

IMPLICATIONS OF PLASTIC INGESTION BY GREEN TURTLES

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THE PROBLEM WITH PLASTIC

- Entanglement
- Habitat damage
- Ingestion



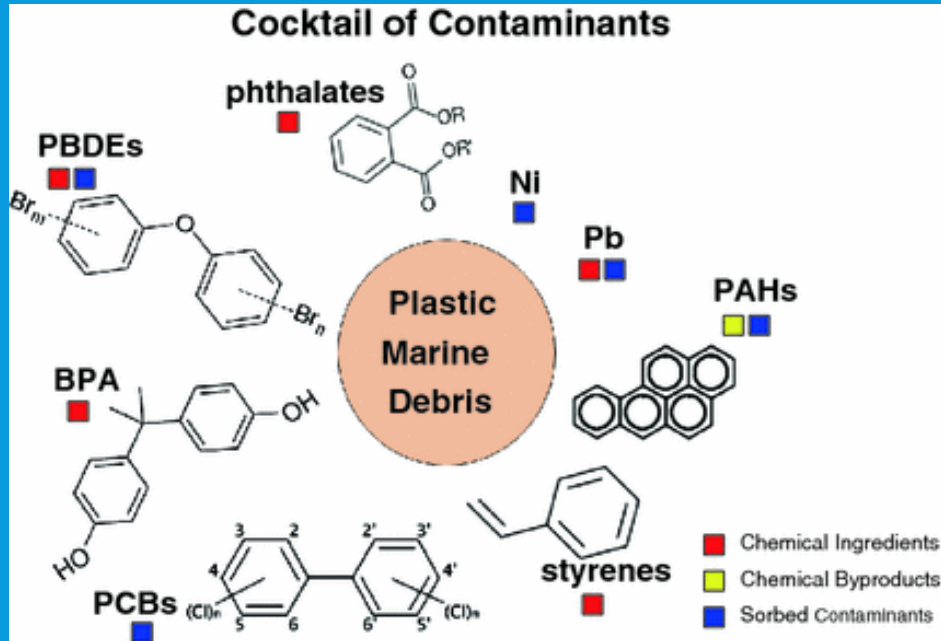
POTENTIAL EFFECTS OF INGESTION

Lethal:

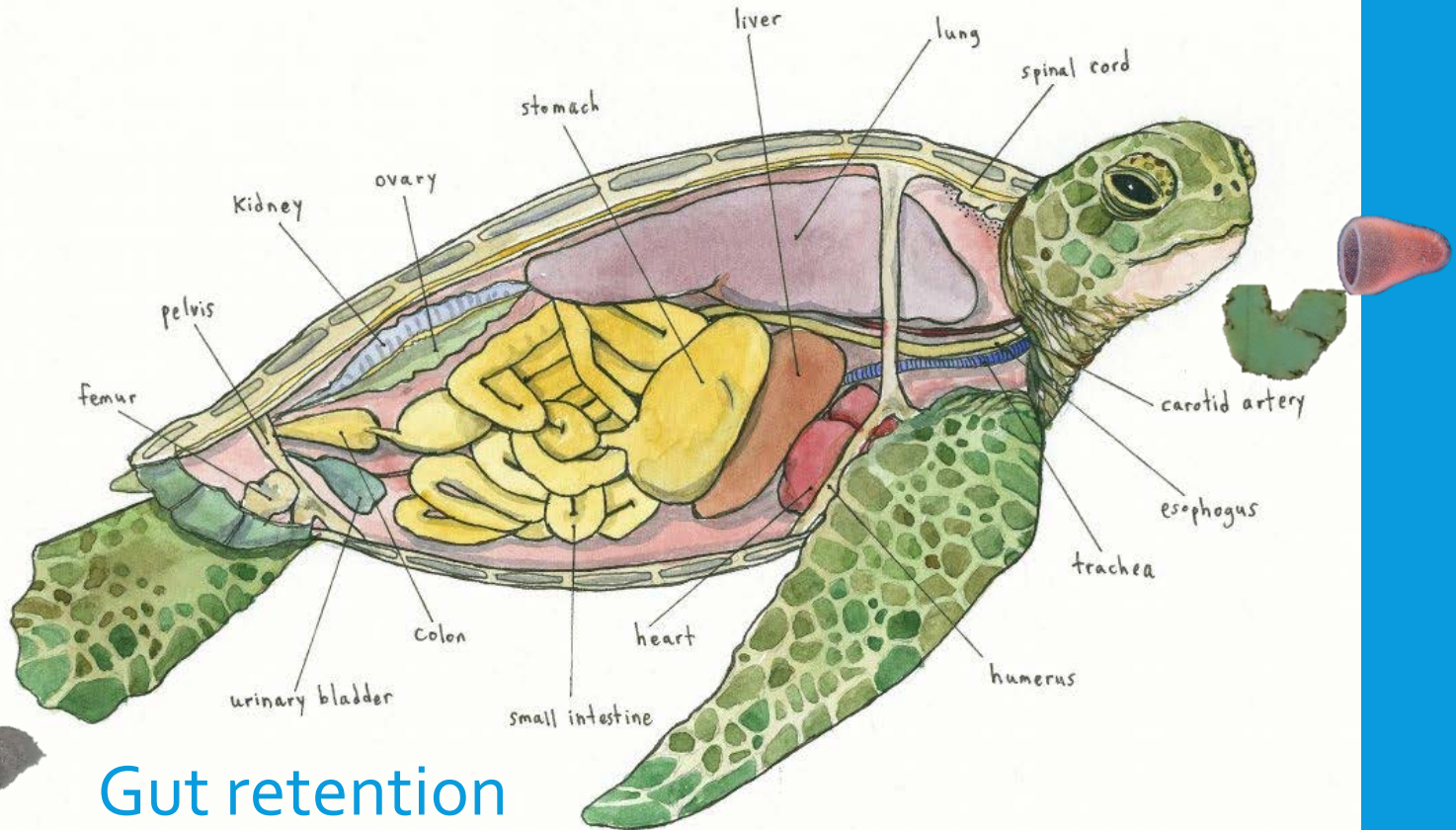
- Obstruction (Balazs, 1985)
- Perforation (Mascarenhas et al., 2004)
- Plications

Sublethal:

- Dilution of nutrients (McCauley & Bjorndal, 1999)
- Exposure to harmful chemicals (Rochman et al., 2013)



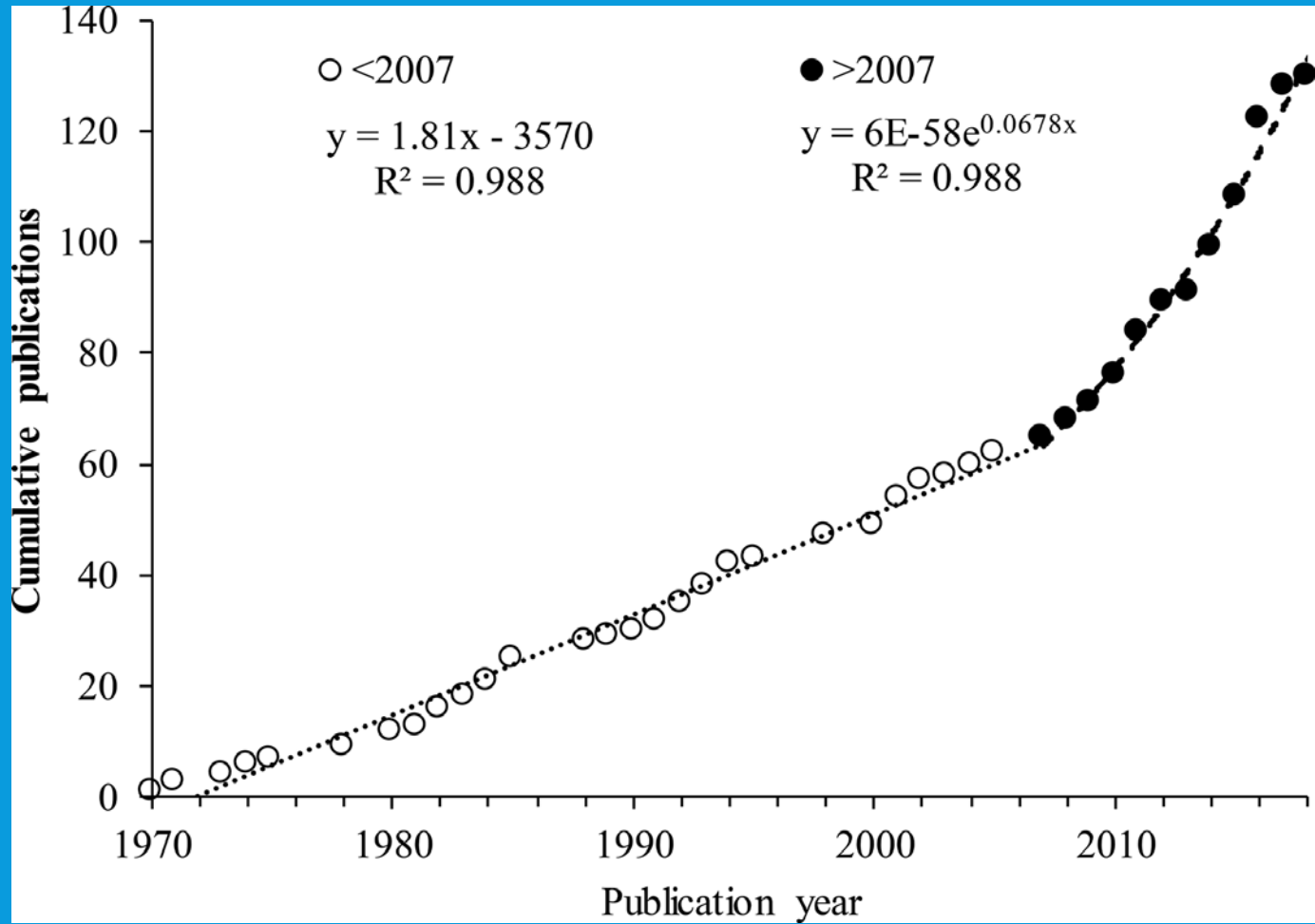
PLASTIC INGESTION BY SEA TURTLES

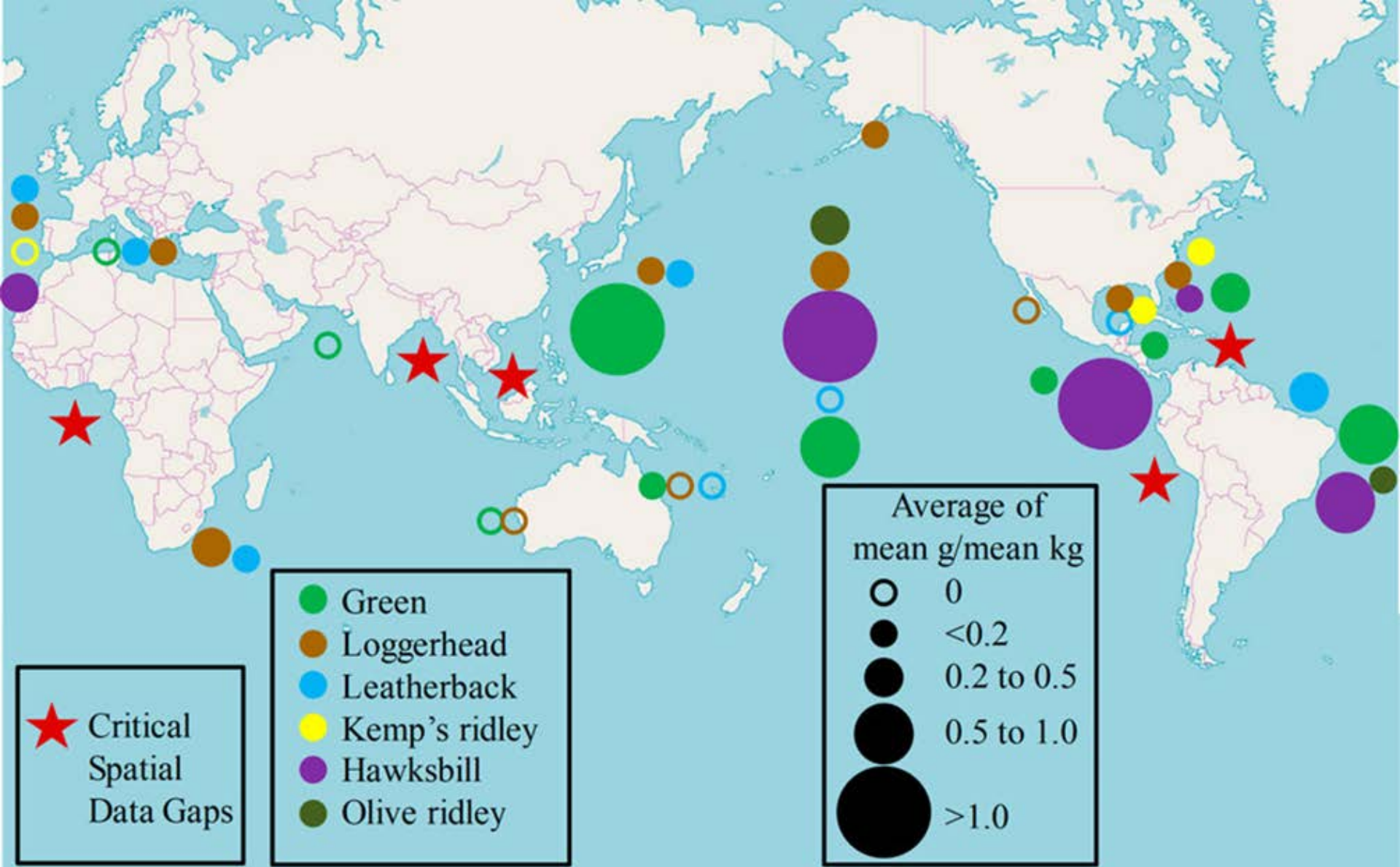


Gut retention
≈ 3 weeks

PLASTIC INGESTION BY SEA TURTLES

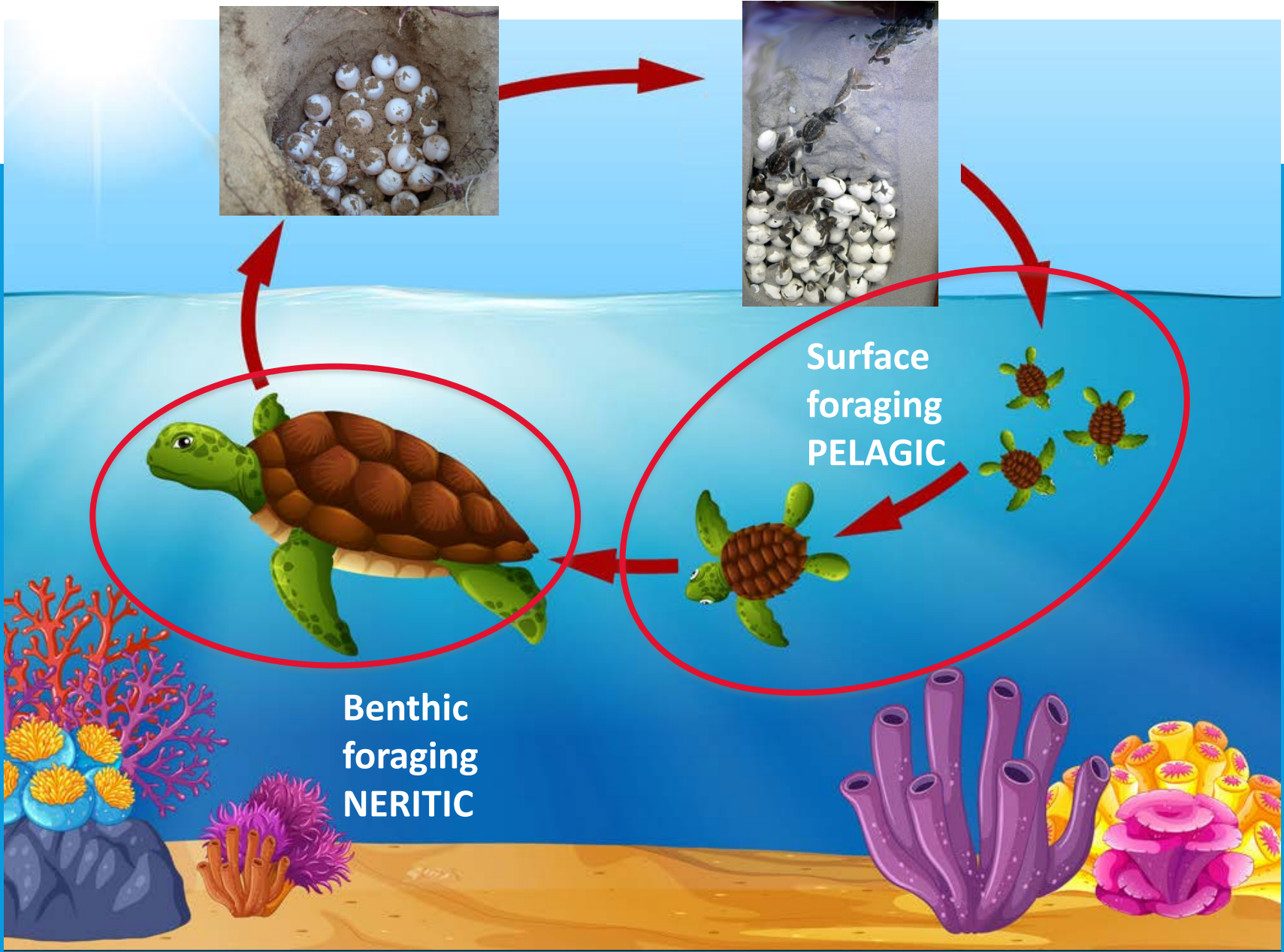
First report
in the late
1950's
Archie Carr
(reported in
Balazs 1985)





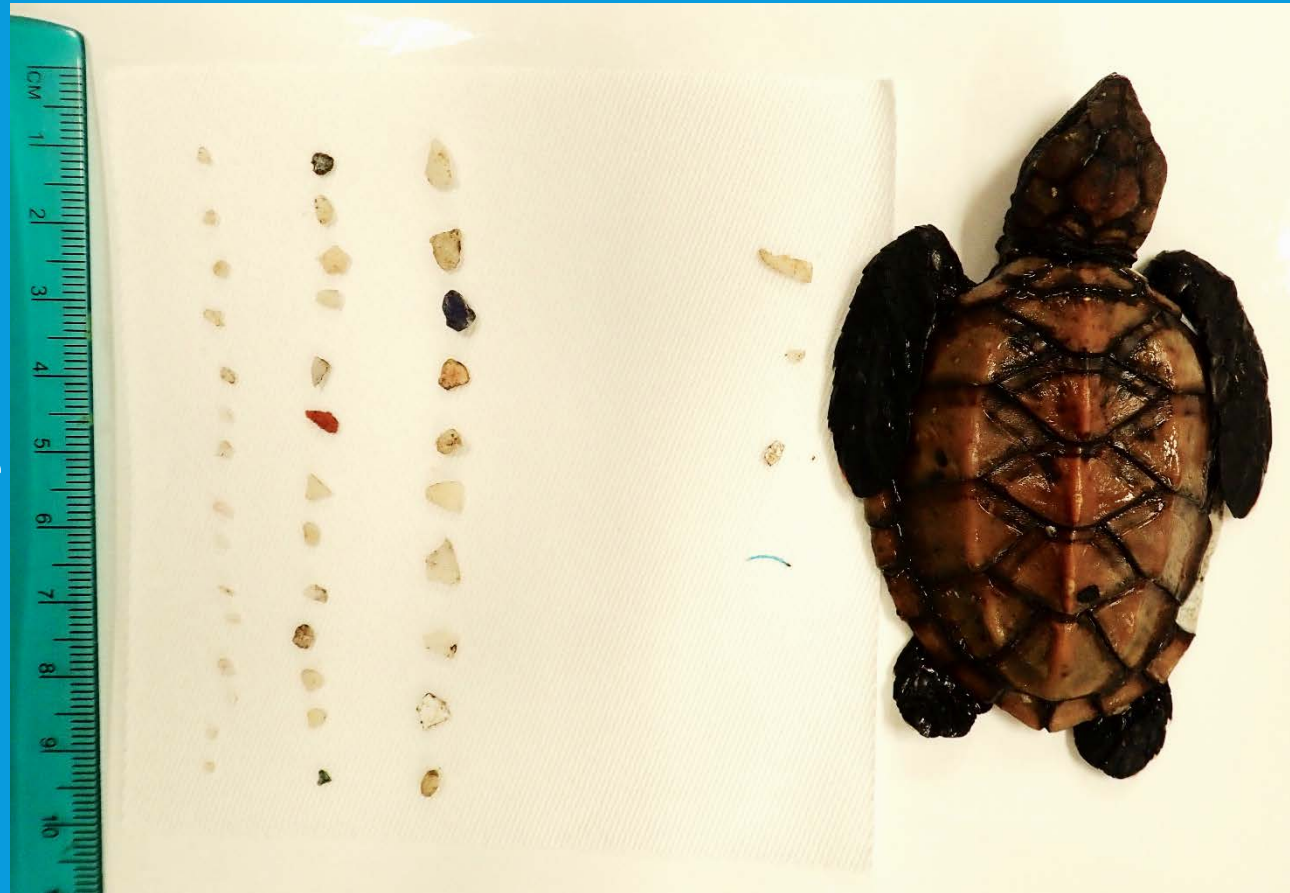
Lynch, J.M., 2018. Quantities of marine debris ingested by sea turtles: global meta-analysis highlights need for standardized data reporting methods and reveals relative risk. *Environmental Science & Technology*, 52(21), pp.12026-12038.

LIFE CYCLE OF SEA TURTLES

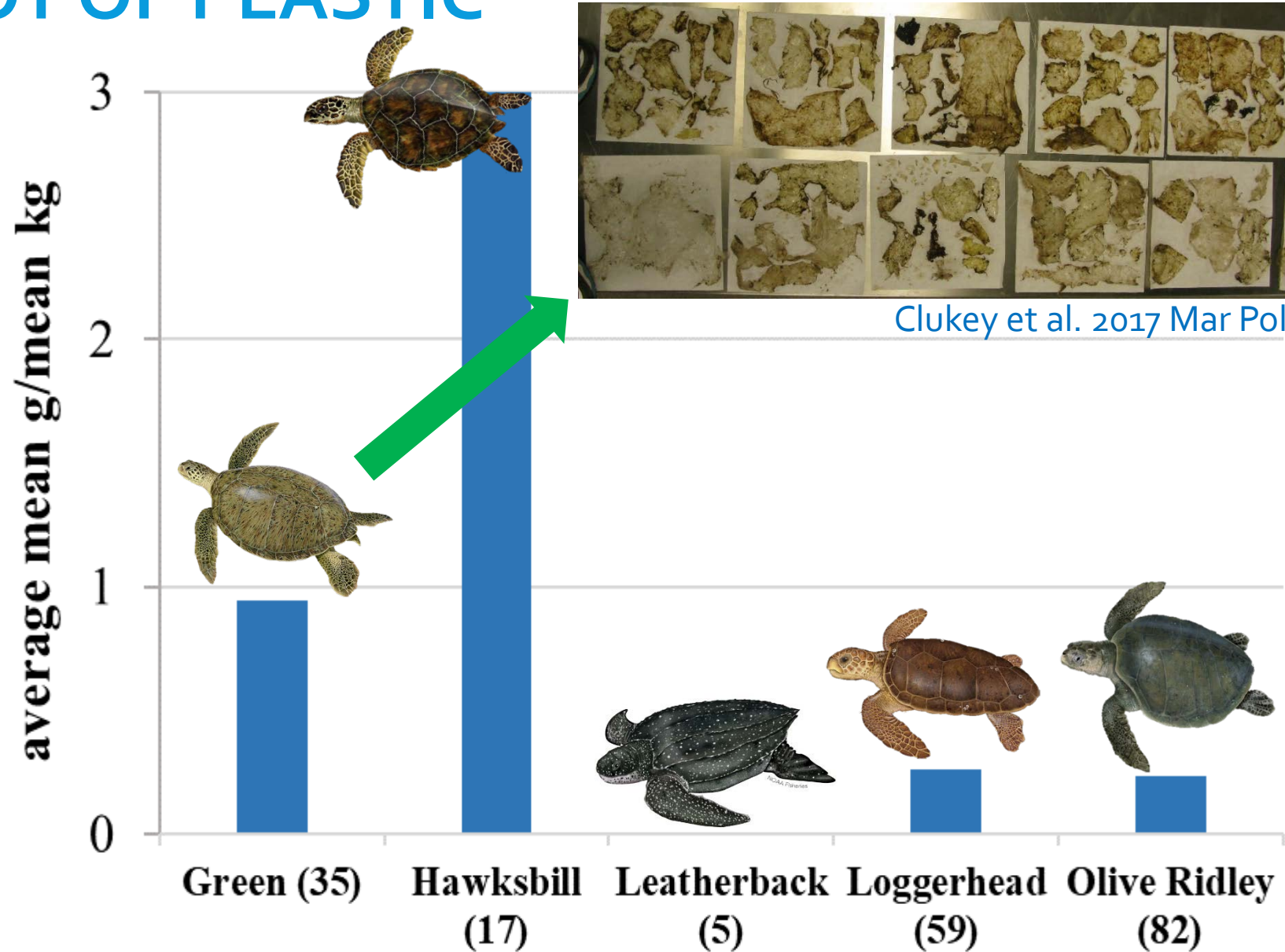


SAMPLE COLLECTION

- Necropsy
- Examine entire GI tract for plastic and pathology
- Record plastic color, type, size, mass
- Store plastics and tissues in LN2 for future chemical analysis
- Calculate per turtle
 - # of pieces
 - mass of plastic
 - g plastic per kg turtle

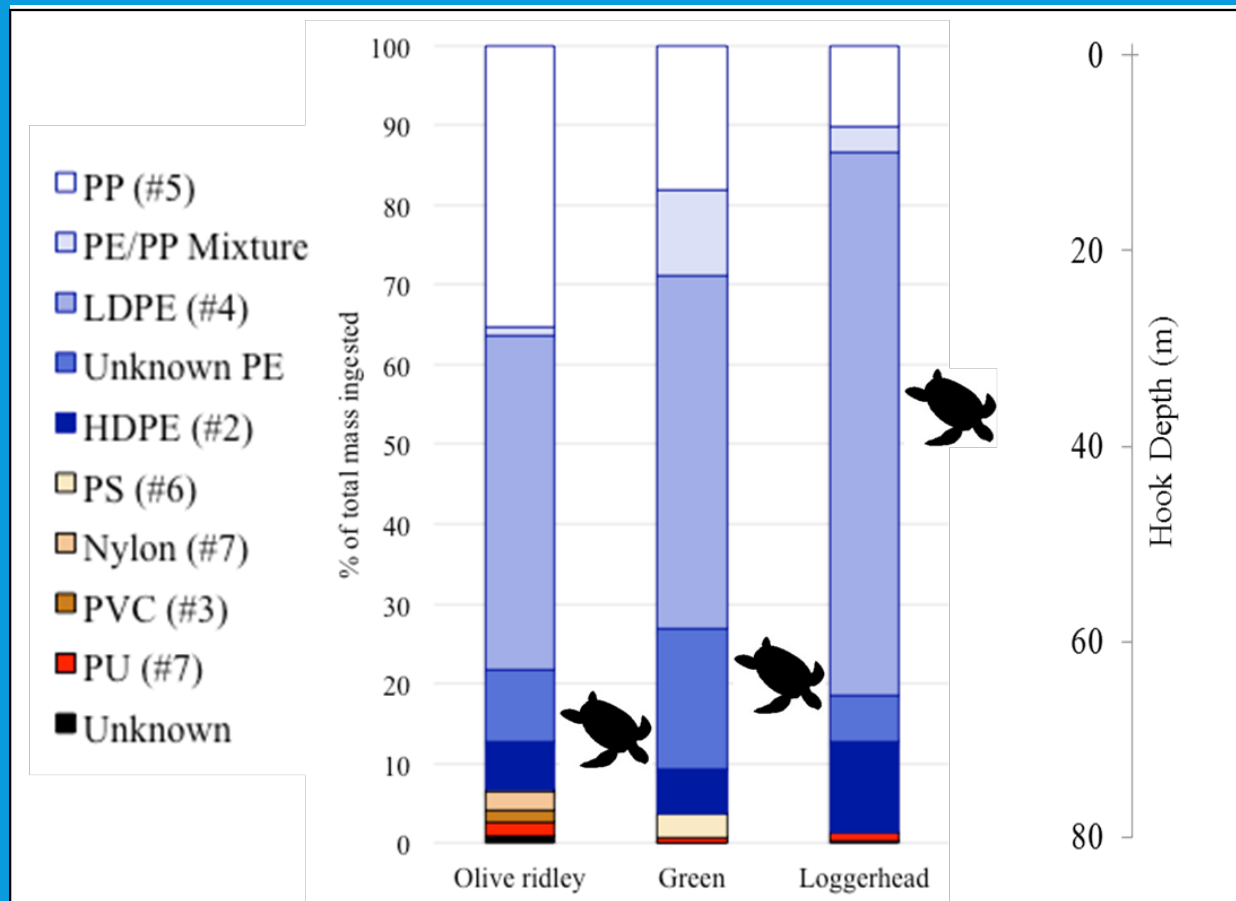


PELAGIC GREEN SEA TURTLES INGEST A LOT OF PLASTIC



Clukey et al. 2017 Mar Pollut Bull

WHAT POLYMER TYPES DO TURTLES INGEST?





EFFECTS OF PLASTIC INGESTION?

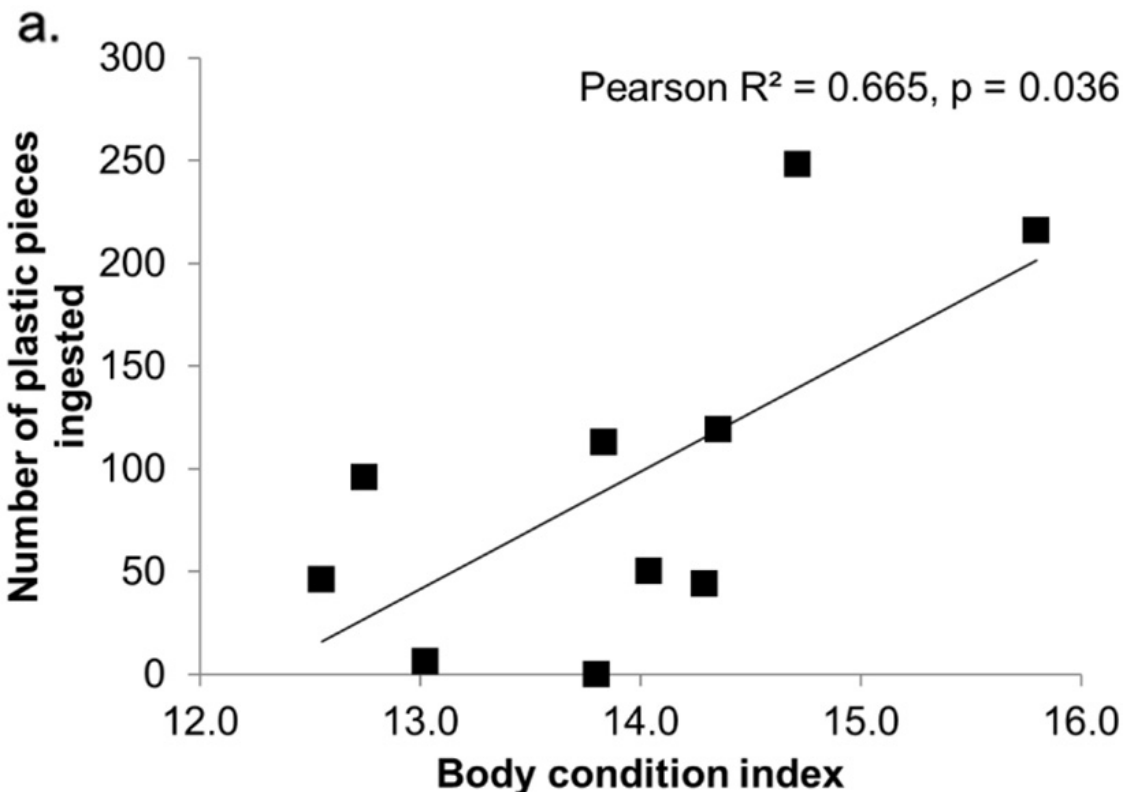
- No gut obstructions, perforations, torsions
- Contrary to...

A quantitative analysis linking sea turtle mortality and plastic debris ingestion

Chris Wilcox¹, Melody Puckridge¹, Qamar A Schuyler^{1,2}, Kathy Townsend^{2,3,4} & Britta Denise Hardesty¹



EFFECTS OF PLASTIC INGESTION?

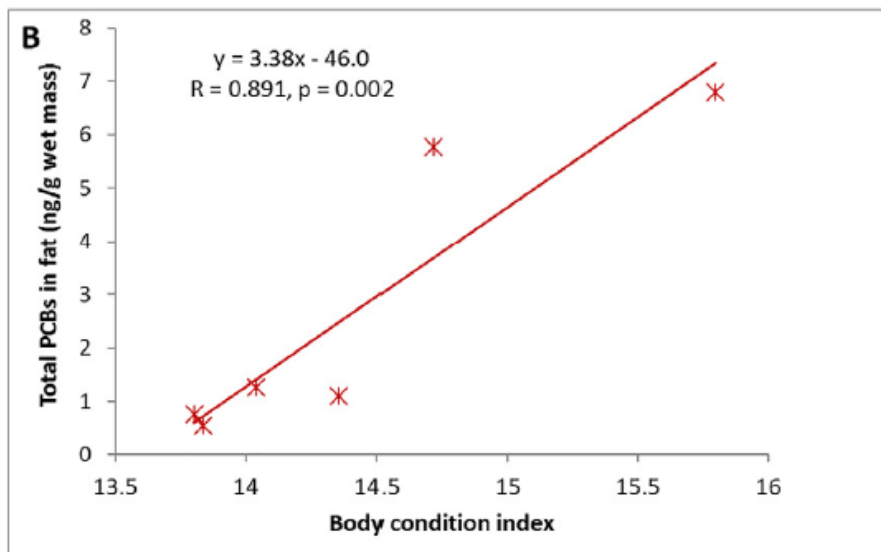
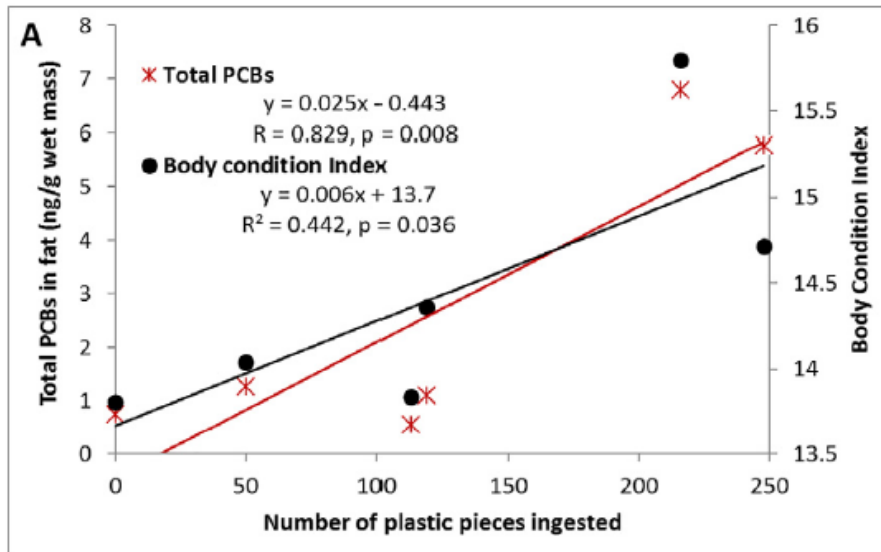


- No dietary dilution
- Contrary to...

McCauley, S.J., Bjorndal, K.A., 1999. Conservation implications of dietary dilution from debris ingestion: sublethal effects in post-hatchling loggerhead sea turtles. *Conserv. Biol.* 13, 925–929. <http://dx.doi.org/10.1046/j.1523-1739.1999.98264.x>.



EFFECTS OF PLASTIC INGESTION?



- Correlation of POPs exposure vs. ingested plastic is confounded by body condition
- Fatter turtles eat more prey, eat more plastic, and also acquire more POPs from either their prey or the plastic
- Source of POP exposure is likely food > plastic

CONCLUSIONS

- Plastics do not belong in the ocean and they kill sea turtles
- Pelagic green sea turtles ingest large quantities of plastic
- Neritic green sea turtles ingest little plastic
- Implications of ingestion in pelagic green sea turtles are not evident



THANK YOU!



- Paul Becker, John Kucklick, Rebecca Pugh, Katy Shaw



- Brenda Jensen, Melissa Jung, Kayla Brignac, Frannie Nilsen, Angela Hansen, Adam Kurtz, Elise Kohli, Jennette Vanderjagt



- George Balazs, T. Todd Jones, Shandell Brunson, Devon Francke, Wendy Marks, Irene Nurzia Hamburg



- Thierry Work, Bob Rameyer, Renee Breeden
- Katharine Clukey



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