Delaware 16-Foot Trawl

- An increase in the number of juveniles

Source: Michels

Delaware Juvenile (<160mm) Horseshoe Crab Index Juvenile Trawl Survey

Geometric Mean Catch per Tow

Source: Michels
VA Tech Horseshoe Crab Trawl Survey – DE Bay Core Stations

- Short time series
- Improving juvenile abundance is encouraging

Data Source: Hata (2008)
Table 4, plotted by Michels
### DE Bay Spawning Population Estimate

<table>
<thead>
<tr>
<th></th>
<th>2003 Maximum likelihood estimates</th>
<th>2003 Adjusted for relocation rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abundance</td>
<td>90% CI</td>
</tr>
<tr>
<td>Males</td>
<td>16,410,000</td>
<td>9,910,000 – 22,300,000</td>
</tr>
<tr>
<td>Females</td>
<td>7,350,000</td>
<td>4,520,000 – 10,160,000</td>
</tr>
<tr>
<td>Total</td>
<td>23,490,000</td>
<td>14,430,000 – 32,460,000</td>
</tr>
</tbody>
</table>

- Using these estimates, the Addendum IV harvest would be less than 1% of the DE Bay male spawning population (w/ NJ at moratorium)

- Under a complete moratorium, the harvest would be zero

Source: Smith (2006)
Declining Red Knot Populations are a Principal Management Concern

Abundance of horseshoe crab eggs as food during migration linked to red knot condition & likelihood of successful nesting
DE Bay Peak Count - Red Knot 1998-2008

\[ y = -4305x + 52856 \]

\[ R^2 = 0.848 \]

Source: Kalasz
DE Bay Peak Count - Ruddy Turnstone 1998-2008

\[ y = -7816.1x + 10235 \]

\[ R^2 = 0.848 \]

Source: Kalasz
Horseshoe Crab Management by the Atlantic States Marine Fisheries Commission
15 member states ME-FL

3 Commissioners per state, although only one vote/state

1 legislator, 1 governor’s appointee, chief fisheries administrator
(No wildlife administrators)

ASMFC charged with proposing and implementing management plans that conserve the species and prevent overharvest
Initially linked to American eel plan, ASMFC passes horseshoe crab management plan in 1998

Since 1998, the plan has been amended 5 times
Coastwide Horseshoe Crab Bait Landings

Source: Atlantic States Marine Fisheries Commission

Landings (Millions of crabs)

- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008

FMP
Addendum I
Addendum II
Addendum III
Addendum IV
Addendum V
• Generally, landings have been 1/3 female and 2/3 male
• ’98, ’99, ’01 landings approximated to 1:1
Proposed Options

• ASMFC Compliance with Addendum IV

For 2 Years (October 1, 2006 – September 30, 2008)

– Delayed male harvest
  • Prohibited the directed harvest & landing of all HSCs in NJ & DE from January 1 through June 7
  • Prohibited directed harvest of female HSCs from June 8 through December 31.
  • Limited NJ & DE harvest to 100,000 HSCs per state.

• Addendum V extended these measures through 2009 with an option for another year

• In 2006 NJ implemented a complete harvest moratorium which remains in effect until changed by legislation
  • Prohibits harvest of any HSCs
Delaware installs harvest moratorium January 2007

- Secretary’s ruling challenged by watermen and VA conch processor.
- Environmental groups attempt to intervene
  - Delaware DF&W adopts emergency regulation consistent with Addendum IV.
  - Adopted by formal regulatory process fall, 2007
  - Hundreds of public comments received on draft regulations from all over country
The Plight of the Red Knot
A shorebird veers toward extinction
By Sandy Bauers
INQUIRER STAFF WRITER

In the next week or so, what could be the final fragment of a once-vast population of shorebirds - the red knots - will touch down on Delaware Bay beaches in search of food.

Newspaper

Del. judge overturns ban on horseshoe crab harvest

POSTED BY THE ASBURY PARK PRESS ON 06/10/07

By Kirk Moore
STAFF WRITER

A Delaware state court decision Friday striking down a 2-year-old ban on collecting horseshoe crabs for bait was a rare victory for commercial fishermen, though they are still shut out of taking crabs on the New Jersey side of Delaware Bay.

Supreme Court overturns moratorium on horseshoe crab harvest

By Rachel Swick
CAPE GAZETTE STAFF

Del. horseshoe crab harvest ban appealed

Two-year halt approved in Nov.
By Iffy Montgomery, The News Journal
Posted Wednesday, December 20, 2006

A Milford-area waterman and a Virginia company challenged Delaware's two-year ban on horseshoe crab harvests Tuesday, arguing that state regulators took the step "without a reasonable scientific, economic or social basis."

Department of Natural Resources and Environmental Control Secretary John A. Hughes said he approved the ban last month to protect horseshoe crabs and the red knot, a migratory shorebird seen in dwindling numbers along the Delaware Bay. The red knot relies almost exclusively on horseshoe crab eggs for food during spring migrations from southern South America to the Arctic.
SAVE A REDKNOT
KILL A FISHERMAN
HELP ME!
Management Lessons Learned from the Horseshoe Crab Experience

• Fisheries management must include ecosystem considerations.
• Non-traditional users can be very important.
• Politics and/or courts may drive decision making.
• NGOs from environmental community will likely play a role in decision making.
Acknowledgments

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