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INSTITUTE OF OCEANOGRAPHY AND ENVIRONMENT



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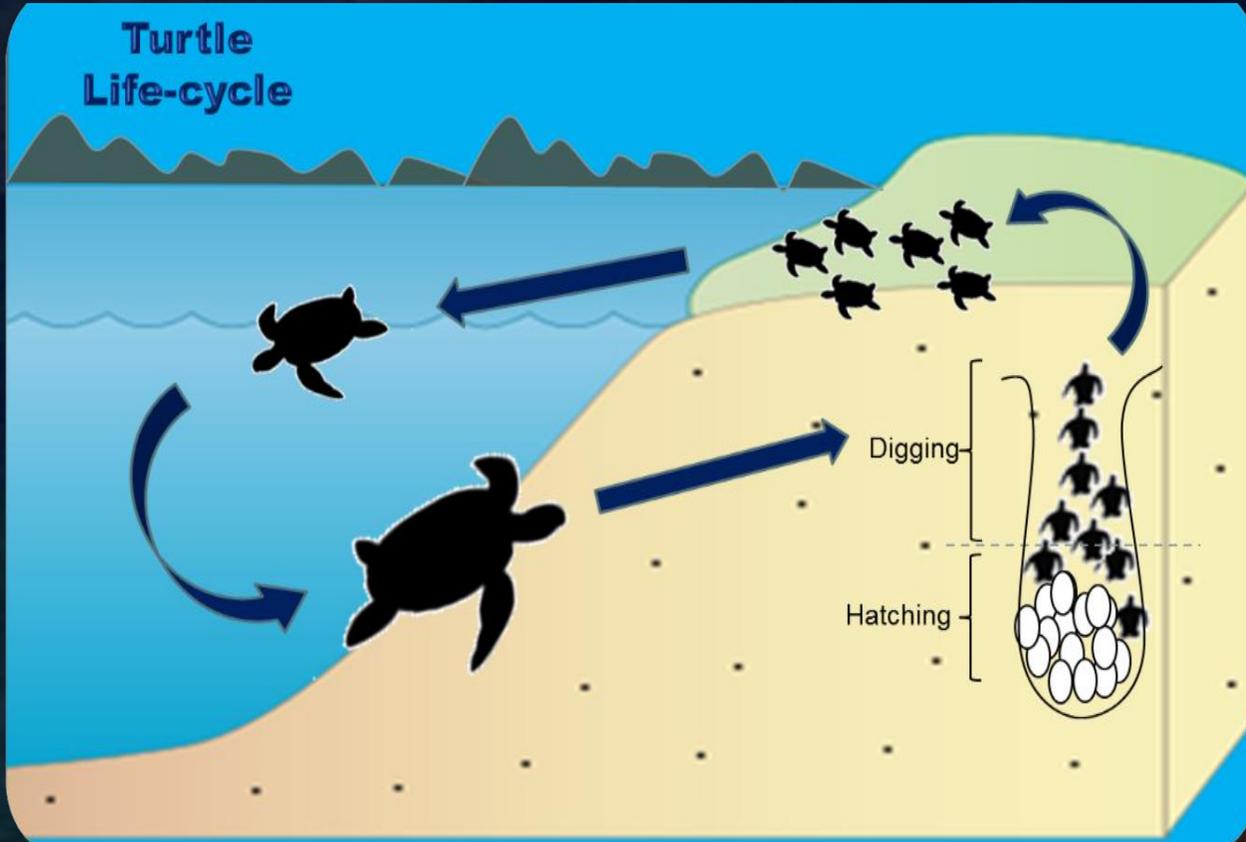
**THE UNIVERSITY
OF QUEENSLAND**
AUSTRALIA

An evaluation of splitting egg clutches practice in sea turtle hatcheries

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Life History of Sea Turtles



- Sea turtle lay eggs on land.
- Once hatched, hatchlings spend several days digging upward to escape.
- Digging powered by remaining egg's yolk.
- Do not consume any food on a first few days while swimming.

**“The more energy they spent in nest,
the less energy they have to avoid predator.”**

Splitting Egg Clutches Practice



*“Don’t put all Your Eggs
in one Basket”*

- Splitting eggs into half to reduce the risk of incubation failure.
- For more than two decades, this practice successfully increase the hatching success in sea turtle hatcheries
- YES for the **quantity** of hatchlings,
BUT how about the **quality (performance)?**



Research Question

- Does **splitting egg clutches** effect the energetic cost of nest escape?

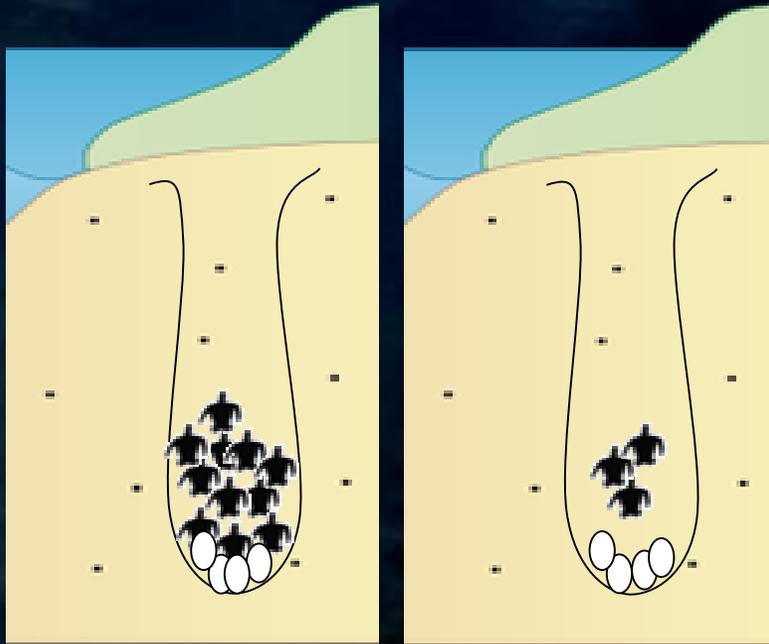


Fig. 3: Illustration of effect of clutch size on energetic cost of upward digging effort.

1. **'Social facilitation'** is a term used to describe hatchlings have to share the work load while digging. A single hatchling is most likely fail to reach nest surface (Carr & Ogren, 1959).
2. Hypothesis: The smaller group sizes will consume more energy in nest escaping
3. Experimental Design:
 - Big vs. Small Group

Measuring Energetic Cost with Respirometry

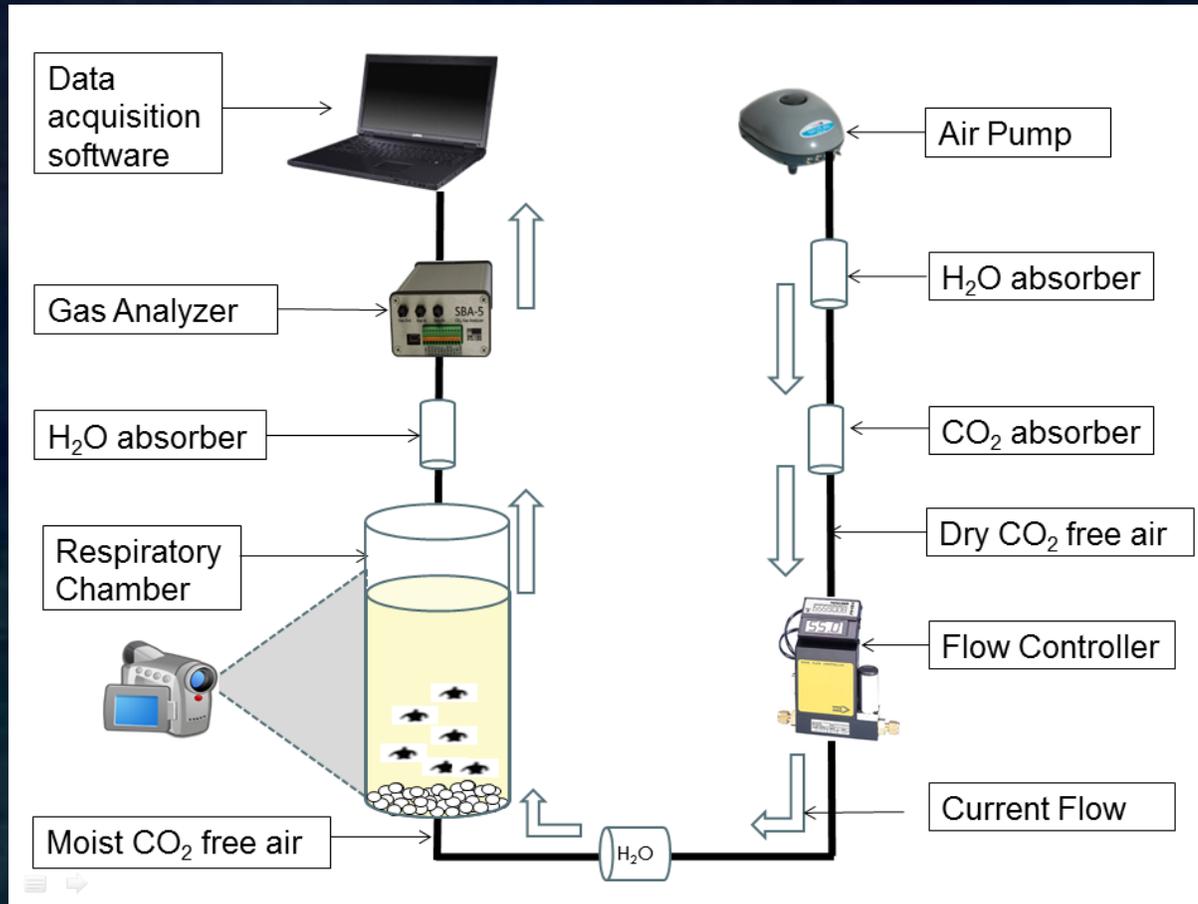
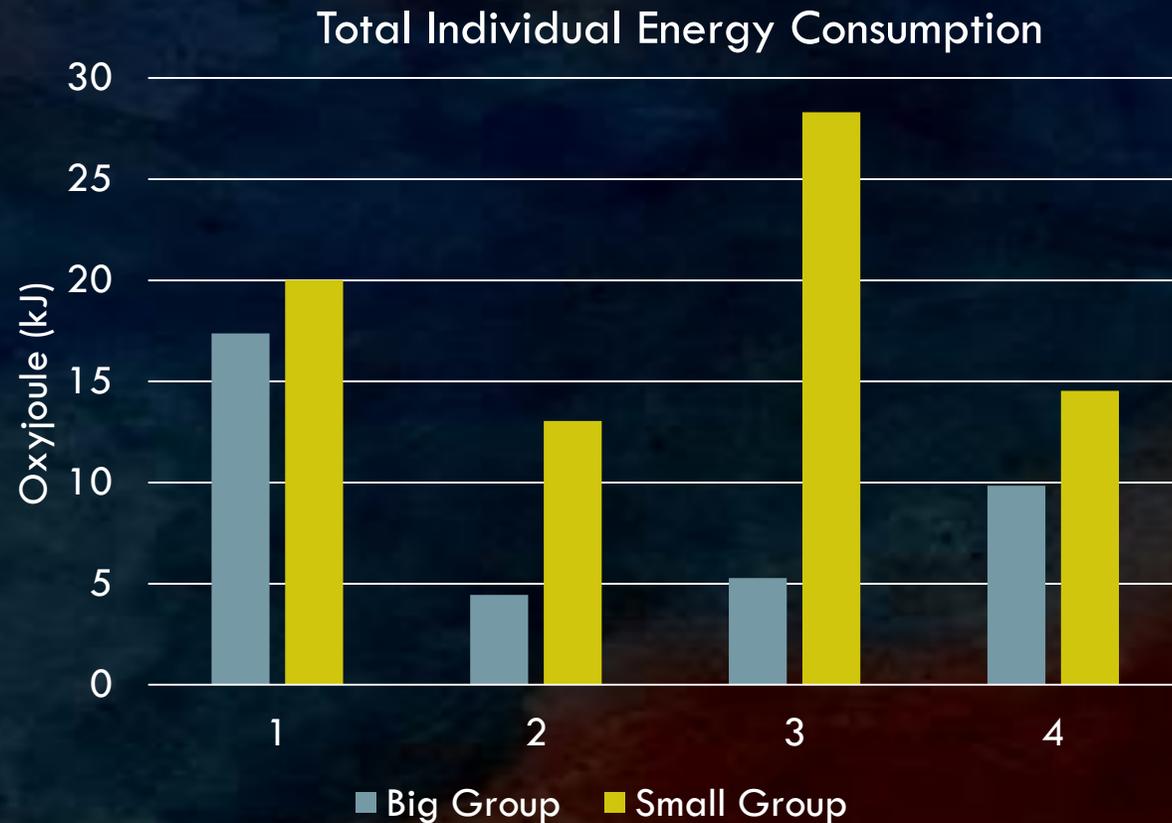


Fig 4: Experimental setup of the open-flow respirometry



Fig 5: A respirometry chamber with surfacing hatchlings

Big vs. Small Group



- Hatchlings from the smaller group spent more energy significantly (t-test, $P < 0.05$)
- Reducing the clutch size on incubation will effect hatchlings' fitness





The usage of the extra energy probably reduced their swimming potential and their survival rate

in less than 10 words...



Put all your eggs in
one basket

Acknowledgement



Dr David T. Booth
School of Biological Sciences
The University of Queensland.



Dr Juanita Joseph
Sea Turtle Research Unit (SEATRU)
Universiti Malaysia Terengganu.