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LIFE SCIENCE (LS) EDITING SAMPLE

Prepared by:

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+91-8093778526



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info@researchedit4u.in

Life Science Research Paper - Technical Copyediting Sample (Client Anonymised)

Service: Subject-aware copyediting (Life Science) | Style: American English |

Mode: Track Changes + Comments

Prepared by: RE4U Solutions

Confidential —for demonstration only

Field	Details
Subject	Fruit fly (<i>Bactrocera</i>) pest diversity in Pakistani mango crops (2022 season) morphological identification of <i>B. dorsalis</i> and <i>B. zonata</i> across Punjab & Sindh, confirmed via mt-COI DNA barcoding and genetic clustering.
Type of article	Life Sciences / Entomology / Agricultural biology research manuscript (field sampling + lab rearing + morphological taxonomy + molecular validation using DNA barcodes).
Sections shown in sample	Abstract, Introduction excerpt, Conclusion excerpt.
Primary goal of editing	Improve scientific clarity and readability (methods narration, taxonomic/molecular terminology, numbers, and flow) while keeping meaning intact; American English with reviewer-friendly markup.
Editing level demonstrated	Subject-aware copyediting (Life Science) with Track Changes + Comments (clarity/consistency without changing scientific conclusions).
Deliverables	Track-changes edited file + Comments (editorial rationale visible to the client/reviewer).

C) “Overall issues found” + “Solution provided” (Cover page summary — Life Sciences)

Major issues (high impact)

1. **Methods clarity (workflow compression):** Key steps (field collection → lab rearing → morphological ID → DNA barcoding → genetic clustering) were densely packed and needed cleaner sequencing so the study design reads instantly.
2. **Terminology precision (taxonomy + molecular biology):** Species naming and gene notation (e.g., *Bactrocera*, *B. dorsalis*, *B. zonata*, mt-COI/mtCOI) required consistent, discipline-appropriate formatting across sections.
3. **Quantitative reporting readability:** Large counts and sampling detail (e.g., locations/districts, number of flies, “30–80% damage”) needed tidy number presentation and smoother integration into sentences.
4. **Evidence-aligned interpretation:** Statements about confirmation/validation and “valuable insights” needed careful, reviewer-safe phrasing tied clearly to what the data actually show (two species, two clusters, intraspecific distances).
5. **Flow from background → gap → aim:** The Introduction had strong content but benefited from tighter transitions linking global pest impact → limits of morphology → rationale for barcoding → Pakistan-specific gap.

Minor issues (low–medium impact)

- **Grammar/usage + sentence economy:** Small wording smoothness improvements to keep technical prose fluent in American English.
- **Consistency in formatting:** Uniform treatment of italics/abbreviations, hyphenation (mt-COI-based), and citation punctuation for a clean journal look.
- **Redundancy trimming:** Reduced repeated phrasing while preserving scientific meaning and emphasis.

Solution provided (what RE4U copyeditors did)

- **Delivered meaning-preserving, subject-aware** Life Science copyediting to improve clarity and reviewer readability without changing the science.
- **Restructured key sentences so the story reads cleanly:** sampling → identification → molecular confirmation → key findings → implication.

- **Standardised taxonomy/molecular terminology** (species naming + mt-COI notation) and polished numerical reporting for scan-friendly results.

*Current verdict: The manuscript addresses a practical life-science problem—fruit fly (*Bactrocera*) diversity affecting Pakistani mango production—and the overall aim (identify key species using morphology and mt-COI barcoding) is clear. At present, however, the methods and results read compressed in places: several sentences carry too many steps, locations, counts, and percentages at once, and taxonomic/molecular notation (species names, mt-COI/mtCOI) needs more consistent presentation. The Introduction would benefit from smoother transitions that clearly connect pest impact → identification limits → rationale for barcoding → Pakistan-specific gap. The edits are meaning-preserving and domain-aware, improving clarity while keeping the scientific conclusions intact.*

- **Provided Track Changes** + Comments so authors can see what changed and why at a glance.

ABSTRACT

Fruit flies of the genus *Bactrocera* are important significant insect pests that affect the commercial cultivation of commercially cultivated mangos in Pakistan limiting its, hindering successful production in the country. Despite the economic risk threat they pose, the genetic diversity and population dynamics of this pest these pests have remained unexplored not been thoroughly investigated. This study aimed to morphologically identify *Bactrocera* species infesting Mangomangoes in the major production areas of the country and to confirm the results with these findings using insect DNA barcode techniques. Infested mango Mango fruits from infested during the 2022 crop of 2022, season were collected from 46 locations of 11 major across 11 major production districts of in the Punjab and Sindh provinces, and the first-generation flies were obtained reared in the laboratory. All 10,653 first-generation flies were morphologically identified as two species of *Bactrocera*; species: *dorsalis* and *zonata* showing geography-based, with their relative abundance in varying geographically between the two provinces, Punjab and Sindh. Morphological identification was confirmed corroborated by mitochondrial cytochrome oxidase gene subunit I (mt-COI)-based DNA barcoding. Genetic analysis of the mtCOI gene region of in 61 selected specimens by the presence of revealed two defined distinct clusters and reliable intraspecific distances validated, validating the results of morphological identification results. This study by, through the morphological identification of a large number of many fruit fly specimens from the fields across Pakistan validated, confirmed by insect DNA barcode barcoding, reports two species of *Bactrocera* species infesting mangomangoes in the country.

INTRODUCTION EXCERPT

Fruit flies of the genus *Bactrocera* (Diptera: Tephritidae) with more than 5000 Tephritidae), comprising over 5,000 species, are among the most important significant pests of affecting fruits and vegetables in the world [1], globally [1]. In addition to the polyphagous nature of some certain species, several many are considered deemed highly invasive; aided, a situation

exacerbated by the globalization of trade and poor/inadequate quarantine infrastructure in the developing countries. Adults often exhibit frequently display a strong tendency/propensity for dispersal—and the, whereas immature stages are readily/easily transported to new areas via regions through fruit movement [2]. [2]. The direct damage reported/inflicted by these flies is ranges from 30% to 80%%, depending on the fruit variety, season, and location [3], resulting in [3], leading to annual losses worth/amounting to billions of dollars. The cost includes These costs encompass both infestation and management techniques [4].

Taxonomy that utilizes strategies [4]. For decades, taxonomy relying on morphological identification has been at the gold standard for insect identification for decades [5]. [5]. However, this conventional approach is challenged by availability/traditional method faces challenges due to the scarcity of taxonomic experts and keys-species-specific to insect species, keys, issues with sample handling, different/the various stages of insect metamorphosis, change/changes in morphological traits by/due to host adaptability, and most importantly, crucially, the presence of hybrid species and the existence of some insects as species complex [6]-complexes [6]. DNA barcoding—for insect identification, including the use of mt-COI gene regions—is, has been introduced relatively recently as a parallel/complementary approach to morphology based/morphological taxonomy. It is This method involves a short, standardized sequence of the mt-COI gene that can be easily amplified by/using a universal set of primers—and resulting sequence is able to provide a higher, providing greater sequence variation at both the inter- and intra-species level/levels. [77,88].

From In Pakistan—eighteen, 18 species of fruit flies are/have been morphologically characterized/identified from different/various fruits and vegetables [9–15] and [9–15], yet there are very limited/only a few reports on their genetic diversity [16,17]. [16,17]. Similarly—not much, there is known/limited knowledge about the diversity and geographical distribution of the fruit flies infesting Mango crop that infest mango crops in the country [16,17].

[16,17]. In recent years, Pakistan has become/emerged as a popular country in the production/prominent producer of different mango varieties of mango fruits and is currently is the second largest mango-producing country [11,12,18]. [11,12,18]. Fruit flies are/pose the greatest enemies of the mango fruit/threat to mangoes in Pakistan and, with studies from limited samples and a few areas—show regions indicating the presence

of *B. dorsalis* and *B. zonata* from Mangos in the country [17 in the country's mangoes. [17,1919,2020].

CONCLUSION EXCERPT

~~The morphology~~Morphology-based identification ~~validated~~confirmed by mt-COI gene barcoding ~~shows~~indicated the presence of two ~~species of~~Bactrocera- ~~species~~ in ~~the 2022~~ mango crop ~~of year 2022~~ in Pakistan. ~~Validation of morphological data by~~ mt-COI gene analysis ~~shows that it~~supports the ~~absence~~effectiveness of ~~barcode technology~~ morphology-based identification ~~is an effective approach~~as a method for screening adult fruit flies of ~~the~~ Bactrocera genus. ~~However, integrated~~, especially when barcode technology is unavailable. ~~Nevertheless, the integration of~~ barcoding, ~~a combination of which merges~~ traditional taxonomy ~~and with~~ molecular ~~methods, enhance~~techniques, ~~has significantly improved~~ the accuracy and reliability of ~~results. Overall~~these studies. ~~Therefore~~, this study ~~contributes important information on~~offers valuable insights into ~~the~~ species diversity and genetic variation of ~~Bactrocera on Mango crop in mango crops~~ in Pakistan.

WHAT WE CHANGED / WHY / RELEVANCE TO LIFE SCIENCES

Change type	What our copyeditors did	Why it was needed	Why it matters in Life Sciences
Methods clarity	Re-sequenced and tightened the workflow narrative so the study reads in a clean order: sampling → lab rearing → morphological ID → DNA barcoding → genetic clustering.	Key steps were densely packed, making the design hard to follow at first scan.	Reviewers assess rigor through transparent methods ; clearer sequencing improves reproducibility perception.
Terminology precision (taxonomy + molecular)	Standardised scientific naming and gene notation (e.g., Bactrocera , B. dorsalis , B. zonata , mt-COI/mtCOI), including consistent formatting across sections.	Mixed/uneven notation and naming can create ambiguity and look “uncontrolled” in a taxonomy–barcoding manuscript.	Life-science journals expect taxonomic accuracy and consistent molecular notation ; it directly affects credibility and indexing.
Quantitative reporting readability	Cleaned the presentation of counts, sampling scope, and percentages (e.g., 46 locations, 10,653 flies, 30–80% damage) and integrated numbers smoothly into sentences.	Large numeric detail was correct but heavy, reducing scanability.	In biological manuscripts, reviewers often scan for study scale and effect size first; clean numeric reporting reduces misread risk.

Evidence-aligned interpretation	Refined claims about “confirmation/validation” and “valuable insights” so they map tightly to what the data show (two species, two clusters, reliable intraspecific distances).	A few phrases could sound broader than the immediate evidence base.	Reviewer pushback often targets over-interpretation ; evidence-matched wording strengthens acceptance chances.
Flow (background → gap → aim)	Tightened transitions linking: global pest impact → limits of morphology → rationale for mt-COI barcoding → Pakistan-specific gap.	The content was strong, but the logical bridge between ideas needed clearer signposting.	A strong intro helps editors see the novelty and justification quickly—critical in applied entomology studies.
Grammar & American English	Polished grammar/usage and tightened sentence economy while keeping scientific meaning intact; aligned the manuscript to American English.	Minor language noise can distract reviewers in technical sections.	Clear, consistent English improves professional tone and reduces “avoidable revisions” during peer review.
Consistency checks (formatting/citations)	Standardised formatting details (italics/abbreviations, hyphenation like mt-COI-based , citation punctuation) for a clean journal look.	Small inconsistencies accumulate and make the manuscript feel less controlled.	Consistency signals editorial discipline and increases reviewer confidence in the overall work.
Transparency (Track Changes +	Provided edits in Track Changes + Comments so the	This is a sample meant to demonstrate	Builds trust and speeds revisions—

Comments)	author can see what changed and why.	editorial decisions clearly.	especially when terminology and interpretation must remain precise.
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