

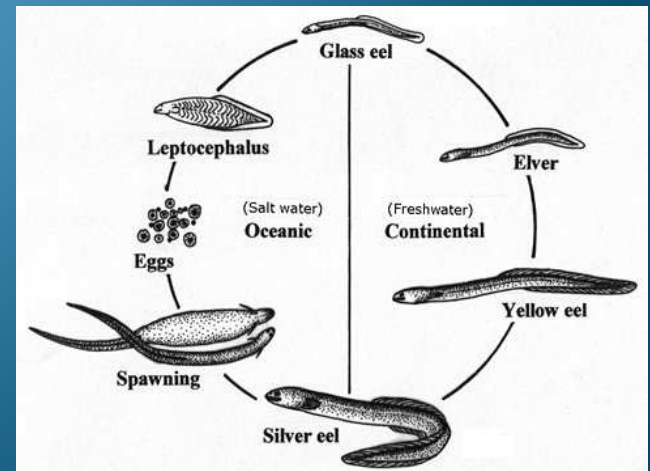
Eel conservation – global context



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Anguillid eels

- 16 species – various opinions on sub-species / populations
- Temperate / tropical
 - Non-polar
 - West Africa and Pacific USA
- Common, complex life cycle -
 - Multiple life stages
 - Catadromous
 - Semelparous
 - Panmictic



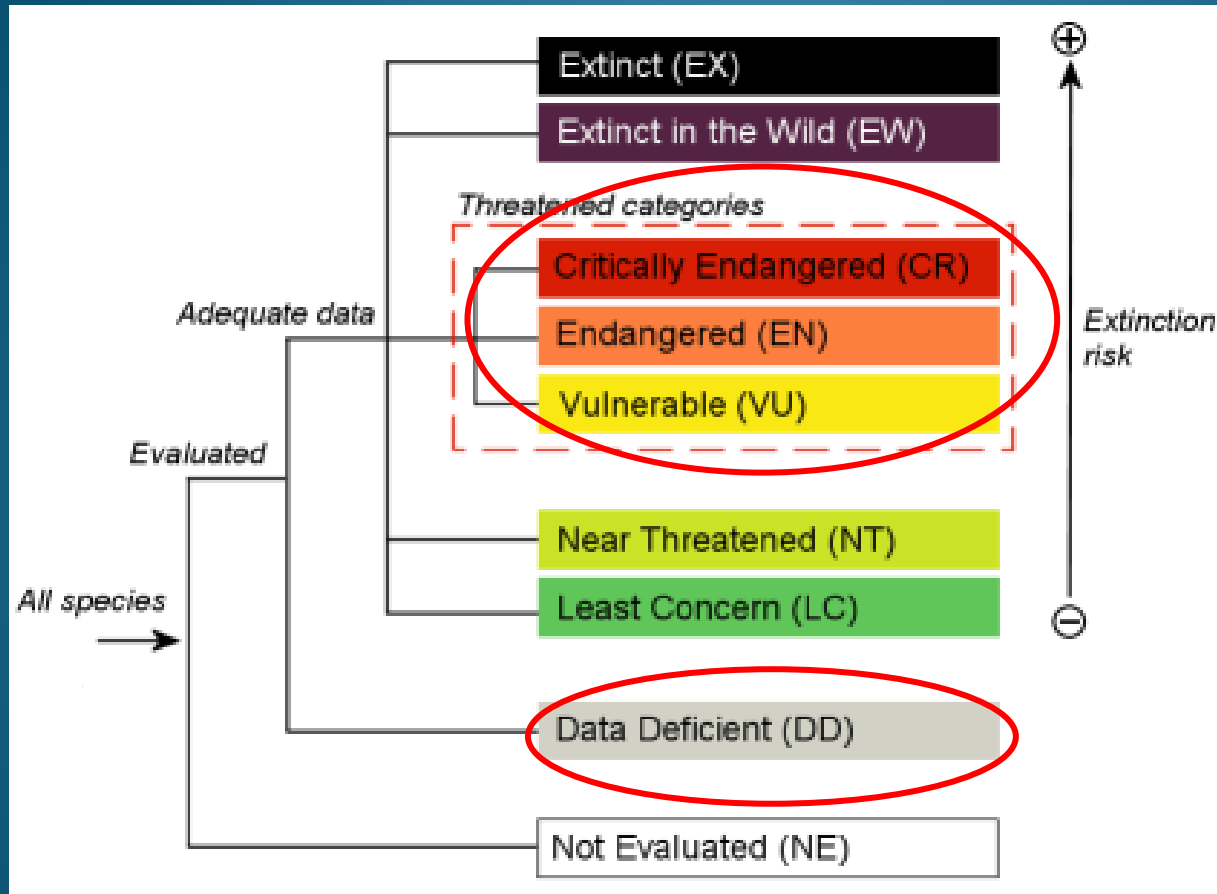
Prioritisation?!

- Variable species ranges and overlaps
- Variable regional capacity (Intra-/Inter-species)
- Variable knowledge base (Intra-/Inter-species)
- Multiple potential threats / impacts
- Restriction to management/conservation/research
 - Primarily freshwater focus
- Varied (limited?) resources
 - Financial / Infra-structure / Human
- Prioritisation is a huge challenge (Intra-/Inter-species)
- Need to think about conservation / management of species across it's range in context of others.

IUCN Red List

- Prioritisation tool
- Assessment of 'threat' based on:
 - Population change over three generation lengths
 - Threats and associated management/mitigation
 - Geographic range
 - Precautionary approach
- 77,340 plant, animal and fungus species to date.
- An appearance on the Red List does not automatically mean a species is under threat.
 - 'Red Listed' is not a helpful term.

Red List Categories



- ASSG established in 2012 – volunteer experts
 - Catalyse research and conservation initiatives
 - Assessment workshop in 2013

Assessment summary

- Four species were in a 'threatened' category:
 - 1 x Vulnerable – *Anguilla borneensis* (?)
 - 2 x Endangered – *A. japonica* (?) and *A. rostrata* (↑?)
 - 1 x Critically Endangered – *A. anguilla* (↑?)
- Four were found to be Near Threatened (NT)
 - *A. bengalensis*; *A. bicolor*; *A. celebesensis*; *A. luzonensis*
- Two were Least Concern (LC):
 - *A. marmorata*; *A. mossambica*
- Three were Data Deficient (DD):
 - *A. interioris*
 - *A. megastoma*
 - *A. obscura*



Prioritisation re-visited (1)

- 'Threatened' species
 - Primarily temperate
 - More capacity and baseline data in many instances
 - Range knowledge gaps
 - European eel – North Africa / Mediterranean
 - American eel – Southern portion
 - Escapement studies
 - Limited for all species
 - Threat / impact analysis
 - Still a poor understanding of how they affect species individually / synergistically / cumulatively.
 - Stakeholder co-ordination
 - Lacking nationally and internationally in many instances

Prioritisation re-visited (2)

- NT species
 - Particular concern for *A. bicolor*
- DD species
 - Tropical
 - Less capacity and significant knowledge gaps
 - Proper I.D. – confusion in some cases.
 - Range
 - Population studies
 - None at present
 - Threat / impact studies



Japanese eel

- Long cultural association with the eel.
- Historically had high consumption
 - Doyo Ushi No-Hi
 - Appears to be declining (FAO / Customs):
 - >150k t (2000–2002) to ~35k t (2013)
- *A. japonica* preferred
 - Other bi-coloured species consumed
- Threats / impacts
 - Habitat loss / modification
 - Pollution
 - Barriers to migration
 - Changing oceanic conditions



Japan eel forum

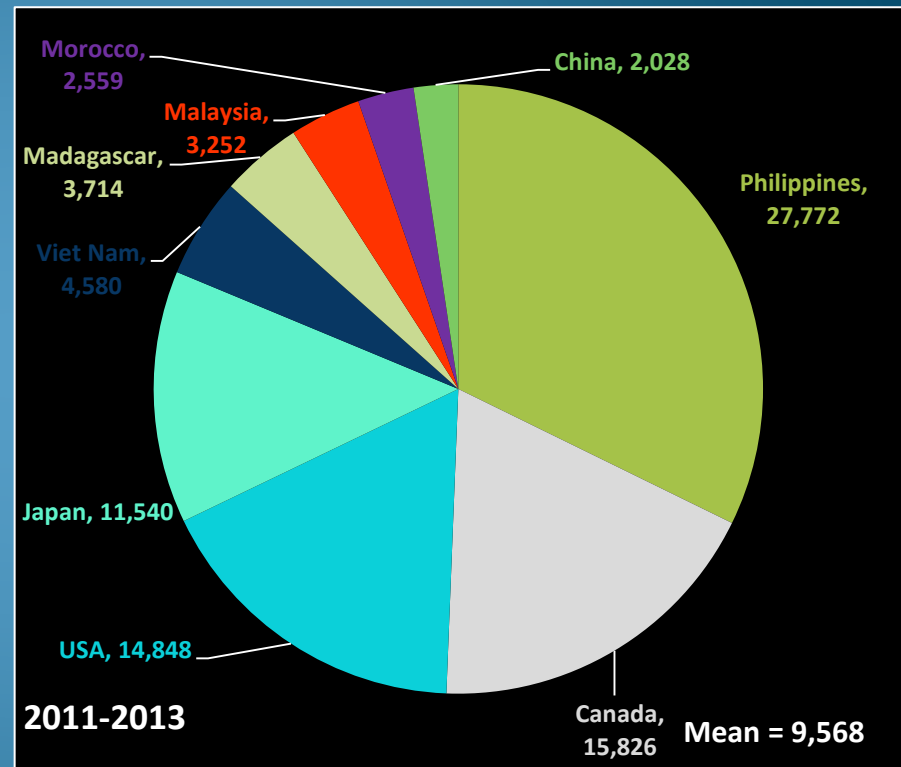
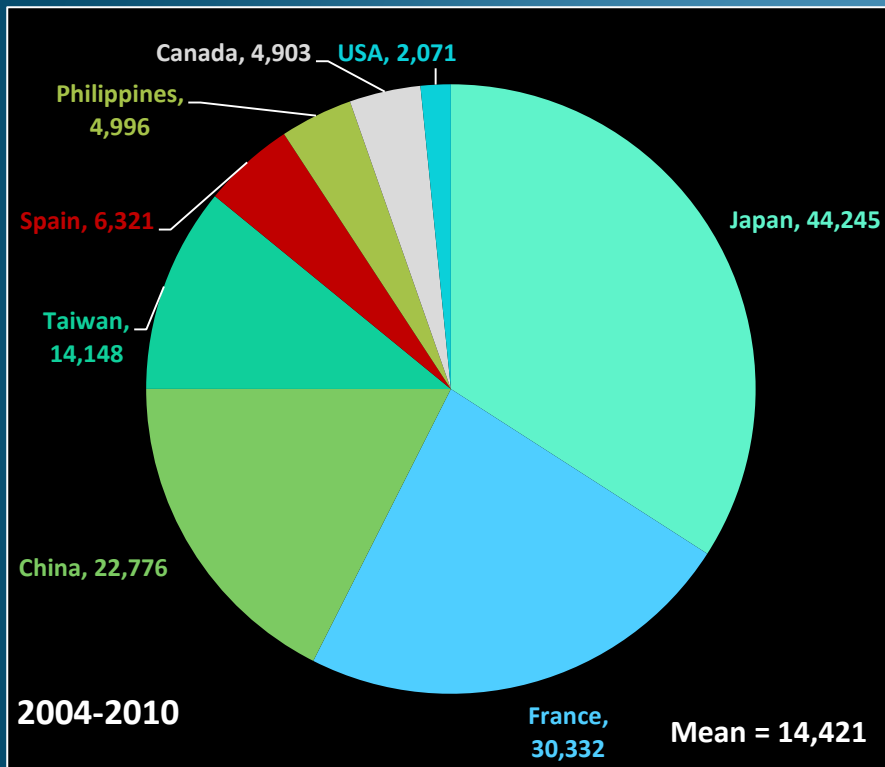
- 1st National stakeholder forum in 2014.



- Conservation / Management prioritisation initiated.
- Species action plan:
 - Data collection
 - Barrier mitigation
 - Habitat restoration
 - Fisheries management

Eels in the Philippines

- 5 (7?) species – primarily tropical; little data
- International trade – including *A. anguilla*



- Legal export in t/yr (Not species/life-stage specific)
- Philippines peak = \$5000/kg

Eels in the Philippines

- Little capacity to deal with shift in demand.
- Little eel or freshwater research to date.



- Collaboration with TRAFFIC, BFAR and BMB in N. Philippines.
 - Baseline biological and socio-economic data collection
 - Freshwater habitat assessment / threat analysis
 - Policy development
 - Ensuring sustainable fisheries management
 - Community-based eel farming feasibility study

Eels in the Philippines

- Policy development
 - Improved chain of custody and associated transparency.
 - Improved national and international engagement.
- Mixed catch - demand primarily for *A. bicolor*.
- Shift to S. Philippines due to change in composition.
 - Influence of changing oceanic conditions.
- Fisheries management training to initiate data collection.
- Fishery is opportunistic :
 - Links to external demand/price of other bicoloured species.
 - Many fishers engaged in eel fishing below minimum wage.
- Improved local co-ordination of stakeholders through FFAs.
 - More equitable supply chain.

Eels in the Philippines

- Freshwater habitat:
 - Few large barriers on the Cagayan River
 - Good connectivity
 - Habitat degradation due to slash and burn / agriculture
 - Invasive species – Tilapia introduced
 - Pollution from communities
 - No trash collection – goes in the river.
- Tropical eel culture is challenging



Conclusions

- Prioritisation is key
 - Stakeholder co-ordination and communication
- Species and their management can be globally linked:
 - Trade is constantly changing.
 - Oceanic currents and overlapping spawning sites.
 - e.g. Sargasso Sea; Marianas
- Important to be mindful of other species.
 - Tropical species in serious need of attention.
- Opportunities for multi-species research / replication:
 - Philippines / DD species in French Polynesia
 - ICES CITES NDF

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