habitats sampled, and the population dynamics was spatially and temporally synchronized in all habitats sampled. The only habitat patches clearly differing were the clay patches, supporting amphipod densities exceeding the highest recorded in the literature. Possible reasons and consequences of the surprisingly similar ecological functions provided by the physically different habitats within patchy seagrass beds are discussed.

Assessment of a Trophic Cascade Model in a Temperate Seagrass System under a Natural Nitrogen Gradient

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The decline of seagrass systems was traditionally conceived under physico-chemical control. The importance of top-down processes was recently recognized. In order to test a trophic cascade model which postulates that an increase of small fish predators control the abundance of mesoherbivores leading to epiphyte algal overgrowth and seagrass loss, we assessed the effect of a small fish on the growth of *Zostera marina*. The experiment took place in San Quintin Bay, a "Y" shape coastal lagoon in Baja California (Mexico), in July 2001 during upwelling conditions. We selected three seagrass meadows representing a fertilization gradient: base Y, BY (maximum), west arm, BF (intermediate), and east arm, SQ (least). To corroborate spatial differences of inorganic nutrient concentrations we carried out three semidiurnal time series at 3 hr intervals in each meadow. Samples for nitrites + nitrates, ammonium, phosphates and silicates concentrations, among other variables, were considered. After 30 d, the growth of *Z. marina* leaves inside cages with 40 individuals m^{-2} of the pipefish *Syngnathus leptorhynchus* (inclusion treatment, I) was compared with the one in cages without the fish (exclusion treatment, E; $n = 4$). Nitrites + nitrates mean concentration was significant higher in BY (1.55 μM) than in BF (0.80 μM, $P = 0.02$) and SQ (0.51 μM, $P < 0.01$; $n = 14$). Seagrass growth differed both between meadows (BF > BY, $P = 0.03$) and treatments. At BY, inclusion of the fish resulted in reduced seagrass growth ($P = 0.02$): 1.4 cm d^{-1} $shoot^{-1}$, compared to 2.9 cm d^{-1} $shoot^{-1}$ in E treatment. At BF and SQ the inclusion of the fish did not have effect on seagrass growth ($P > 0.05$), I: 2.9 and 2.8 cm d^{-1} $shoot^{-1}$ vs E: 3.8 and 2.3 cm.d^{-1} $shoot^{-1}$, respectively. These results suggest that top-down control of *Z. marina* growth varies as a function of nutrient status in San Quintin Bay meadows. To evaluate this hypothesis we are, at present, repeating the experiment under low nutrient conditions, winter months.

Structural Characteristics of Two Different Bed Types of *Posidonia oceanica* (L.) Delile

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Seagrass beds occur in various structural forms, ranging from small patches to continuous beds. Such variability has identified seagrass habitats as ideal models for the study of marine landscapes. Understanding the ecology of different seagrass landscapes enables an assessment of changes in the diversity of associated fauna and flora that may result from habitat fragmentation and forms a basis for the implementation of successful conservation and management strategies. The endemic Mediterranean seagrass *Posidonia oceanica* forms dense and extensive monospecific meadows that occur in several different morphotypes, including reticulate (seagrass interspersed with bare sand) and continuous beds. This study examined whether nearshore reticulate and farshore continuous *P. oceanica* beds, located adjacent to each other and at similar depths, had different meadow structural characteristics. Bed structural descriptors, including shoot density, number of leaves per shoot, mean leaf length and shoot dry weight, were estimated from *P. oceanica* shoots collected from adjacent reticulate and continuous beds at three different spatial scales: (i) tens of meters; (ii) hundreds of meters; and (iii) a few kilometers. Results of 2-factor ANOVA (factor 1 = bed form; factor 2 = sampling locations) carried out at the three spatial scales indicated a significant interaction for shoot density ($P < 0.05$) but not for the other bed descriptors. Overall, the study suggests that continuous and reticulate *P. oceanica* beds have similar bed structural characteristics and that habitat structural complexity of the foliar stratum does not differ appreciably between the two different bed types. The findings are discussed in the light of available data on *P. oceanica* landscapes and the relevance of the obtained results for conservation and management of this seagrass are highlighted.

Distribution Pattern of Fish in Seagrass Beds Along the Swedish West Coast

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The diversity and richness of the fish fauna in seagrass beds may be of considerable importance throughout the world. Besides the many stationary species, temporary and transient fish may utilize seagrass habitats as spawning and nursery grounds, foraging areas as well as predation refuges. In the present study, we examined the distribution patterns of fish in eelgrass (*Zostera marina*, L.) beds along the Swedish Skagerrak coast. Spatial variation in abundance of fish was investigated on local scales (20 km) in three fjord systems, and on a regional scale (200 km) in three areas along the coast. Temporal variation was studied in the three fjord systems from June through Oct.. Species composition was shown to differ between regions, the three fjord systems, and inner and outer parts of those fjord systems. Generally, there was a trend showing an increase in fish density over time during the recruitment period, while the species diversity and individual sizes was relatively stable. The fish density ranged on the local scale from 0.19 to 15.13 fishes/m^2 and the mean for the three regions were 2.88, 7.94 and 11.42 fishes/m^2, respectively. For all areas and sampling occasions, 41 species were identified belonging to principally gasterosteidae (53%), gobidae (39%), syngnathidae (2.4%), labridae (2.2%) and gadidae (1.8%). In addition, gut content of five important fish species was analyzed in order to classify them into trophic categories and ascertain their functional role in the seagrass ecosystem. The result indicates that different feeding niches were exploited for the most abundant fish species associated to eelgrass beds along the Swedish Skagerrak coast.

A Portable Drop Net: A New Sampling Gear of Fauna in Water Column at Seagrass Beds

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To quantitatively collect fish and invertebrates at seagrass beds, a portable drop net system was modified. The net is 3 × 3 m and 1.1 m in height with steel chain attached at the bottom edge of skirt net. The net has a ceiling net that enables to capture some fauna escaping from the top at seagrass beds deeper than 1 m. Two people on a small boat can handle the net. Capture efficiency, which was estimated by a maximum likelihood method, was high for pelagic fish such as *Myoxocephalus brandti,* and *Hexagrammons octogrammus.* Efficiencies for demersal fish such as *Pleuronectes obscurus* and *P. pinnifasciatus,* and for fish that inhabit near the bottom such as *Pholis crassispina* and *Opisthocentrus dybowskii* were relatively low, due to escape at the bottom of skirt net. Similarly, *Pandalus kesslerei* which is closely associated with seagrass leaves showed high capture efficiency and *Crangon* spp. which resides near the bottom showed low efficiency. By using the capture efficiencies, faunal biomass at a seagrass bed in northern Japan was estimated. In May 2000, *Pandalopsis pacifica* was the most abundant in number followed by *P. crassispina, Crangon* spp., *M. brandti.* As biomass basis, *Zoarces elongates* was the highest and *M. brandti* followed. Biomass we obtained was higher than those estimated by a trawl sampling, suggesting that the drop net is a more suitable gear to know faunal biomass at seagrass beds.

Seagrass Biomass and Faunal Abundance in Laguna de Alvarado, Mexico

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The relationship between habitat and fauna has been of long-standing interest in a variety of aquatic environments including seagrass beds. The coastal lagoon of Alvarado is small, oligo-mesohaline and