

The Economic Valuation of Pollinators for Southeast Asia: Philippines and Vietnam

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Pollination is one of 17 recognized Ecosystem Services (ES). Pollination is critical for natural plant communities. In temperate regions, approximately 78% of angiosperms rely on pollinators and in tropical systems 94% of angiosperms rely on pollinators. In a recent publication by Ollerton *et al.* (2011), they asked how many plants worldwide are animal pollinated angiosperms? They



found that 87.5% of approximately 352000 angiosperms need pollinators. Specifically for agricultural production, 75% of our crop species need pollinators for fruit and seed production. In terms of volume, that equates to only 35% by volume largely due to the massive production of wind-pollinated staple crops such as cereals and sugarcane.

Unfortunately, we are in the midst of a pollinator crisis. There are reported disruptions to pollinator systems and evidence of pollinator declines for every continent with the exception of Antarctica. The consequences of these declines could be reduced crop yield and/or quality, parallel declines in natural plant communities and the extinction of plants that rely on specialist pollinators.

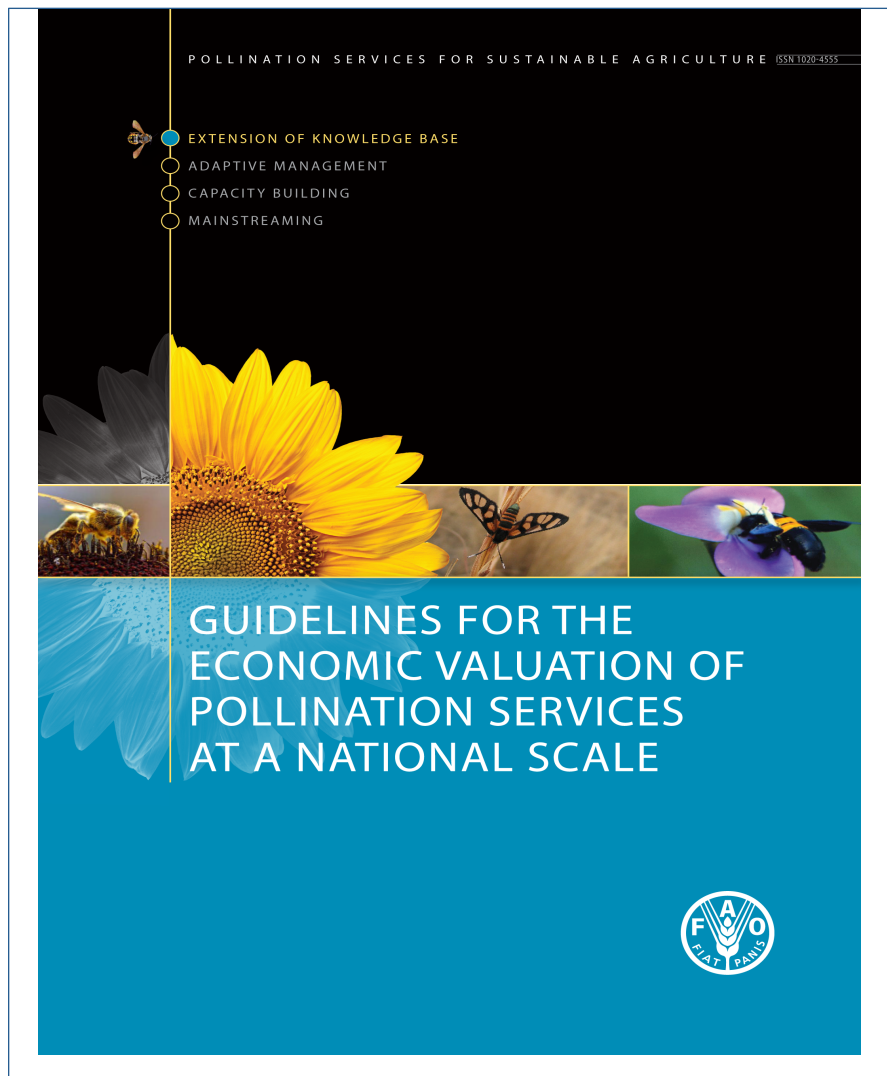
We know that pollinators are important and are linked to crop production and habitat integrity but what actions and steps are we taking to research and protect their populations? One method is to evaluate pollinator services in monetary terms because monetary valuation dictates policy decisions and environmental conservation management decisions. Economic valuation is an assessment tool that allows us to monitor pollination services, their declines, and their impact on crop production if decreased.

The global community has recognized the importance of pollinators. Together with GEF and UNEP, the FAO started the Global Pollinator Project to identify practices and build capacity in the management of pollinator services. Seven countries were involved in this Global Pollinator Project: Brazil, Ghana, South Africa, Kenya, India, Pakistan, and Nepal. Further action was developing to protect pollinator services; at the CBD COP 5 (COP 5

decision V/5) in 2000, the International Pollinator Initiative (IPI) was established. At the CBD COP 6 meetings a plan of action was developed for the IPI.

The Plan of Action included: 1) Monitor pollinator decline, its causes and its impact on pollinator services, 2) address the lack of taxonomic information on pollinators, 3) assess the economic value of pollination and the economic impact of the decline of pollination services, and 4) promote the conservation and the restoration and sustainable use of pollinator diversity in agriculture and related ecosystems. Currently, the IPI includes 5 participating regions: Europe, North America, Brazil, Africa and Oceania. Asia and Southeast Asia are regions that are not currently participating in any known large-scale pollinator conservation programs. To date we do not know information regarding pollinator communities or their services for this region of the world. The first step in addressing this issue is perhaps to calculate the economic valuation of pollinator services in this region for justification of more research and effort.

The FAO, in collaboration with scientists Nicola Gallai and Bernard Vaissiere produced an analytical tool entitled “Guidelines for the Economic Valuation of Pollinator Services at a National Scale.”



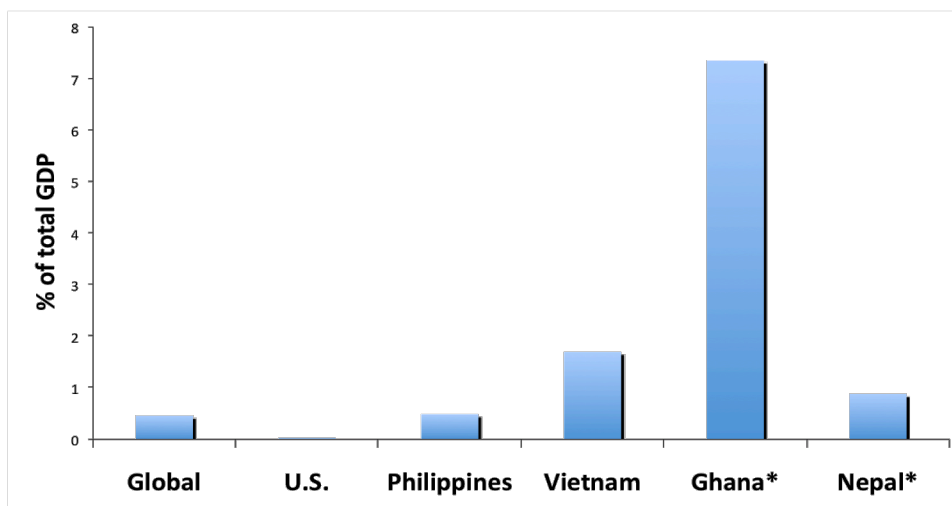
Our objectives of this study were to 1) Test the economic tool produced by the FAO to calculate the total economic value of insect pollination in Southeast Asia using the Philippines and Vietnam as representative countries, 2) to look at relative ratios of non-pollinator and pollinator-dependent crops for these two countries, and 3) to examine the relative economic value of pollinator services against GDP for these countries.

We hope that these analyses and their results will help promote awareness and/or initiate much needed pollinator research in Southeast Asia.

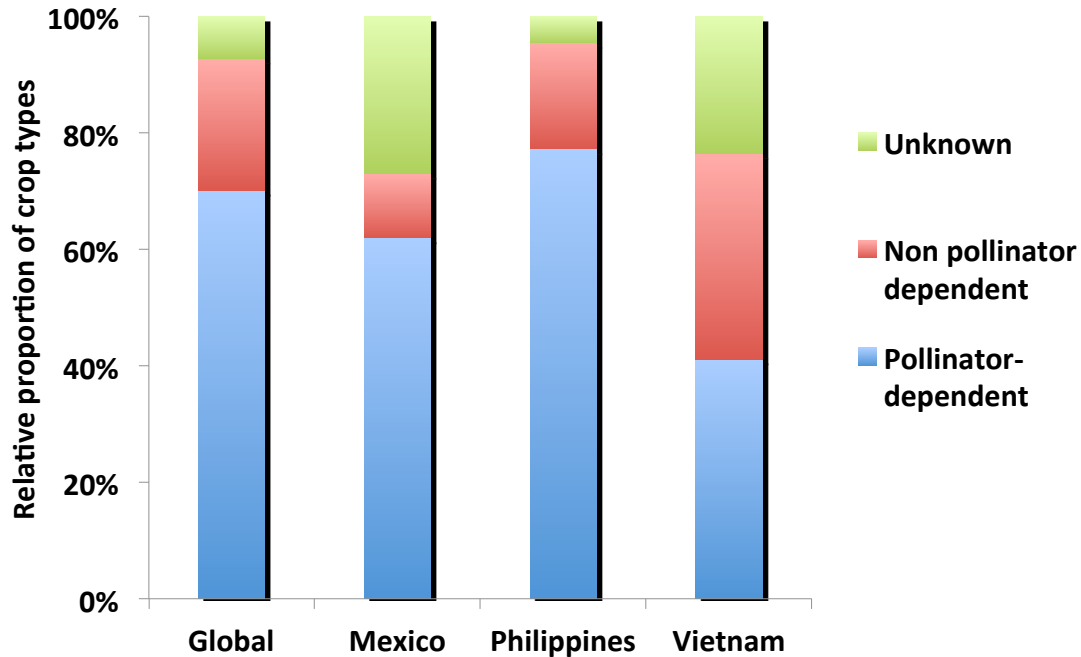
Results

Using disaggregated crop data for the Philippines, we calculated the Economic Value of Insect Pollination (EVIP) to be \$702.8 million (US) for 2009. When we use the FAO economic tool, we get an EVIP of \$710 million (US) for 2009 for the Philippines. This two values are within 1.1% of each other, which means this economic tool works to estimate EVIP. Subsequently, we then used the economic tool to calculate EVIP for Vietnam. Vietnam had an EVIP of \$1.76 billion (US) for 2010.

These EVIP values don't mean very much unless we are able to put them into context. There was EVIP data available for the United States, global values, Nepal and Ghana. The chart below shows EVIP values against GDP.



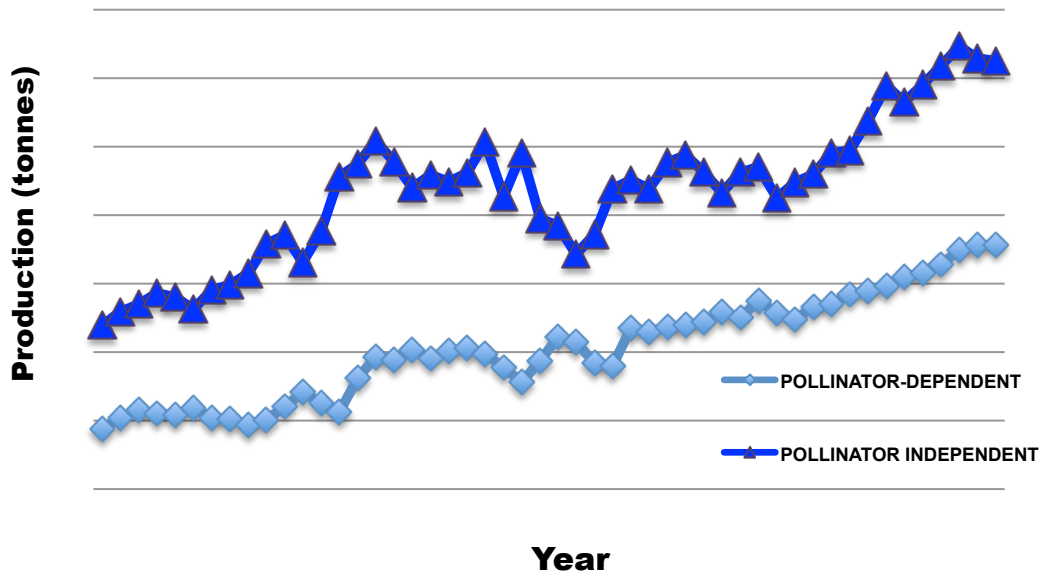
The chart below shows the relative ratios of pollinator-dependent and pollinator-independent crops. The Philippines has a higher proportion of pollinator-dependent crops compared to both global proportions and Mexico. For Vietnam, there are a large proportion of crops grown which have an unknown dependency value on pollinators.



This graph shows that in the midst of an ever-growing pollinator crisis and decline, countries would not suffer equally and some countries are more vulnerable to pollinator declines than others.

The following are crop trends (below) are for both the Philippines and Vietnam. Over approximately 5 decades for both countries, pollinator dependent crops and pollinator dependent crops are on an increasing trend. Therefore, the future forecasts predict increases of both crop categories.

CROP TRENDS FOR THE PHILIPPINES (1961-2010)



CROP TRENDS FOR VIETNAM (1961-2010)

