

# Winter Diet of the American Mink (*Neovison vison*) in Northeastern and Central Pennsylvania

Chelsea L. Daycock and Carlos A. Iudica, Dept. of Biology, Susquehanna University

#10: 5-C

## INTRODUCTION

### A- GENERAL INFORMATION and DIET

- Habitat is usually near water (streams, rivers, ponds) (Merritt 1987; Hamilton and Whitaker 1979).
- Mink predators can include owls, foxes, and coyotes but greatest threat are humans (Hamilton and Whitaker 1979).
- Minks are valued for their fur (in 2009 average price per pelt was \$65.10 (NASS 2010)).
- General diet of minks is known to be made of frogs, fish, crayfish, muskrats, birds, small mammals, etc. (Merritt 1987; Hamilton and Whitaker 1979; Birks and Dunstone 1985).

### B- SEXUAL DIMORPHISM

- Male and female minks differ in size and Pennsylvania has the largest degree of sexual dimorphism in the United States (Stevens and Kennedy 2005, see also Figure 1).
- This could be a causal for resource partitioning.
- Birks and Dunstone (1985) found males feed on larger prey more often than the smaller females do.

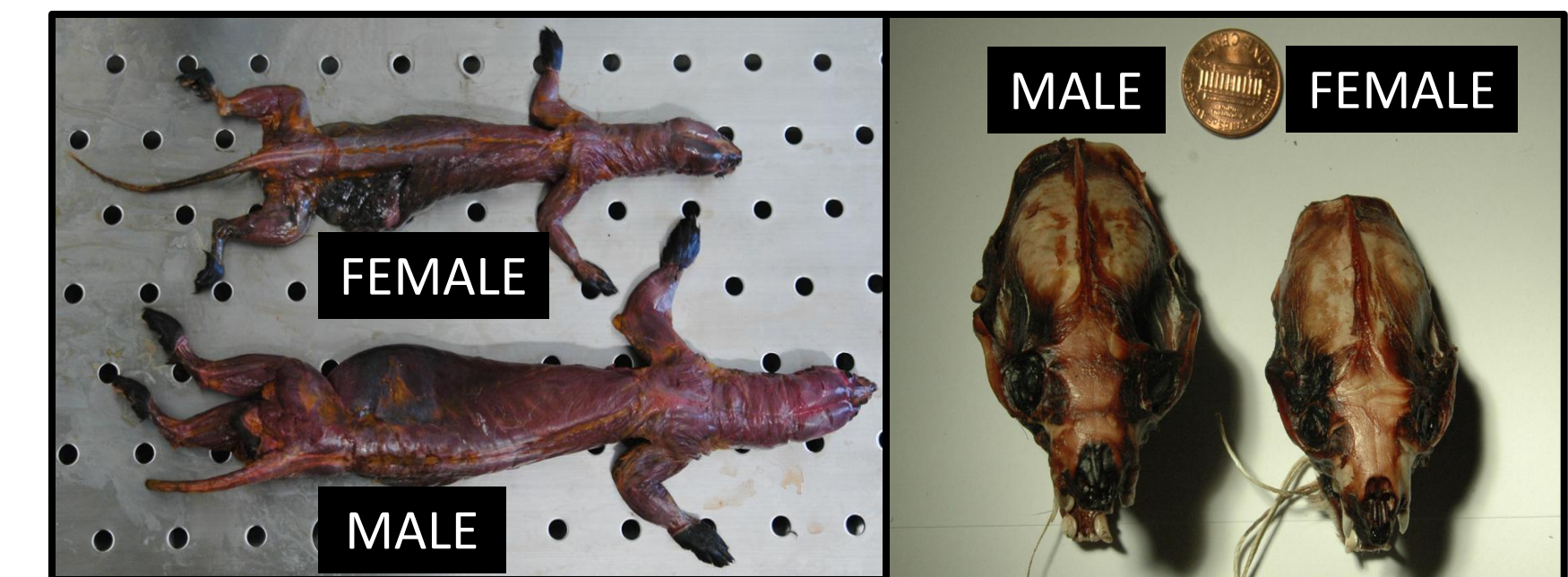


Figure 1. (Left) male and female mink carcasses. (Right) Male and female mink skulls.

### C- WHAT WAS OUR GOAL?

- Define diets of minks, specifically in Pennsylvania, and see if there is a correlation between sex and diet.

## METHODS

- Mink specimens were thawed before dissection
- Stomachs were extracted and frozen to be opened at a later time
  - Stomachs were opened one at a time
  - Contents were collected and fixed with 70% ethanol
  - Items were identified using hair casting techniques, scale ID, bone ID, and teeth ID

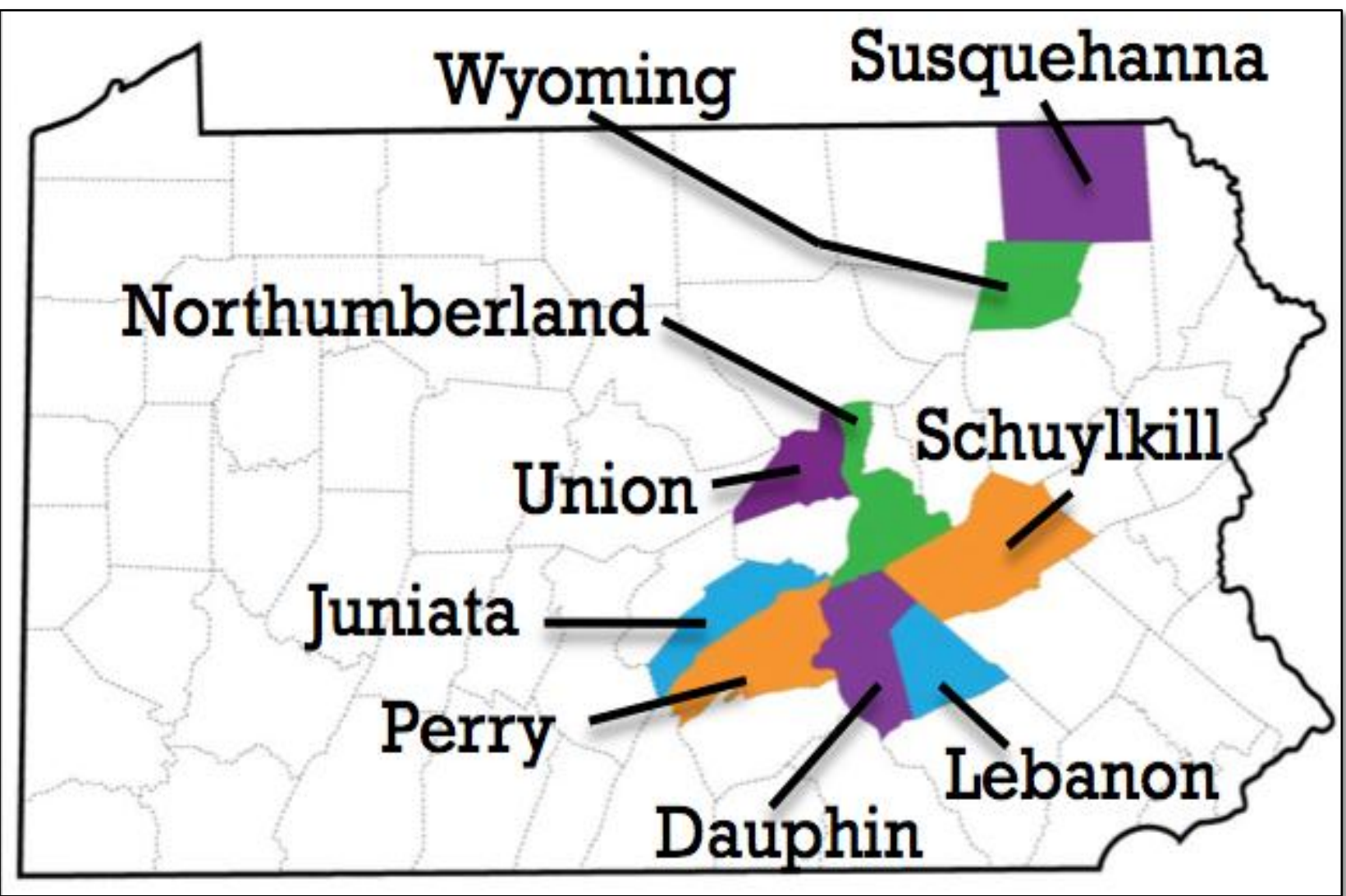


Figure 2. Counties in Pennsylvania from where minks were collected.

## RESULTS



Prey	Range of weight of prey (g)**	Number and percent* occurrence of prey items in males [550-1250 g]**	Number and percent* occurrence of prey items in females [550-1000 g]**
<b>Mammals</b>		<b>34%</b>	<b>33%</b>
<i>Microtus pennsylvanicus</i> (Meadow Vole)	33-65	14 (19.2%)	4 (12.5%)
<i>Microtus pinetorum</i> (Pine Vole)	14-37	0	2 (6.3%)
<i>Synaptomys cooperi</i> (Southern Bog Lemming)	21-50	0	1 (3.1%)
<i>Ondontra zibethicus</i> (Muskrat)	700-1800	2 (2.7%)	0
<i>Peromyscus leucopus</i> (White-footed Mouse)	15-25	8 (11.0%)	3 (9.4%)
<i>Peromyscus maniculatus</i> (Deer Mouse)	10-30	0	1 (3.1%)
<i>Sciurus carolinensis</i> (Eastern Gray Squirrel)	500-950	3 (4.1%)	0
<i>Condylura cristata</i> (Star-nosed Mole)	40-85	1 (1.4%)	0
Other (Unknown rodent)		2 (1.4%)	4 (12.5%)
<b>Fish</b>		<b>43%</b>	<b>42%</b>
Ctenoid Scales		11 (15.1%)	7 (21.9%)
Cycloid Scales		11 (15.1%)	6 (18.8%)
Ctenoid and Cycloid Scales		1 (1.4%)	0
Other (Unknown fish)		14 (19.2%)	6 (18.8%)
<b>Amphibians</b>		<b>12%</b>	<b>9%</b>
Anura (Frogs and Toads)		4 (5.5%)	1 (3.1%)
<i>Rana catesbeiana</i> (Bull Frog)		6 (8.2%)	3 (9.4%)
<b>Birds</b>		<b>1%</b>	<b>0%</b>
Unknown Bird		1 (1.4%)	0
<b>Macroinvertebrates</b>		<b>10%</b>	<b>16%</b>
Cambaridae (Crayfish)		6 (8.2%)	7 (21.9%)
Lepidoptera: <i>Synclita</i> (Aquatic Moth)		1 (1.4%)	0
Arachnida (Spider)		1 (1.4%)	0
<i>Corydalis cornutus</i> (Dobsonfly)		1 (1.4%)	0



Figure 3. Legs and arms of a bull frog, *Rana catesbeiana*.



Figure 4. Hellgrammite (dobsonfly), *Corydalis cornutus* (scaled view on right).

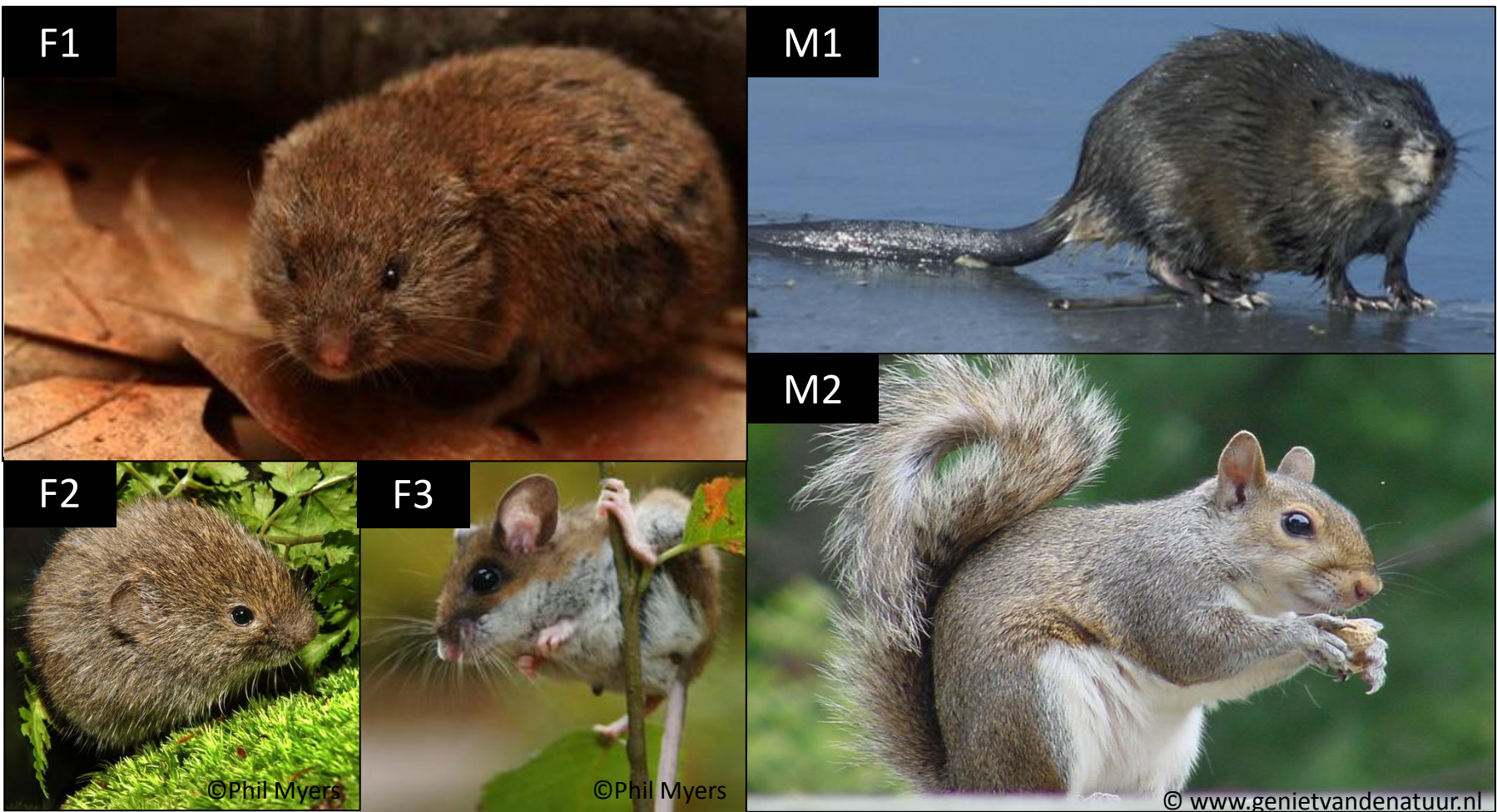


Figure 5. Prey items found only in female mink stomachs F1(*Microtus pinetorum*), F2(*Synaptomys cooperi*), F3(*Peromyscus maniculatus*) and only in male stomachs M1(*Ondontra zibethicus*) and M2(*Sciurus carolinensis*).



Figure 6. Left M2 of a meadow vole, *Microtus pennsylvanicus*.

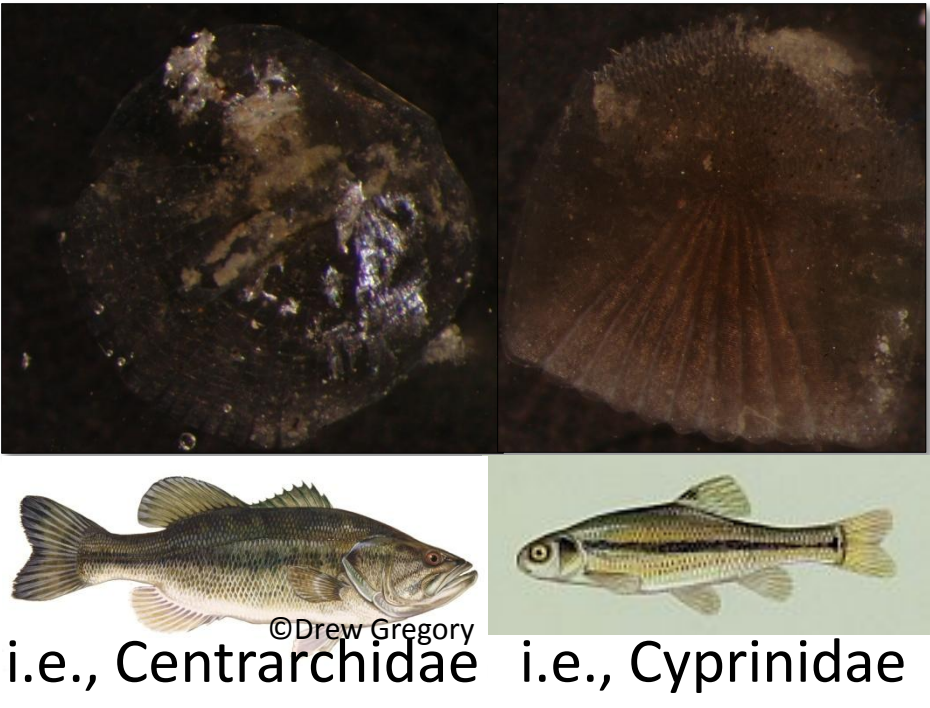


Figure 7. Cycloid (left) and Ctenoid (right) fish scales.

## DISCUSSION

### DIET (see Table 1)

Winter diets of minks consist of...

- Small Mammals (Figs. 5 and 6)
- Bonny fish (Fig. 7)
- Macro-invertebrates (Fig. 4)
- frogs (Fig. 3)
- Birds

### RESOURCE PARTITIONING

Sexual dimorphism is clear (see Fig.1) and our data suggest partitioning (table 1). Certain items are exclusively been eaten by individuals of one sex:

- Male minks are eating muskrats and gray squirrels (Fig. 5)
- Female minks are eating deer mice, southern bog lemmings, and pine voles (Fig. 5)

## CONCLUSIONS



- ✓ The American Mink (*Neovison vison*) preys upon a variety of animals and utilizes different habitats
- ✓ Our data suggests possible resource partitioning as males seem to be able to handle large prey items and females showing a preference for smaller prey items
- ✓ An incomplete list of dietary items will include:
  - 8+ different species of mammals
  - 1+ species of amphibians
  - 2+ species of fish
  - 4+ species of invertebrates
  - 1 species of bird

## LITERATURE CITED

- Birks, J.D.S. and N. Dunstone. 1985. Sex-related differences in the diet of the mink *Mustela vison*. *Holarctic Ecology*, **8**: 245-252.
- Hamilton, W.J. and J.O. Whitaker. 1979. *Mammals of the Eastern United States*, 2<sup>nd</sup> edition. Cornell University Press, Ithaca, NY.
- Kays, R.W. and D.E. Wilson. 2002. *Mammals of North America*. Princeton University Press, NJ.
- Merritt, J.F. 1987. *Guide to the Mammals of Pennsylvania*. University of Pittsburgh Press, Pittsburgh, PA.
- National Agricultural Statistics Service (NASS). 2010. Mink Pelt Production. <http://furcommission.com/farming/usdanew.pdf>
- Stevens, R.T. and M.L. Kennedy. 2005. Spatial Patterns of Sexual Dimorphism in Minks (*Mustela vison*). *American Midland Naturalist*, **154**: 207-216.
- Whitaker, J.O. and W.J. Hamilton. 1998. *Mammals of the Eastern United States*, 3<sup>rd</sup> edition. Cornell University Press, Ithaca, NY.

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