Püllomen: an ethnoecological perspective of the Mapuche protector spirit insect

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Abstract. Biodiversity plays an important role in cultural worldviews, influencing myths, stories, and spiritual beliefs of indigenous peoples. This short review explores an ecological phenomenon that may have influenced and contributed to the development of the Mapuche good spirit insect (*Püllomen*), which represents the spirit of someone who passed away and comes back to the world of the living providing companion and protection on the land to their relatives. *Püllomen* is also represented in ceremonial silverwork jewelry. An extensive literature search related to the *Püllomen* and other insects and their relationship with indigenous cosmovisions in the Americas was analyzed. A novel link between an ecological phenomenon and anthropological literature review is proposed to hypothesize how this *Püllomen* belief could be developed from the behavior of a parasitoid wasp (Hymenoptera: *Pepsis limbata* on Araneae: *Grammostola rosea*). This brief perspective piece is a modest contribution to the vast task of elevating and preserving living traditional ecological knowledge and nature-inspired spiritual beliefs. Biocultural conservation of orally communicated traditional knowledge through generations and the conservation of associated biodiversity is key to preserving Mapuche cosmovision.

Keywords: Argentina, Arthropods, Biocultural conservation, Chile, Cosmovision.

Püllomen: Etnoecologia zugun ñi azumtuam Püllomen ñi zugun.

Mapuche az mogen mew itxofill mogen ta rume faligekey. Tüfa mew txipakefuy kuifike zugu, piam, epew, itxokom zugu feyentukelu pu che kütu. Tüfachi küzaw inarumey kiñe mapuche zugun: Püllomen.

Püllomen ta pu la yem ñi alwe wiñoturkelu wente mapu mew isiken reke. Fey ñi afkazituam ñi pu che egün ka igkayam ñi mapu. Püllomen ka txipakey mapuche rütxan mew kütu.

Tañi inarumen mew chillkatuy kakewme chillka zugulkelu Püllomen ñi zugun mew, ka chillkatuy ka isike kimün ta kakelu llituche kimniekelu. Tüfa reyülkunuy itxofill mogen ñi kimün ka antropologia ñi zugun, fey ñi rakizuamnieam chumgechi am püllomen ñi zugun txipafuy. Tüfachi küzaw piley ñi kimniegekefel tüfa, ñi chumgechi kuyfikecheyem ñi azkintuniekefel mew chi pu diwmeñ ka chi pu kulawkulaw llalliñ. Femgechi elugelu kechiley püllomen ñi zugun, feypi iñ küzaw.

Tüfa ta kiñe püchi küzaw taiñ azumtuam pu llituche ñi feyentun, pu llituche ñi kimün itxofill mogen mew. Fey ñi faligetuam kuyfike mapuche kimün, faligetuam mapuche ekun itxokom mogen mew, femgechi faligetuay ka mogeleay mapuche ñi az mogen.

Falike nemül: Az mogen, Itxokom isiken, Chile, Argentina, Az mogen ñi felerpuken

Püllomen: una perspectiva etnoecológica sobre los orígenes del insecto espíritu protector Mapuche

Resumen. La biodiversidad juega un papel importante en la cosmovisión cultural, influyendo en los mitos, historias, y creencias espirituales de los pueblos indígenas. Esta breve revisión explora un fenómeno ecológico que pudo haber influido y contribuido al desarrollo de la cosmovisión del insecto espíritu protector Mapuche (*Püllomen*). *Püllomen* representa el espíritu de alguien que falleció y que regresa al mundo de los vivos en forma de insecto, proporcionando compañía y protección en la tierra a sus familiares. *Püllomen* es también representado en joyas ceremoniales de platería. Se realizó una extensa búsqueda bibliográfica relacionada con a *Püllomen*, y otros insectos en relación con las cosmovisiones indígenas en las Américas. Se propone un nuevo vínculo entre un fenómeno ecológico y la revisión de la literatura antropológica, para plantear la hipótesis de cómo la creencia de *Püllomen* podría haberse desarrollado a partir del comportamiento de la avispa parasitoide (Hymenoptera: *Pepsis limbata*) sobre la araña pollito (Araneae: *Grammostola rosea*). Esta breve perspectiva es una modesta contribución a la vasta tarea de elevar y preservar el conocimiento ecológico tradicional vivo, y las creencias espirituales indígenas inspiradas en la naturaleza. La conservación biocultural de conocimientos tradicionales comunicados oralmente a través de generaciones y la conservación de la biodiversidad asociada son clave para preservar la cosmovisión Mapuche.

Palabras clave: cosmovisión, artrópodos, Chile, Argentina, conservación biocultural

Background

Links between insect natural history and indigenous beliefs deserve further attention during the current moment of catastrophic arthropods decline [1] and undocumented but likely associated indigenous biocultural loss [2]. Investigating local ethnozoological phenomena is critical for biological and biocultural conservation [3,4], particularly for indigenous peoples that orally transmit their knowledge and wisdom, such as Mapuche people [5]. Most of the etymology of Mapuche bird names have an onomatopoeic representation, followed by physical appearance of the bird, its behavior, habitat use, and sensory and symbolic representations [6]. The Mapuche people are the most numerous indigenous people in the southern cone of South America. However, cultural erosion and western cultural assimilation have been promoted by the Chilean and Argentinian governments over multiple centuries and these states have largely failed to provide recognition of Mapuche ethnic identities and rights [7,8]. Documenting Mapuche cosmovision and perceptions of wildlife is relevant for strengthening biocultural conservation [9,10].

Animals play different cultural, economic, social and traditional roles in the perceptions and attitudes of indigenous and non-indigenous global societies [3,6,11]. Many indigenous groups' cosmovisions consider biodiversity to be an extension of human society and human society to be part of nature. The concept of nature can include not only biophysical objects and organisms but also an invisible spirit world [12]. Denominating animals as spiritual figures has been documented for vertebrates, for example, birds as mediators between life and death due their ability to move between worlds in various cultures of Latin America [13] or snakes as protectors and destroyers (and their dual cosmovision) of the

ancient world in Mapuche culture such as in the myth of Kai Kai Vilu and Treng-Treng Vilu [14,15].

In a global defaunation era characterized by an unprecedent rate of animal extinction, vertebrates are not the only organisms affected [16]. Invertebrates, in particular bees and wasps (Hymenoptera) are among the most affected (46% of species declining, 44% of the species threatened) [17]. This biodiversity loss could lead to linguistic and cultural loss as insects and their ecological context that inspired words or beliefs go extinct [12], risking increasing biocultural homogenization [18].

Arthropods, particularly insects, are the most common invertebrate group in indigenous mythologies [19]. Most insect references are related to traditional medicine [20], traditional culinary aspects [21] or “black magic” [22]. However, some insects are related to themes of broader social and philosophical importance. For the *Kayapo* people of the southern Amazon basin (Brazil), social wasps, bees and ants inspired the structure of tribe organization [23] and bees and their honey are associated with heavens and rain [21]. In the *Kawaiwete* cosmovision (Amazon basin, Brazil), bees have their own protector spirit that regulates their reproduction and honey production and smoke from beeswax repels evil spirits and protects children [21]. For the *Hopi* people (New Mexico, USA), ancestors take an insect form and other helper insect spirits, the *Kachinas*, based on bees and wasps, among others, act as messengers of people to their gods [24]. For the *Diné* (*Navajo* people southwestern USA), flies (Diptera: Tachinidae) are helpers of humans [25]. For the Aymara and Quechua people in central Andes, *Chiririnka* green flies represent the

flies of the death that embody the soul of the deceased person [26]. However, few other insects have this combined life and death biocultural categorization.

In this short review, the role of a wasp in the Mapuche indigenous cosmovision is described and a novel hypothesis is proposed that this spiritual belief originated in ecological observations of a parasitic wasp in central southern Chile. This case study is then used to illustrate how biodiversity loss can have detrimental impacts on local traditional indigenous biocultural beliefs. In closing, strategies are proposed for widely publicizing knowledge of these ecological and spiritual links in Chile, which could serve as examples for similar biocultural conservation and awareness strategies in other countries.

Cultural perspective

In the traditional Mapuche worldview of southern Chile and Argentina, the good ancestor spirit *Püllomen* is characterized as a blue flying insect [27,28]. This insect is commonly referred as "*moscardón o moscón*" or fly [29,30], while *püllu* means errant spirit of someone who passed away and tried to come back to the world of the living [31], that also that provides companion and protection on the land to their relatives [32]. It is not clear what species is referred to, as this is a generic name for multiple species including flies (Diptera:Tabanidae), bumble bees (Hymenoptera: Apidae), and wasps (Hymenoptera: Pompilidae, Chrysididae).

Püllomen is a key figure in Mapuche spirituality. It serves as a protector during the transition between life and death, accompanying a body after death until it disintegrates

and returns to the *Ñuke Mapu* (Mother Earth) [29]. A second definition is that it represents the spirit from a *Toqui* (warrior chief) that is returning from death to visit its relatives and favorite places [33–35]. *Püllomen* has also been referred to as "*Alwe or Püllomen Alwe*", the soul of a deceased ancestor that may take the form of a blue fly and act as a protector spirit [30]. Yet another study reported four groups of flying insects that represent the soul of deceased relatives: *dwillñ* or moscardón (Bombus dahlbomi), *kallfü Püllomen* (blue flies from the family *Calliophoridae*), and the butterflies (Lepidoptera) *Llangkellangke and Nampe* [28]. In Chile the family (Lepidoptera: Lycaenidae) have species of blue butterflies (D. Cepeda, personal communication). Smith-Ramirez suggested that *Lasia nigritarsis* (Diptera: *Acroceridae*) could also be the blue fly referred as Püllomen, due its distribution and conspicuity (Dr. C Smith-Ramirez, personal communication). *Lasia nigritarsis* presents a metallic blue coloration that also refers to its common name "jeweled spider fly" [36].

Püllomen Alwe is represented as an insect in Mapuche silverwork that is used by women in *trarilonkos* (headband jewelry), *trapelacuchas* and *sikil* (*chest jewelry*), and *kulkay* (*necklace jewel*). Mapuche women use silver jewelry not only for aesthetic reasons but also as medicine to protect against bad spirits; silver jewelry is transferred for generations by families creating linages of guardian spirits [30]. There is also a connection between silverwork and winged creatures represented in and carved on the jewelry that makes reference to rhetorical questions addressed to ancestral spirits "*antüpaiñanmko ñeuín*": "have you become hawk of the sun?, "have you become bluefly?", "Have you become butterfly?", "What happened to you in your trip to the sky?" [37,38]. Which insect "*Püllomen*" refers to is unclear, but the behavior of one species offers a clue as proposed next.

Ecological perspective

The life histories and behavior of multiple insects offer parallels with the *Püllomen* figure, some more than others. *Pepsis limbata* (Hymenoptera: Pompilidae) is a blue wasp native to Chile that is commonly seen flying short distances and hunting near the soil surface [39]. This behavior facilitates its reproduction as a parasitoid of the native tarantula *Grammostola rosea (*Arachnida: Theraphosidae). In a high-stakes battle (Fig. 1), the wasp only has one chance to sting the central nervous system in the cephalothorax of the tarantula in order to paralyze it and drag it to a hole in the soil. There, the wasp lays its eggs and its future larvae will eat the tarantula and a new generation of wasp will emerge from the ground. However, the wasp is not the guaranteed winner of this battle, and sometimes finishes instead as the tarantula's prey. Similarly, the larvae of jeweled spider flies (*Acroceridae*) also are internal parasitoids of juvenile spiders, with almost all of them being endoparasites [40]. However, the main difference of jeweled spider flies compared to *Pepsis limbata* is that Acrocerid females oviposit in foliage or branches and eggs are scattered during flight and it is the first-instar larvae (free living planidium), not the adult [41,42]. Another family of Diptera that has blue flies that potentially could have been the impetus for the Püllomen figure is Cariophoridae (*Calliphora vicina* and *Sarconesia magellanica*), which has necrophagous behavior putatively related with the rebirth of Püllomen. However, this does not reflect the active parasitoidism between two living organisms as in the case of *P. limbata* and *G. rosea*.

Parasitoidism of *G. rosea* by *P. limbata* is a scene commonly observed by a careful naturalist in central-southern Chile. The natural histories of the wasp and tarantula imply that this ecological process of paraistioidism of a tarantula by a blue wasp may have inspired a traditional indigenous spiritual figure in the Southern Cone: is *Pepsis limbata* the *Püllomen?* Does the emerging new wasp generation from the dead body of the spider

represent the continuous life cycle of the life and death, or the soul of the deceased relative? *Püllomen* also represents the connection between different worlds, through which ancestors persist in the daily life of their relatives and are able to intercede with deities [43]. This belief also relates to those of other Andean indigenous peoples (e.g. Aymara, Quechua) that honor the deceased ancestor as part of the community and as persistent entities, with a conception of death as a path to another world. In contrast, some Amazonic indigenous peoples exclude recent deceased relatives from social life [43]. Interdisciplinary research could probe these questions further with an integrative perspective that bridges traditional and scientific knowledge in ethnoecology for conservation of biodiversity and Mapuche biocultural knowledge. For example, conducting local interviews with Mapuche elders and their community in this topic, collecting traditional folktales, and connecting current stories with orally transmitted ancient knowledge and natural history of the species, may help to elucidate the origin of *Püllomen.* Ethnoecological knowledge and traditions are particularly relevant for Mapuche people which traditionally privilege their intrinsic relationship with nature and their land territory. Mapuche defined themselves as people of the land (*Mapu* = land, *che* = people), so helping to conserve their identity and biodiversity has both intrinsic sociocultural value and constitutes a form of sociopolitical resistance against biocultural homogenization supported by dominant western cultures [9].

Significance

(Re)discovering and popularizing organisms and interactions that the Mapuche indigenous perspective considers sacred could help build momentum for conserving biodiversity and cultural indigenous knowledge. Exploring the proposition that *Pepsis limbata* inspired the *Püllomen* figure is one modest contribution to the enormous task of elevating and preserving the living traditional ecological knowledge and ecologically inspired spiritual

beliefs unique to southern Chile and Argentina. Cultural globalization processes tend to homogenize societal views about nature and culture. For example, children books in Chile are biased toward exotic biodiversity, increasing cultural homogenization [44]. It is well documented that conserving nature and related cultural values are associated with local sociopolitical and economical processes. For example, rural migrations of indigenous people from the countryside to cities facilitates cultural erosion [45]. Even in rural areas Mapuche traditional folktales (*epew*) are related with more conspicuous mammals (two native felids) that are almost extinct [46]. The biodiversity conservation value that traditional indigenous stories can have in engaging local actors, connecting people with nature, and conserving traditions through generations is recognized [47]. However, this connection between biodiversity conservation and biocultural conservation can only be conserved if culturally significant biodiversity continues to exist and beliefs are passed on to future generations. For instance, many meanings of ethnozoological names in a preliminary study of Mapuche ethnozoology have already been lost due to lack of use or extinction of the organism [28]. Mapuche people conferred species-specific names for commonly seen species such as mammals and birds, but other species were grouped by a generic ethnocategories (e.g. *llalliñ* for spiders, or *küllüf* for seafood) [28]. Considering that rare species are at higher extinction risk when compared to more broadly distributed species [48], the names of less common species could be more quickly or easily forgotten.

In Chile nearly half of the population has an indigenous genetic heritage [49]. Embracing environmental experiences in native ecosystems through multicultural education, including Mapuche cosmovisions, could help to preserve biocultural knowledge and increase awareness about biodiversity loss and biocultural conservation. Although this perspective piece focuses on the case of Chile, its emphasis on linkages between ecological processes, indigenous beliefs, biocultural conservation, and resistance to cultural

240 homogenization could provide a framework for addressing similar challenges in other
241 countries.

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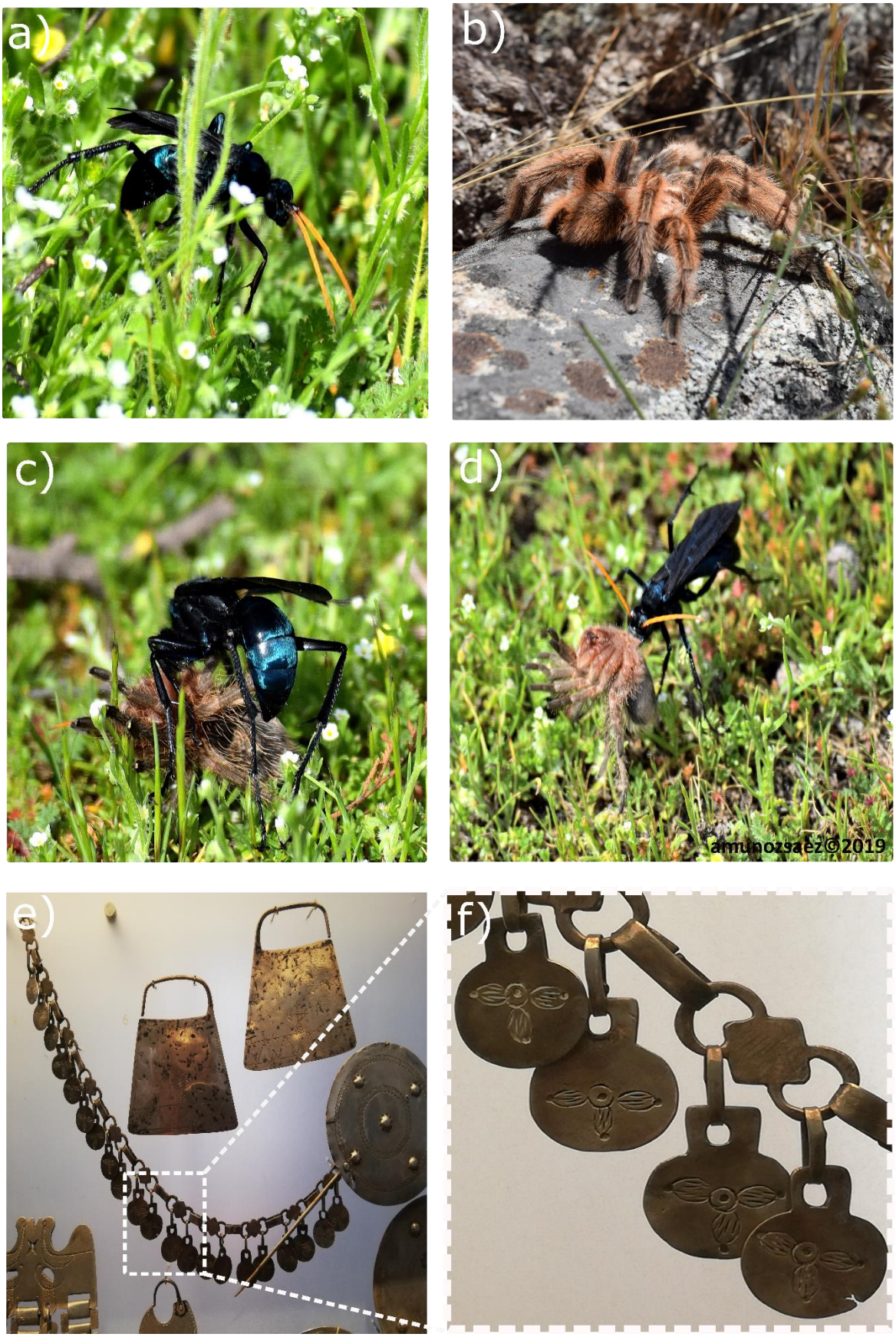

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376 Figure 1. Life-or-death battle between a) blue wasp *P. limbata* and b) tarantula *G. rosea* in
377 central Chile (Metropolitan region). c) Wasp paralyzing the tarantula. d) Wasp dragging the
378 tarantula to a cavity where to lays its eggs on the tarantula and complete its life cycle. e)
379 *Trarilonkos* (silverware headband jewel, Collection of Museo Chileno de Arte
380 Precolombino) f) Detailed of *trarilonko* showing *Püllomen* design. Photos: A. M. S.

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