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Taxonomy as a bottleneck in fisheries management: a case study from Cambodia

Eric BARAN¹, CHHENG Phen²

¹ WorldFish Center

² IFRDI

What are the 10 dominant species in Cambodian fisheries?

- What are the valuable species from an economic viewpoint?
- What are the species that management should focus on in priority?
- What are the ecological requirements of the major species?
- What is the genetic distribution (i.e. populations) of the dominant species (management units)?
- What fish are we talking about?

Literature review and data analysis

- **National statistics**

Fish are not identified at the species level



Literature review and data analysis

- **Van Zalinge & Nao. (1999)**

- Top-ten species from different types of large and medium-scale fisheries in Cambodia (after Deap *et al.* 1998, based on an extensive scientific monitoring program)

but

- Fishes were originally identified by their Khmer name, converted into Latin name *a posteriori*
- Problems:
 - this list is based on gears from large and medium scale fisheries only; bagnet and family fisheries (60 % of the catch) are not included;
 - the list does not detail the relative contribution of large and medium scale fisheries;
 - the equivalence table between Khmer and Latin names is not detailed and problematic (e.g. several species for one Khmer name, ≠ Khmer names for adults and juveniles, etc)

Literature review and data analysis

Lamberts 2001

- Two years of scientific sampling based on gill nets in one province
- but
- This list has only two species in common with that of Van Zalinge & Nao 1999
 - Problem:
 - Non representativeness of a sampling based on one gear only

Literature review and data analysis

DoF and Rainboth 2002

- A poster of the 80 dominant commercial species in Cambodia
- but
- No ranking of these species



Intermediate conclusions

- 1) The ten dominant species in Cambodia inland fish catches remain unknown
- 2) Socio-economic statistics on dominant species based on a translation of Khmer names are not exact
- 3) It is necessary to refine the identification of dominant species identified by Khmer names

Starting again from raw monitoring data

- 1) **Re-analyse fishery data**
 - Use original monitoring data (Deap *et al.* 1998)
 - 1) Mobile gear fishery, monitored from 1994 to 1996
 - 2) Lot fishery, monitored from 1994 to 1997
 - 3) Dai fishery, monitored from 1994 to 1996
 - Identify 10 dominant species in each fishery (fish recorded under Khmer name)
 - Merge data from the 3 commercial fisheries, with a weight for each fishery
 - Rank and select overall 10 dominant taxa under Khmer name



2) Find Khmer – Latin equivalence

- 3 taxonomic references for Khmer-Latin equivalences:
 - Rainboth 1998 Fishes of the Cambodian Mekong
 - Mekong Fish Database 2003 (MRC)
 - FishBase 2004 (WorldFish)

- FishBase: enter local names, get the Latin equivalences
- Rainboth: copy equivalences from the book glossary
- MFD: [Latin -> Local languages](#) equivalences are available, but not the other way around. So skip the database launcher, enter the Access files, go to the equivalence table, and get [Local languages -> Latin equivalences](#)
- Combine and compare these equivalences and make a selection among close scripts
e.g. Ros Check <-> Rus Cheik
- Make a single list of equivalences

3) From the list of 10 dominant fish in Khmer and from the list of equivalences make a list of Latin species

the 10 Khmer names become 81 possible Latin names

4) Identify the species that are recorded in Cambodia by all the 3 taxonomic references

the 81 possible Latin names become 40 species agreed upon

CONCLUSIONS

- 1) This study has identified the forty *species* possibly present among the top-ten taxa caught in Cambodia
- 2) The exact list of ten dominant species will remain unknown to science until species are identified by Latin names in monitoring

CONCLUSIONS (II)

- 3) possible specific actions aimed at managing the dominant species (e.g. sanctuaries in selected zones, ban of selective gears, regulation about minimum fish size, etc) would be hampered by uncertainty about the species addressed
- 4) when socio-economic data are gathered in Khmer, it is preferable to identify in publications the fish by their original Khmer name rather than by erroneous Latin names (no information loss)

Thank you!

