



# Different Ways Used to Measure the Importance of Australia's Managed and Wild Honeybee Industry *John M. Karasinski* 1

This brief note looks at the different ways that have been used to measure the importance of the Australia's managed and wild honeybee industry. The word "importance" has been deliberately chosen because it conveys the ambiguity consistent with the ways used by the industry to measure economic value.

This ambiguity was very evident in the submissions made to the two federal parliamentary committees of inquiry into the Australian bee keeping industry by the House of Representatives inquiry (2008) and followed six years later by a Senate committee of Inquiry (2014).

Submissions made to both inquires presented substantially different estimates of the value (importance) of the Australian bee keeping industry. In its verbal submission to the House of Representatives inquiry, RIRDC said "... honeybees contribute directly to between \$4 billion and \$6 billion worth of agriculture production."<sup>2</sup> Seven years later, the Australian Department of Agriculture's written submission cited the economic value was between \$A 600m to \$A 1.7bn.<sup>3</sup>

The methodologies used to calculate those values are not the same and should not be compared. This inconsistency motivated my research into unravelling the various methods used to measure the importance or the economic value.

A review of the global literature, both academic and industry published between 1989 and 2015 have been grouped in four headings:

1. **Replacement Cost method.** The cost of replacing some part of a beekeeper's business is a commonly reported measure. For instance, determining the cost of replacing bee hives, bees (bees with bees or bees with artificial pollinators) or queen bees. That cost is extrapolated for the number of registered beekeepers or hives in a region, state or the country. The final value is the replacement cost. Another example of replacement cost is the cost of employing human pollinators to hand pollinate China's apple orchards in Sichuan Province.

2. **Crop value of honeybee pollinators.** This method devised by entomologists identify agriculture crops pollinated by honeybees. A pollination factor is assigned to each crop which is then multiplied by the value of the agriculture crop to give the total dollar value. This is the most commonly cited "economic" value used by industry and stakeholders. The RIRDC submission mentioned above was calculated this

way. But this is not the economic value.

3. **Gross Value of Production (GVP).** The Dept. of Agriculture and Water Resources ABARES uses this measure in its Australian honey bee industry survey. The GVP measures the value of honey and bee wax produced. In 2014-2015 the industry GVP was \$101m.<sup>4</sup> Again, this is not the economic value.

4. **The Economic Value.** This calculation uses a sophisticated model known as the Launhardt – Marshall Economic Welfare Model (L-M Model)<sup>5</sup> to measure the economic benefit producers receive in the presence of honeybee pollinators. Or to calculate the economic loss consumers face, in the absence of honeybee pollinators.<sup>6</sup> This model is used by government when making industry policy decisions.

The values cited in the Department of Agriculture's submission mentioned above were calculated using this model.<sup>7</sup>

My current research project uses the L-M Model to calculate the economic value of managed and wild honeybee pollinators of over 50 honeybee dependent agriculture crops using 2014-2015 data. The results include the measurement of the economic value of more than 50 individual crops across Australia, the States and territories. As well, the economic value of specific crops, such as almonds at a regional level can be measured and correctly valued.

The L-M Model's versatility allows it to also calculate the economic value of non-honeybee pollinators (and crops) across Australia, the states and territories and regionally. That is the focus of further research and a future report.

My current study has quantified the

qualitative view expressed by the House of Representatives Inquiry (2008) final Report<sup>8</sup> "... the value of European honey bees (*Apis mellifera*) to agricultural production is reckoned in terms of billions of dollars."

1. *Curtin Graduate School of Business, Curtin University (email: John.Karasinski@gsb.curtin.edu.au)* This note draws upon a larger body of research which is currently being prepared for publication. I acknowledge the helpful advice provided by P.A. Brindal & M. Katz in the development of this article. Errors and Omission are entirely mine.

2. *Australian House of Representatives 2008. More Than Honey: The Future of the Australian Honey Bee and Pollination Industries: Report of the Inquiry into the Future Development of the Australian Honey Bee Industry. Canberra. Transcript of Evidence 8 August 2007, p.6.*

3. *Australian Government Dept of Agriculture. 2014. "Inquiry into the Future of the Beekeeping and Pollination Services Industries in Australia. Submission No. 79. p.4.*

4. *Australian Government Dept of Agriculture. 2016. "Combing through the honey bee industry." Accessed 13 January, 2017.*

5. *Named after the two economists who independently developed the model in the 1880's.*

6. *Consumer Surplus Loss may result from: poor diet & health of honeybees, an insect incursion (deadly varroa mite), over use of pesticides or shifting patterns of agriculture and farming.*

7. *Those values were very outdated: the smaller value related to a 1989 publication; the larger value related to 2003 publication.*

8. *Ibid.p.23.*



*John Karasinski*

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