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Complex Effects of Payment for Ecosystem Services in Rural Areas

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Ecosystem degradation is one of the greatest global crises of our time. To address this issue, many governments have implemented payment for ecosystem services (PES) policies in rural areas to encourage eco-friendly activities, often with complex effects on rural sustainability. Although many studies have estimated the socioeconomic and ecological effects of PES policies, some complex ones remain understudied. In this talk, we present two such complex effects: the spatial spillover effect (effect of changes on targeted land induced by PES policy on surrounding non-targeted land) and feedback effect (effect of changes induced by PES policy on the policy itself). We demonstrate these two complex effects with one of the world's largest PES policies — the Grain-to-Green Program (GTGP) using data collected in China's Wolong Nature Reserve (Wolong) for giant pandas (*Ailuropoda melanoleuca*). Our results show that afforestation on marginal cropland promoted by the GTGP has spilled over to nearby remaining cropland and significantly intensified crop damage by wildlife there, generating unintended costs borne by local communities. We also found the intensified crop damage on remaining cropland induced by the current GTGP increased local households' willingness to enroll it in possible future GTGP, indicating a positive feedback exists. Our study highlights that PES policies can cause complex human-nature interactions in rural areas and generate unexpected outcomes. Scientists, policy makers, and conservation practitioners should consider these complex effects in the design and management of PES policies to achieve sustainable development goals in Wolong and many other parts of the world..

3 p.m. - 4 p.m. Wednesday March 29, 2017

273 Giltner Hall

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