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METHODOLOGICAL JOURNAL<http://mentaljournal-jspu.uz/index.php/mesmj/index>RITUAL INTERPRETATIONS OF BEE BEHAVIOUR IN THE TRADITIONAL
KNOWLEDGE OF UZBEK BEEKEEPERS**Sanjar Khamzaevich Bazarbayev**

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ABOUT ARTICLE

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Abstract: This article examines the traditional knowledge, beliefs, ritual interpretations, and practical responses of Uzbek beekeepers to changes in honeybee behaviour. Particular attention is paid to situations in which bees stop flying, become unusually agitated, reduce their collection of nectar, leave the hive, swarm, become ill, or die. The study approaches beekeeping not merely as an agricultural and economic activity but as a culturally embedded system of human–insect relations in which observations of bee behaviour may acquire symbolic, social, and ritual meanings. The research employs historical-comparative, ethnographic, structural-functional, semantic, and interdisciplinary approaches. Published materials on Uzbek beekeeping, ethnographic studies of bee-related beliefs, historical sources, and contemporary reports on traditional beekeeping knowledge in Uzbekistan are analysed. The findings indicate that beekeepers' interpretations of bee behaviour combine empirical ecological knowledge with culturally transmitted explanations. At the same time, the available published evidence does not justify treating every reported belief or ritual as a universal Uzbek practice. Therefore, regional and family-specific practices should be distinguished from widely distributed

traditions. The article argues that bee behaviour functions as an important source of environmental information for beekeepers and, in traditional cultural contexts, may also serve as a symbolic indicator of prosperity, disorder, danger, seasonal change, or the need for protective action. The study contributes to the documentation of traditional ecological knowledge and the anthropology of beekeeping in Uzbekistan.

Introduction. Beekeeping represents a distinctive form of interaction between human communities and the natural environment. Unlike many agricultural activities, it requires people to observe, interpret, and respond to the behaviour of another living organism whose social organization is highly complex. The beekeeper therefore does not simply manage a productive resource; he or she develops a long-term practical relationship with the bee colony.

In Uzbekistan, beekeeping has developed as both a traditional livelihood and a contemporary agricultural activity. Historical materials on Central Asian beekeeping indicate that bee products were known and consumed in the region for a long period, while the development of organized beekeeping intensified during the nineteenth and twentieth centuries. The history of Uzbek beekeeping also demonstrates the transmission of knowledge between generations and the adaptation of local practices to changing environmental and economic conditions . [1, 96]

The contemporary experience of Uzbek beekeepers confirms that traditional knowledge remains important. A documented case from the Bukhara region shows that beekeeping knowledge and practical skills were transmitted within a family from older generations to younger ones. The beekeeper learned to recognize the condition of the queen, food reserves, disease symptoms, and other characteristics of bee colonies through long-term practical observation .[2,148]

The significance of such knowledge extends beyond technical beekeeping. In many traditional societies, bees have occupied a special place in systems of folk belief, symbolism, ritual, and mythology. Ethnographic research conducted in different parts of Europe demonstrates that beekeepers developed specific customs, prohibitions, protective practices, euphemistic names for bees, and ritual interpretations of changes in bee colonies . [3, 3-4] Such evidence suggests that beekeeping can constitute a special cultural sphere in which empirical knowledge and symbolic interpretation coexist.

This observation raises an important question concerning Uzbekistan: how have Uzbek beekeepers traditionally interpreted unusual changes in bee behaviour, and what cultural or ritual responses have been associated with such changes?

The question is particularly relevant when bees behave differently from their expected seasonal pattern. A beekeeper may observe that bees stop flying, become aggressive, remain inside the hive, collect less nectar, swarm unexpectedly, abandon a hive, or experience large-scale mortality. From a modern biological perspective, such phenomena can be related to temperature, availability of forage, disease, pests, pesticides, queen condition, colony strength, or other ecological factors. Modern beekeeping practice explicitly emphasizes regular hive inspection and early identification of disease and pest problems . [4]

Traditional beekeepers, however, may interpret the same phenomenon through a wider cultural framework. The unusual behaviour of bees may be regarded as a sign, warning, consequence of an unfavourable condition, or indication that some action needs to be taken.

The study of these interpretations is important for several reasons. First, it contributes to the documentation of Uzbekistan's traditional ecological knowledge. Second, it makes it possible to examine the relationship between empirical observation and folk belief. Third, it provides a basis for studying the cultural significance of bees within Uzbek society. Finally, it may contribute to the broader field of multispecies ethnography by examining how people construct cultural relationships with insects.

Research problem

Despite the historical and contemporary importance of beekeeping in Uzbekistan, the cultural dimension of beekeepers' interpretations of bee behaviour remains insufficiently documented. Existing materials tend to focus on the economic, biological, agricultural, and technical aspects of beekeeping, while ritual and symbolic interpretations receive considerably less attention.

Research objective

The objective of this study is to identify and analyse ritual and symbolic interpretations of bee behaviour within the traditional knowledge of Uzbek beekeepers and to determine how such interpretations interact with practical ecological knowledge.

Research questions

The study addresses the following questions:

1. How do Uzbek beekeepers interpret unusual changes in bee behaviour?
2. What meanings are attributed to bees stopping their flight or becoming restless?

3. How is low honey production interpreted within traditional beekeeping knowledge?
4. What practices are associated with swarming, leaving the hive, illness, or death of bee colonies?
5. How do traditional interpretations coexist with modern scientific explanations?
6. Which practices can be regarded as broadly Uzbek, and which should be understood as regional or family-specific traditions?

Scientific novelty

The scientific novelty of the study lies in treating bee behaviour not simply as a biological phenomenon but as an object of cultural interpretation. The article proposes an analytical model in which observation - interpretation - ritual/practical response - social transmission of knowledge constitutes a basic mechanism through which traditional beekeeping knowledge is reproduced.

MATERIALS AND METHODS

The study applies an interdisciplinary methodological framework combining ethnography, folklore studies, anthropology, environmental history, and the study of traditional ecological knowledge.

Historical-comparative method

The historical-comparative method was used to examine the development of beekeeping traditions and the transmission of knowledge about bees across generations. Historical information on Central Asian beekeeping demonstrates that beekeeping knowledge developed alongside broader agricultural practices and subsequently incorporated both local experience and written technical knowledge . [5, 95]

Ethnographic method

The ethnographic approach was used to examine beekeeping as a culturally embedded livelihood. Particular attention was paid to the beekeeper's observations of the colony, interpretations of abnormal behaviour, and the social transmission of knowledge.

Contemporary evidence from Uzbekistan demonstrates that traditional beekeeping knowledge may be transmitted within families and combined with modern technical practices . [6] This coexistence provides an important methodological basis for distinguishing between inherited cultural interpretations and contemporary scientific explanations.

Structural-functional method

The structural-functional approach was employed to determine the functions performed by beliefs and ritual practices.

A particular practice may perform several functions simultaneously:

- explaining an unusual event;
- reducing uncertainty;
- strengthening confidence in the beekeeper;
- protecting the bee colony;
- maintaining continuity between generations;
- reinforcing social identity;
- expressing respect toward nature.

Thus, a ritual should not be interpreted exclusively as a “superstitious” action. It may also function as a mechanism of social memory and environmental interpretation.

Semantic analysis

Semantic analysis was used to examine the meanings attached to bee behaviour.

The following semantic categories are particularly relevant:

bee activity - productivity - abundance

bee restlessness - danger - uncertainty

bee absence - loss - disruption

swarming - reproduction - renewal

honey abundance - prosperity - blessing

colony death - misfortune - environmental disturbance

These categories provide an analytical framework for interpreting traditional narratives about bees.

Comparative ethnographic approach

Comparative ethnographic materials from other societies were used cautiously in order to identify broader patterns in human-bee relationships. Studies of European beekeeping traditions demonstrate that bees may be associated with family continuity, death, prosperity, ritual protection, and sacred knowledge .[7, 6]

These comparative materials are not treated as evidence of Uzbek practices. Rather, they are used to develop an analytical framework for interpreting Uzbek ethnographic material.

Source criticism

An important methodological principle of the study is the distinction between:

1. documented Uzbek practices;

2. regional or family-specific practices;
3. comparative ethnographic evidence from other cultures;
4. interpretations proposed by the researcher.

This distinction is essential because published sources currently available do not provide sufficient evidence for claiming that every ritual associated with unusual bee behaviour is practiced throughout Uzbekistan.

RESULTS

The first major result of the study is that bee behaviour constitutes an important source of information for beekeepers.

Experienced beekeepers are able to recognize changes in colony condition by observing flight activity, sound, movement, food reserves, queen presence, and other characteristics. Contemporary documentation of Uzbek beekeeping demonstrates that experienced beekeepers can identify the condition of a queen, food availability, and possible disease or pest infestation through regular observation of the colony . [8]

This demonstrates that what may appear from outside to be a simple “belief about bees” may in fact contain an empirical observation accumulated over many years.

For example, a beekeeper who says that “the bees have become restless” may be describing a real change in colony behaviour. The traditional interpretation attached to that observation, however, may differ from a modern biological explanation.

Therefore, it is necessary to distinguish between:

behavioural observation and cultural interpretation of that observation.

This distinction is central to the anthropology of traditional beekeeping.

One of the most significant behavioural changes observed by beekeepers is a reduction or complete cessation of flight activity.

From a biological perspective, reduced flight may be associated with temperature, rain, strong wind, absence of flowering plants, lack of forage, colony weakness, disease, pesticide exposure, or other environmental factors.

Traditional beekeepers, however, may interpret unusual inactivity as a sign that “something is wrong” with the colony.

The cultural significance of this interpretation lies in the fact that the bee is expected to be continuously active. The image of the bee is strongly associated with work, movement, productivity, and order. Therefore, inactivity contradicts the culturally expected behaviour of the bee.

This produces a symbolic opposition:

active bee = healthy colony = productive household

inactive bee = disturbance = uncertainty = possible loss

The ritual response, where it exists, should therefore be understood as an attempt to restore order and productivity.

However, it would be methodologically incorrect to claim that Uzbek beekeepers universally perform a specific ritual whenever bees stop flying. The available sources do not establish such a universal practice. Instead, this phenomenon should be investigated through regional fieldwork and oral-history interviews.

Unusual aggression or restlessness is another important indicator for experienced beekeepers.

Modern beekeeping recognizes colony temperament as an important practical characteristic. The condition of the queen, colony strength, weather, disease, pests, and other environmental factors can influence bee behaviour. Traditional knowledge similarly pays close attention to changes in temperament.

From an ethnographic perspective, restlessness has an important symbolic meaning because it violates the expected order of the apiary.

The beekeeper may interpret increased aggression as:

- an indication of disturbance;
- a warning;
- evidence that the colony is not in a normal condition;
- a sign that the hive requires attention.

This interpretation demonstrates that traditional ecological knowledge is often based on continuous sensory observation.

The beekeeper does not necessarily separate biological and cultural knowledge into two independent systems. Instead, both may coexist within a single explanatory framework.

Reduced honey production is one of the most economically significant changes in beekeeping.

At the practical level, low honey production may result from poor flowering conditions, drought, excessive heat, insufficient forage, colony weakness, diseases, pests, or other environmental factors.

Modern beekeeping programmes in Uzbekistan also emphasize environmental conditions, hive management, disease prevention, and the availability of forage as important factors affecting productivity . [9]

Traditional interpretations, however, may associate reduced productivity with broader notions of baraka, prosperity, and the condition of the household.

The semantic relationship can be represented as:

healthy bees - abundant honey - prosperity

and conversely:

weak bees - little honey - reduced prosperity.

This connection is particularly important anthropologically because it transforms the bee colony into an indicator of household wellbeing.

The bee is not simply producing honey; its productivity may become a metaphor for the productivity and prosperity of the household itself.

Swarming represents one of the most visible changes in the life of a bee colony.

From a biological perspective, swarming is a natural reproductive process through which a colony produces a new colony. For beekeepers, however, it can represent both an opportunity and a potential economic loss.

The traditional interpretation of swarming may therefore contain two opposing meanings:

renewal and multiplication

versus

loss of the established colony and honey production.

This ambiguity makes swarming particularly important for ethnographic research.

A swarm may be viewed positively when it results in the creation of a new bee colony. At the same time, the loss of bees from the original hive may be interpreted negatively because the beekeeper loses part of his productive colony.

Further field research is necessary to determine which symbolic interpretations are characteristic of particular Uzbek regions.

The disappearance of a bee colony is among the most emotionally and economically significant events for a beekeeper.

A modern beekeeper may investigate disease, pesticide exposure, food shortages, queen problems, parasites, weather conditions, or other causes.

Traditional interpretations may instead frame the event as a sign of disorder, misfortune, or an unfavourable environmental condition.

Comparative ethnographic research demonstrates that in several traditional cultures bees have been associated with the household and with the fate of the beekeeper. Some traditions even interpret the death of a beekeeper as being connected with the death or disappearance of his bees . [10, 228-252]

Such comparative evidence is important for understanding the potential symbolic depth of human-bee relationships. Nevertheless, these European examples cannot automatically be attributed to Uzbek culture.

For Uzbekistan, this issue should therefore be investigated through oral histories collected from experienced beekeepers.

Disease is one of the most serious threats to beekeeping.

Modern beekeeping emphasizes early identification of disease and pests. Contemporary Uzbek beekeepers trained through agricultural programmes are encouraged to inspect hives and recognize early symptoms . [11]

Traditional beekeepers, however, may interpret disease through a combination of empirical and cultural explanations.

The important point is that traditional knowledge should not automatically be dismissed as irrational. A beekeeper may identify a colony as “weak” long before he or she can identify the scientific cause of that weakness.

In this sense, traditional knowledge may function as an early-warning system based on accumulated experience.

The death of bee colonies occupies a special place in the cultural interpretation of beekeeping.

For a beekeeper, the death of bees means more than the loss of insects. It can mean loss of labour, income, honey, wax, and future colonies.

Consequently, bee mortality may produce emotional and symbolic responses.

In traditional societies where bees have been associated with the household, the death of bees may be interpreted as a serious sign. Comparative folklore studies demonstrate that bees can be regarded as symbolic beings connected with life, death, household continuity, and prosperity . [12, 235-236]

For Uzbek ethnography, this field remains insufficiently documented and therefore deserves systematic collection of oral testimony.

A particularly important research category concerns practices intended to protect bees.

In world ethnography, beekeepers have used:

- protective objects;
- verbal formulas;
- prohibitions;
- special treatment of hives;
- sacred or symbolic objects;
- ritual timing;
- special behaviour around the apiary.

Ethnographic studies of beekeeping traditions demonstrate that such practices can coexist with practical knowledge and commercial activity . [13, 191-208]

The same analytical model can be applied to Uzbekistan, but with an important qualification: a protective practice should only be classified as Uzbek when it is supported by Uzbek ethnographic or field evidence.

This is particularly important for future research because contemporary Uzbek sources already confirm the existence of traditional beekeeping knowledge, while the ritual dimension remains comparatively underdocumented . [14]

One of the most interesting possible areas of research is the beekeeper's verbal relationship with bees.

In several traditional cultures, bees have been addressed using kinship terms, euphemisms, or special forms of speech. Comparative research shows that bees could be called “workers,” “men,” or kinship-related names, and that special verbal formulas were used in some traditions . [15, 240-242]

This suggests a broader anthropological principle:

the more socially significant an animal becomes, the more specialized the language used to speak about it becomes.

Whether comparable linguistic practices exist among Uzbek beekeepers should be established through field interviews rather than assumed from comparative materials.

DISCUSSION

The results demonstrate that the relationship between Uzbek beekeepers and bees can be interpreted through the concept of traditional ecological knowledge.

Traditional ecological knowledge is not simply a collection of beliefs. It consists of observations, practical skills, environmental knowledge, seasonal experience, classifications, behavioural expectations, and culturally transmitted interpretations.

In beekeeping, these elements become particularly visible because the beekeeper must constantly interpret the behaviour of another living organism.

The relationship can therefore be represented as follows:

Observation -interpretation -response -experience -transmission.

For example:

bee becomes restless -beekeeper recognizes abnormality -investigates or performs a culturally meaningful action -evaluates the result -transmits knowledge to younger generations.

This model demonstrates why traditional knowledge cannot be reduced to either “science” or “superstition.”

It contains elements of both empirical observation and symbolic interpretation.

From an anthropological perspective, bee behaviour may be treated as a kind of cultural “text” that beekeepers learn to read.

Flight activity can indicate environmental conditions.

Sound can indicate colony condition.

Aggression can indicate disturbance.

Swarming can indicate reproduction.

Honey production can indicate forage availability and colony strength.

The beekeeper therefore develops a culturally specific system of interpretation.

This is particularly important because such knowledge is often tacit. Experienced beekeepers may not be able to formulate their knowledge in scientific terminology, yet they can recognize changes in the colony through accumulated experience.

A major theoretical conclusion of the study is that ritual and practical knowledge should not automatically be treated as opposites.

A beekeeper may simultaneously:

- observe the weather;
- inspect the hive;
- check the queen;
- assess the food reserve;
- consider disease;

- perform a traditional protective practice;
- express a blessing or good wish.

These actions may coexist within one cultural system.

This phenomenon has also been observed in comparative ethnographic research, where traditional beekeeping combines archaic beliefs, protective practices, religious symbolism, and modern commercial knowledge . [16, 200-201]

The symbolic connection between bees and prosperity deserves particular attention.

Bees are industrious, collective, organized, and productive. Their labour results in a valuable product – honey.

Consequently, the bee becomes an ideal metaphor for:

- hard work;
- order;
- cooperation;
- prosperity;
- household productivity;
- abundance.

When honey production declines, the economic loss can therefore acquire symbolic significance.

This provides a possible explanation for why unusual bee behaviour may be interpreted more broadly than merely as a biological event.

Beekeeping knowledge often has a strongly intergenerational character.

The Uzbek case documented by FAO demonstrates that knowledge of bee management may be transmitted within families, with older generations teaching younger members through practical participation . [17]

This makes the beekeeper a particular type of cultural knowledge bearer.

The beekeeper knows:

- seasonal rhythms;
- flowering periods;
- colony behaviour;
- hive locations;
- weather signs;
- bee temperament;
- honey plants;

- methods of colony management.

Some of this knowledge is written today, but a significant part remains embodied in practice.

Modernization is changing Uzbek beekeeping.

Digital tools, scientific veterinary knowledge, disease monitoring, improved equipment, and modern hive-management techniques are increasingly available to beekeepers. FAO's support programmes in Uzbekistan have specifically addressed information gaps, disease management, pesticide risks, and digital access to beekeeping knowledge . [18]

At the same time, traditional knowledge has not simply disappeared.

Contemporary beekeepers may combine inherited knowledge with scientific recommendations. The resulting system can be described as hybrid ecological knowledge.

This hybridization represents an important area for future research.

Conclusion. The study demonstrates that bee behaviour occupies a significant place in the knowledge system of beekeepers because it provides information about the condition of the colony, the environment, and the productivity of the apiary.

In the traditional cultural context, however, the observation of bee behaviour may extend beyond practical diagnosis. Bees may become symbolic indicators of prosperity, disorder, danger, productivity, renewal, and loss.

The most important behavioural situations requiring further ethnographic investigation include:

1. bees stopping or reducing flight activity;
2. unusual restlessness or aggression;
3. declining nectar collection;
4. low honey production;
5. unexpected swarming;
6. bees leaving the hive;
7. colony illness;
8. mass mortality;
9. changes in queen behaviour;
10. successful multiplication of colonies;
11. unusually high honey production;
12. changes in bee behaviour before major environmental events.

The research also demonstrates that it is scientifically necessary to distinguish between documented Uzbek traditions and comparative ethnographic parallels. Although international ethnographic literature provides numerous examples of ritual and symbolic relationships between beekeepers and bees, such evidence cannot automatically be attributed to Uzbek culture.

Contemporary evidence from Uzbekistan nevertheless confirms that beekeeping knowledge is transmitted between generations and that traditional practices continue to coexist with modern technical knowledge . [19]

Therefore, the study of Uzbek beekeepers' ritual interpretations should be expanded through systematic fieldwork, particularly oral-history interviews with elderly and experienced beekeepers in different regions of Uzbekistan.

Such research would make it possible to document practices that may not yet have been adequately represented in published literature.

The cultural significance of bees can ultimately be summarized through four interconnected dimensions:

bee -labour -abundance -cultural meaning.

The bee is therefore not merely an agricultural insect. Within the traditional knowledge of beekeepers, it may function simultaneously as a biological organism, economic resource, environmental indicator, social metaphor, and cultural symbol.

The documentation of these relationships is particularly important today because modernization, environmental change, pesticide exposure, climate variability, and transformation of rural livelihoods may cause traditional beekeeping knowledge to disappear or change rapidly . [20]

For this reason, the ethnographic study of Uzbek beekeeping should be regarded as an important direction within the broader study of traditional ecological knowledge and multispecies cultural relations.

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