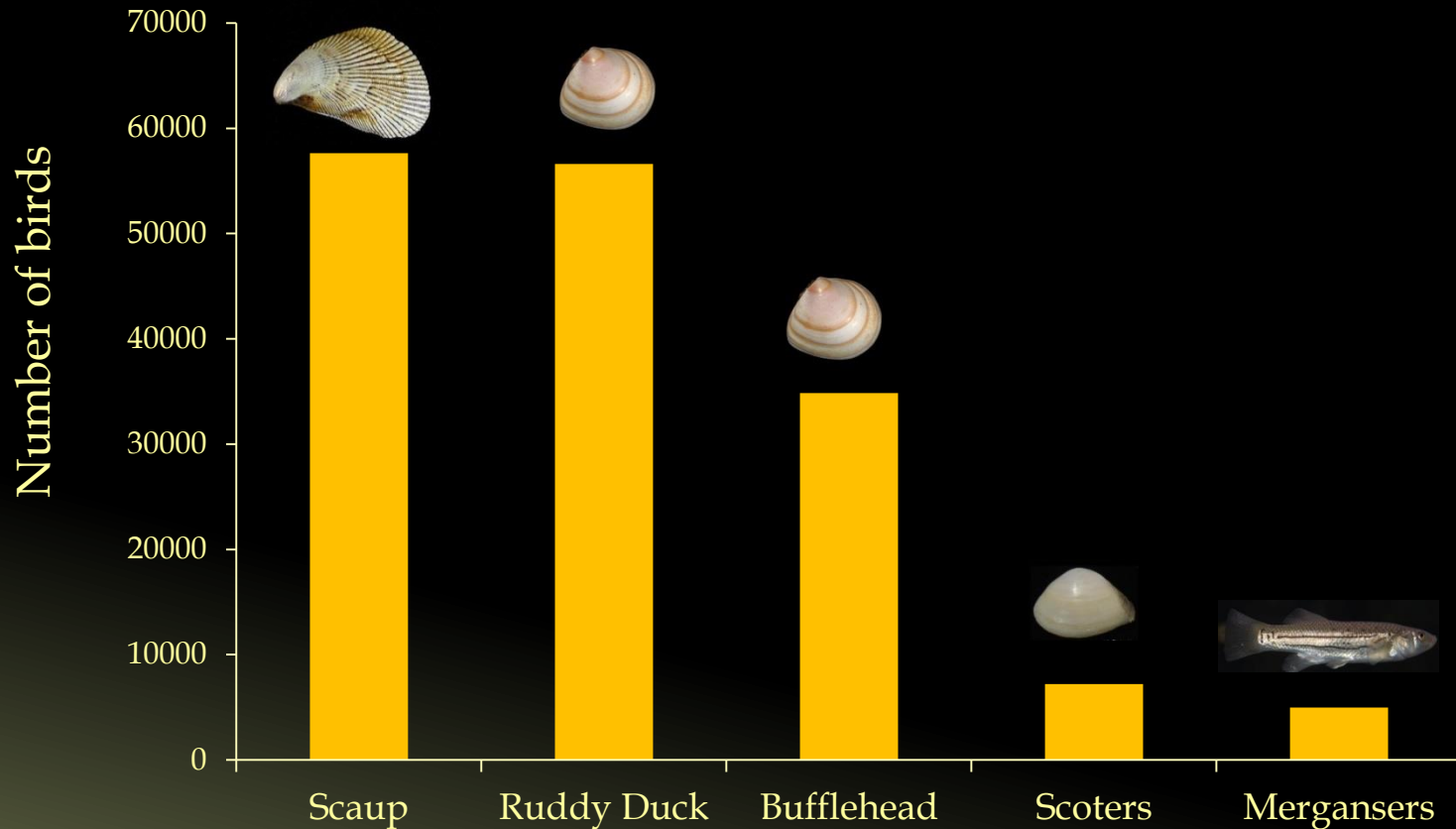
Midwinter Survey



57,646 scaup
(3yr average)



Winter Populations, Diving Ducks



Top Predators - Breeding Season



heron



cormorant



pelican



osprey



terns



eagle

Winter



scaup



ruddy duck



bufflehead



scoters



mergansers



loons

Thank You!

