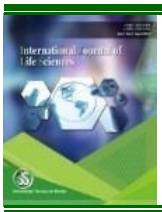

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Permapiculture: Preservation and Bee Productivity

Telly Yarita Macías-Zambrano [a], Leida Mercedes Morán-Vega [b], Juan Carlos Vélez-Vera [c], Antonio Vázquez-Pérez [d], Dilka Leyva-Rodríguez [e]

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Corresponding Author [a]

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Abstract

Permapiculture comes down to respecting the valuable work of bees in their habitats; Thus, the objective of the work highlights the importance of Permapiculture for the preservation of agricultural ecosystems and productivity through the construction of the perm apiculture hive, for which the method included the review of all the work documented in workshops, conferences, interviews, manuals and other manuscripts by Oscar Perone, its creator. As a result the multiple advantages of Permapiculture over traditional beekeeping, in which 4 times more is produced, at a minimum investment cost and with minimal work from the Permapiculture, providing the hive with 3 fundamental elements, space, reserves and peace. It concludes with the urgency of raising awareness about traditional beekeeping practices, to recover the nature of large populations of honey Apis native to agroforestry ecosystems, contributing to the preservation of the species and the productivity of the hive.

Contents

[a] Montuvia Beekeeping Force Association, Portoviejo, Manabí, Ecuador
[b] Montuvia Beekeeping Force Association, Portoviejo, Manabí, Ecuador
[c] Montuvia Beekeeping Force Association, Portoviejo, Manabí, Ecuador
[d] Self-employed, Portoviejo, Manabí, Ecuador
[e] Self-employed, Miami, Estados Unidos

1 Introduction

The laudable work that winged honeyeaters have been carrying out (Lino, 2002) has been documented throughout history since the Splendid Giver of Life gave life to the earth, Mother Nature and all species, man, flora, fauna, of which little bees are a vital part, and this silent and organized work has been contributing in many ways to the preservation of these species, either through the pollination of crops or through the wonderful products of the hive (Zambrano et al., 2023).

However, the industrious nobles are in danger of disappearing, and one of the causes is due to the management that man has been doing with this species which he has called traditional beekeeping, which includes breed improvement techniques that have caused the weakening not only of the Apis mellifera species but the alteration of its very genetics when it is mixed with other non-endemic species, producing diseases and making them prone to attack by pests and other agents that consume it and make people believe that they always need human beekeepers to survive in nature (Akhtar et al., 2016; Rivett et al., 2018).

However, given the very perfection of Mother Earth, hope is the small virtue that awakens with each living being in each new dawn, bringing good news such as Permapiculture that emerges as the alternative to begin to decrease and stop the disappearance of the brides of the sun, since this renewed practice of intensive or traditional beekeeping arises as a response to the very cry of the winged ones that bring food and medicine to those who have come for hundreds of years to harvest it (Zambrano et al., 2022); but Permapiculture is the non- doing of beekeeping activity since bees do not need man at all, this has been a mere illusion, they were free, happy and productive long before man tried to play the beekeeper with them (Perone, 2009).

Permapiculture is respecting the home, work and harmony of the winged pharmacists, the servile workers, the golden princesses of the sun (Perone, 2011), their perfect and laborious organization to produce the honey and pollen that are the food for the entire adult population, the royal jelly that sustains its queen and her posture, the propolis that is the natural antidote and medicine against the effects that could damage the hive, the wax as the fundamental base to house the food of the species (Álvarez et al., 2022).

Likewise, the hive can provide many products and by-products to man, but they can also be minimized or disappear with the same species if this traditional beekeeper man is not renewed into a conscientious permabeekeeper who takes what he should take at the correct time, in the correct amount and the right place of those noble, industrious winged honeyeaters, the bees, producers of the most used, consumed and artificially copied metabolites in the entire history of humanity; honey, royal jelly, propolis, pollen, wax and apitoxin (Álvarez, 2022).

However, although bees are providers for man, they have been facing and continue to face a serious threat that is causing millions of hives to disappear on the planet, in agricultural fields, and in their natural habitats, which are already few, due to intensive agroforestry practices that use mechanical and chemical treatments to kill weeds, limiting the flowering that bees need to produce their honey, additionally, they use an excess of agrochemicals that are poison in some cases gradually, but in others, they do so unexpectedly (Geslin et al., 2017).

Furthermore, Apis mellifera face the serious situation of genetic management that reduces their natural defense against attacks from outsiders but tames them to be managed in the apiary and harvest honey without difficulties, as well as to take them to pollinate large areas of crops, which is known as transhumance (Guzmán-Novoa et al., 2011), which would be very difficult with native Africanized species, since, according to the experience of many intensive beekeepers, they swarm frequently, abandoning the hives, which brings considerable losses (López, 2019), as the queen bees are replaced by tame ones of European origin, causing the hive to also tame, generating much more benefits for the beekeeper.

On the other hand, the practice of traditional beekeeping or intensive beekeeping that seeks greater productivity of the hive using innovative tools, practices and techniques such as the genetic management of queens to tame the species endemic to tropical ecosystems, adds to the irresponsibility (Tan et al., 2012; Bencsik et al., 2011). Which has contributed to the extermination of honey Apis populations throughout the world, therefore, it is urgently necessary:

Look back at agricultural fields, agro-forestry systems, the natural environment of hills and valleys, rivers and estuaries; Putting a little love into recovering them is part of what Mother Earth demands from the human beings she houses; The combination of sowing and harvesting the land while respecting the work of the bees is one of the ideal alternatives to begin the rescue tasks, through the work of such noble insects, of the winged pharmacists, of the servile workers, beginning to value the effort, the time and work that it takes for them to travel kilometers to pollinate so many types of crops and thus extract what will be their food, to reward us even more, through the wonderful and therapeutic products of the hive (Zambrano et al., 2022).

For this, it is necessary to decide to change intensives beekeeping for extensive beekeeping or Permapiculture, the beekeeping of not doing: Permapiculture, which leads to the recovery not only of bees, but of other beneficial and native insects, of the endemic flora and fauna of the species, of the forest and agricultural ecosystems, and that also promotes total respect for their work and their habitats, their organization and way of life, of everything they have to teach, because they will never They have needed a man (Perone, 2009), however, man would disappear from the earth, shortly after the industrious winged species disappeared on the planet. In this sense, the present research determines the importance of Permapiculture to contribute to the preservation of honey Apis and productivity through the construction of the Permapiculture hive.

2 Materials and Methods

The research responds to the qualitative approach, non-experimental design, descriptive and explanatory level, empirical research method and documentary review as an information collection technique. For which the experiential experience of the Argentine Permapculture expert Oscar Perone was collected, from several courses, workshops, interviews and recorded conferences, which are duly documented in recorded electronic media, websites and other manuscripts that are available on the web such as manuals, guides, scientific articles, masters and doctoral theses.

Thus, thanks to the valuable experience of more than forty years of Oscar Perone, of Argentine nationality, creator of Permapiculture and defender of the life and work of bees, practicing, teaching and bringing the knowledge of Permapiculture to various territories in America Latina, have corroborated that "the bad practices exercised for years by those who have worked in traditional beekeeping are the true reason why beekeeper bees are currently in clear disappearance throughout the planet" (Perone, 2016), aggravated this situation, due to the increasingly polluted environments where bees are intended to work, causing what is known as the global phenomenon of Colony Collapse Disorder (disappearance of entire hives).

3 Results and Discussions

There are many definitions and qualifiers for golden wings, Table 1 summarizes some:

Table 1
Bees, inspiring definitions

Author	Work	Definition/inspiration
Domin (1997) cited by Weiller (2000)	Book: Bees and Man	“Whoever was like the bee, who feels the sun also through the cloudy sky, who finds the way to the flower never losing its direction, to him the fields would appear in splendor; "No matter how short I lived, I would rarely cry."
(Perone, 2011)	Permapiculture Guide	Bees are the poetic thoughts of God, flying from beauty to beauty, offering wonderful gifts to all in doing so, that is the sacred mission of bees to fly from flower to flower pollinating them, offering plants the possibility of procreating, of giving

Author	Work	Definition/inspiration
		them energy. reproductive system to plant life, helping it and thereby maintaining biodiversity, helping to conserve nature as we know it now, and producing with this great and sacred task the most powerful and healing food product known as honey. Pure and the bread of bees, it is not for nothing that it is said that beehives are nature's pharmacies.
(Perone, 2012)	Permapiculture: interview	Bees do not gather honey, bees give life to life, bees are not prey animals, bees are not defensive, bees are loving because if we do not bother them, they never bother us and if not, we must stop to observe how they coexist with us in the cities, drinking and foraging in the flowers of the parks and gardens, the man gets scared, they don't even look at them...
Maeterlinck (1999)	Book: The life of bees	Before intuiting its secrets, before imbuing ourselves with the atmosphere, the perfume, the spirit, the mystery of those industrious virgins, the blonde little birds, the daughters of Aristaeus" (p. 15),
Maeterlinck (1999)	Book: The life of bees	There they were, at the brilliant crossroads where the aerial routes that the busy and sonorous swarms travel from dawn to dusk converge and depart, all the perfumes of the countryside. There one would hear the happy and visible soul, the intelligent and musical voice, the joyful crackling of the most beautiful hours in the garden. There one would learn, in the school of bees, the designs of omnipotent Nature, the luminous relationships of the three kingdoms, the inexhaustible organization of life, the morality of hard and selfless work, and what is worth as much as a morality of work: the heroic workers there also taught to enjoy the somewhat vague taste of leisure, underlining, so to speak, with the fiery strokes of their thousand little wings, the almost imperceptible delights of those immaculate days that revolve around themselves in space, without bringing us anything more than a transparent world, empty of memories, like a too pure bliss (p. 18).

Source: Own elaboration.

The importance that bees have gained over time is considerable, especially in current times, some are highlighted in Figure 1 below.

(Baena, Chévez, Ruiz, & Porter, 2022)

Polylectic species, which means that it is a great producer of honey due to its ability to collect nectar, pollen and resins according to the flowering of the place.

(Brondizio, Settele, Díaz, & Ngo, 2019)

Pollinating insect with more presence in the various continental territories, contributing to the food security and survival of human conglomerates throughout the planet in their different eras.

(Vásconez Robalino, 2017)

They contribute 25% to the pollination of various species of flora, hence the essence of their presence in nature, which has promoted several investigations for their genetic conservation.

(Suasnávar, De León, & Guzmán, 2018)

They have a great capacity to adapt in various climates, although they do better in warmer environments.

(Acosta, 2019)

It is more resistant depending on the conditions of the queen bee that determines the strength of the entire colony.

(Tibatá, y otros, 2018)

Their characteristics vary according to the locality where they are found and this is directly related to their haplotype) and this, in turn, to the climatic adaptation and the capacity of resistance to diseases of the hive.

Figure 1. Characteristics of the species Apis mellifera
Source: Own elaboration

According to history, the Apis mellifera, also called the honey bee, arrived on the American continent in 1956, being known since Mesoamerican cultures and Spanish colonization, in the 1760s and 1770s; But it was not until the 20th century that beekeeping became economically active. The honey Apis have a life cycle that depends on their role, thus the queen bee lives less than the worker and the latter less than the drone, the detail can be seen in Table 2.

Table 2
Life cycle of the species Apis mellifera

Cycle	Queen bee	Worker bee	Abeya Zángano
Egg	3 days	3 days	3 days
Larva	5.5 days	6 days	6.5 days
Pupa	7.5 days	12 days	14.5 days
Total	16 days	21 days	24 días days

Source: Taken from Suasnávar et al., (2018)

Various subspecies of the honey bee have been found around the world since Linnaeus in 1758 described its importance; this has occurred in a variety of climates, from cold and icy, to temperate and warm (Acosta-Vázquez, 2019). The taxonomic classification is shown in Figure 2 below:

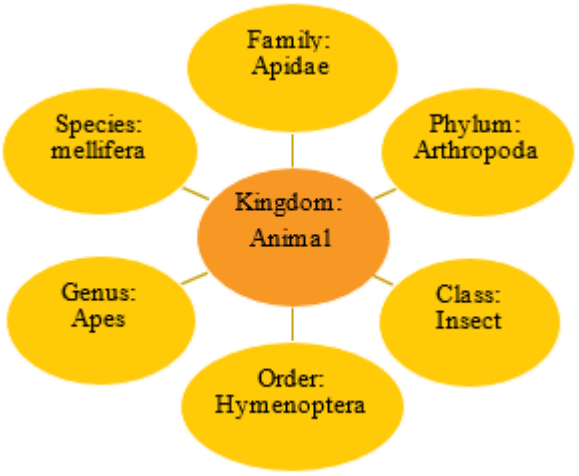

Figure 2. Taxonomy
Source: Taken from Borbor Méndez (2015)

Currently, both the genus and the species are potentially threatened, since according to statistics published by the UN (2022), in recent years, Apis honey bee colonies have been significantly reduced, one of the main causes being excessive use of agrochemicals in agricultural properties and agroforestry systems, intensive agriculture and extreme climate change, together with environmental conditions such as increased temperature and humidity that directly influence the work of the honey bee in the plant-pollinator network, even the decrease in plant diversity does (Giannini et al., 2015).

Added to all this is air pollution, which directly affects the aggressive decrease in the population of honey bees (Rollin et al., 2013; DeGrandi-Hoffman & Chen, 2015). In the United States alone, in the last decade, a decrease of 44% was recorded in the last five years, making these negative impacts increase in more vulnerable ecosystems such as protected areas and areas of intensive agriculture (Geslin et al., 2017). Likewise, hydrocarbons, powerful pollutants that are present in the air, produce chemical changes that mix with the aromatic molecules released by the flowers which are the signals that the bees follow to collect nectar, which makes them confused and late. Much more in locating them to carry out pollination (Cheng et al., 2020). Some of these impacts are illustrated in Figure 3 below.

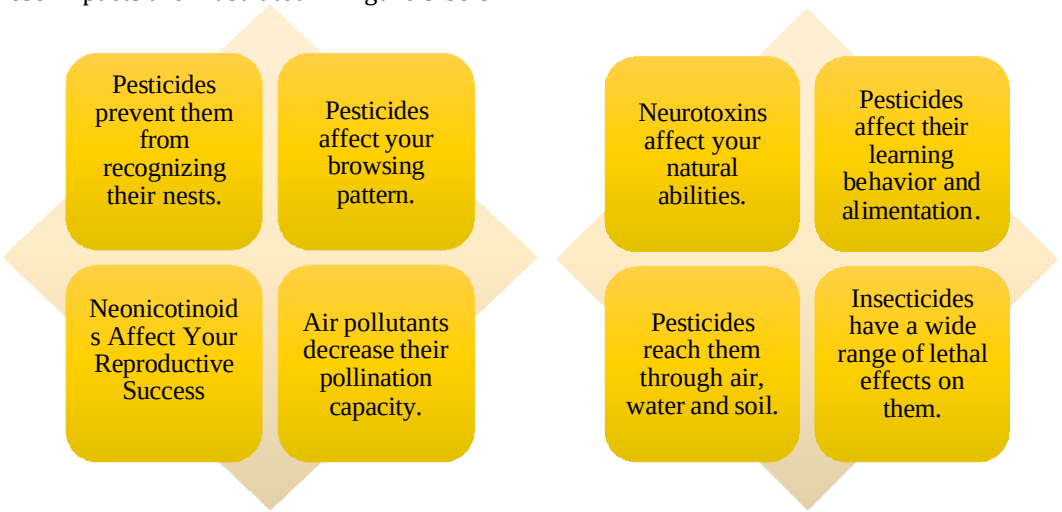

Figure 3. Threats to Apis mellifera
Source: Taken from Cheng et al., (2020)

Bees and their contribution to the preservation of ecosystems and beekeeping productivity.

The importance of bees is so great that life itself would become extinct if they disappeared from the earth, and when we talk about life it involves man, animals and vegetation, which in turn means food for man and animals (Sperandio et al., 2019; Kamga et al., 2024). Part of this contribution includes the beneficial impact they have on agricultural ecosystems since they are considered the most efficient pollinating insects, as they can travel kilometers to collect nectar from the flowers of fruit, timber, floral, short-cycle and long-cycle, such as oranges, tangerines, grapefruits, lemons, apples, watermelons, melons, coffee, tomatoes, kiwis, passion fruits, guavas, among many others, from which we would not be able to feed ourselves if it were not for the existence of the industrious bees (The Citizen, 2022).

Permapiculture or extensive beekeeping

Permapiculture is not doing, letting the bees be bees again, not intervening except to harvest... placing them, populating them and leaving them, they will not be touched until there is no honey for us (Perone, 2012). It is a natural process and therefore respects the times and events of nature (Perone, 2011). It is a beekeeping technique based on a deep respect for bees and is reborn from the vocation of Oscar Perone, inspired by the Permapiculture of the Australian Bill Mollison, as a philosophical daughter of Natural Agriculture or the "No-Doing" of the Japanese Masanobu Fukuoka, which means a return to nature, to the optimal production of uncontaminated food (Perone, 2012b).

It is an improved technique of what traditional beekeeping has conceived that is based on respect for bees, it is "a return to nature, to the optimal production of uncontaminated food, since the Permapiculture does not intervene in the hives, achieving thereby significantly reducing operating expenses while experiencing considerable increases in production" (IICA, 2016).

Permapiculture takes care of the bees, also offering the possibility for the beekeeper to, in some cases, increase honey production up to four times, through "automatic hives", in the Permapiculture does not intervene at all in the production, achieving This will also significantly reduce operating expenses along with notable harvest increases (Perone, 2016).

Permapiculture according to the Perone method (extensive natural beekeeping) seeks to guide the work to achieve environmental conditions, so that the bees can develop freely according to their nature, building honeycombs not under a structure (frame) but rather respecting the way and form in which they produce in nature (Calderón et al., 2020). At the same time, using natural food (honey and pollen reserves) for feeding during the critical time of year, in such a way that gastrointestinal diseases that man himself has developed in bees using artificial feeding with sugar syrup will be reduced (Morales Zamora, 2014).

Permapiculture is "the return to what is natural in beekeeping, it is the return to what is reasonable, to what is sustainable, to what is in harmony with nature: harmonious, symbiotic, a virtuous circle, because that is what happens in natural when man does not intervene, nature creates virtuous circles, circles of life in which everything has to do with everything, everything is symbiotic with everything, no part is more important than the whole, but the whole cannot be adequate without that part " (Perone, 2012 cited by López, 2019).

4 Conclusion

The importance that Permapiculture currently has may not be imagined and much less accepted by traditional beekeepers, however, its importance lies in the harmony that has always existed between all forms of life that coexist on planet Earth, that is, plants, animals, water, air, land and human beings, all naturally interconnected with each other, sustainably and sustainably, which corresponds to the biological cycle of natural ecosystems and nature itself that they share; Permapiculture is much more than a means of economic production, which is ultimately the product of the exercise of a productive activity and is a logical consequence; It is the principle of love, respect and conservation that man must provide to his environmental environment, to Mother Earth and all species (Frankham, 2010; Bennett et al., 2006).

Permapiculture inspires the most precious values that seem to have been hidden in the backpack of a child who stopped going to school, to re-inspire him in the most precious virtues of faith, charity and hope, making him believe again in the abilities of the little bees, recovering their humanity to eventually treat them again with

respect for their hive abode and eagerly welcoming one new day at a time, trusting that their love for them is generating such positive changes for the preservation of the noble winged ones, as if they were now the parents who guard, care for and save their daughters, like princesses dressed with their wings, and in each flight, as they fly from flower to flower, they give more life to life and transform nectar into food, of life in perfect communion with the Creator.

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Biography of Authors

Telly Yarita Macías-Zambrano
Industrial Engineer, Specialization in Projects, Master's Degree in Agricultural Engineering, PhD student in Higher Education at the University of Palermo Research professor. Facilitator of courses and workshops in academic research. Peer reviewer in scientific journals. Training coordinator at a research center. Author of several publications: academic-scientific articles, book chapters and books.
Email: itspem.tmacias@gmail.com

Leida Mercedes Morán-Vega
President of the Montuvia Beekeeping Force Association, Entrepreneur of products derived from the hive, Permapiculturist and Beekeeper with 20 years of experience, Meliponiculturist, Farmer, exhibitor and facilitator of courses, workshops and related on beekeeping topics. Agricultural Engineer
Email: leidam30@hotmail.com

Juan Carlos Vélez-Vera
Vice President of the Montuvia Beekeeping Force Association, Permapiculturist, Meliponiculturist, Beekeeper with 30 years of experience, farmer, exhibitor and facilitator of courses, workshops and related on beekeeping topics. Beekeeping entrepreneur. Banking and Business Engineer.
Email: mieljcarlos@hotmail.com

Antonio Vázquez-Pérez
Graduated in Law, Master in Environmental Training, Research Professor, has taken different postgraduate courses related to Environmental Education, participates in scientific events, with Scopus publications. Currently a PhD student at the Universidad de Alicante, España.
Email: antoniov5506@gmai.com

Dilka Leyva-Rodríguez
Basic Technician in Health Psychology, Paramedic, Psychometric,
Self-employed.
Email: talimar81@gmail.com