Turtle Farming in China, with particular reference to US species

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Turtle Consumption in China

• Turtle has long been used as food and as medicine in China despite being a symbol of longevity
• Many turtles in trade are wild-caught individuals from China and other Asian countries
• Farm-bred turtles became available in good numbers in the last 20 years and the market share has increased substantially
Turtle Farming in China

• 16 provinces have turtle farms
• Difficult to get an accurate picture because many farms operate without proper license
• Shi et al. (2008) estimated over 300 million turtles are sold per year and are worth US$ 750 million
• Zhou & Wang (2008) estimated 120 – 160 million turtles produced yearly and worth US$ 200 million
Softshell Turtles Farming

• China started farming Chinese Softshell Turtles in 1970’s
• In mid 1980’s, adopted Green House farming technique from Japan
• In 1990’s turtle farming expanded quickly throughout China
• Since 2000, Florida Softshell, Spiny Softshell and Smooth Softshell have also been farmed
## 2007 Softshell Turtles Production

<table>
<thead>
<tr>
<th>Species</th>
<th>Breeding Stock</th>
<th>Yearly Production</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pelodiscus sinensis</em></td>
<td>2 - 2.5 million</td>
<td>110 – 120 million</td>
</tr>
<tr>
<td><em>Palea steindachneri</em></td>
<td>20,000 – 30,000</td>
<td>100,000 – 150,000</td>
</tr>
<tr>
<td><em>Apalone ferox</em></td>
<td>50,000 – 60,000</td>
<td>250,000</td>
</tr>
<tr>
<td><em>Apalone spinifera</em> &amp; <em>A. mutica</em></td>
<td>10,000 – 20,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Zhou & Wang, 2009; Zhou *et al.*, 2009
Hard-shelled Turtles Farming

- Started in mid 1990’s with two main species, Reeves Terrapin and Red-eared Slider
- In late 1990’s, price of Soft-shell Turtles dropped considerably, many farms switched to Hard-shelled Turtles
- More species are being farmed and the scale of operation also increases
- Ranged from big outdoor ponds for adaptable low-priced species to high-security indoor facilities for valuable species
## 2007 Hard-shelled Turtles Production

<table>
<thead>
<tr>
<th>Species</th>
<th>Breeding Stock</th>
<th>Hatchlings per year</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Trachemys scripta elegans</em></td>
<td>1 – 2 million</td>
<td>10 million</td>
</tr>
<tr>
<td><em>Mauremys reevesii</em></td>
<td>500,000 – 700,000</td>
<td>8 million</td>
</tr>
<tr>
<td><em>Mauremys sinensis</em></td>
<td>200,000 – 260,000</td>
<td>300,000 – 500,000</td>
</tr>
<tr>
<td><em>Mauremys mutica</em></td>
<td>40,000 – 50,000</td>
<td>230,000 – 260,000</td>
</tr>
<tr>
<td><em>Chelydra serpentina</em></td>
<td>22,000 – 50,000</td>
<td>20,000 – 30,000</td>
</tr>
<tr>
<td><em>Cuora trifasciata</em></td>
<td>10,000</td>
<td>5,500 – 8,000</td>
</tr>
<tr>
<td><em>Cuora flavomarginata</em></td>
<td>5,000 – 8,000</td>
<td>2,000 – 5,000</td>
</tr>
</tbody>
</table>

Zhou & Wang, 2009; Zhou *et al*., 2009
Hard-shelled Turtles Farming

• 22 species are being bred in commercial scale

• Other US species bred (in moderate numbers) include: *Trachemys scripta scripta*, *Chrysemys picta bellii* and *Graptemys pesudogeographica kohnii*

• Young *Macroclemys temminckii* are imported and raised to marketable size in farms
Other US turtles being farmed (as of 2008)

• Bred successfully in small numbers: *Graptemys nigrinoda, G. pesudogeographica pesudogeographica, G. versa, Pseudemys nelsoni, Chrysemys picta picta, Deirochelys reticularia, Malaclemys terrapin, Terrapene carolina triunguis, Sternotherus carinatus, S. odoratus*

• Being attempted: *Terrapene ornata ornata, Kinosternon subrubrum* etc.
Impacts of Turtle Farming

• Can flood the market and cause a big reduction in price of the concerned turtles
• Results in less pressure on wild population
• Only apply to common species with short life cycle and high reproductive potential, e.g. Chinese Softshell Turtles
Impacts of Turtle Farming

• For very rare and highly valuable species, e.g. Golden Coin Turtle, can cause a big jump in demand and the price actually shoots up (price of a hatchling went up from US$ 10 in 1984 to over $ 1000 now)

• The need for breeding stock, especially males, results in intensive collecting pressure to find the last turtles in the wild

• The presence of legal, farm-bred individuals makes enforcement extremely difficult
Linking Turtle Farming with Turtle Conservation

• Workable certification system, legislation and enforcement in place so that the trade in wild caught individuals can be controlled or stopped

• Part of the profit generated goes back into conserving turtles
Other Concerns

- Establishment of invasive exotic species
- Hybridization with native species or subspecies and causes genetic contamination
Trends

• The number of turtle farms, farmed turtle species and the turtle stock increase every year

• Some big farms now diversify their products, e.g. turtle wine and turtle essence and run tours
Worrying trend – growing pet trade may stimulate farming of endangered species

• Need turtles to build up stock
• Complicate enforcement
Thank you