Interactions between two endangered butterflies and invasive, exotic grasses in western Oregon, USA

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Invasion by non-native animals, plants, and pathogens is a burgeoning problem in many areas of the world (Kolar and Lodge 2001). While many species brought into a new habitat do not become invasive, there appear to be a growing number of species that can severely disrupt ecosystem functioning (D'Antonio and Vitousek 1992, Shafroth et al. 2005) and displace native species, culminating in a local loss of biodiversity (e.g. Schooler et al. 2006). While cheat grass (*Bromus tectorum*) may change fire return intervals in the Great Basin of western North America (D'Antonio and Vitousek 1992) and saltcedar (*Tamarisk* spp.) may disrupt water regimes in the desert southwest (Shafroth et al. 2005), native animals and plants frequently coexist with these exotic, invasive species and evolve relationships that may enable native species to persist (Shapiro 2002, Shafroth et al. 2005). Increasing pressure on rare, threatened, and endangered species from habitat loss, fragmentation, degradation, land conversion, and global climate change places a premium on the understanding of species-species interactions. If we are to successfully manage threatened and endangered species, an understanding of interactions between species that either limit or enhance rare species survival and reproduction is essential.

Remnant grasslands of the Pacific Northwest in North America are often dominated by exotic plants to such a degree that grasslands with >20% of the total species richness belonging to exotic species may be considered "high quality habitat" (personal observation). Native grasslands in western Oregon, USA, are heavily dominated by exotic plants, both forbs and graminoids (Clark and Wilson 2001, Lawrence and Kaye 2006). Exotic grasses and invasive woody plants can quickly overrun the historically bunchgrass dominated prairies and appear to outcompete many native grassland plants (Wilson and Clark 2001). Population persistence of two endangered butterflies from western Oregon, Fender's blue butterfly (*Plebejus icarioides fenderi*) and Taylor's checkerspot (*Euphydryas editha taylori*), may be negatively impacted by the relatively recent invasion of exotic grasses. I compare how the dominance of exotic grasses threatens the persistence of Fender's blue and Taylor's checkerspot butterfly populations and highlight the key interactions that appear to impact butterfly reproduction. By presenting these two case studies, I hope to provide land managers and conservation biologists with concrete examples of how studies targeting species-species interactions may benefit conservation in our rapidly changing ecosystems.