

Rangia cuneata was recorded in the Vistula Lagoon in September 2010. Clams were collected at a station (54°40.19' N, 20°00.85' E) where Atlantic *rangia* were most abundant. From April 2011 to November 2012, four replicate samples were taken monthly. Somatic production (Ps) was calculated according to Boysen-Jensen method. Average assimilation efficiency was 0.7 for suspension-feeding bivalves. In 2011 and 2012, the Ps values were on the same level (607 and 604 kJ.m⁻².year⁻¹). In 2011 respiration (R) and consumption (C) were lower by 2 times (5,709 and 9,023 kJ.m⁻².year⁻¹) than in 2012 (11,711 and 17,593 kJ.m⁻².year⁻¹). In 2011, P/B ratio and net production efficiency (K2) were 1.76 and 0.096, and decreased to 0.91 and 0.049 in 2012. In 2011 and 2012, the annual primary production (Pp) were 19,000 and 24,400 kJ.m⁻².year⁻¹. Clams might to consume 47% and 72% from Pp (C/Pp) in 2011 and 2012. Until 2010, zooplankton was main the consumer of phytoplankton. Consumption of zooplankton averaged 970 kJ.m⁻².year⁻¹ or 7% from Pp. Water clarity increased with 0.59-0.74 m in 1995-2010 to 0.84 and 0.99 m in 2011 and 2012. Thus, clams become the important component of the Vistula Lagoon ecosystem and play a significant role in water self-purification and clarification.

P3.18

Structural and functional trends indicate fishing pressure on marine fish assemblages

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Conservation science increasingly focuses on how ecosystem functioning is affected by anthropogenic pressures, which implies an understanding about the structural and functional changes in biological assemblages and requires indicators to timely detect such changes. A novel approach was used to model the response of several fish-based metrics to gradients of trawling. The response of these metrics to increasing intensity of fishing revealed a significant biomass loss with a corresponding increase of dominant species. Additionally, in the most fished areas there were noteworthy changes in vulnerable features of fish assemblages like biomass of chondrichthyes as well as very low-resilient species and those more sedentary. These patterns were attributed to direct and indirect fishing effects acting synergistically over specific features of fish assemblages leading to its homogenization. Moreover, different critical thresholds were identified, depending on the nature of metrics, suggesting that it is difficult to define a single global target for fishing management as it ultimately will depend on management and conservation objectives. Overall, this study suggests that fishing can affect the functioning of fish assemblages and could consequently change the resilience of marine ecosystems, therefore, research that focus on the use of indicators as warning tools deserves our better understanding.

P3.19

From an antagonistic to a synergistic predator prey perspective: Bifurcations in marine ecosystems

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"From an antagonistic to a synergistic predator prey perspective: Bifurcations in marine ecosystems" is the title of a book that will be published by Elsevier in 2014. The book presents predator-prey synergism as a novel perspective in ecology, defined as predator-prey relationships enhancing abundances of both predator and prey. The idea emerged during analyses of near-century long time series of observations of marine coastal ecosystems, but it is suggested that synergism may be important in some terrestrial systems too. Predator-prey synergism has wide-ranging implications for management of marine ecosystems and for theories in ecology and evolution. Resilience in marine ecosystems may be explained mechanistically by synergism, as may repeated incidents of bifurcations observed in the long time series. Bifurcations are sudden and persistent regime shifts as a result of gradually changing environmental conditions. It is suggested that global warming may induce bifurcations which in turn may result in recruitment failures in fishes and substantially reduced fish abundances.

P3.20

Population dynamic and trophic position of mysid community demonstrates its key role for nursery function in a temperate estuary

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Guadalquivir Estuary is a main nursery ground of marine goal species for Gulf of Cadiz fisheries. It is a well-mixed temperate estuary with horizontal salinity gradient and clear seasonal water temperature trend. Mysid community with *Mesopodopsis slabberi*, *Neomysis integer* and *Rhopalophthalmus tartessicus* make up to over 80% of total macrofauna biomass in the estuary. Life history, population structure, secondary production, trophic level and community spatio-temporal dynamic were unravelled combining analysis of long term 16y monitoring data with 2y of in depth population analysis and trophic biomarker studies. Results show a key trophic role in food web, a seasonal trend showing density peaks (23, 3 and 6 mg/m³, respectively) in spring-summer and winter marine coastward migration. Despite being euryhaline, the three species of showed unevenly spatial distribution, being salinity the variable best explaining structure changes of mysid assemblage. Inter- and intra-specific euryhalinity differences both for prey and predators seem to determine the entire spatial estuarine community distribution. High secondary production (P/B rates 38.2, 10.3 and 10.7) and food web studies confirm key role of mysids transferring energy up to juveniles (fish and crustaceans) arriving yearly in spring to their nursery area.

P3.21

Microbiological Transport in Negro River Estuary, Argentina

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The Negro River Estuary is a micro to meso tidal influenced estuarine system in a semi arid region in North Patagonia Argentina. The status of its quality waters has raised interest in the last years by increased uses, urban, agriculture, fishing and nautical sports of international levels. Waters samples were taken from spring 2011 to autumn 2013 to determine microbiological transport among Guardia Mitre and Atlantic Ocean zone. Total coliform, fecal and *E. coli* were examined by NMP per 100 ml in relation to environmental parameters and point sources. The Pearson correlation was typically significant with temperature, and preliminaries results revealed *E. coli* survived in winter months at low temperatures (maximum level of 93 NMP/100 ml) and had negative correlations with other anthropic and environmental parameters.

P3.22

Estuarine Mysids as key prey for anchovy juveniles

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Previous studies on feeding habits of European anchovy *Engraulis encrasicolus*, carried out in open sea, described it as a strictly zooplanktivorous species, with copepods their main prey from larvae to adults. Nevertheless the analysis of the stomach contents of a total of 1836 individuals (from 18 to 131 mm total length) collected monthly (from February 1998 to January 1999) at the Guadalquivir estuary (SW Spain) revealed that estuarine mysids play an important role in their diet. Inside the estuary, the smallest individuals analysed (postlarvae) fed mainly on copepods, but as they grew into juveniles they shifted to mysid. In fact, estuarine mysids represented 76% of dietary composition, in terms of biomass, of juveniles (total length > 40 mm), being *Mesopodopsis slabberi* the main prey species (46%). During last 16 years, from June 1997 to date, abundance of anchovy and mysids have been monitored by monthly sampling in the estuary. This time series has pointed out the role of the estuary as an important nursery ground for anchovy. The seasonal coincidence of maximal anchovy and mysid densities suggests that food availability may be a principal factor influencing that nursery function.

P3.23

Invasive species and climate change: an assessment of the global distribution of *Undaria pinnatifida* for present and future times

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