## Bee Decline

Zattara, EE. Aizen, MA/ (2021) Worldwide occurrence records suggest a global decline in bee species richness. *One Earth* [online]. 4, pp. 114-123. [Accessed 04 March 2024].

* “We found that after the 1990s, the number of collected bee species declines steeply such that approximately 25% fewer species were reported between 2006 and 2015 than before the 1990s. Although these trends must be interpreted cautiously given the heterogeneous nature of the dataset and potential biases in data collection and reporting, results suggest the need for swift actions to avoid further pollinator decline.”
* “Wild and managed bees are key pollinators, ensuring or enhancing the reproduction of a large fraction of the world’s wild flowering plants and the yield of 85% of all cultivated crops.”
* “There is mounting evidence that a decline in wild bee populations might follow or even be more pronounced than overall trends in insect decline.”#
* “In contrast, while the number of recorded species per year during the same period also increases initially, it reaches a steady maximum after 1950 but then shows a noticeable decline starting near the end of the 20th century… Thus, fewer species have been reported globally within GBIF records since approximately the 1990s.”
* “By comparing the values of the asymptotic richness estimators, we found a reduction of about 8% during the 2000s in both datasets and a reduction of 22% and 26% during the 2010s for the full and specimen-only datasets… These results suggest that the number of species among bee specimens collected worldwide is showing a sharp decline.”

LeBuhn, G. Luna, JV. (2021) Pollinator decline: what do we know about the drivers of solitary bee declines?. *Insect Science* [online]. 46, pp. 106-111. [Accessed 04 March 2024].

* “The primary driver of change in pollinator communities is a change in land cover… From urbanization to deforestation, the loss and degradation of land has significant negative impacts on pollinators through the modification of nesting and/or foraging sites… The accompanying fragmentation can lead to declines in population sizes and species richness due to the need for increased search and travel times for nesting and floral resources… The long-term effect of these changes are smaller population sizes and decrease in the diversity of pollinator communities.”
* “Urbanization has varied effects on pollinator diversity and species… Not only is there a loss of habitat, but there can be significant shifts in temperature through urban heat island effects.”
* “However, drought and increased CO2 may alter plant–pollinator interactions… However, with elevated CO2, flowers had stronger petal colors and lower volatile compounds. In drought-ridden areas, this may interfere with attraction leading a cascade effect where plants not getting pollinated enough will die out and pollinators will have to look elsewhere for resources.”
* “Climate change also disrupts migratory patterns and spatial dislocation of pollination, and changes of flowering plants in alignment with pollinator flight pattern”
* “Recent studies have found that pesticide usage can affect immune function that overall affects the fitness and survivability in bumble bees. In addition, neonicotinoid pesticides have been documented to lead to decreased foraging efficiency, declines in cognitive functions, and decreased colony fitness.”

Goulson, D. Nicholls, E. Botias, C. Rotherray, E. (2015). Bee declines driven by combined stress from parasites, pesticides and lack of flowers. *Science* [online]. 347 (6229). [Accessed 04 March 2024].

* “managed honey bee colonies have decreased in Europe [25% loss of colonies in central Europe between 1985 and 2005] and markedly in North America [59% loss of colonies between 1947 and 2005]. However, overall global stocks actually increased by ~45% between 1961 and 2008 because of a major increase in numbers of hives in countries such as China and Argentina”
* “For example, in the United Kingdom, approximately 97% of flower-rich grasslands were lost in the 20th century, and this has resulted in major range contractions of bee species associated with this habitat”

# Interactive Narratives

Riedl, MO. Bulitko, V. (2013). Interactive Narrative: An Intelligent Systems Approach. *Association for the Advancement of Artificial Intelligence* [online]. pp. 67-77. [Accessed 04 March 2024].

* “The goal of interactive narrative is thus to immerse users in a virtual world such that
* they believe that they are an integral part of an unfolding story and that their actions have meaningful consequences.”
* “The key challenge to interactive narrative is how to balance these competing needs to ensure that the player feels he or she has agency to affect the direction or outcome of his or her narrative experience while still ensuring that the experience is coherent”
* “A common solution, first proposed by Bates (1992) is to implement a drama manager. A drama manager is an intelligent, omniscient, and disembodied agent that monitors the virtual world and intervenes to drive the narrative forward according to some model of quality of experience.”
* “A generative experience manager must solve the boundary problem (Magerko 2005) — to recognize and respond to (intentional or unintentional) attempts by the user to perform actions that deviate from the narrative the experience manager desires to tell”

Ryan, ML. (2009). From Narrative Games to Playable Stories: Towards a Poetics of Interactive Narrative. *Storyworlds: A Journal of Narrative Studies* [online]. 1 pp. 43-59. [Accessed 04 March 2024].

“a narrative game, story is meant to enhance gameplay, while in a playable story, gameplay is meant to produce a story”

“kind of reward can we expect from active participation in a story? Narrative pleasure can be generally described in terms of immer sion in a fictional world, though some kinds of pleasure lie in distan ciation.”

“Existing forms of interactive narrative can be broadly divided into bottom-up, emergent systems that create stories during the run of the program… and top-down systems that rely on pre scripted content”

“you wait to see what kind of story will come out of their interactions. If there is a drawback to bottom-up systems, it is the lack of closure of their output: with out top-down authorial control, it is virtually impossible to create an Aristotelian curve of rise and fall in tension, or a sequence of events that stops after a conflict has been resolved”

“hile the bottom-up approach is favored by playable stories… The players progression is a journey along a path that is already traced and that leads to a fixed destination, or to several destinations when the system offers branching point”

“The top-down and the bottom-up approaches are not mutually ex clusive: scripted elements can be used in bottom-up systems to give proper narrative form to the output, while top-down systems, as al ready noted, would not be interactive if they did not find a way to inte grate the bottom-up input of the user in their narrative arc.”

Meadows, MS. (2002) *Pause & Effect: The Art of Interactive Narrative* [online]. London: Pearson Education. [Accessed 04 March 2024].

* “Interactive narrative is the most ambitious art form existing today because it combines traditional narrative with visual art and interactivity. Strangely enough, these three art forms share an important feature: They each allow information to be understood from multiple perspectives.”
* “An ‘interactive narrative’ is a narrative form that allows someone other than the author to affect, choose, or change the plot.”
* “Putting the viewer in a new dimensional perspective also affected the viewer’s emotional perspective.”

Perko, C. (2018) What’s an Interactive Narrative? *YouTube* [online] 02 December. Available from: <https://www.youtube.com/watch?v=KwJ1WITqFC0&t=306s> [Accessed 04 March 2024].

* “If the game and narrative are separate, then I’m going to take the game and I won’t have anything good to say about the narrative because I don’t care.”
* “When the narrative is telling me to push *‘X’*  that’s the narrative telling me to push it, that’s not my decision, that is a movie telling me to push ‘X’ to keep watching. Whereas if I am wondering through the level and I see ‘press x’ to do an event, that is me choosing and by the time it pops up for the third time in the game it is a natural movement”

GDC (2019) All Choice No Consequence: Efficiently Branching Narrative. *YouTube* [online] 12 December. Available from: <https://www.youtube.com/watch?v=TEa9aSDHawA> [Accessed 04 March 2024].

* “The data shows that having choice matters, it improves your retention, it makes the game fun and it makes the players happier. Most importantly those choices need to feel impactful to the players, they have to feel like they’re making a difference. The data shows that having choices actually impactful to your storyline is not really a big deal”
* Designing an interactive game should follow the path of outlining the story and then the major branches, then the dialogue and finally the choices.
* “We found that for our story [morality indicator] that they don’t actually improve anything at all, they don’t hurt it either. We don’t use them unless it really helps the story and if it helps the story it doesn’t hurt to put them in.
* “[In life is strange] there is a really interesting mechanic they use where you can rewind in the moment and watch what happened in the other branch”

# Diagrams

Riedl, MO. Bulitko, V. (2013) *The Experience Management Problem is to Compute Trajectories Through State Space.* Available from: <https://ojs.aaai.org/aimagazine/index.php/aimagazine/article/view/2449> [Accessed 04 March 2024].

A diagram of a fish

Description automatically generated

A person standing at a podium

Description automatically generated

A screen shot of a computer

Description automatically generated

A screenshot of a video game

Description automatically generated