hypothesis. In our first hypothesis, exemplified by the metaphor of the "low-hanging fruit", the lion's share of our capacity to explain and predict is made possible by long-established theories. The "explanation of residual variation" described by Patten and Hartnett could have been substituted with our use of the term "marginal explanatory power". We did not, however, speculate on the advent of a "paradigm shift" in ecology or the advent of a new crop of fruit.

We do not identify as philosophers or historians of science, but we do feel the portrayal by Patten and Hartnett of "paradigm shift" in contrast to "normal science", sensu Kuhn, is not entirely adequate, even if this distinction may be highly subjective. We would suspect that paradigm shifts are accompanied by leaps in R^2 in the specific context that the advancement applies. While the discovery of relativity could undoubtedly be labeled a "paradigm shift", it is not because this theory offered a step improvement on Newton's theories. Rather, Einstein's theory provided explanatory and predictive power ($R^2 \rightarrow 1$) in a context where Newton's theory failed ($R^2 \rightarrow 0$) – the prediction and explanation of the movement of extremely large objects or movement at extreme speeds – while also providing explanation and prediction in all contexts where Newtonian physics had not been falsified. The effect of "paradigm shifts" on explanatory power or complexity is a suitable question for future metaknowledge studies.

We likely have not presented an exhaustive list of the possible mechanisms for the observed trends in R^2 and number of P values in ecology. These trends may be best explained by hypotheses that make reference to "normal science" and "paradigm shifts" as suggested by Patten and Hartnett, beyond what is included in the "low-hanging fruit" hypothesis. We would suggest that further metaknowledge studies are required to discern between proposed hypotheses and to accurately describe the state of our discipline.

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doi:10.1890/14.WB.015

Rapidly spreading seagrass invades the Caribbean with unknown ecological consequences

The non-native seagrass *Halophila stipulacea* has spread rapidly throughout the Caribbean Sea (Willette *et al.* 2014); without additional research, the ecological ramifications of this invasion are difficult to predict. Biodiversity, connectivity of marine ecosystems, and recovery of degraded coral reefs could all be affected. The invasive seagrass, native to the Red Sea and Indian Ocean, has taken over sand bottoms and intermixed with or replaced native seagrasses, including *Thalassia testudinum*, *Syringodium filiforme*, and *Halodule wrightii* (Figure 1).

H stipulacea is an established invasive species in the Mediterranean Sea, probably introduced after the opening of the Suez Canal. Competition between *H stipulacea* and native Mediterranean seagrasses is minimal to absent due to habitat preferences; *H stipulacea* grows in deeper, bare sand habitats and over submerged dead mats of native seagrass (Sghaier *et al.* 2011). The only other known invasive seagrass species, *Zostera japonica*, has displaced a native seagrass at some locations off the coast of the Pacific Northwest (Jun Bando 2006). Experimental introduction of *Z japonica* to bare mud flats increased the density and number of animal species observed therein (Posey 1988). Sediment disturbance, such as the excavation of underwater substrate by storms, provides an advantage to both of these faster-growing invasives over their native counterparts (Jun Bando 2006; Willette and Ambrose 2012).

In the Caribbean, *H stipulacea* could stabilize previously unvegetated sand bottoms, thereby reducing erosion of nearby coastal shorelines during storm events, which are expected to become more frequent and stronger under a changing climate. Improved understanding of the potential effects of this invasive seagrass in the Caribbean requires more

Figure 1. *The invasive seagrass* Halophila stipulacea *(bright green, short elliptic/oblong blades 3–8 cm long, with distinct mid-veins) growing intermixed with* Thalassia testudinum, Halodule wrightii, *and* Syringodium filiforme *near St John, in the US Virgin Islands.*

data on herbivory rates, selective feeding, and relative nutritional values of the native and introduced species. For example, the proximity of seagrasses, mangroves, and coral reefs in the Caribbean supports high levels of fish biomass and diversity (Nagelkerken *et al.* 2001), which could decline if the invasive seagrass reduces the extent of native seagrasses, if native seagrasses are preferred by herbivorous fish, or if native seagrasses provide superior nutrition.

Recovery of degraded coral reefs (Jackson *et al.* 2014) could be either hindered or promoted indirectly by the spread of this invasive seagrass, depending on its effects on the abundance and diversity of herbivorous fish and sea urchins that, by feeding on algae, open up substrate for coral recruitment and growth. Preliminary data from experimental fish traps placed in seagrass beds dominated either by *H stipulacea* or by *S filiforme* showed the former had larger individual fish, fewer juvenile fish, and more fish species (Willette and Ambrose 2012). Notably, few herbivorous fish were caught in traps within either of these seagrass beds. Moreover, a significantly greater abundance of epibiotic (surface-attached) organisms – particularly members of the Crustacea, many of which serve as important prey species for fish – was associated with the invasive seagrass (Willette and Ambrose 2012). More data are needed on the role of *H stipulacea* beds as nurseries and foraging areas for parrotfish, green sea turtles, sea urchins, and other herbivores.

Further research is also required to determine whether positive effects of the spread of this seagrass outweigh the negatives and what, if any, management actions should be taken. Given the rapid spread of *H stipulacea*, only weekly monitoring of bays and removal of the invasive would keep it from getting a foothold. Physical removal of the seagrass after it has become established, however, would likely not be feasible due to logistic and monetary constraints.

H stipulacea now joins a growing list of habitat-altering species, including the Indo-Pacific lionfish (*Pterois volitans*), invading the Caribbean.

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doi:10.1890/14.WB.016