

## **Who Speaks For The Bees? Narratives of Pollinator Protection in Public Policy**

Robin Denise Katz

### **ABSTRACT**

Bees are in crisis globally, facing devastating population declines due to land development, agricultural practices, climate change, habitat fragmentation, and competition from non-native species. In response, members of the scientific and agricultural communities have sought drastic policy changes and legislation to protect pollinators. I compared pollinator protection recommendations offered by the scientific community and the contents of conservation policy, focusing on how and why policy-makers have disproportionately emphasized conservation of managed honeybee populations rather than native bees. I analyzed narratives from six sectors with a stake in the pollinator policy debate: business interests (agriculture, beekeeping, and food industry), politicians, scientists, the popular press, resource managers, and conservation-based NGOs. I used a policy narrative analytical approach designed to track the role of specific stakeholder arguments and ideas in influencing action taken by policy makers.

### **KEYWORDS**

pollinators, colony collapse disorder, Farm Bill, narrative policy analysis, habitat conservation

## INTRODUCTION

Bees are in crisis globally, facing devastating population declines due to land development and agricultural practices, climate change, habitat fragmentation, and competition from non-native species (Goulson, Lye, & Darvill, 2008). The number of honeybee colonies in the United States has fallen by 55% since the 1980s, with a 36% loss over winter 2007-2008 alone (vanEngelsdorp et al., 2008). Since 2006, honeybee and native bee populations and colony stability have been devastated by colony collapse disorder (CCD), the sudden mass abandonment of formerly thriving colonies with no trace of dead bees surrounding them, caused by a combination of issues including pesticides, parasites, habitat reduction and fragmentation, competition, and reduction of nutrient resources (Kremen & Ostfeld, 2005; National Resource Council, 2007; Naug 2009; Goulson et al., 2008). Many species of native bumble bees have seen significant declines in the last decade, but insufficient data makes measurement of these declines difficult (NRC, 2007, pg 44). However, our dependence on pollinators is well understood. In the US, over 30% of the food we consume requires bee pollination (Buchmann & Nabhan, 1996; McGregor, 1976; National Research Council 2007). Economic losses to agriculture from honey bee decline range between \$5-15 billion annually (Southwick & Southwick, 1992; Allen-Wardell et al., 2008, Goulson et al., 2008). Despite reduction of global honey bee stocks, pollinated crop agriculture continues to grow due to its high value, exacerbating the pollinator shortage and leaving food production more dependent on the already vulnerable honey bee (Aizen, 2009). Increased acreage under cultivation has reduced areas for wild vegetation, jeopardizing the ability of native pollinators to serve as backup (Aizen, 2009). The continuing cycle of increased agricultural bee dependence and the reduction of pollinator availability will lead to serious food security issues for high value crops (such as almonds, tomatoes, and watermelon), unless actions are taken in the agricultural and governmental sectors to protect pollinators, and pollinator habitat (Aizen, 2009; Winfree, 2007; Klien et al, 2007; Allen-Wardell et al., 2008).

Members of the scientific and agricultural communities have sought drastic policy changes and legislation to protect pollinators for reasons including agricultural productivity, food security, and preservation of biological diversity. While honeybees have been of particular concern to beekeeping and agricultural interests, the scientific community has highlighted conservation of native habitat and vegetation as a possible solution to encourage wild pollinators

as an alternative to honeybees (Winfree et al., 2007; Kremen et al., 2002). Wild bees provide pollination services equal to those of managed honeybees on many high value crops, and are more resilient to habitat changes (Winfree, 2010). To address pollinator population decline and alleviate impact on agriculture, the National Research Council in *The Status of Pollinators in North America* (2007) and *The Forgotten Pollinators* (Buchmann & Nabham, 1996) emphasizes the need for conserved natural habitat with native vegetation, more funding to investigate the causes of bee and colony decline, and a switch from the imported, managed honey bee to native, wild pollination.

Pollinator protection efforts, such as the “Forgotten Pollinators” campaign in the early 1990s, and the 2007 National Research Council recommendations, brought recognition of the plight of the bees and prompted politicians to tackle the issue in 2007 (Byrne & Fitzpatrick, 2009; Coenen-Davis, 2009). The Pollinator Protection Act and the Pollinator Habitat Protection Act were passed under the 2007 Farm Bill, putting pollinator conservation policy on paper, yet specifying no programs and allocating no funds (Coenen-Davis, 2009). While ongoing research continues to assess bee species and habitat declines from an entomological and ecological standpoint (Klien et al, 2007), studies of the policy content and processes of federal and state legislation and programs themselves have been scarce, with a notable lack of research investigating whether policies follow the recommendations of the scientific community that brought the crisis to light (Byrne & Fitzpatrick, 2009; Coenen-Davis, 2009). Pollinator policy impacts at the state level have also been understudied. Research on the affects of national and local level pollinator policy on support of native versus honeybee habitat conservation would shed light on the nature of political impacts on pollinator conservation and its potential for success.

I compare pollinator protection recommendations offered by the scientific community and the contents of conservation policy, focusing on how and why policy-makers have disproportionately emphasized conservation of managed honeybee populations rather than native bees. Second, I seek to determine how the pollinator protection provisions in the Farm Bill affect policy and pollinator conservation project implementation, in an effort to understand whether it can help alleviate honey bee dependence and contribute to an informed political effort to improve pollinator dependent agricultural sustainability.

## APPROACH

I analyzed narratives from six sectors with a stake in the pollinator policy debate, using a policy narrative analytical approach designed to track the role of specific stakeholder arguments and ideas in influencing action taken by policy makers (Roe & Eten 2004). I used national and California state level agriculture and conservation pollinator conservation policy as my object of study, incorporating literature and testimonies from six stakeholder groups that inform and are affected by pollinator policy.

I collected literature political policymakers, scientific community, agricultural interests, popular press, conservation based NGOs, and resource managers. I analyzed documents including the Pollinator Protection Act and the Pollinator Habitat Protection Acts, which were folded into Farm Bill 2007 and Farm Bill 2008, transcripts and recordings from congressional hearings discussing pollinator policy including the Pollinator Acts, and reports distributed to policymakers through the Congressional Research Service. (Cowen & Johnson 2008; Johnson 2010;). These documents were obtained through searches of Lexis Nexis government document archives and CSPAN transcripts and footage for “pollinator,” “honeybee,” and “colony collapse disorder” (Cordoza 2007). Using the narrative policy analysis approach suggested by Roe (1994), I categorized the types of arguments and solutions included in the policy documents according to whether they will most clearly support native and wild bee or managed domestic bee conservation, or both. I used literature from other stakeholders as a comparison point for which ideas were selected for inclusion or exclusion, and reviewed testimonies from various actors substantiated why such selections were made.

With categories of supported pollinator protection elicited from the political policy literature, I selected various inputs and responses to the bill from the rest of the stakeholders. I compared arguments inherent in each of the stakeholder groups with those made in the bills and policymaker documents. I also assessed the relative positions taken by each stakeholder in terms of the support their arguments held for native versus managed bee solutions. I analyzed major scientific publications including *The Forgotten Pollinators* by Buchmann & Nabhan (1997), *The Status of Pollinators in North America*, published by the National Research Council (2007), and other scientific articles highlighting the decline and proposed solutions for bee decline. I also explored the arguments of agricultural businesses and associations, such as the American

Beekeepers Association and various pesticide companies, popular press articles such as Colony Collapse Disorder editorials in the *New York Times* and reviews from *Bee Culture Magazine*, and statements from conservation and bee based NGOs such as the Pollinator Partnership, and the Xerces society (native bee education and advocacy). I selected documents based on their relevancy for making recommendations for or responding to pollinator protection policy.

## RESULTS AND DISCUSSION

### **The Farm Bill**

I found that the final Farm Bill included sections that recognize the value of both managed and native pollinators. Funding is allocated for research of both managed and native bees for physiology, toxicology, and habitat related influences. Honey bee and native bee research funds are appropriated from the same pool, and are given differing research focuses. Native bee research recommended in the bill would focus on crop pollination and habitat conservation potential, while honey bee research would focus on bee biology, immunology, ecology, genomics, and bioinformatics. Native bee habitat conservation is also added as a priority to existing conservation programs.

Looking at recommendations made by each of the six stakeholder sectors, I found that the categories of solutions they supported differed based on their individual needs. The food/beekeeping industry strongly favored managed bee research, as well as research into pesticide and pathogens. Ecologists and conservation based NGOs supported funds towards research and establishment of habitat protection areas for native bees. The popular press and politicians emphasized identifying and solving the causes of colony collapse disorder.

### **Stakeholder Testimony**

On review of testimonies from congressional hearings on pollinator health and policy recommendations, I noticed various stakeholders had differing responses for why certain arguments were used and included in the bill. Beekeeping interests stated that the importance of managed bee research and funding was due to the reliance of the agricultural industry on already

existing systems and markets. Those from the academic research community had differing answers to where funding should be allocated depending on their disciplines. Popular press and politicians discussed how the public wanted answers and a conclusion to the threat of CCD.

### **Narratives of Loss of Livelihood: CCD Ruining Lives and Traditions**

The beekeeping, agricultural, and food industry sectors, as well as politician reflections of constituents, framed the pollinator debate in terms of the need for preservation of traditional practices and livelihoods. The testimonies of farmers and beekeepers were distinct in that they contained narratives that CCD resulted in loss of livelihoods. The effects of CCD, as well as the outcomes of pollinator protection policy, were framed as having deeply personal implications, as opposed to universal impacts discussed by the other stakeholders. This is demonstrated by three invited beekeepers, including Richard Adee, beekeeper speaking on behalf of the American Honey Producers Association (Cordoza 2007). According to Adee, honey beekeeping has been declining for some time before CCD, but the recent drops are the biggest threat to traditional beekeeping institutions. Putting beekeeping families at the center of the discussion, he warns that unless CCD and pollinator declines are solved quickly, beekeepers will no longer be able to support their families, causing their children to choose alternative careers, ending a lineage of beekeepers that are unlikely to be replaced, and increasing demand on and for bees. Adee's policy recommendations follow from the idea of preserving traditional beekeeping, and thus preserving the livelihoods and traditions that the industry has long relied on. These included research into CCD solutions, subsidies for bee losses, and controls for better honey prices for producers, and public support and increased consumption of locally produced honey.

### **Narratives of Sustainable Pollinator Alternatives: Native versus Introduced**

Counter to the narrative of loss of livelihood is the implication that the traditions of beekeeping and pollination had significant systemic issues before CCD, and alternatives to traditional pollination are needed to protect pollinators and preserve the industry. These narratives were present in testimonies by native pollinator researchers and conservation based NGOs, and had foundations in the 1990s following the Forgotten Pollinators campaign by pollinator researchers (Buchmann & Nabham, 1996) Testimonies from May R. Berenbaum,

professor from the Department Of Entomology at University Of Illinois At Urbana-Champaign, and Laurie Davies Adams, Executive Director of the NGO Coevolution Institute (CoE), recommended that the bee declines were part of larger pollinator management issues: reliance on a single introduced species, and land management practices unfavorable to pollinator survival. Reliance on a single imported species has created economic and ecological issues, including but not limited to importing foreign pollinator diseases, disturbing native ecosystems and threatening native species. According to the testimonies, research has demonstrated wild pollinators have the potential to be effective honeybee alternatives for many high value crops if managed properly, but have yet to be used due to farmers and beekeepers reliance on “traditional” means. By encouraging farmers and beekeepers to use pollinator friendly vegetation and habitat preservation near to the crops, there is potential to become less reliant on importation, while improving pollinator health, diversity, and productivity.

### **Narratives Included in Farm Bill 2008**

The policies laid out in the Farm Bill contained recommendations and recognition supporting each of the two primary pollinator protection narratives separately, but in doing so faced an issue of coherency (Farm Bill 2008). Pollinators were given recognition as crucial actors. Money was set aside for research for pollinator biology, colony health, investigations into CCD causes and solutions, and best practices of bee friendly habitat conservation, which benefitted both traditionally managed honeybees and native pollinators. However, the focus of the pollinator provision for addressing CCD seems to indicate siding with the narrative protecting the traditional beekeeping practices, as the policy would be good for as long as CCD is the target. Provisions also provide for pollinator habitat protection as a goal for land management programs, addressing systemic management issues and encouraging native pollinator restoration. However, also included is subsidy assistance to pollinator and crop loss, which may provide support to sudden declines in the short term but may come into competition with efforts to promote alternative pollinator practices if not managed in conjunction.

## CONCLUSION

Although Farm Bill 2008 has provided much needed support for pollinator research and habitat protection to prevent impending crisis, policies reflected narratives of loss for traditional systems of management framed by personal economic loss and nostalgia for tradition, using actions supporting honeybees most favorably, but also showing initial interest in native alternatives when means fit into traditional structures. Colony Collapse Disorder has served as an awakening for policy makers to monitor pollinator issues closely, thus stakeholders have shaped narratives around CCD to gain access, support, and backing, but must be careful to do so, as policy has the potential to be shaped by temporary symptoms to deeper systemic issues. Further research would be beneficial to follow the impacts of the pollinator provisions and allocations of funding and program focus to trace how actions have resulted from how the policies were shaped. Additionally, research into the lawmaking processes and hearing testimonials other resource management policy decisions are needed to identify how narratives are shaped by temporary environmental concerns, and how that may impact how structures may or may not be resistant to change in the face of political persuasion.

## ACKNOWLEDGEMENTS

Acknowledgements go out to Victoria Wojcick and the Pollinator Partnership for continued support, reference, and advisement. I'd also like to thank Kurt Spreyer and Lara Roman for valuable guidance and referral. Thanks go out as well to Tanya Wenzel, Emma Tome, and Sylvia Chang for valued edits and comments.

## REFERENCES

- Adams, L. D. (2010). Importance of Pollinators to US Agricultural Crops - Value of Agricultural Production (2007). Pollinator Partnership.
- Aizen, M. A., & Harder, L. D. (2009). The Global Stock of Domesticated Honey Bees Is Growing Slower Than Agricultural Demand for Pollination. *Current Biology*, 19(11), 915-918.



- Allen-Wardell, G., Bernhardt, P., Bitner, R., Burquez, A., Buchmann, S., Cane, J., Cox, P. A., et al. (2008). The Potential Consequences of Pollinator Declines on the Conservation of Biodiversity and Stability of Food Crop Yields. *Conservation Biology*, 12(1), 8-17.
- Buchmann, S.L., and G.P. Nabham. (1996). *The Forgotten Pollinators*. Washington: Island Press.
- Byrne, A., & Fitzpatrick, Ú. (2009). Bee conservation policy at the global, regional and national levels. *Apidologie*, 40(3), 17.
- Cordova, D. (2007). Review the Colony Collapse Disorder in Honey Bee Colonies Across the United States. Hearing before the Subcommittee on Horticulture and Organic Agriculture of the committee on Agriculture, U.S. House of Representatives, 110<sup>th</sup> Cong. March 29.
- Coenen-Davis, A. N. (2009). Mystery of the Disappearing Honeybee: Will Government Funding and Regulation Save This Important Pollinator, The. *Drake Journal of Agricultural Law*, 14, 175.
- Cowan, T., & Johnson, R. (2008). *Farm Bill Legislative Action in the 110th Congress* (CRS Report for Congress). Congressional Research Service.
- Farm, Nutrition, and Bioenergy Act Of 2007*, H.R. 2419, 110<sup>th</sup> Cong. 1<sup>st</sup> Sess. (2007)
- Goulson, D., Lye, G., & Darvill, B. (2008). Decline and Conservation of Bumble Bees. *Annual Review of Entomology*, 53(1), 191-208.
- Johnson, R. (2010). *Honey Bee Colony Collapse Disorder* (CRS Report for Congress). Congressional Research Service.
- Klein, A., Vaissière, B. E., Cane, J. H., Steffan-Dewenter, I., Cunningham, S. A., Kremen, C., & Tscharntke, T. (2007). Importance of pollinators in changing landscapes for world crops. *Proceedings of the Royal Society B: Biological Sciences*, 274(1608), 303-313.
- Kremen, C., Bugg, R. L., Nicola, N., Smith, S. A., Thorp, R. W., & Williams, N. M. (2002). Native bees, native plants and crop pollination in California. *Fremontia*, 30(3-4), 41-49.
- Kremen, C., & Ostfeld, R. S. (2005). A call to ecologists: measuring, analyzing, and managing ecosystem services. *Frontiers in Ecology and the Environment*, 3(10), 540-548.
- McGregor, S.E. (1976). *Insect Pollination of Cultivated Crop Plants*. USDA Handbook 496. Washington: U.S. Department of Agriculture, Agricultural Research Service.
- National Research Council (U.S.) [NRC] & Committee on the Status of Pollinators in North America. (2007). *Status of pollinators in North America*. Washington, D.C: National Academies Press.
- Naug, D. (2009). Nutritional stress due to habitat loss may explain recent honeybee colony collapses. *Biological Conservation*, 142(10), 2369-2372.

- Roe, E. & Eeten, M. (2004). Three--not two--major environmental counternarratives to globalization. *Global Environmental Politics* 4(4), 36-53.
- Roe, E., (1994). Narrative Policy Analysis. Durham: Duke University Press.
- Southwick, E. E., & Southwick Jr., L. (1992). Estimating the economic value of honey bees (Hymenoptera: Apidae) as agricultural pollinators in the United States. *Journal of Economic Entomology*, 85(3), 621–633.
- vanEngelsdorp, D., Hayes, J., Underwood, R. M., & Pettis, J. (2008). A Survey of Honey Bee Colony Losses in the U.S., Fall 2007 to Spring 2008. (N. Gay, Ed.) *PLoS ONE*, 3(12), e4071.
- Winfree, R., Williams, N. M., Dushoff, J., & Kremen, C. (2007). Native bees provide insurance against ongoing honey bee losses. *Ecology Letters*, 10(11), 1105–1113.
- Winfree, R., Williams, N. M., Gaines, H., Ascher, J. S., & Kremen, C. (2007). Wild bee pollinators provide the majority of crop visitation across land-use gradients in New Jersey and Pennsylvania, USA. *Journal of Applied Ecology*, 45(3), 793-802.
- Winfree, R. (2010). The conservation and restoration of wild bees. *Annals of the New York Academy of Sciences*, 1195(1), 169-197.