

"Grazing on Benthic Primary Producers."

"The Influence of Primary Producers on Estuarine Cycling."

- [Reference List](#)
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1. The columns in the data set are:

1st column: reference (authors and date; see references in word file for complete mention)

2nd column: community type

3rd column: net primary production (NPP, g C m⁻² yr⁻¹)

4th column: consumption by herbivores (H, g C m⁻² yr⁻¹)

5th column: percentage of net primary production consumed by herbivores (% NPP consumed)

6th column: producer internal nitrogen concentration (N_{biomass}, %DW)

7th column: producer internal phosphorus concentration (P_{biomass}, %DW)

2. Cells with a dot and no numbers correspond to variables not provided in the report.

LITERATURE USED FOR THE COMPILATION OF THE DATA SET

- Admiraal, W., Bouwman, L. A., Hoekstra, L. & Romeyn, K. Qualitative and Quantitative Interactions between Microphytobenthos and Herbivorous Meiofauna on a Brackish Intertidal Mudflat. *Int. Revue ges. Hydrobiol.* 68, 175-191 (1983)
- Andersen, F. and E. Kristensen. 1988. The influence of macrofauna on estuarine benthic community metabolism: a microcosm study. *Mar. Biol.* 99:591-603.
- Anderson, M.R., Cardinal A. and Larochelle J. (1981). An alternate growth pattern for *Laminaria longicuris*. *J. Phycol.* 17: 405-411.
- Atkinson, M. J., R. W. Grigg (1984). Model of a coral reef ecosystem: II. Gross and net benthic primary production at French Frigate Shoals, Hawaii. *Coral Reefs* 3: 13-22
- Bach, S. D., M. N. Josselyn (1979). Production and biomass of *Cladophora prolifera* (Chlorophyta, Cladophorales) in Bermuda. *Bot. Mar.* 22: 163-168.
- Bach, S., G. Thayer and M. LaCroix 1986. Export of detritus from eelgrass (*Zostera marina*) beds near Beaufort, North Carolina, USA. *Mar. Ecol. Prog. Ser.* 28: 265-278.
- Baird, D. and R. E. Ulanowicz. 1989. The Seasonal Dynamics of the Chesapeake Bay Ecosystem. *Ecol. Monogr.* 59: 329-364.
- Baird, D. and R. E. Ulanowicz. 1993. Comparative study on the trophic structure, cycling and ecosystem properties of four tidal estuaries. *Mar. Ecol. Prog. Ser.* 99: 221-237.
- Bak, R. 1994. Sea urchin bioerosion on coral reefs: place in the carbonate budget and relevant variables. *Coral Reefs* 13: 99-103.
- Baldwin, J. R. and J. R. Lovvorn. 1994. Expansion of seagrass habitat by the exotic *Zostera japonica* and its use by dabbling ducks and brant in Boundary Bay, British Columbia. *Mar. Ecol. Prog. Ser.* 103: 119-127.
- Birch PB, Gabrielson JO, Hamel KS (1983) Decomposition of *Cladophora*. I Field studies in the Peel-Harvey estuarine system, Western Australia. *Bot Mar* 26: 165-171
- Brouwer PEM. 1996. Decomposition in situ of the sublittoral Antarctic macroalgae *Desmarestia anceps* Montagne. *Polar Biol.* 16: 129-137
- Burns, K., M. Ehrhardt, B. Hows and G. Taylor. 1993. Subtidal Benthic Community Respiration and production near the heavily oiled Gulf Coast of Saudi Arabia. *Mar. Pollut. Bul.* 27: 199-205.
- Bythell, J., E. Gladfelter and M. Bythell. 1993. Chronic and catastrophic natural mortality of three common Caribbean reef corals. *Coral Reefs* 12:143-152.

- Cadee, G. C., J. Hegeman (1977). Distribution of primary production of the benthic microflora and accumulation of organic matter on a tidal flat area, Balgzand, Dutch Wadden Sea. *Neth. J. Sea Res.* 11: 24-41
- Carpenter, R. C. Partitioning herbivory and its effects on coral reef algal communities. *Ecol. Monogr.* 56, 345-363 (1986).
- Cebrian, J and C.M. Duarte. 1998. Patterns in leaf herbivory on seagrasses. *Aquatic Botany* 60: 67-82
- Cebrian, J., C. M. Duarte, N. Marbà, S. Enríquez, M. Gallegos and B. Olesen. 1996. Herbivory on *Posidonia oceanica* (L.) Delile: magnitude and variability in the Spanish Mediterranean. *Mar. Ecol. Progr. Ser.* 130: 147-155.
- Cebrián, J., C. M. Duarte, N. Marbà and S. Enríquez. 1997. The magnitude and fate of production of four co-occurring Western Mediterranean seagrass species. *Mar. Ecol. Progr. Ser.* 155 : 29-44
- Cebrian J., M. F. Pedersen, K. Kroeger, I. Valiela. 2000. Fate of production of the seagrass *Cymodocea nodosa* in different stages of meadow formation. *Mar. Ecol. Prog. Ser.* 204:119-130
- Chapman ARO, Craigie JS. 1978. Seasonal growth in *Laminaria longicuris*: relations with reserve carbohydrate storage and production. *Mar. Biol.* 46: 209-213
- Darley, W. M., Montague, C. L., Plumley, F. G., Sage, W. W. & Psalidas, A. T. Factors limiting edaphic algal biomass and productivity in a Georgia salt marsh. *J. Phycol.* 17, 122-128 (1981).
- Davis, M. and H. Lee. 1983. Recolonization of sediment-associated microalgae and effects of estuarine infauna on microalgal production. *Mar. Ecol. Prog. Ser.* 11: 227-232.
- Davis, M. W., C. D. McIntire (1983). Effects of physical gradients on the production dynamics of sediments-associated algae. *Mar. Ecol. Prog. Ser.* 13: 103-114.
- Drew, E. A., and R. M. Hastings. 1992. A year-round ecophysiological study of *Himantothallus grandifolius* (Desmarestiales, Phaeophyta) at Sygny Island, Antarctica. *Phycologia* 31:262-277.
- Dunton, K.H. and Schell, D.M. 1986. Seasonal carbon budget and growth of *L. solidungula* in the Alaskan high arctic. *Mar. Ecol. Prog. Ser.* 31: 57-66
- Egan, B and Yarish, C. 1990. Productivity and life history of *L. longicuris* at its southern limit in the western atlantic ocean. *Mar. Ecol. Prog. Ser.* 67: 263-273
- Erfteimeier P., R. Osinga and M. Astrid. 1993. Primary production of seagrass beds in South Sulawesi (Indonesia): a comparison of habitats, methods and species. *Aquat. Bot.* 46: 67-90.
- Frankignoulle, M., J. Bouquegneau, E. Ernst, R. Biondo, M. Rigo and D. Bay. 1984. Contribution de l'activité de l'Herbier de Posidonies au Metabolisme global de la Baie de Calvi.

- Premiers Resultats, p. 277-282. *In* C. Boudouresque, A. Jeudy de Grissac and J. Olivier [eds.], International Workshop Posidonia oceanica Beds (I) GIS Posidonie publ.
- Fry, B. and R. Virnstein. 1988. Leaf production and export of the seagrass *Syringodium filiforme* Kütz, in an Indian River lagoon, Florida. *Aquat. Bot.* 30, 261-266.
- Gathuso, J., M. Pichon, B. Delesalle and M. Frankignoulle. 1993. Community metabolism and air-sea CO₂ fluxes in a coral reef ecosystem (Moore, French Polynesia). *Mar. Ecol. Prog. Ser.* 96: 259-267.
- Geertz-Hansen, O., Sand-Jensen, K., Hansen, D.F. and Christiansen, A. 1993. Growth and grazing control of abundance of marine macroalgae, *Ulva lactuca* L. in an eutrophic Danish estuary. *Aquat. Bot.* 46: 101-109.
- Gerard, V. 1976. Some aspects of material dynamics and energy flow in a kelp forest in Monterey Bay, California. Ph. D. Thesis, University of California, Santa Cruz.
- Gould, D. and E. Gallagher. 1990. Field measurement of specific growth rate, biomass and primary production of benthic diatoms of Savin Hill Cove, Boston. *Limnol. Oceanogr.* 35:1757-1770.
- Greenway, M. The grazing of *Thalassia testudinum* in Kingston Harbour, Jamaica. *Aquat. Bot.* 2, 117-126 (1976).
- Hanisak, M.D. 1979. Nitrogen limitation of *C. Fragile* ssp. *tomentosoides* as determined by tissue analysis. *Marine Biology* 50: 333-337
- Hansen, J. A., D. Klumpp, D. Alongi, P. Dayton and M. Riddle. 1992. Detrital pathways in a coral reef lagoon. II. Detritus deposition, benthic microbial biomass and production. *Mar. Biol.* 113: 363-372.
- Harrison PG (1982) Control of microbial growth and of amphipod grazing by water soluble compounds from leaves of *Zostera marina*. *Mar Biol* 67: 225-230
- Hatcher, B.G., S. V. Smith and C. Crossland. 1992. The role of Coral Reefs in Global Ocean Production, p. 513-514. *In* P. Falkowski and A. Woodhead [eds.], Primary Productivity and Biogeochemical Cycles in the Sea. Plenum Press.
- Hauxwell J, McClelland J, Behr PJ, Valiela I. 1998. Relative importance of grazing and nutrient controls of macroalgal biomass in three temperate shallow estuaries. *Estuaries* 21: 347-360
- Hauxwell, J, J. Cebrian and I. Valiela. 2002. Annual growth dynamics of eelgrass (*Zostera marina* L.) in estuaries of Waquoit Bay, MA, USA: Relationship to land-derived nitrogen loads and effect on light supply for eelgrass. *Mar. Ecol. Prog. Ser.* (in press).
- Hemmings MA, Nieuwenhuize J (1991) Transport, deposition and "in situ" decay of seagrasses in a tropical mudflat area (Banc d'Arguin, Mauritania). *Neth J Sea Res* 27: 183-190

- Jacobs, R., den Hartog, C., Braster, C. & Carrière, F. Grazing of the seagrass *Zostera noltii* by birds at Terschelling (Dutch Wadden Sea). *Aquat. Bot.* 10, 241-259 (1981).
- Josselyn M. N., A. C. Mathieson (1980). Seasonal influx and decomposition of autochthonous macrophyte litter in a north temperate estuary. *Hydrobiologia* 71: 197-208.
- Josselyn, M. N., G. Cailliet, T. Niesen, R. Cowen, A. Hurley, J. Conner and S. Hawes. 1983. Composition, Export and Faunal Utilization of Drift Vegetation in the Salt River Submarine Canyon. *Estuar. Coast. Shelf Sci.* 17: 447-465.
- Josselyn, M., M. Fonseca, T. Niesen and R. Larson. 1986. Biomass, production and decomposition of a deep water seagrass, *Halophila decipiens* Ostenf. *Aquat. Bot.* 25: 47-61.
- Kenworthy, J. and G. Thayer. 1984. Production and decomposition of the roots and rhizomes of seagrasses, *Zostera marina* and *Thalassia testudinum*, in temperate and subtropical marine ecosystems. *Bull. Mar. Sci.* 35: 364-379.
- Khailov, K. M. & Burlakova, Z. P. Release of dissolved organic matter by marine seaweeds and distribution of their total organic production to inshore communities. *Limnol. Oceanogr.* 14, 521-527 (1969).
- Kiene, W. and P. Hutchings. 1994. Bioerosion experiments at Lizard Island, Great Barrier Reef. *Coral Reefs* 13:91-98.
- Kilar, J. and J. Norris. 1988. Composition, export and import of drift vegetation on a tropical, plant dominated, fringing-reef platform (Caribbean Panama). *Coral Reefs* 7: 93-103.
- Kirkman, D. & Reid, D. A study of the role of the seagrass *Posidonia australis* in the carbon budget of an estuary. *Aquat. Bot.* 7, 173-183 (1979).
- Klumpp D. and N. Polunin. 1989. Partitioning among grazers of food resources within damselfish territories on a coral reef. *J. Exp. Mar. Ecol. Biol.* 125: 145-169.
- Klumpp, D., R. Howard, D. Pollard. 1989. Trophodynamics and nutritional ecology of seagrass communities, p. 349-475. *In* A. Larkum, A. McComb and S. Sepherd S. [eds], *Biology of Seagrasses: a Treatise on the Biology of Seagrasses with Special Reference to the Australian Region*. Elsevier.
- Klumpp, D. W., Salita-Espinosa, J. S. & Fortes, M. D. The role of epiphytes and macroinvertebrate grazers in the trophic flux of a tropical seagrass community. *Aquat. Bot.* 43, 327-349 (1992)
- Klumpp, D. W., Salita-Espinosa, J. S. & Fortes, M. D. Feeding ecology and trophic role of sea urchins in a tropical seagrass community. *Aquat. Bot.* 45, 205-229 (1993).
- Koop, K., R. Newell and M. Lucas. 1982. Biodegradation and carbon flow based on kelp (*Ecklonia maxima*) debris in a Sandy Beach Microcosm. *Mar. Ecol. Prog. Ser.* 7:315-326.

- Kristensen, E. 1993. Seasonal variations in Benthic Community Metabolism and nutrient dynamics in a Shallow, Organic-poor danish lagoon. *Estuar. Coast. Shelf Sci.* 36:565-586.
- Lapointe, B.E., Niell, F. and Fuentes, J.M. 1981. Community structure, succession and production of seaweeds associated with mussel-beds in the Ria de Arosa, NW Spain. *Mar. Ecol. Prog. Ser.* 5: 243-253
- Lindeboom, H. and B. De Bree. 1982. Daily production and consumption in a eelgrass (*Zostera marina*) community in Saline-Lake Grevelingen: discrepancies between the O₂ and ¹⁴C methods. *Neth. J. Sea Res.* 16:362-379.
- Lindeboom, H. and A. Sandee. 1989. Production and consumption of tropical seagrass fields in eastern Indonesia measured with bell jars and microelectrodes. *Neth. J. Sea Res.* 23:181-190.
- Mann, K. H. 1972. Ecological energetics of the sea-weed zone in a marine bay on the Atlantic coast of Canada. II. Productivity of seaweeds. *Mar. Biol.* 14: 199-209.
- Mann, K.H. 1985. *Ecology of Coastal Waters. Studies in Ecology Volume 8.* 2nd ed. Blacwell.
- Mann, K.H. 1988. Production and use and detritus in various freshwater, estuarine and coastal marine ecosystems. *Limnol. Oceanogr.* 33: 910-931.
- McLachlan, A. & Bate, G. Carbon budget for a high energy surf zone. *Vie milieu* 34, 67-77 (1984).
- McLusky, D.S. *The estuarine ecosystem* (Wiley, New York, 1981).
- Merino, M., A. González, E. Reyes, M. Gallegos and S. Czitrom. 1992. Eutrophication in the lagoons of Cancún, México. *Science of the Total Environment, Supplement* (1992): 861-870.
- Montagna, P. A. In situ measurement of meiobenthic grazing rates on sediment bacteria and edaphic diatoms. *Mar. Ecol. Progr. Ser.* 18, 119-130 (1984).
- Murray, L. and R.L. Wetzel. 1987. Oxygen production and consumption associated with the major autotrophic components in two temperate seagrass communities. *Mar. Ecol. Progr. Ser.* 38: 231-239.
- Nakamori, T., A. Suzuki, Y. Iryu, Cont. *Shelf Res.* 12, 951 (1992).
- Neudecker, S. 1979. Effects of grazing and browsing fishes on the zonation of Corals in Guam. *Ecology* 60: 666-672.
- Newell, R., J. Field and C. Griffiths. 1982. Energy Balance and significance of microorganisms in a kelp bed community. *Mar. Ecol. Progr. Ser.* 8:103-113.
- Nicotri, M. E. Grazing effects of four marine intertidal herbivores on the microflora. *Ecology* 58, 1020-1032 (1977)

- Nienhuis, P. & Groenendijk, A. Consumption of eelgrass (*Zostera marina*) by birds and invertebrates: an annual budget. *Mar. Ecol. Prog. Ser.* 29, 29-35 (1986).
- Nixon S. and C. Oviatt. 1972. Preliminary measurements of midsummer metabolism in beds of eelgrass, *Zostera marina*. *Ecology* 53:150-153.
- Østergaard, F. and E. Kristensen. 1992. The importance of benthic macrofauna in decomposition of microalgae in a coastal marine sediment. *Limnol. Oceanogr.* 37:1392-1403.
- Ott, J. and L. Maurer. 1977. Strategies of energy transfer from marine macrophytes to consumer levels: the *Posidonia Oceanica* example, p. 493-502. *In* B. Keegan [ed.], *Biology of Benthic Organisms*. Pergamon Press.
- Ott, J. 1980. Growth and production in *P. oceanica* (L.) Delile. *Mar. Ecol.* 1: 47-64.
- Panatmat, M. 1988. Ecology and metabolism of a benthic community on an intertidal sandflat. *Int. Revue. ges. Hydrobiol.* 53: 211-298.
- Pattersen, M., K. Sebans and R. Olsen. 1991. In situ measurements of flow effects on primary production and dark respiration in reef corals. *Limnol. Oceanogr.* 36:936-948.
- Peduzzi P, Herndl GJ (1991) Decomposition and significance of seagrass leaf litter (*Cymodocea nodosa*) for the microbial food web in coastal waters (Gulf of Trieste, Northern Adriatic Sea). *Mar Ecol Prog Ser* 71: 163-174
- Pellikaan, G. and P. Nienhuis. 1988. Nutrient uptake and release during growth and decomposition of eelgrass, *Zostera marina* L., and its effect on the nutrient dynamics of Lake Grevelingen. *Aquat. Bot.* 30:189-214.
- Pergent, G., J. Romero, C. Pergent-Martini, M. Mateo and C. Boudouresque. 1994. Primary production, stocks and fluxes in the Mediterranean seagrass *P. oceanica*. *Mar. Ecol. Prog. Ser.* 106: 39-146.
- Polunin, N. and D. Klumpp. 1992. Algal food supply and grazer demand in a very productive coral-reef zone. *J. Exp. Mar. Biol. Ecol.* 164:1-16.
- Qasim, S and P. Bhattathiri. 1971. Primary production of a seagrass bed on Kavarotti Atoll (Laccavides). *Hydrobiologia* 38: 29-38.
- Reichardt, W. and G. Dieckmann. *In* *Antarctic Nutrient Cycles and Food Webs* (eds. Siegfried, W. R., P. R. Condy and R. M. Laws) 115-122 (4th SCAR Symposium on Antarctic Biology, Springer-Verlag, New York, 1985).
- Rizzo, W. and R. Wetzel. 1985. Intertidal and shoal benthic community metabolism in a temperate estuary: studies of spatial and temporal scales of variability. *Estuaries* 8: 342-351.

- Romero, J., Pergent, G., Pergent-Martini, C., Mateo, M. A. & Regnier, C. The detritic compartment in a *Posidonia oceanica* meadow: litter features, decomposition rates and mineral stocks. *P. S. Z. N. I. Mar. Ecol.* 13, 69-83 (1992).
- Sfriso A., A. Marcomini (1997). Macrophyte production in a shallow coastal lagoon. Part I: coupling with chemico-physical parameters and nutrients concentrations in waters. *Mar. Environ. Res.* 44: 351-375
- Smith, S.V. 1973. Carbon dioxide dynamics: a record of organic carbon production, respiration and calcification in the Eniwetok reef flat community. *Limnol. Oceanogr.* 18: 106-120.
- Smith, S. V., P. L. Jokiel (1978). Water composition and biogeochemical gradients in the Canton Atoll lagoon. *Atoll. Res. Bull.* 221: 15-53
- Smith, S. V., F. Pesret (1974). Processes of carbon dioxide flux in the Fanning Island lagoon. *Pac. Sci.* 28: 225-245
- Smith, S. V., P. L. Jokiel, G. S. Key (1978) Biogeochemical budgets in coral reef ecosystems. *Atoll Res. Bull.* 220: 1-11.
- Sorokin, Y. 1983. The Black Sea, p. 253-292. *In* B. Ketchum [ed.], *Estuaries and Enclosed Seas. Ecosystems of the World n° 26* Elsevier.
- Spencer, P. 1977. Carbon budgets and vertical zonation of atlantic reef corals, p. 391-396. *In* D. Taylor [ed.], *Proceedings of the the third coral reef symposium, (I) Biology.* Springer-Verlag.
- Tertsching, W. 1989. Diel activity patterns and foraging dynamics of the sea urchin *Tripneustes ventricosus* in a tropical seagrass community and a reef environment (Virgin Islands). *Mar. Ecol.* 10: 3-21.
- Vidal, M. 1991. Estudios sobre la dinámica de nutrientes en sistemas estuaricos: flujos sedimento-agua de nutrientes y oxígeno. Ph. D. Tesis. Universidad de Barcelona, Spain.
- Wahbeh MI, Mahasneh AM (1985). Some aspects of decomposition of leaf litter of the seagrass *Halophila stipulacea* from the Gulf of Aqaba (Jordan) *Aquat. Bot.* 21: 237-244
- Wallentinus I. 1981. Chemical constituents of some baltic macroalgae in relation to environmental factors. *Proc. Int. Seaweed Symp.* 10: 363-370
- Wanders, J. B. W. The role of benthic algae in the shallow reef of Curaçao (Netherlands Antilles) III: The significance of grazing. *Aquat. Bot.* 3, 357-390 (1977).
- Wetzel, R. and P. Penhale. 1983. Photosynthesis, light response and metabolism of submerged macrophyte communities in the lower Chesapeake Bay, p. 50-107. *In* R.L. Wetzel [ed.], *Structural and functional aspects of the ecology of submerged aquatic macrophyte communities in the lower Chesapeake Bay, vol. I.* U.S. EPA Final Grant Report No. R 805974 and X003245-01 and Virginia Institute of Marine Science SRAMSOE 267, Gloucester Point, Virginia.

Williams, S. L. and R. C. Carpenter. 1988. Nitrogen-limited primary productivity of coral reef algal turfs: potential contribution of ammonium excreted by *Diadema antillarum*. *Mar. Ecol. Prog. Ser.* 47: 145-152.

Yap, H., A. Montebon and R. Dizon. 1994. Energy Flow and seasonality in a tropical coral reef flat. *Mar. Ecol. Prog. Ser.* 103:35-43.

Zieman, J. C., G. Thayer, M. Robblee and R. Zieman. 1979. Production and export of seagrasses from a tropical bay, p. 21-33. *In* R. J. Livingston [ed.], *Ecological Processes in Coastal and Marine Systems*, Plenum Press.