

Alien Fishes in the Hudson River Watershed

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Methods

Limit study to tributaries, ignore tidal water

Current species list (Waldman et al. 2006)

Divide into native and alien species

Watershed Total

Total Species = 104

Total Native Species = 71

Total Alien Species = 33

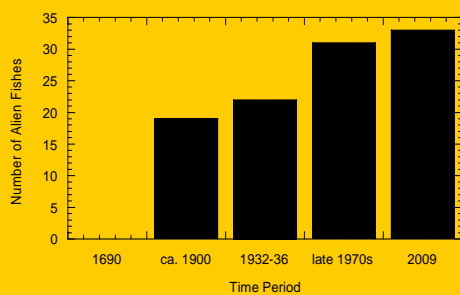
Percent Alien Species = 32%

Report Card Grade = C (rivers in Southwest are worse than the Hudson)

Who Are They?

Gar	Sockeye salmon
Bowfin	Brook silverside
Central mudminnow	Western mosquitofish
Northern pike (includes norlunge)	Freshwater drum
Margined madtom	White Bass
Channel catfish	Warmouth
Pirapitinga	Green sunfish
Carp (includes koi)	Rock bass
Goldfish	Smallmouth bass
Rudd	Largemouth bass
Grass carp	Black crappie
Bitterling	White crappie
Fathead minnow	Bluegill
Oriental weatherfish	Walleye
Rainbow trout	Rainbow darter
Brown trout	Northern snakehead
Chinook salmon	

Increase in Alien Fishes in the Hudson River Watershed



Sources of Alien Fishes

Fish and Game Agencies – 16
 Captivity (Aquaria, Aquaculture) – 8
 Canal (Recent) - 3
 Bait – 2
 Game (Unsanctioned) – 2
 Who Knows? - 2

Individual River Systems

Wappinger Creek- 19 Native, 9 Alien- 32%
 Fishkill Creek- 22 Native, 10 Alien- 31%
 Quassaic Creek- 13 Native, 2 Alien- 13%
 Moodna Creek- 11 Native, 4 Alien- 27%
 Schoharie Creek- 42 Native, 15 Alien- 26%

Only used rivers with recent comprehensive surveys. Large variation, but none exceeded the percent of aliens in the watershed.

Three Case Studies

Bitterling, *Rhodeus sericeus* (Cyprinidae)

Rudd, *Scardinius erythrophthalmus* (Cyprinidae)

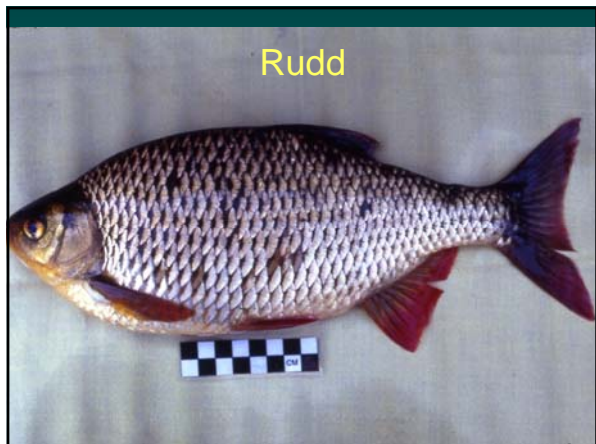
Green sunfish, *Lepomis cyanellus* (Centrarchidae)



Bitterling

Bitterling

Sawmill and Bronx Rivers
 Recorded in early 1920s
 Small species, scrapes *aufwuchs* from rocks
 ~900 individuals in 1.2 km in 1980s (Bronx)
 Gone from Sawmill in early 1950s
 Gone from Bronx River in early 1990s
 A "benign" alien?



Rudd

Rudd

Robinsons Pond, Roeliff Jansen Kill since the 1920s
 Large size, herbivorous, high fecundity (495,000)
 Do not thrive in running water
 Influx of individuals from bait dealers in the 1980s
 Now spawning in several places in Hudson
 Population explosion potential not realized

Green sunfish



Green sunfish

Spotty distribution in several Hudson tribs
Abundant some years, rare in others
Bad reputation- aggressive, predatory
Seems unable to maintain high densities

New observations in Dwaarkill (Walkill River):
Green sunfish are quite abundant
Some research on this population would be valuable

Effects of Alien Fish Introductions?

Many potential effects, few documented

No loss of native species- need to look into

Bridle shiner, Creek chubsucker, Satinfish
shiner declines

Four aliens with substantial documentation of
negative effects:

Brown trout, Largemouth bass, Carp, Goldfish

Conclusions

We are not being vigilant. Introductions
usually "discovered" well after they
occurred.

Thus far, we have mostly dodged the bullet.
Most aliens have not caused huge
disruptions despite their potential.

Concern is that we may eventually succeed
if we keep trying. (Flathead catfish, e.g.)

Maybe fishes are not the macroaliens we should
be concerned with: My First Juvenile Chinese
Mitten Crab- June 8, 2008

