Shipment of insects and related arthropods into and out of India for research or commercial purposes

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Summary

This paper provides a concise summary of the guidelines and regulations that govern the shipment of insects and related arthropods into and out of India. The Plant Quarantine (Regulation of Import into India) Order, 2003, that regulates the import of agents for biological control, and the Biological Diversity Act, 2002, and associated Biological Diversity Rules, 2004, that guide the transfer of insects and related arthropods for identification, taxonomic research, as well as commercial purposes, are discussed. Processing, packing and shipping procedures and protocols are described. Insect trade for some food and feed purposes is also mentioned. Finally, some implications, conclusions and recommendations are presented.

Keywords

Biocontrol agents – Bioresources – Insect exchange – National Biodiversity Authority.
Introduction

The documented history of insect shipments to India dates back to the 18th century. These first arrivals were all related to the efforts of the East India Company to introduce the true cochineal insect (*Dactylopius coccus* Costa) (Hemiptera: Dactylopiidae) into India for the dye industry. Even though there was no real success in this endeavour, the narrative on the resolute attempts at establishing a lucrative cochineal trade makes interesting reading. Tryon (1) gives an account of these efforts, citing reports by East India Company official G.A. Prinsep from 1838/9 besides referring to the works of Whitelaw Ainslie (2), Superintending Surgeon of the then Madras Establishment, and William Roxburgh (3), the then Superintendent of the Botanical Gardens in Calcutta (now Kolkata). The first lot of the insect (‘grana silvestre’, the inferior cochineal) was hand-carried from Brazil by Captain Richard Neilson and handed over to Roxburgh in 1795. Subsequently, in the early 19th century, there were more introductions of the same insect species, while the intention was to import ‘grana fina’, the superior cochineal. Luckily, though, the actual insect species imported — *D. ceylonicus* Green — turned out to be valuable as a biocontrol agent for prickly pear cacti, particularly, *Opuntia monacantha* (Willd.) Haw. (Cactaceae). The difficulties of importing live insects could also be understood from the experience of the then Mysore Department of Agriculture, which in the early 1900s attempted to introduce the seed fly *Ophiomyia lantanae* (Froggatt) (= *Agromyza lantanae* Froggatt) (Diptera: Agromyzidae) from Hawaii on five different occasions, but most of the insects were received dead each time, delaying and almost leading to failure of the intended programme of biological control of *Lantana camara* L. (Verbenaceae), the lantana weed (4). India has come a long way since then, and robust regulations and guidelines are in place now for the shipment of insects and related arthropods into and out of India for research or commercial purposes.
Shipments of insects and related arthropods for biological control

The volume of importation of insects saw a quantum jump from the 1960s following the establishment of the Commonwealth Institute of Biological Control (CIBC) Indian Station at Bangalore (now Bengaluru) in 1957. Exotic insects for biocontrol purposes were prioritised and imported into quarantine, and those considered safe to nontargets were liberated in the field as classical biological agents. Similarly, insects were also shipped out of India, primarily for biocontrol purposes. Thus, India played a significant role in the global exchange of insects, and other natural enemies, for biological control. In 1977, the Indian Council of Agricultural Research (ICAR) initiated the All-India Coordinated Research Project on Biological Control of Crop Pests and Weeds, which paved the way to further strengthen the importation of natural enemies for biological control of invasive insects and weeds. Since 1993, the ICAR–National Bureau of Agricultural Insect Resources (ICAR–NBAIR) in its various forms has been handling the importation and introduction of biocontrol agents, particularly insects. Procedures to support the safe introduction of biocontrol agents have been an important responsibility of this bureau.

Plant Quarantine (Regulation of Import into India) Order, 2003

The Directorate of Plant Protection, Quarantine and Storage, which came into being in 1946, headed by the Plant Protection Advisor, is established under the Department of Agriculture, Cooperation and Farmers’ Welfare in the Ministry of Agriculture and Farmers’ Welfare, Government of India. One of its mandates is to prevent introduction of exotic pests inimical to Indian agriculture by implementation of the Destructive Insects and Pests (Amendment and Validation) Act, 1992 (the Destructive Insects and Pests Act, 1914, is the principal Act), supported by the Plant Quarantine Order (PQO) Regulation of Import into India, 2003. The PQO regulates the import and prohibition of import of plants and plant products into India. It contains specific requirements for permits for live insect imports where they pertain to
agriculture. It was published in the Gazette of India (S.O. 1322 (E), dated 18 November 2003) by the then Ministry of Agriculture, and has been subsequently amended 90 times, the last being on 10 June 2021 (an updated and consolidated version of the order is available at: http://ppqs.gov.in/archive-acts). The PQO, which came into effect from 1 April 2004, has 15 clauses describing various aspects and conditions of import of agricultural articles (plants and plant products) into India. There are 16 administrative forms for various plant quarantine regulatory functions, two of which (Forms 12 and 13) relate specifically to import of live insects (5). The earlier order ‘Rules for regulating the import of insects into India’ notified under F-193/40 dated 3 February 1941 has been repealed after the enactment of the PQO.

**Plant Quarantine Order Chapter II provides the general conditions for import as below**

The primary concern addressed in the PQO is to prevent introduction of potentially harmful contaminant organisms along with colonies of potentially beneficial insects, so the order requires a taxonomic declaration and requires approved quarantine to ensure clean colonies.

**Paragraph 7. Import of live insects and other arthropods/nematodes/microbial cultures including algae/biocontrol agents:**

(1) No consignment of live insects and other arthropods/nematodes/microbial cultures including algae/biocontrol agents shall be permitted into India without valid import permit issued by competent authority as specified under Schedule-X.

(2) Every application or online application for permit to import live insects and other arthropods/nematodes/microbial cultures including algae/biocontrol agents, shall be made in the PQ Form 12 at least thirty days in advance to Plant Protection Adviser along with a fee of Rs. 1,000 towards registration in the form of bank draft issued in favour of the Accounts Officer, Directorate of Plant Protection Quarantine and Storage, Faridabad.
(3) The competent authority shall issue the permit in PQ Form 13 in triplicate, if satisfied of the purpose for which import is made and subject to such conditions imposed thereon.

(4) All the consignments of live insects and other arthropods/nematodes/microbial cultures including algae/biocontrol agents shall be permitted only through points of entry specified under Clause 3(14). The consignment of beneficial insects shall be accompanied by a certificate issued by National Plant Protection Organisation at the country of origin with additional declarations for freedom from specified parasites and parasitoids and the biocontrol agents free from hyperparasites. The consignment of beneficial insects/biocontrol agents shall be subjected to post-entry quarantine as may be prescribed by the Plant Protection Advisor.

(5) Nothing contained in the clause shall apply to import of live insects and other arthropods/nematodes/microbial cultures including algae/biocontrol agents having no relevance in agriculture.

**Quarantine facility for biocontrol agents**

An exclusive quarantine facility of international standard is available at ICAR–NBAIR, Bengaluru, to handle imported arthropod and microbial biocontrol agents. The structure includes a quarantine area with HEPA (high-efficiency particulate air) filters and airtight doors; a glasshouse with a shatterproof polycarbonate roof; an incinerator; a double-ended autoclave; and other pieces of equipment needed to handle various imported organisms. Although this facility has been catering to the Indian biocontrol programmes, it could also serve other countries in the region that lack quarantine facilities, if needed (6).
Regulations for export of live insects and related arthropods for non-commercial research towards biological control for global benefit

Export shipment of classical biocontrol agents that are effective against potential invasive pests in other countries are required to comply with guidelines published by the National Biodiversity Authority (NBA), established under the Biological Diversity Act, 2002 (BDA). A distinction is made between the biological resources native to India and those that have been naturalised in India, so an objective of the legislation is ‘fair and equitable sharing of the benefits arising out of the use of biological resources’. If the insect species is indigenous to India, then the necessary permissions may be obtained through Form B (7). If the insect species is an exotic biocontrol agent, which has been imported long ago to India for biological control and the species has been established in India for years, the Biological Diversity Act does not apply. In such cases, a request letter from the country which is in need of the biocontrol agent is required, based on which a proposal for export must be prepared for each individual case. This proposal is considered by the committee dealing with export of bioagents at the respective institute and must be approved by the institute committee and the director of the institute, noting that the provision of the Biological Diversity Act does not apply to the exotic organism. The exotic nature of the requested biocontrol agents can be adequately confirmed and certified by the designated committee at the institute level. Then the export of biocontrol agents for the purpose of non-commercial research or under a global biocontrol programme can be implemented enclosing the declaration/certification from the designated committee stating the exotic nature of the biocontrol agents. In any case, the voucher specimens or samples of such export species should be deposited in the institute repository.

Packing and shipping of insects and related arthropods for biological control

Indian scientists follow international procedures and protocols for packing and shipping of insects and related arthropods for biological
control. Because of the involvement of at least two countries in such transfers, common protocols are a must. Early reviews, such as the one by Boldt and Drea (8), laid the foundation to standardise these techniques. Within the country, ICAR–NBAIR has a long history of supplying trichogrammatids, chrysopids, coccinellids and other parasitoids and predators via domestic couriers and speed post. Most of the routine procedures of packing have been brought into conformity with set standards in order to assure consistency so that the methods are highly reliable in ensuring secure containment and a suitable environment in transit. The suggestion that trial packages should be subjected to the type of handling and environmental conditions that they are likely to encounter in transit (9) is followed whenever feasible. Some of the common procedures for living arthropods are dealt with elsewhere in this issue (10; 11).

**Shipment of insects for identification or taxonomic research**

The National Biodiversity Authority (NBA), an autonomous and statutory body of the Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India, located in Chennai, is the regulatory body in India for accessing the biological resources in the country for research or commercial purposes. Shipment of insects for research or commercial purposes should comply with the Biological Diversity Act, 2002, and Biological Diversity Rules, 2004. Insect samples or any biological resources to be accessed by foreign citizens/entities for research or to be sent or hand-carried abroad by Indian citizens/institutions for research and non-commercial purpose through Sections 39 (1–3) and 19 (1) of the Biological Diversity Act, 2002, along with Rule 14(6) (viii) of the Biological Diversity Rules, 2004, and Regulation on Access and Benefit Sharing Guidelines notified in November 2014 should follow the regulations and guidelines of NBA, India (12). These rules are primarily intended to protect national biological resources and traditional knowledge.
Regulations and guidelines

In pursuance of the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation to the Convention on Biological Diversity, which has been in place since 2014, NBA notified the following regulations, called the Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014 under the Biodiversity Act, 2002, and Biological Diversity Rules, 2004. The access to insect resources from India requires necessary permissions and approvals from NBA notified under Section 13 of the guidelines:

Section 13. Conducting of non-commercial research or research for emergency purposes outside India by Indian researchers/government institutions:

(1) Any Indian researcher/government institution who intends to carry/send the biological resources outside India to undertake basic research other than collaborative research referred to in section 5 of the Act shall apply to the NBA in Form ‘B’ annexed to these regulations.

(2) Any government institution which intends to send biological resources to carry out certain urgent studies to avert emergencies like epidemics, etc., shall apply in Form ‘B’ annexed to these regulations.

(3) The NBA shall, on being satisfied with the application under sub-regulation (1) or sub-regulation (2), accord its approval within a period of 45 days from the date of receipt of the application.

(4) On receipt of approval of the NBA under sub-regulation (3), the applicant shall deposit voucher specimens in the designated national repositories before carrying/sending the biological resources outside India and a copy of proof of such deposits shall be endorsed to NBA.
The permissions become much easier when the collaborative research projects are formulated and carried out as per Section 5 of the Biological Diversity Act, 2002. These stipulate that the collaborative research proposed conforms to Government of India policy and is approved by the Government of India.

**Application process**

The application process for export involves submission of specific forms to obtain approval from NBA (7) (Table 1). Form B is being widely used by Indian researchers to send or hand-carry insect specimens abroad for identification or taxonomic research purposes. Before dispatching, voucher specimens must be deposited at an appropriate Designated Repository for future reference. In the last few years, ICAR–NBAIR has obtained multiple Form B approvals to enable specimen identification (for non-commercial research) by international scientists, especially for Coleoptera, Diptera, Hemiptera, Hymenoptera, Thysanoptera and Arachnida. A total of 146 Form B’s have been processed and approved at NBA through 2021 (13).

*Place Table I. here*

**Designated Repositories for insects, mites and spiders**

In order to ensure national biological resources are protected and differentiated from exotic species there must be a coordinated system of evidence that species are endemic within the country. ICAR–NBAIR in Bengaluru is the only institute under the National Agricultural Research System in India to act as the nodal agency for collection, characterisation, documentation, conservation, exchange, research and utilisation of agriculturally important insect resources (including mites, spiders and related arthropods) for sustainable agriculture.

The Ministry of Environment, Forest and Climate Change (then Ministry of Environment and Forests), Government of India, recognised ICAR–NBAIR (then National Bureau of Agriculturally Important Insects; NBAII) in Bengaluru as a Designated Repository (DR) for agriculturally important insects, mites and spiders in...
September 2012. The mandate assigned is for safe deposit of holotypes, isotypes or paratypes of new taxa discovered in India and samples of biological resources accessed by foreign citizens/entities for research or sent/carried abroad by Indian citizens/institutions for research [Sections 39(1–3) and 19(1) of the Biological Diversity Act, 2002, along with Rule 14(6) (viii) of the Biological Diversity Rules, 2004, and clause 4(6) of the Regulation on ABS Guidelines notified in November 2014]. Earlier, in August 2008, the Zoological Survey of India in Kolkata became a DR for fauna (which included insects and related arthropods) and the Jabalpur-based Tropical Forest Research Institute (under the Indian Council of Forestry Research and Education, Dehradun) was designated for termites, butterflies and moths.

Because of the importance of taxonomic specification for both imports and exports of insect resources, the availability of reference collections is essential. The National Insect Museum located at ICAR–NBAIR has over 194,420 dry-mounted specimens and more than 200,000 specimens in wet preservation, in addition to 345 type specimens. Most of the specimens in the collection are Indian but there is a unique representation of exotic beetles, wasps, flies, and moths from various countries and regions, including Argentina, Australia, Iran, Japan, Reunion Island, USA and the West Indies. The collection also contains many undescribed species from remote islands.

**Shipmment of insects for commercial purposes**

A surge in the use of insects as food and feed is expected in India, going by a similar global trend. Entomophagy, the practice of eating insects, is an age-old tradition amongst many people across the globe. More and more ready-to-eat insect-based food formulations are entering the local markets in western countries because of increasing consumer demand and acceptance. Insect-based foods, however, are not included in the global standards for foods set by Codex Alimentarius.

In India, entomophagy is common in north-eastern India, where tribal communities consume seasonal borers, silkworms and stink bugs as delicacies. Larvae and pupae of lepidopteran insects are sold throughout the year in local markets for consumption. Fresh larvae and pupae of
wild tasar silkworm, *Antheraea* spp. (Lepidoptera: Saturniidae), and their dried powders are sold in local markets in Arunachal Pradesh and Meghalaya. Rearing of eri silkworm, *Samia cynthia ricini* Boisduval (Lepidoptera: Saturniidae), is widely practised in Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland. Consumption of winged alates of termites is a common practice followed by tribal communities in Tamil Nadu and some parts of Bihar and Uttar Pradesh (Amala et al., unpublished data). The season-specific availability of edible insects gets passed from generation to generation as indigenous knowledge.

Though entomophagy is an established practice in tribal areas of the Northeast, the emergence and abundance of edible insects is largely season-driven and is directly correlated with availability of their preferred food plants. Bamboo borers and stink bugs are some of the examples with limited seasonal emergence that are preferred for consumption in tribal areas. Most people in tropical parts of India largely avoid entomophagy. This could be due to the fear of allergenicity that might cause health concerns after consumption, or simply from fear of the new or unknown. At this time, there is a lack of robust edible insect processing systems in place in India to attract consumers across different age groups towards entomophagy.

Insects can partly replace the increasingly expensive protein ingredients of compound feeds in the livestock, poultry and aquaculture industries. The biomass contribution and the rich protein content add insects as a suitable content of diet for livestock, poultry and fish (14, 15). The concept of using insects as feed is still in a nascent stage in India, except for the wide use of yellow mealworms, *Tenebrio molitor* L., and superworms, *Zophobas morio* (Fabricius) (both Coleoptera: Tenebrionidae), as bird and other pet foods. Farming of the black soldier fly (BSF), *Hermetia illucens* (L.) (Diptera: Stratiomyidae), is at a developmental stage in various parts of India with a few commercial-scale producers in Andhra Pradesh rearing insects for use as poultry feed. Feeding trials on fish and poultry are in research and pre-commercialisation stages to develop a protein-rich feed formulation. ICAR–NBAIR has developed a BSF-based protein-rich fish feed (sinking and floating types) in collaboration with the ICAR–Central
Inland Fisheries Research Institute, Barrackpore. BSF is supplied to domestic destinations based on the requirements (Fig. 1).

Online marketing sites like Amazon (www.amazon.in), Flipkart (www.flipkart.com) and Snapdeal (www.snapdeal.com) have been selling insects such as black soldier fly larvae, crickets, mealworms, superworms and annelids such as tubifex worms and bloodworms for use as feed for fish, pet birds and reptiles. Different formulations, such as whole larvae, processed powders of worms, are also being marketed on a large scale in India. These worms and fly larvae are marketed with catchy trade names with a prefix of ‘proty’ / ‘pro’ to convince the customers of their protein-rich nature for their pets. Many suppliers claim these products are organically reared, rich in protein, calcium and polyunsaturated fatty acids that supports growth and development of tank grown fishes. Different forms of such worms are being sold by these online marketing sites: live forms, dehydrated forms and as oven-dried worms. They are being sold in attractive sealed containers to meet customer preference with labels containing the proximate composition of the worms in the containers. Live larvae are packed with suitable filler materials to enable receipt of the worms without damage. Some labels in the market bear the suggested rate of usage of worms per day for the pet birds or fish based on their age. Though the identity of the worms sold online is not certified or established scientifically, the sale of such insects is prospering as pet food in India without any strict guidelines in place. As this market for human and animal feed develops further there may be international trade with India.

Implications, conclusions and recommendations

The procedures and protocols for importation of insects and related arthropods for biological control are straightforward. However, in the present scenario, seamless transboundary exchange of genetic resources (for non-commercial research) is under tremendous pressure owing to the fear of potential biopiracy as indicated through the enforcement of the Biological Diversity Act, 2002. Some taxonomists are also apprehensive that the restrictions imposed for dead specimen exchange
limit exhaustive revisionary phylogenetic or evolutionary studies, which might sideline Indian taxonomists as key contributors. With the limited taxonomic expertise available in the country and with restricted access to the type specimens located in museums abroad, documenting species diversity is becoming a herculean task. Without physical comparison with the closely allied species the chances of misidentifications in cryptic taxa are statistically much higher. This in turn is slowing down biodiversity documentation, which in turn affects trade of potential beneficial species with appropriate benefit sharing.

As far as live insect trade is concerned, the strict regulations should continue to be enforced to avoid illegal import of commercial insects which may carry pests and/or pathogens that may cause threats to the native insect biodiversity in India.

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**References**

1. Tryon H. (1910). – The ‘wild cochineal insect’, with reference to its injurious action on prickly pear (*Opuntia* spp.) in India, etc., and to its availability for the subjugation of this plant in Queensland and elsewhere. *Queensland Agr. J.*, **25**, 188–197.

2. Ainslie W. (1813). – *Materia Medica of Hindoostan*. The Government Press, Madras, India, 301pp.

3. Roxburgh W. (1832). – *Flora Indica*, or Description of Indian Plants. Thacker and Co, Calcutta, India, 875pp.

4. Subramaniam T.V. (1934, published in 1936). – The lantana seedfly in India, *Agromyza (Ophiomyia) lantanae* Froggatt. *Indian J. Agric. Sci.*, **4**, 468–470.

5. Government of India. (2021). – Plant Quarantine Order. Available at:
6. Rabindra R.J., Sreerama Kumar P. & Verghese A. (2017). – Policy frameworks for the implementation of a classical biological control strategy: the Indian experience. In Invasive Alien Plants: Impacts on Development and Options for Management (C.A. Ellison, K.V. Sankaran & S.T. Murphy, eds), CABI Invasive Series 8, CAB International, Boston, United States of America, 206–222.

7. National Biodiversity Authority (2021). – National Biodiversity Authority Forms. Available at: http://nbaindia.org/content/26/59/1/forms.html (accessed on 17 December 2021).

8. Boldt P.E. & Drea J.J. (1980). – Packaging and shipping beneficial insects for biological control. *FAO Plant Prot. Bull.*, **28**, 64–71.

9. Harley K.L.S. & Forno I.W. (1992) – Biological Control of Weeds: a Handbook for Practitioners and Students. Inkata Press, Melbourne, Australia, 74 pp.

10. Simoni A. (2022). – Movement of genetically modified insects for research purposes. In Safety, regulatory, and environmental issues related to international trade of insects (J. Mumford & M.M. Quinlan, eds). *Rev Sci Tech. Off. Int. Epiz.*, **41** (1), XXX–YYY. doi:…

11. Denton J.A., Joubert D.A., Goundar A. & Gilles J.R.L. (2022). – International shipment of Wolbachia-Infected Mosquito eggs - Towards Scale up of World Mosquito Program Operations. In Safety, regulatory, and environmental issues related to international trade of insects (J. Mumford & M.M. Quinlan, eds). *Rev Sci Tech. Off. Int. Epiz.*, **41** (1), XXX–YYY. doi:…

12. National Biodiversity Authority (2021). – Access and Benefit Sharing Experiences from India. Available at: http://nbaindia.org/uploaded/pdf/ABS_Factsheets_1.pdf (accessed on 17 December 2021).

https://plantquarantineindia.nic.in/PQISPub/pdffiles/pqorder2015.pdf (accessed on 17 December 2021).
13. National Biodiversity Authority. (2021). – Approval granted to the Applicants. Available at: http://nbaindia.org/content/683/61/1/approvals.html (accessed on 16 December 2021).

14. Barroso F.G., de Haro C., Sánchez-Muros M.-J., Venegas E., Martinez-Sánchez A. & Pérez-Bañón C. (2014). – The potential of various insect species for use as food for fish. *Aquaculture*, **422–423**, 193–201. doi: 10.1016/j.aquaculture.2013.12.024.

15. Makkar H.P.S., Tran, G., Heuzé V. & Ankers P. (2014). – State-of-the-art on use of insects as animal feed. *Anim. Feed Sci. Tech.*, **197**, 1–33. doi: 10.1016/j.anifeedsci.2014.07.008.
Table I
Application forms for specific activities related to the regulation of access to Biological Resources and/or Associated Knowledge

Note: Online applications are enabled. The required fees for Forms I–IV can be paid online. There is no fee for Forms B and C.

| Application form | Purpose and particulars |
|------------------|-------------------------|
| Form I | This is used by any non-Indian, non-resident Indian (NRI), foreign entity or Indian entity having non-Indian participation in share capital or management to access biological resources occurring in or obtained from India and/or associated traditional knowledge for research, commercial utilisation, biosurvey or bioutilisation. If the applicant is a trader, manufacturer or company, Form A should also be submitted along with Form I, as per regulation 2 of ABS Guidelines, 2014. |
| Form II | Any Indian or non-Indian or entity to any non-Indian, NRI, foreign entity or Indian entity having non-Indian participation in share capital or management can use this to transfer the results of research. |
| Form III | Any Indian, non-Indian or entity can use this to apply for intellectual property rights for inventions based on any research or information on a biological resource obtained from India. |
| Form IV | Any person who obtained approval of NBA in Form I, to Indians, non-Indians or entities can use this to transfer biological resources/knowledge already accessed, to a third party. |
| Form B | Indian researchers or government institutions can use this to conduct non-commercial research or research for emergency purpose outside India as per regulation 13 of ABS Guidelines, 2014. |
| Form C | Any Indian scientist or researcher can use this to deposit a microorganism in non-Indian repository for claim of novel species. |
Fig. 1
Consignment of live black soldier flies ready for shipment from ICAR–NBAIR.
Source: ICAR-NBAIR