

# IPI Database

*Examining the Impacts of Pesticides on Invertebrates*

## Neonicotinoids

- [Impact of controlled neonicotinoid exposure on bumblebees in a realistic field setting](#)

Arce, A.N., T.I. David, E.L. Randall, A. Ramos Rodrigues, T.J. Colgan, Y. Wurm, and R.J. Gill

Journal of Applied Ecology

2016

- [Contamination of wild plants near neonicotinoid seed-treated crops, and implications for non-target insects](#)

Botias, C., A. David, E. M. Hill, and D. Goulson

Science of the Total Environment

2016

- [The neonicotinoids thiacloprid, imidacloprid, and clothianidin affect the immunocompetence of honey bees \(\*Apis mellifera\* L.\)](#)

Brandt, A., A. Gorenflo, R. Siede, M. Meixner, and R. Buchler

Journal of Insect Physiology

2016

- [Widespread contamination of wildflower and bee-collected pollen with complex mixtures of neonicotinoids and fungicides commonly applied to crops](#)

David, A., C. Botias, A. Abdul-Sada, E. Nicholls, E. L. Rotheray, E. M. Hill, D. Goulson

Environment International

2016

- [Increasing neonicotinoid use and the declining butterfly fauna of lowland California](#)

Forister, M. L., B. Cousens, J. G. Harrison, K. Anderson, J. H. Thorne, D. Waetjen, C. C. Nice, M. D. Parsia, M. L. Hladik, R. Meese, H. van Vliet, and A. M. Shapiro

Biology Letters

2016

- [Exposure of native bees foraging in an agricultural landscape to current-use pesticides](#)

Hladik, M. L., M. Vandever, and K. L. Smalling

Science of the Total Environment

2015

- [Are neonicotinoid insecticides driving declines of widespread butterflies?](#)

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PeerJ

2015

- [Non-cultivated plants present a season-long route of pesticide exposure for honey bees](#)

Long, E. Y., and C. H. Krupke

Nature Communications

2016

- [Neonicotinoid-contaminated pollinator strips adjacent to cropland reduce honeybee nutritional status](#)

Mogren, C. L., and J. G. Lundgren

Scientific Reports

2016

- [Are bee diseases linked to pesticides? – A brief review](#)

Sanchez-Bayo, F., D. Goulson, F. Pennacchio, F. Nazzi, K. Goka, and N. Desneux

Environment International

- [Synergistic mortality between a neonicotinoid insecticide and an ergosterol-biosynthesis-inhibiting fungicide in three bee species](#)

Sgolastra, F., P. Medrzycki, L. Bortolotti, M.T. Renzi, S. Tosi, G. Bogo, D. Teper, C. Porrini, R. Molowny-Horas, and J. Bosch

Pest Management Science

2016

- [Evidence for indirect effects of pesticide seed treatments on weed seed banks in maize and soybean](#)

Smith, R. G., L. W. Atwood, M. B. Morris, D. A. Mortensen, and R. T. Koidec

Agriculture, Ecosystems and Environment

2016

- [Neonicotinoid pesticide exposure impairs crop pollination services provided by bumblebees](#)

Stanley, D. A., M. P. Garratt, J. B. Wickens, V. J. Wickens, S. G. Potts, and N. E. Raine

Nature

2015

- [Bumblebee learning and memory is impaired by chronic exposure to a neonicotinoid pesticide](#)

Stanley, D.A., K.E. Smith, and N.E. Raine

Scientific Reports

2015

- [Investigating the impacts of field-realistic exposure to a neonicotinoid pesticide on bumblebee foraging, homing ability and colony growth](#)

Stanley, D.A., A.L. Russell, S.J. Morrison, C. Rogers, and N.E. Raine

Journal of Applied Ecology

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- [Neonicotinoid insecticides can serve as inadvertent insect contraceptives](#)

Straub et al.

Proceedings of the Royal Society of Biology

2016

- [Monitoring the effects of thiamethoxam applied as a seed treatment to winter oilseed rape on the development of bumblebee \(\*Bombus terrestris\*\) colonies](#)

Thompson, H., M. Coulson, N. Ruddle, S. Wilkins, P. Harrington, S. Harkin

Pest Management Science

2016

- [In-hive Pesticide Exposome: Assessing risks to migratory honey bees from in-hive pesticide contamination in the Eastern United States](#)

Traynor, K.S., J.S. Pettis, D.R. Tarpy, C.A. Mullin, J.L. Frazier, M. Frazier, and D. vanEngelsdorp

Scientific Reports

2016

- [Neonicotinoids, bees and opportunity costs for conservation](#)

Walters, K.F.A.

Insect Conservation and Diversity

2016

- [Impacts of neonicotinoid use on long-term population changes in wild bees in England](#)

Woodcock, B. A., N. J. B. Isaac, J. M. Bullock, D. B. Roy, D. G. Garthwaite, A. Crowe and R. F. Pywell

Nature Communications

2016

## **Neonicotinoids**

- [Sub-lethal effects of dietary neonicotinoid insecticide exposure on honey bee queen fecundity and colony development](#)

Wu-Smart, J. and M. Spivak

Scientific Reports

2016

- [Imidacloprid perturbs feeding of Gammarus pulex at environmentally relevant conditions](#)

Agatz, A., R. Ashauer, and C.D. Brown

Environmental Toxicology and Chemistry

2014

- [Effects of insecticide exposure on feeding inhibition in Mayflies and Oligochaetes](#)

Alexander, A.C., J.M. Culp, K. Liber, and A.J. Cessna

Environmental Toxicology and Chemistry

2007

- [Emergent body size of mayfly survivors](#)

Alexander, A.C., K.S. Heard, and J.M. Culp

Freshwater Biology

2008

- [Potential of 11 pesticides to initiate downstream drift of stream macroinvertebrates](#)

Beketov, M.A., and M. Liess

Archives of Environmental Contamination and Toxicology

2008

- [Effects of repeated insecticide pulses on macroinvertebrate drift in indoor stream mesocosms](#)

Berghahn, R., S. Mohr, V. Hubner, R. Schmiediche, I. Schmiedling, E. Svetich-Will, and R. Schmidt

Aquatic Toxicology

2012

- [Environmental impacts of an imidacloprid-containing formulation: from soils to waters](#)

Bori, J., C. Ribalta, X. Domene, M.C. Riva, and J.M. Ribo

Afinidad

2015

- [Effects of low-doses imidacloprid pulses on the functional role of the caged amphipod \*Gammarus roeseli\* in stream mesocosms](#)

Bottger, R., M. Feibicke, J. Schaller, and G. Dudel

Ecotoxicology and Environmental Safety

2013

- [Can't take the heat: Temperature-enhanced toxicity in the mayfly \*Isonychia bicolor\* exposed to the neonicotinoid insecticide imidacloprid](#)

Camp, A.A., and D.B. Buchwalter

Aquatic Toxicology

2016

- [Comparative chronic toxicity of imidacloprid, clothianidin, and thiamethoxam to \*Chironomus dilutus\* and estimation of toxic equivalency factors](#)

Cavallaro, M.C., C.A. Morrissey, J.V. Headley, K.M. Peru, and K. Liber

Environmental Toxicology and Chemistry

2016

## Neonicotinoids

- [Structural changes in a macrozoobenthos assemblage after imidacloprid pulses in aquatic field-based microcosms](#)

Colombo, V., S. Mohr, R. Berghahn, and V.J. Pettigrove

Archives of Environmental Contamination and Toxicology

2013

- [Using field data to assess the effects of pesticides on Crustacea in freshwater aquatic ecosystems and verifying the level of protection provided by water quality guidelines](#)

Guy, M., L. Singh, and P. Mineau

Integrated Environmental Assessment and Management

2011

- [Differences in susceptibility of five cladoceran species to two systemic insecticides, imidacloprid and fipronil](#)

Hayasaka, D., T. Korenaga, K. Suzuki, F. Sanchez-Bayo, and K. Goka

Ecotoxicology

2012

- [Comparison of acute toxicity of two neonicotinoid insecticides, imidacloprid and clothianidin, to five cladoceran species](#)

Hayasaka, D., K. Suzuki, T. Nomura, M. Nishiyama, T. Nagai, F. Sanchez-Bayo, and K. Goka

Journal of Pesticide Science

2013

- [Impact of imidacloprid on Daphnia magna under different food quality regimes](#)

Ieromina, O., W.J.G.M. Peijnenburg, G. de Snoo, J. Muller, T.P. Knepper, and M.G. Vijver

Environmental Toxicology and Chemistry

2014

- [Comparative toxicity of imidacloprid, of its commercial liquid formulation and of diazinon to a non-target arthropod, the microcrustacean Daphnia magna](#)

Jemec, A., T. Tisler, D. Drobne, K. Sepcic, D. Fournier, and P. Trebse

Chemosphere

2007

- [Macroinvertebrate community response to repeated short-term pulses of the insecticide imidacloprid](#)

Mohr, S., R. Berghahn, R. Schmiediche, V. Hubner, S. Loth, M. Feibicke, W. Mailahn, and J. Wogram

Aquatic Toxicology

2012

- [The insecticide imidacloprid causes mortality of the freshwater amphipod Gammarus pulex by interfering with feeding behavior](#)

Nyman, A-M., A. Hintermeister, K. Schirmer, and R. Ashauer

PLoS ONE

2013

- [Structural and functional responses of benthic invertebrates to imidacloprid in outdoor stream mesocosms](#)

Pestana, J.L.T., A.C. Alexander, J.M. Culp, D.J. Baird, A.J. Cessna, and A.M.V.M. Soares

Environmental Pollution

2009

- [The neonicotinoid imidacloprid shows high chronic toxicity to mayfly nymphs](#)

Roessink, I., L.B. Merga, H.J. Zweers, and P.J. Van den Brink

Environmental Toxicology and Chemistry

2013

### **Neonicotinoids**

- [Ecotoxicity of imidacloprid to aquatic organisms: Derivation of water quality standard for peak and long-term exposure](#)

Smit, C.E., C.J.A.M. Posthuma-Doodeman, P.L.A. van Vlaardingen, and F.M.W. de Jong

Human and Ecological Risk Assessment: An International Journal

2015

- [Acute and chronic toxicity of imidacloprid to the aquatic invertebrates Chironomus tentans and Hyalella azteca under constant- and pulse-exposure conditions](#)

Stoughton, S.J., K. Liber, J. Culp, and A. Cessna

Archives of Environmental Contamination and Toxicology

2008

- [Hazard identification of imidacloprid to aquatic environment](#)

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2009

- [Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008-2011](#)

Ensminger, M.P., R. Budd, K.C. Kelley, and K.S. Goh

Environmental Monitoring and Assessment

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- [First national-scale reconnaissance of neonicotinoid insecticides in streams across the USA](#)

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Environmental Chemistry

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- [Detections of the neonicotinoid insecticide imidacloprid in surface water of three agricultural regions of California, USA, 2010-2011](#)

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Bulletin of Environmental Contamination and Toxicology

2012

- [Macro-invertebrate decline in surface water polluted with imidacloprid](#)

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PLoS ONE

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- [Macro-invertebrate decline in surface water polluted with imidacloprid: A rebuttal and some new analyses](#)

Vijver, M.G. and P.J. van den Brink

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- [Stormwater-related transport of the insecticides bifenthrin, fipronil, imidacloprid, and chlorpyrifos into a tidal wetland, San Francisco Bay, California](#)

Weston, D.P., D. Chen, and M.J. Lydy

Science of the Total Environment



2015

- [Neonicotinoids override a parasite exposure impact on hibernation success of a key bumblebee pollinator](#)

Fauser, A., C. Sandrock, P. Neumann, and B.M. Sadd

Ecological Entomology

2017

- [Neonicotinoid insecticide removal by prairie strips in row-cropped watersheds with historical seed coating use](#)

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Agriculture, Ecosystems and Environment

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- [Quantifying exposure of wild bumble bees to mixtures of agrochemicals in agricultural and urban landscapes](#)

Botias, C., A. David, E.M. Hill, D. Goulson

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2017

- [Translocation of the neonicotinoid seed treatment clothianidin in maize](#)

Alford, A. and C. Krupke

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- [Effects of a pyrethroid and two neonicotinoid insecticides on population dynamics of key pests of soybean and abundance of their natural enemies](#)

Regan, K., D. Ordosch, K.D. Glover, K.J. Tilmon, and A. Szczepaniec

Crop Protection

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- [Planting of neonicotinoid-treated maize poses risks for honey bees and other non-target organisms over a wide area without consistent crop yield benefit](#)

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Journal of Applied Ecology

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- [Meta-analysis reveals that seed-applied neonicotinoids and pyrethroids have similar negative effects on abundance of arthropod natural enemies](#)

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- [Current Pesticide Risk Assessment Protocols Do Not Adequately Address Differences between Honey Bees \(\*Apis mellifera\*\) and Bumble Bees \(\*Bombus\* spp.\)](#)

Stoner, K.

Frontiers in Environmental Science

2016

- [Chronic exposure to neonicotinoids reduces honey bee health near corn crops](#)

Tsvetkov, N., O. Samson-Robert, K. Sood, H.S. Patel, D.A. Malena, P.H. Gajiwala, P. Maciukiewicz, V. Fournier, and A. Zayed

Science

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- [Country-specific effects of neonicotinoid pesticides on honey bees and wild bees](#)

Woodcock, B.A., J.M. Bullock, R.F. Shore, et al.

Science

2017

- [Effects of clothianidin on aquatic communities: Evaluating the impacts of lethal and sublethal exposure to neonicotinoids](#)

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PLoS ONE

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- [Surface runoff and subsurface tile drain losses of neonicotinoids and companion herbicides at edge-of-field](#)

Chretien, F., I. Giroux, G. Theriault, P. Gagnon, and J. Corriveau

Environmental Pollution

2017

- [Complex mixtures of dissolved pesticides show potential aquatic toxicity in a synoptic study of Midwestern U.S. streams](#)

Nowell, L. H., P. W. Moran, T. S. Schmidt, J. E. Norman, N. Nakagaki, M. E. Shoda, B. J. Mahler, P. C. Van Metre, W. W. Stone, M. W. Sandstrom, and M. L. Hladik

Science of the Total Environment

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- [Neonicotinoid Seed Treatments: Limitations and Compatibility with Integrated Pest Management](#)

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2017

- [Ornamental plants on sale to the public are a significant source of pesticide residues with implications for the health of pollinating insects](#)

Lentola, A., A. David, A. Abdul-Sada, A. Tapparo, D. Goulson, and E. M. Hill

Environmental Pollution

2017

- [The challenges of predicting pesticide exposure of honey bees at landscape level](#)

Simon-Delso, N., G. San Martin, E. Bruneau, C. Delcourt, and L. Hautier

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- [High pesticide risk to honey bees despite low focal crop pollen collection during pollination of a mass blooming crop](#)

McArt, S. H., A. A. Fersch, N. J. Milano, L. L. Truitt, and K. Boroczky

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- [Monarch butterfly population decline in North America: identifying the threatening processes](#)

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- [Assessing the value and pest management window provided by neonicotinoid seed treatments for management of soybean aphid \(\*Aphis glycines\* Matsumura\) in the Upper Midwestern United States](#)

Krupke, C. H., A. M. Alford, E. M. Cullen, E. W. Hodgson, J. K. Knodel, B. McCornack, B. D. Potter, M. I. Spigler, K. Tilmon, and K. Welch

Pest Management Science

2017

- [Year-round presence of neonicotinoid insecticides in tributaries to the Great Lakes, USA](#)

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Environmental Pollution

2018

### **Neonicotinoids**

- [Uptake and dissipation of neonicotinoid residues in nectar and foliage of systemically treated woody landscape plants](#)

Mach, B. M., S. Bondarenko, and D. A. Potter

Environmental Toxicology

2017

- [An update of the Worldwide Integrated Assessment \(WIA\) on systemic insecticides. Part 3: alternatives to systemic insecticides](#)

Furlan, L., A. Pozzebon, C. Duso, N. Simon-Delso, F. Sanchez-Bayo, P. A. Marchand, F. Codato, M. B. van Lexmond, J. M. Bonmatin

Environmental Science and Pollution Research

2018

- [A worldwide survey of neonicotinoids in honey](#)

Mitchell, E. A. D., B. Mulhauser, M. Mulo, A. Mutabazi, G. Glauser, and A. Aebi

Science

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