

Data from: Experimental duration and predator satiation levels systematically affect functional response parameters

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Abstract

Empirical feeding studies where density-dependent consumption rates are fitted to functional response models are often used to parameterize the interaction strengths in models of population or food-web dynamics. However, the relationship between functional response parameter estimates from short-term feeding studies and real-world, long-term, trophic interaction strengths remains largely unexamined. In a critical first step to address this void, we tested for systematic effects of experimental duration and predator satiation on the estimate of functional response parameters, namely attack rate and handling time. Analyzing a large data set covering a wide range of predator taxa and body masses we show that attack rates decrease with increasing experimental duration, and that handling times of starved predators are consistently shorter than those of satiated predators. Therefore, both the experimental duration and the predator satiation level have a strong and systematic impact on the

predictions of population dynamics and food-web stability. Our study highlights potential pitfalls at the intersection of empirical and theoretical applications of functional responses. We conclude our study with some practical suggestions for how these implications should be addressed in the future to improve predictive abilities and realism in models of predator-prey interactions.

Usage Notes

Data from: Li et al (2017) *Oikos*

Literature data on functional response experiments across studies containing additional information on e.g. body mass, temperature, starvation (see readme file for details).

Lietal_oikos_2017_data.csv

References

This dataset is supplement to <https://doi.org/10.1111/oik.04479>

Keywords

Ceriodaphnia dubia, Aphis gossypii, Archosargus rhomboidalis, Artemia, Aphis craccivora, Diaptomus spatulocrenatus, Iphiseius degenerans, Phytoseiulus persimilis, Calanus finmarchicus, Leptinotarsa decemlineata, Pterostichus oblongopunctatus, Anchoa mitchilli, Mallotus vilosus, Acrobelloides nanus, Cheilomenes sexmaculata, Ranatra dispar, Different copepods, Coenosia attenuata, Pardosa lugubris, Achirus lineatus, Cyclops vernalis, Oncorhynchus nerka, Coccinella septempunctata, Trialeurodes vaporariorum, Celithemis fasciata, Chlorella vulgaris, Allochromatium vinosum, Geocoris punctipes, Moina hutchinsoni, Ischnura elegans, Nyctiphanes australis, Oncorhynchus gorbuscha, Typhlodromus pyri, Danaus plexippus, Neomysis integer, Perca fluviatilis, Pomatomus saltatrix, experimental duration, Panonychus ulmi, Aedes aegypti, Saccharomyces cerevisiae, Daphnia magna, Chironomidae, Collops quadrimaculatus, Pseudobodo tremulans, Podisus maculiventris, Chironomus tentans, Holopedium gibberum, Metopus es, Frankliniella occidentalis, handling time, Pelodera teres, Spodoptera exigua, Lepomis macrochirus, Paraphysomonas vestita, Daphnia pulex, Podisus nigrispinus, Sander vitreus, temperature, Americamysis bahia, Euseius finlandicus, Perca flavescens, Scymnus levaillanti, attack rate, Chrysopa oculata, Coccinella transversalis, Calathus fuscipes, Acartia hudsonica, Aponychus corpuzae, Thalassiosira constricta, Anisops deanei, Notonecta hoffmanni, Dugesia tigrina, Piona exigua, Diaptomus leptopus, Plagiopyla nasuta, Menidia menidia, Neoseiulus californicus, Mononychellus tanajoa, Paracalanus parvus, body mass, Escherichia coli, Didinium nasatum, Body Size, Neomysis mercedis, Orius laevigatus,

Philodromus cespitum, Enallagma aspersum, Actinomonas mirabilis, Pterostichus melanarius, Drosophila hydei, heterotrophic bacteria, Neoseiulus barkeri, Tetranychus viennensis, Pergamasus crassipes, Monosiga, Orius majusculus, Trochosa terricola, Chydorus sphaericus, Brachydanio rerio, Tetranychus urticae, Daphnia rosea, Simocephalus serrulatus, Crangon septemspinosa, drosophila melanogaster, Daphnia pullicaria, Folsomia candida, Chaetoceros gracilis, Pseudopleuronectes americanus, Centropages typicus, Macrobiotus richtersi, Coregonus hoyi, Polyphemus pediculus, Propylea dissecta, Picromerus bidens, Myzus persicae, Abax parallelepipedus, Diaptomus birgei, Helicoverpa zea, Alosa pseudoharengus, Tetrahymena pyriformis, functional response, Amblyseius andersoni, Daphnia carinata, Paramecium aurelia (syngen 4), Pleuromonas jaculans, Pseudomonas spp., Salvelinus namaycush, predator satiation, Scolothrips takahashii, Harpalus rufipes, Coleomegilla maculata, Sander lucioperca, Musca domestica, Chaoborus americanus, Chattonella antiqua, Morone saxatilis, Dicyphus tamaninii, Ochromonas sp., Oncorhynchus keta, Macrolophus caliginosus, Culex quinquefasciatus, Amblyseius longispinosus, Schizotetranychus nanjingensis, Hippodamia convergens, Alphitobius diaperinus, Cycloneda sanguinea, Harmonia axyridis, Calliopius laeviusculus, Heteromurus nitidus

Files

2 files for this dataset

Lietal_oikos_2017_data.csv	189.59 kB	text/csv
README_for_Lietal...os_2017_data.txt	3.62 kB	text/plain

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