Tendências nas investigacões dos impactos da acidificação no crescimento de corais e de algas coralináceas

Tendencies in theinvestigationsoftheimpactsofacidificationon coral andcorallinealgaegrowth

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Aims
Objetivos

- *Fazer um balanço dos trabalhos publicados nos últimos 5 anos sobre o tema;*
  - To makeanappraisalofthemainresultsofthepapersrelated to thethemepublished in thelast 5 years
- *Sintetizar as principais abordagens dos trabalhos publicados nos últimos 5 anos*
  - Synthesizethemain approaches ofthepaperspublished in thelast 5 years

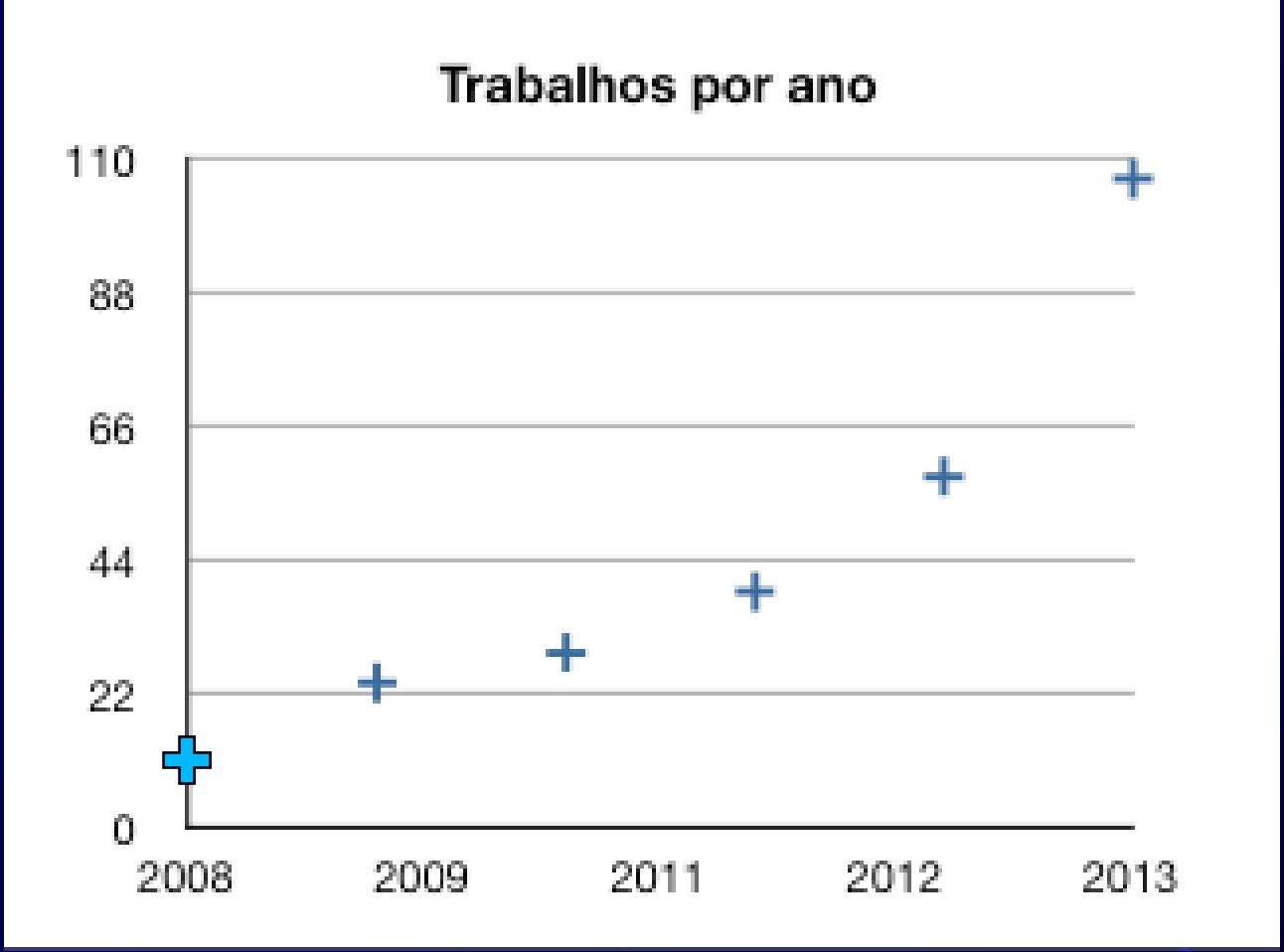
Trabalhos publicados até 2008

Paperspubli
heduntil 200

Physiological response	Major group	Species studied	Response to increasing CO_2 a	b	c	d
Calcification						
	Coccolithophores[1]	4	2	1	1	1
	Planktonic Foraminifera	2	2	–	–	–
	Molluscs	4	4	–	–	–
	Echinoderms[1]	3	2	1	–	–
	Tropical corals	11	11	–	–	–
	Coralline red algae	1	1	–	–	–
Photosynthesis[2]						
	Coccolithophores[3]	2	–	2	2	–
	Prokaryotes	2	–	–	1	–
	Seagrasses	5	–	–	–	–
Nitrogen Fixation						
	Cyanobacteria	1	–	1	–	–
Reproduction						
	Molluscs	4	4	–	–	–
	Echinoderms	1	1	–	–	–

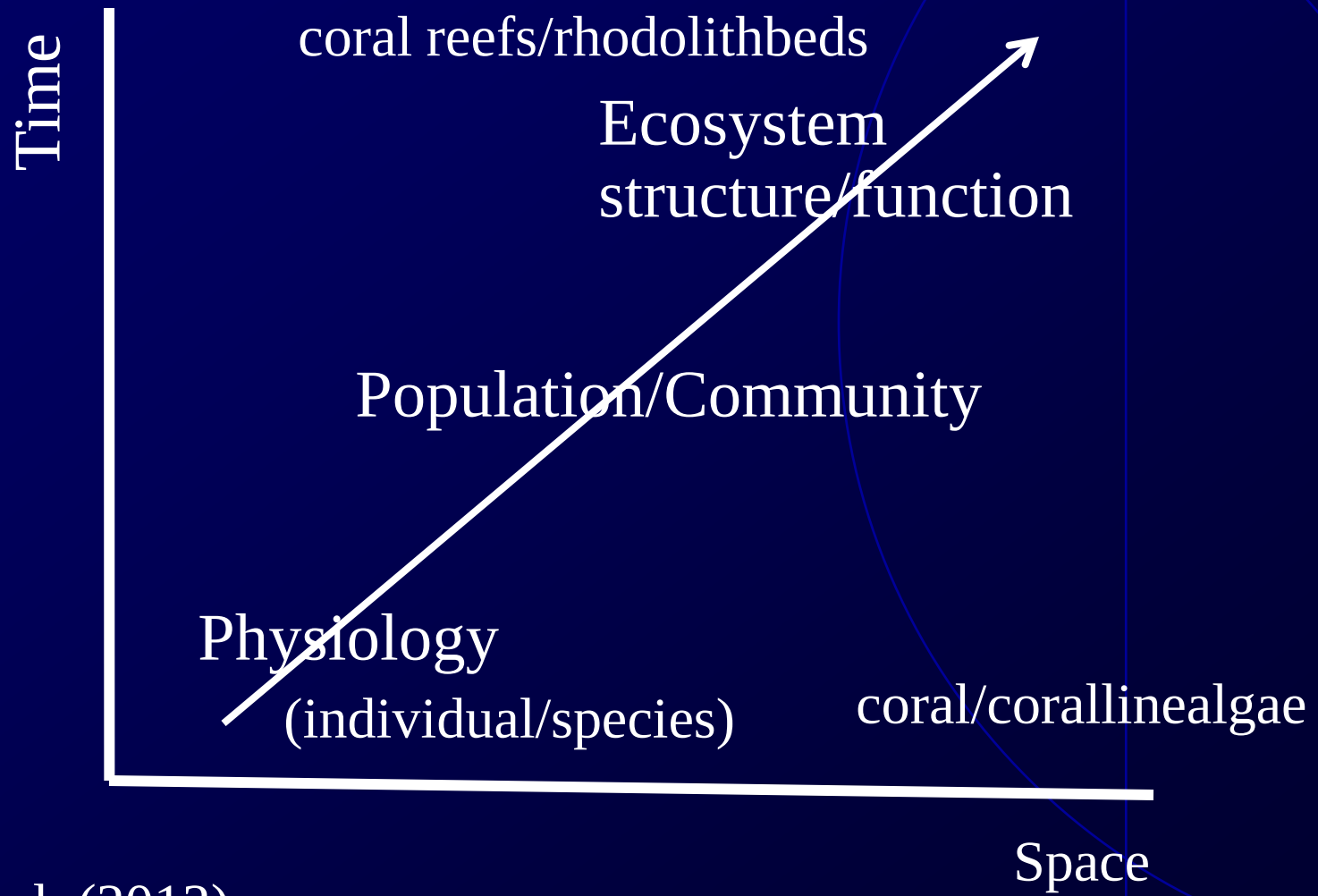
Doneyet al. (2009)

Theme: Impactsofacidification in coralsandcorallinealgae



*Web ofKnowledge: acidification; coral**

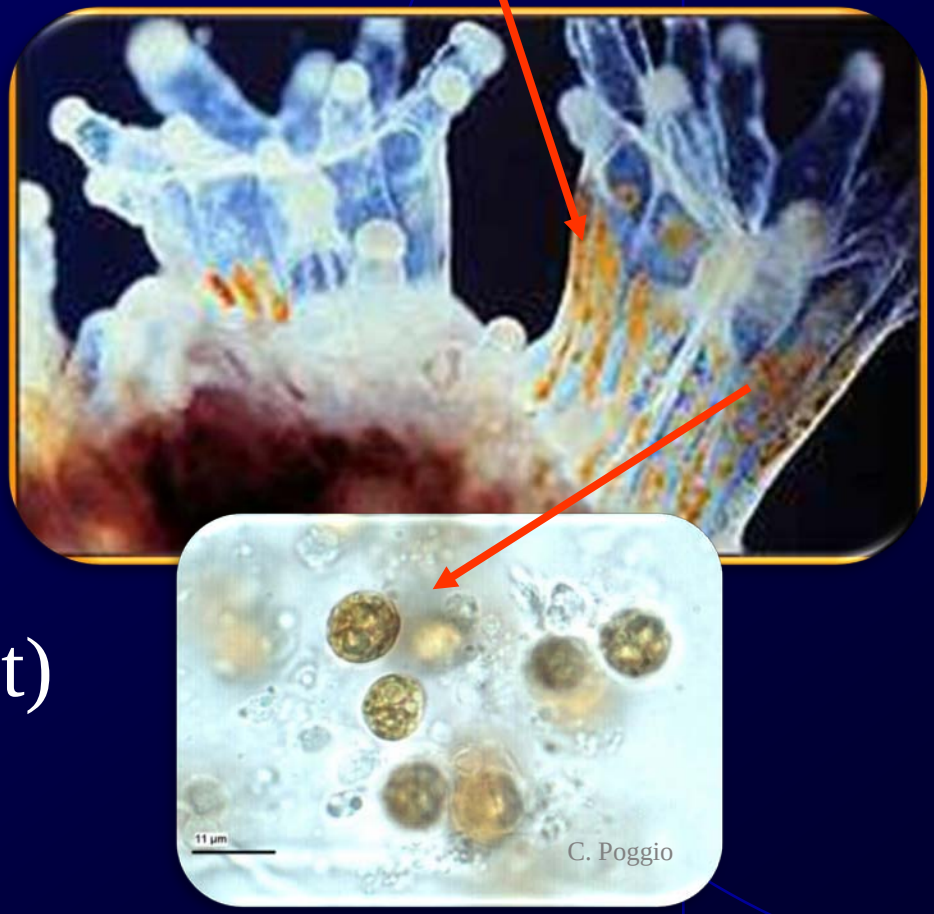
Biological processes response



Doneyet al. (2012)

Natureoftheorganism

ZOOXANTHELLAE

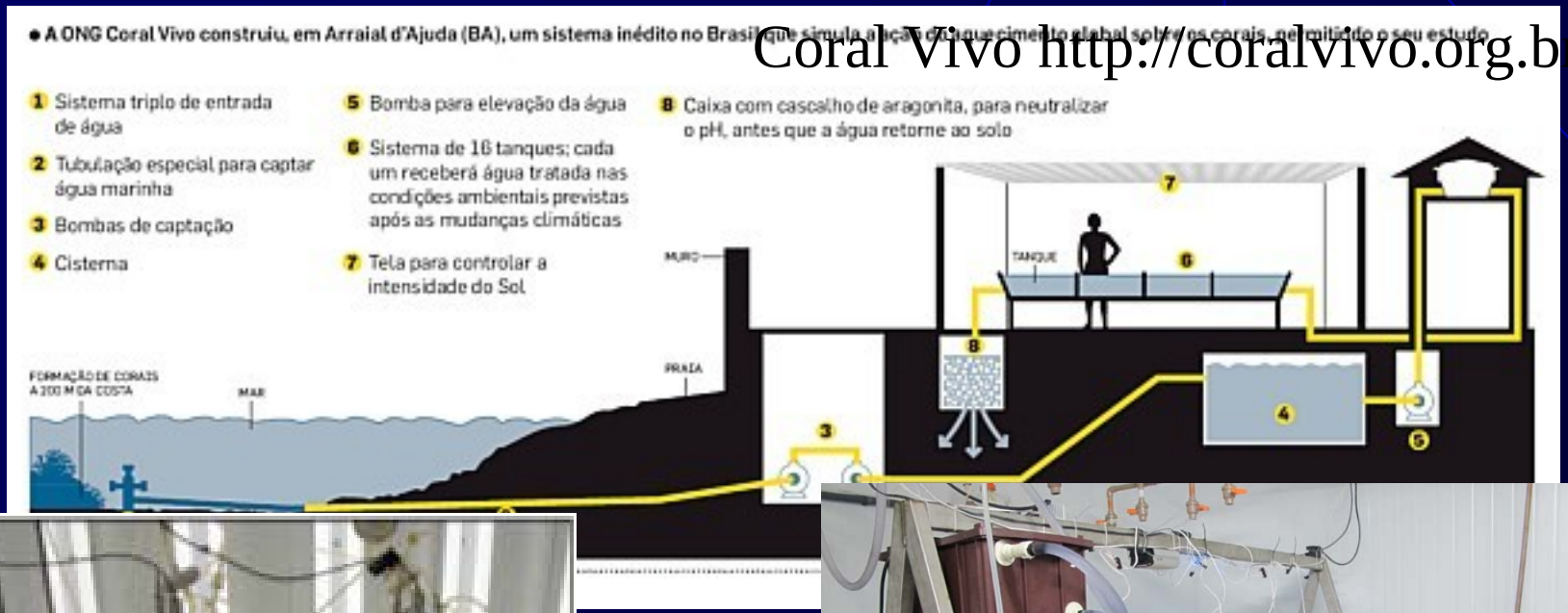


- Colonial
- Singlespecies
- Symbiosis (holobiont)

Approach: ex situ

Natural X Artificial light
Natural X Artificial water

outdoor X indoor mesocosm



Coral Vivo http://coralvivo.org.br

Approach: “in situ” (organismal)

Okazakiet al. (2013)

Approach: in situ/ecosystem

Studiesalong natural pH gradients

Global Change Biology

Global Change Biology (2012) **18**, 3015–3025, doi: 10.1111/j.1365-2486.2012.02767.x

Sea anemones may thrive in a high CO_2 world

DAVID J. SUGGETT*, JASON M. HALL-SPENCER†, RICCARDO RODOLFO-METALPA†, TOBY G. BOATMAN*, ROSS PAYTON*, D. TYE PETTAY‡, VIVIENNE R. JOHNSON†, MARK E. WARNER‡ and TRACY LAWSON*

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Mar Biol (2013) 160:2597–260
DOI 10.1007/s00227-013-2254-

ORIGINAL PAPER

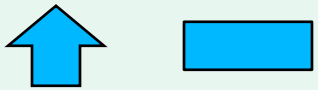
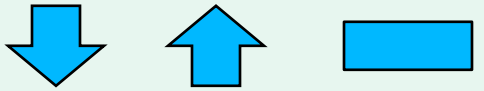
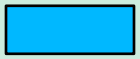
Occurrence of a cold-water coral along natural pH gradients (Patagonia, Chile)

C. Jantzen · V. Häussermann · G. Försterra · J. Laudien · M. Ardelan · S. Maier · C. Richter

Processes studied

Scale	until 2008	2009-2013
Coral &corallinealgae	Calcification	Calcification
		Photosynthesis (holobiont)
		Respiration
		Reproduction
		Associatedmicroorganism
		Othergasproduction (DMSP)
Ecosystemincludingsediment		yes

Processes studied

Processes	Coral	Corallinealgae
Calcification		
Photosynthesis (holobiont)		
Respiration		
Reproduction		
Othergasproduction (DMSP)		

Tolerance

- Mineralogy (aragonite x Mg-calcite)
- Diurnal/seasonalvariations in pH;
- “Vital” effect (capacity to maintaininternal – subcalicoblastic - conditiondifferentfromenvironment);
- Species-specificresponses
- Interactionoffactors
  - T
  - Light
  - Nutrition
  - Sedimentation
  - symbiosis (different
  - otherspeciesrelationships

Trends

- Environmental ranges
- Species-specificresponses
- Interactionoffactors - feedbacks
  - T
  - Light
  - Nutrition
  - Sedimentation
  - symbiosis (differentclades/microorganisms)
  - otherspeciesrelationships

Availablefacilities/ongoingprojects

- UFPE – *in situ*(Atol das Rocas) – Ramos
- IEAPM – indoor mescosm – Figueiredo, Coutinho
- Coral Vivo – outdoor mesocosm – Castro, Echeverria, Horta
- UFBA – reactionbottles – Kikuchi, Oliveira, Leão

- Field analogues - Todos-os-SantosBay (tentative); Abrolhos ?
- Identifysuitable sites for monitoringecosystemand CO_2 monitoring

Thankyou