
2026- Various pertinent articles relating to diet passage in green turtles Assembled by Karla McDermid UH Hilo.

From George Balazs <itsahonuworldinhawaii@hotmail.com>
Date Wed 4/29/2026 1:50 AM
To George Balazs <honumazu@gmail.com>; George Balazs <itsahonuworldinhawaii@hotmail.com>

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From: Karla McDermid Smith <mcdermid@hawaii.edu>
Sent: Tuesday, April 28, 2026 2:43:22 PM
To: honu world <itsahonuworldinhawaii@hotmail.com>
Subject: Fwd: Various pertinent articles

what I sent to Marcel after our 40 min TELEPHONE CONVERSATION!

----- Forwarded message -----
From: **Karla McDermid Smith** <mcdermid@hawaii.edu>
Date: Tue, Apr 28, 2026 at 1:36 PM
Subject: Various pertinent articles
To: Marcel Honore <mhonore@civilbeat.org>

Paya, I., & Santelices, B. (1989). MACROALGAE SURVIVE DIGESTION BY FISHES
1. *Journal of Phycology*, 25(1), 186-188.

Abstract Small individuals (<15 cm long) of the clingfish *Sicyases sanguineus* consume as many as 18 seaweed species in Central Chile. *Enteromorpha* sp. was the only species able to survive digestion by fish recently collected from the field. *Enteromorpha compressa* and *Gelidium chilense* also survived by tissue regeneration when offered as food in the laboratory, but only *E. compressa* showed stimulation of swarmer production. In general, our results on a vertebrate species reproduce previous findings on diverse invertebrate species. Since fish are highly motile, their capacity to disperse algal species by defecation might be of great ecological importance.

Santelices, B., & Correa, J. (1985). Differential survival of macroalgae to digestion by intertidal herbivore molluscs. *Journal of experimental marine biology and ecology*, 88(2), 183-191.

This study evaluates the capacity of algal propagules to survive digestion by seven intertidal herbivore molluscs. Thirty individuals of *Littorina peruviana*, 36 of *Siphonaria lessoni*, 35 of *Collisella ceciliana*, and 25 each of *C. zebrina*, *Chiton granosus*, *Fissurella crassa* and *F.*

limbata were collected at different dates between October, 1983 and April, 1984. About half of the individuals of each species were examined for gut contents and the other half was used to provide faecal pellets for culture. Diet of these grazers ranged from 8 macroalgal species in *Collisella zebrina* to 17 in *Fissurella limbata*. In total, macroalgal propagules of 56% of the 27 algal species found in these gut contents survive digestion. There was no positive correlation between diet and number of algal taxa growing in the respective faecal cultures. Survival through *Littorina peruviana* and *Chiton granosus* was low (20–30% of the algal species consumed) while it was high (75–83%) through the two species of *Collisella*. No significant correlation was found between frequency of algae in the gut contents and its frequency in the faecal cultures. Algal capacity to survive digestion was almost exclusively restricted to opportunistic species, especially in the Chlorophyta and Phaeophyta. It seems that survival of algal propagules through the digestive tract of generalist grazers is a rather random phenomenon.

Santelices, B., Correa, J., & Avila, M. (1983). Benthic algal spores surviving digestion by sea **urchins**. *Journal of Experimental Marine Biology and Ecology*, 70(3), 263-269. **my favorite**

Present ideas on benthic algae adaptations to animal herbivory focus mainly on defensive and escape mechanisms of settled plants, and disregard the ability of algal reproductive bodies to escape from digestion by animals. To test this hypothesis, 150 individuals of the common Chilean sea urchin, *Tetrapygyus niger* Molina were collected over a period of 7 months, covering Spring through Fall. Fifty were examined for gut contents which revealed a total of 31 algal species, 62.9% of which could be categorized as opportunists and 37.1% as late successional forms. When the contents of faecal pellets were cultured the resulting algal species that had successfully resisted digestion by means of incomplete digestion or protective spore walls showed 84.6% as opportunists and 15.4% as late successional forms. There was no significant correlation between frequency of occurrence in the gut contents and in the faecal cultures, indicating that digestion survival depended on factors other than abundance. Data from these studies provide new insights into the life histories of opportunistic species and suggest that the capacity to survive digestion may play a role in the abundance of these species in overgrazed areas.

A study of appetite, digestion and growth in juvenile green turtle (*Chelonia mydas* L.) fed on artificial diets

Author links open overlay panel [M. Hadjichristophorou](#) ^a, [D.J. Grove](#) *

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Abstract

One-year-old immature green turtles (500–900 g) were kept at 25°C in recirculating seawater. When deprived of food for 108 h and then offered floating trout pellets, they consumed a satiation meal (S g) described by the equation $S = 0.025 W^{0.96}$ where W is wet body weight in g. When food was offered at different deprivation times after satiation, maximum meals were taken after 60–72 h and corresponded to 2.5% body weight. Longer deprivation (108 h) led to reduced intake of 1.9–2% body weight. Gastric emptying was measured using X-radiography or chromic oxide to label the faeces. Complete stomach emptying required 110 ± 11 h S.D. and maximum appetite occurred when the stomach was estimated to be 80–95% empty. **The average time for a meal to be voided from the alimentary tract was 176 ± 16 h S.D.** Diets containing 40–50% protein and 4.2–5 kcal/gram were assimilated with apparent efficiencies of $76 \pm 6\%$ S.D. and $86 \pm 6\%$ for energy and protein nitrogen, respectively. A preliminary estimate for an energy budget for these animals based on a 23 day growth period accounted for 90% of the daily food intake as:

where known daily intake (I calories) is compared with measures or estimates of metabolic rate (M), growth (G) and excreted wastes (E). Although this balance is similar to that of herbivorous fish, the turtle has slower feeding and digestion rates than its teleost counterparts.

Intake passage time, digesta composition and digestibility in East Pacific green turtles (*Chelonia mydas agassizii*) at Gorgona National Park, Colombian Pacific

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Abstract

We investigated the food digestibility of East Pacific green turtles, *Chelonia mydas agassizii*, at tropical coral reefs of Gorgona National Park in the Colombian Pacific and calculated the intake passage time (IPT) of 3 different diets. We collected 150 faecal samples from turtles (mean straight carapace length 61.3 ± 4.12 cm and mean mass 32.3 ± 6.67 kg) to determine digesta composition and for measurement of neutral detergent fibre (NDF), acid detergent fibre (ADF), sulphuric acid lignin and protein. The mean (\pm S.D) IPT to recover at least 73% of **external markers (plastic beads) in the faeces was 23.3 ± 6.6 days.** The true NDF digestibility and dry matter digestibility were determined for high protein (fish), plant (fresh leaves of *Araceae*, *Moraceae* and *Bombaceae*) and mixed (combination of both high protein and plant) diets. NDF values obtained for digestibility of the protein, plant and mixed diets were 1%, 63% and 49% respectively. **There was a large amount of undigested plant material in the faeces, dominated by fruits of red mangrove (*Rhizophora mangle*).** We considered the relationships between the type of food, IPT and apparent digestibility in the context of the nutritional contribution of an omnivorous diet. Our results suggest that for juvenile green sea turtles in the Eastern Pacific combined diets are an opportunistic strategy responding to habitat features and supply to maximise energy acquisition in transitional habitats such as Isla Gorgona.



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