Making NDFs for seahorses
(Hippocampus spp.)

International Expert Workshop on
CITES Non-Detriment Findings
Cancun, Mexico, November 17-22, 2008
Outline

- Seahorse life history
- Seahorse exploitation and trade
- Interim measures
  - Minimum size limit
  - Protecting habitat
  - Enforcing existing laws
  - Aquaculture
- More precise measures
  - Information needs
- A web based tool
Hippocampus spp.

H. kelloggi

H. kuda

A Guide to the Identification of Seahorses

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TRAFFIC

NORTH AMERICA

Project Seahorse

APPARENTLY MANY CONSUMERS NO
# Seahorse life history and the consequences

<table>
<thead>
<tr>
<th>Life History Trait</th>
<th>Conservation consequence</th>
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<tbody>
<tr>
<td>low population densities</td>
<td>Vulnerable to extirpations</td>
</tr>
<tr>
<td>low mobility</td>
<td>slow to recolonize over-exploited areas</td>
</tr>
<tr>
<td>small home range sizes</td>
<td>ilda rates of natural mortality</td>
</tr>
<tr>
<td></td>
<td>heavy fishing will place unsustainable pressure on population</td>
</tr>
<tr>
<td>male brooding</td>
<td>survival of young depends on survival of male</td>
</tr>
<tr>
<td>monogamy</td>
<td>partner stops reproducing, at least temporarily</td>
</tr>
<tr>
<td>small brood size</td>
<td>limits potential reproductive rate (may be offset by higher juvenile survival)</td>
</tr>
</tbody>
</table>

**CONCLUSION:** NOT SUITED FOR HEAVY EXPLOITATION
Summary 2006 Red List

<table>
<thead>
<tr>
<th>EN</th>
<th>VU</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>23</td>
</tr>
</tbody>
</table>

when data are very uncertain assign DD – does not mean the species is not threatened
Trade

Traditional medicines

Ornamental display

Curiosities
Exploitation

Enter trade from:

- Bycatch from shrimp trawlers (largest source - mostly dried trade)
- Target fisheries (live and dried trade)
- Aquaculture (all live trade)
Trade impacts

- Fishers, traders and informants in many countries report that seahorse catches have declined, often despite increased fishing effort.
- Trade volumes may be maintained by geographic expansion, greater retention of bycatch, greater sale of incidental landings.
- Loss of habitat is a grave concern.
Making NDFs now

- No information on abundance and exploitation = no information to set quotas
- BUT to overcome the immediate difficulties can use other management tools
- Evoke principles of adaptive management
- Possible interim measures for wild seahorses
  - Minimum export size
  - Protect seahorse habitats
  - Enforce existing laws
- Rules of thumb
Important to remember

- Parties are at liberty to do what they want to make NDFs under CITES – the following are recommendations of interim measures where Parties lack other options/opportunities.
Minimum export size

- Decision 12.54
- Present recommendation = 10 cm height
- Biologically sound
- Need limited data
- Tried with other species
- Apply to dried and live trades
- Relatively easy to enforce
- ... especially if many Parties adopt
Surveyed seahorses in Hong Kong, Taiwan, Vancouver and Los Angeles.

Recommends increasing minimum size limit to:
- 14 cm (6.25”) height for live seahorses
- 13 cm (5.75”) height for dried seahorses
- Trade height of 5 cm (2”) can be used as proxy

Clear biological imperative to increase size limit

BUT would severely limit export of some species

Need to determine potential socio-economic effects of implementing the limit
Protect habitats

- Protecting seahorse habitats should protect seahorse populations
- Useful where seahorses are caught as bycatch
- Ideally would protect areas of seahorse occupancy (where known)
- What % of habitats to protect?
- (Changes to fishing techniques)
Enforce laws

- Enforcement of existing laws (e.g., trawling bans in specific areas) is needed to improve the conservation of seahorses
- Many countries currently ban trawling in coastal waters
- Seahorses collected from these illegal fisheries should not be exported under CITES provisions for legal acquisition
Management options and stakeholders’ views

- Minimum Size Limits
- Marine Protected Areas
- Tenurial Systems
- Temporal Closures
- Sex-Selective Fishing
- Total Allowable Catch
- Reduced Number of Fishers
- Maximum Size Limits
- Slot Size Limits

Martin-Smith et al. 2004
Aquaculture

- Need to determine production capabilities, degree of reliance on wild populations, and environmental concerns.
- Need for marking systems to distinguish aquacultured seahorses from wild-caught specimens.
- For now must rely on thorough paper documentation.
- No need to impose a standard minimum export size for aquacultured seahorses produced in non-detrimental facilities.
Making NDFs later

- More accurate measures for making NDFs on species and population specific levels are needed
- Requires collection of basic data
- Two different types of data should be collected:
  a) fisheries and and b) population data
Any data is better than none!

- When vital resources are rapidly degrading … we often have neither the time nor the resources for such data-gathering… The choice is between giving imperfect advice or none at all. Data-less and data-poor management are … an imperative… Management should be judged by its fruits, not its roots

(Johannes 1998)
## Data needs

<table>
<thead>
<tr>
<th>Information needed</th>
<th>Fishery (landings surveys)</th>
<th>Population (field surveys)</th>
</tr>
</thead>
<tbody>
<tr>
<td>which species</td>
<td>are caught</td>
<td>are observed</td>
</tr>
<tr>
<td>where (locations, depth, habitat)</td>
<td>at which they are caught</td>
<td>at which they are found</td>
</tr>
<tr>
<td>when (time of year)</td>
<td>at which they are caught</td>
<td>at which they are found</td>
</tr>
<tr>
<td>how many</td>
<td>are caught PER UNIT EFFORT (including discards)</td>
<td>are observed</td>
</tr>
<tr>
<td>size structure</td>
<td>of captured individuals</td>
<td>of observed individuals</td>
</tr>
<tr>
<td>sex (male, female, juvenile)</td>
<td>of captured individuals</td>
<td>of observed individuals</td>
</tr>
<tr>
<td>pregnant (yes/no)</td>
<td>of captured individuals</td>
<td>of observed individuals</td>
</tr>
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Also need: species, numbers and sizes in trade
Future NDFs?

- Info on population size and intrinsic rates of population increase = quotas
- Info on reproductive peaks = seasonal closures of trawl grounds
- Info on population specific height at maturity = population specific minimum size limits
Assessing sustainability

- Long-term monitoring of these data will also provide an indication of population health.
- Recommended that Parties use indicator fisheries and trades to test and evaluate various management measures through an adaptive management process.
Changes since listing

**Dried trade – TCM importers/wholesalers**
- Listing appears to have had little effect
- International trade regulations are necessary
- Worry about potential negative impacts on their business

**Live trade**
- Listing has had an effect: changes in sources, increased importance of cultured individuals, sizes declined, volumes dropped and values doubled
- Neutral or positive about CITES listing
Hippocampus Info

- [www.hippocampusinfo.org](http://www.hippocampusinfo.org)
- a web-based tool to assist countries in preparing scientifically sound and defensible NDFs for seahorses
  - Seahorse identification
  - Seahorse trade statistics
  - Resources about seahorse distribution, biology and trade
  - Generic resources about marine conservation issues and solutions
  - Country-specific information
  - Decision tools to assist Parties make NDFs
Acknowledgements

- Guylian Chocolates, Belgium
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