Table S1

Region	Species	Common Name	Order	Process	Stage	Protein (g/100g DM)	Iron (mg/100g DM)	Folate (mcg DFE/100g DM)	Vitamin B12 (mcg/100g DM)	Reference
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	33.0	14.7			Tang et al., 2019
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE (Late Stage)	10.5	0.6			Omotoso and Adedire, 2007
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	29.9	69.3			Ehounou et al., 2019
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	28.4	12.2			Banjo et al., 2006
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	23.4				Opara et al., 2012
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE		30.8			Elemo et al., 2011
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE		13.1			Santos Oliveira et al., 1976
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	52.9	7.0		2.77	Okunowo et al., 2017
Sub-Saharan Africa	*Rhynchophorus phoenicis*	African Palm Weevil	Coleoptera	DRY	LARVAE	32.8	0.9	200	20.00	Parker et al., 2020
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT		13.0			Tang et al., 2019
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT			340		Kinyuru et al., 2010a
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT			350		Kinyuru et al., 2010a
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT	43.1	16.6	900		Kinyuru et al., 2010b
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT	44.3	13.0			Kinyuru et al., 2010b
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT	40.0	48.6		1.04	Ssepuuya et al., 2019
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT	47.7				Fombong et al., 2017
Sub-Saharan Africa	*Ruspolia differens*	Green Cone-Headed Cricket	Orthoptera	DRY	ADULT	44.6	2.0			Siulapwa et al., 2014
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (whole)	LARVAE	57.0	26.7			Siulapwa et al., 2014
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (whole)	LARVAE	52.1				Madibela et al., 2009
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (roasted)	LARVAE	48.3	30.4			Glew et al., 1999
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (meal, whole)	LARVAE	55.0	12.7			Moreki et al., 2012
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (meal, whole)	LARVAE	54.0				Manyeula et al., 2018
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (meal)	LARVAE	56.8	11.6			Rapatsa and Moyo, 2017
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY (degutted)	LARVAE	69.8	31.2			Nantanga and Amakali, 2020
Sub-Saharan Africa	*Gonimbrasia belina*	Mopane Worm	Lepidoptera	DRY	LARVAE	62.0	31.0			Dreyer and Wehmeyer, 1982
Sub-Saharan Africa	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	50.4	0.1			Mohamed, 2015
Sub-Saharan Africa	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	59.0	12.4			Oonincx and van der Poel, 2010
Sub-Saharan Africa	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT				0.84	Schmidt et al., 2019
Sub-Saharan Africa	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	50.8				Clarkson et al., 2018
Sub-Saharan Africa	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	LATE NYMPH	58.3	9.7			Ghosh et al., 2017
Sub-Saharan Africa	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	60.7	7.2			Udomsil et al., 2019
Sub-Saharan Africa	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT		12.9			Latunde-Dada et al., 2016
Sub-Saharan Africa	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	57.0				Taufek et al., 2016
Sub-Saharan Africa	*Gryllus assimilis*	1 Black Field Cricket / Jamaican Field Cricket	Orthoptera	DRY	ADULT				2.88	Schmidt et al., 2019
Sub-Saharan Africa	*Acheta domesticus*	1 House cricket	Orthoptera	converted to DRY	ADULT	60.0	6.4	389	70.20	Finke, 2015
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	55.5	5.3			Omotoso, 2006
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	52.6	5.6			Nigeria Food Database, 2019
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	33.1	64.0			Akinnawo and Ketiku, 2000
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	20.0	1.3			Osasona and Olaofe, 2010
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	52.6	5.6			Adepoju and Daboh, 2013
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	55.4	46.7			Igbabul et al., 2015
Sub-Saharan Africa	*Cirina forda*	Emperor Shea Moth	Coleoptera	DRY	LARVAE	20.2	1.8			Banjo et al., 2006
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	LARVAE	64.7				Frye et al., 1989
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	LARVAE	62.7				Frye et al., 1989
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	LARVAE	53.8	9.5	410	0.00	Finke, 2002
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	LARVAE	53.0	12.1			Dierenfeld, 2002
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	LARVAE	61.2				Kovitvadhi et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	Freeze-dried powder	LARVAE	70.1	3.5	188	0.52	Tong et al., 2011
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	LARVAE	58.0				Ramos-Elorduy et al., 1997
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	LARVAE	69.8				Finke, 2007
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	PUPA	50.4				Kovitvadhi et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	PUPA	55.6				Tomotake et al., 2010
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	PUPA	53.1				Chieco et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	PUPA	56.4				Chieco et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	PUPA	55.0				Lamberti et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	PUPA	56.3				Lamberti et al., 2019
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	PUPA	65.9				Rangacharyulu et al., 2003
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	PUPA	49.5	9.3			Yhoung-Aree et al., 1997
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	DRY	PUPA	60.0	3.5			Kuntadi et al., 2018
East and Southeast Asia	*Bombyx mori*	Domesticated Silkworm	Lepidoptera	converted to DRY	UNSPECIFIED	59.2	3.1			Dignan et al., 2004
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	66.1				Ghaly and Alkoaik, 2009
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	converted to DRY	LARVAE	59.8	6.7	498	0.42	Finke, 2015
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	50.1				Alves et al., 2016
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	58.4				Barroso et al., 2014
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm (Giant)	Coleoptera	converted to DRY	LARVAE	47.2	5.5	300	0.33	Finke, 2002
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	converted to DRY	LARVAE	49.1	5.4	412	1.23	Finke, 2002
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm (Giant)	Coleoptera	converted to DRY	LARVAE	49.4				Finke, 2007

East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	53.0				Kovitvadhi et al., 2019
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	38.3	4.1			Kuntadi et al., 2018
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	49.1				Liu et al., 2020
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE		7.0			Latunde-Dada et al., 2016
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	46.4	6.7			Ravzanaadii et al., 2012
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	51.5				Zhao et al., 2016
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE				1.08	Schmidt et al., 2019
East and Southeast Asia	*Tenebrio molitor*	Yellow Mealworm	Coleoptera	DRY	LARVAE	52.4	3.3			Zielińska et al., 2015
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	converted to DRY	LARVAE	22.6				Nirmala et al., 2017
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	34.1	9.0			Ohtsuka et al., 1984
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	59.3	5.6			Linn et al., 2016
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	30.5	9.9			Abdel-Moniem et al., 2017
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	34.6				Barroso et al., 2014
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	18.0	1.0			Chinarak et al., 2020
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	28.5	1.1			Chinarak et al., 2020
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	LARVAE	24.8	1.6			Chinarak et al., 2020
East and Southeast Asia	*Rhynchophorus ferrugineus*	Asian Palm Weevil / Sago Larvae	Coleoptera	DRY	PUPA	32.3				Abdel-Moniem et al., 2017
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Coleoptera	converted to DRY	ADULT	45.1	33.2			Yhoung-Aree et al., 1997
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	53.3				Kovitvadhi et al., 2019
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	LATE NYMPH	58.3	9.7			Ghosh et al., 2017
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	60.7	7.2			Udomsil et al., 2019
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT		12.9			Latunde-Dada et al., 2016
East and Southeast Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	57.0				Taufek et al., 2016
East and Southeast Asia	*Gryllus assimilis*	1 Black Field Cricket / Jamaican Field Cricket	Orthoptera	DRY	ADULT				2.88	Schmidt et al., 2019
East and Southeast Asia	*Acheta domesticus*	House cricket	Orthoptera	DRY	ADULT	73.1				Barroso et al., 2014
East and Southeast Asia	*Acheta domesticus*	House cricket	Orthoptera	DRY	ADULT	52.8				Kovitvadhi et al., 2019
East and Southeast Asia	*Acheta domesticus*	House cricket	Orthoptera	converted to DRY	ADULT	60.0	6.4	389	70.20	Finke, 2015
East and Southeast Asia	*Acheta domesticus*	House cricket	Orthoptera	DRY	ADULT	66.6	6.3	487	17.44	Finke, 2002
East and Southeast Asia	*Acheta domesticus*	House cricket	Orthoptera	DRY	NYMPH	67.2	9.3	633	38.08	Finke, 2002
Central and South Asia	*Samia ricini*	Eri Silkworm	Lepidoptera	DRY	PUPA	54.6	24.0			Longvah et al., 2011
Central and South Asia	*Samia ricini*	Eri Silkworm	Lepidoptera	DRY	PUPA	54.8	23.4			Longvah et al., 2011
Central and South Asia	*Samia ricini*	Eri Silkworm	Lepidoptera	DRY	PUPA	59.4	40.0			Mazumdar, 2019
Central and South Asia	*Samia ricini*	Eri Silkworm	Lepidoptera	DRY	PUPA	64.5				Kovitvadhi et al., 2019
Central and South Asia	*Samia ricini*	Eri Silkworm	Lepidoptera	DRY	PUPA	48.2	24.5			Sailo, 2019
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	converted to DRY	ADULT	53.5	21.9			Yhoung-Aree et al., 1997
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	DRY	ADULT	69.7	24.9			Linn et al., 2016
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	DRY	ADULT	55.3	15.7			Chakravorty et al., 2016
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	DRY	ADULT	45.2	15.3			Sailo, 2019
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	converted to DRY	EGG	38.7	22.7			Yhoung-Aree et al., 1997
Central and South Asia	*Oecophylla smaragdina*	Weaver Ant	Hymenoptera	converted to DRY	YOUNG FEMALE	37.5	10.0			Yhoung-Aree et al., 1997
Central and South Asia	*Lepidiota mansueta*	Scarab Beetle	Coleoptera	DRY	ADULT	76.4	1.6			Bhattacharyya et al., 2018
Central and South Asia	*Lepidiota mansueta*	Scarab Beetle	Coleoptera	DRY	ADULT	76.8	1.6			Borah, 2016
North Africa and Western Asia	*Schistocerca gregaria*	Desert Locust	Orthoptera	DRY	ADULT	50.6	2.9			Khalil, 2018
North Africa and Western Asia	*Schistocerca gregaria*	Desert Locust	Orthoptera	DRY	ADULT	76.0	8.4			Zielińska et al., 2015
North Africa and Western Asia	*Schistocerca gregaria*	Desert Locust	Orthoptera	DRY	ADULT	35.3				Haber et al., 2019
North Africa and Western Asia	*Schistocerca gregaria*	Desert Locust	Orthoptera	DRY	ADULT	46.3	4.8			Kinyuru, 2020
North Africa and Western Asia	*Schistocerca sp.*	2 Grasshopper/Locust, Species Unspecified	Orthoptera	DRY	ADULT	61.0				Ramos-Elorduy et al., 1997
North Africa and Western Asia	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	50.4	0.1			Mohamed, 2015
North Africa and Western Asia	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	59.0	12.4			Oonincx and van der Poel, 2010
North Africa and Western Asia	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT				0.84	Schmidt et al., 2019
North Africa and Western Asia	*Locusta migratoria*	Migratory Locust	Orthoptera	DRY	ADULT	50.8				Clarkson et al., 2018
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Coleoptera	converted to DRY	ADULT	45.1	33.2			Yhoung-Aree et al., 1997
North Africa and Western Asia	*Gryllus sp.*	Field Cricket, Species Unspecified	Orthoptera	DRY	NYMPH	32.6	3.3			Kuntadi et al., 2018
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	53.3				Kovitvadhi et al., 2019
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	LATE NYMPH	58.3	9.7			Ghosh et al., 2017
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	60.7	7.2			Udomsil et al., 2019
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT		12.9			Latunde-Dada et al., 2016
North Africa and Western Asia	*Gryllus bimaculatus*	Two-Spotted Cricket / African Field Cricket	Orthoptera	DRY	ADULT	57.0				Taufek et al., 2016
North Africa and Western Asia	*Gryllus assimilis*	1 Black Field Cricket / Jamaican Field Cricket	Orthoptera	DRY	ADULT				2.88	Schmidt et al., 2019

1 Species were added only to supplement missing nutrient data for related insects in this region. For example, vitamin B12 values for *Gryllus bimaculatus* are not available, so vitamin B12 from *Gryllus assimilis* was added in North Africa and Western Asia.

2 Species added to give additional data to a similar species where data was sparse. For example, *Schistocerca sp.* was added where there was limited data for *Schistocerca gregaria.*

Table S2

Paired code	Species	Common Name	Nutrient	Value	Unit	Reference
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	26.5	mg/100g DM	Tang et al., 2019
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	0.0	mg/100g DM	Omotoso and Adedire, 2007
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	16.3	mg/100g DM	Ehounou et al., 2019
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	15.8	mg/100g DM	Elemo et al., 2011
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	23.7	mg/100g DM	Santos Oliveira et al., 1976
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	0.5	mg/100g DM	Okunowo et al., 2017
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	3.6	mg/100g DM	Parker et al., 2020
a	*Rhynchophorus phoenicis*	African Palm Weevil	zinc	4.5	mg/100g DM	Omotoso and Adesola, 2018
b	*Gryllus bimaculatus*	Field Cricket	zinc	22.4	mg/100g DM	Ghosh et al., 2017
b	*Gryllus bimaculatus*	Field Cricket	zinc	14.4	mg/100g DM	Udomsil et al., 2019
b	*Gryllus bimaculatus*	Field Cricket	zinc	32.1	mg/100g DM	Latunde-Dada et al., 2016
c	*Cirina forda*	Emperor Shea Moth	zinc	3.8	mg/100g DM	Omotoso, 2006
c	*Cirina forda*	Emperor Shea Moth	zinc	15.0	mg/100g DM	Nigeria Food Database, 2019
c	*Cirina forda*	Emperor Shea Moth	zinc	8.6	mg/100g DM	Akinnawo and Ketiku, 2000
c	*Cirina forda*	Emperor Shea Moth	zinc	24.2	mg/100g DM	Osasona and Olaofe, 2010
c	*Cirina forda*	Emperor Shea Moth	zinc	15.0	mg/100g DM	Adepoju and Daboh, 2013
c	*Cirina forda*	Emperor Shea Moth	zinc	38.7	mg/100g DM	Igbabul et al., 2015
c	*Cirina forda*	Emperor Shea Moth	zinc	3.9	mg/100g DM	Omotoso and Adesola, 2018
d	*Samia ricini*	Eri Silkworm	zinc	7.2	mg/100g DM	Longvah et al., 2011
d	*Samia ricini*	Eri Silkworm	zinc	7.0	mg/100g DM	Longvah et al., 2011
d	*Samia ricini*	Eri Silkworm	zinc	7.7	mg/100g DM	Sailo, 2019
e	*Oecophylla smaragdina*	Weaver Ant	zinc	19.0	mg/100g DM	Chakravorty et al., 2016
e	*Oecophylla smaragdina*	Weaver Ant	zinc	18.4	mg/100g DM	Sailo, 2019
a	*Rhynchophorus phoenicis*	African Palm Weevil	phytate	0.0	mg/100g DM	Ekop et al., 2010
a	*Rhynchophorus phoenicis*	African Palm Weevil	phytate	19.4	mg/100g DM	Omotoso and Adesola, 2018
a	*Rhynchophorus phoenicis*	African Palm Weevil	phytate	0.3	mg/100g DM	Jonathan, 2012
b	*Gryllus assimilis*	Cricket	phytate	0.1	mg/100g DM	Oibiokpa et al., 2017
b	*Gymnogryllus lucens*	Cricket	phytate	0.0	mg/100g DM	Ekop et al., 2010
c	*Cirina forda*	Emperor Shea Moth	phytate	1.0	mg/100g DM	Omotoso, 2006
c	*Cirina forda*	Emperor Shea Moth	phytate	25.5	mg/100g DM	Omotoso and Adesola, 2018
c	*Cirina forda*	Emperor Shea Moth	phytate	0.1	mg/100g DM	Oibiokpa et al., 2017
d	*Samia ricini*	Eri Silkworm	phytate	97.9	mg/100g DM	Sailo, 2019
e	*Oecophylla smaragdina*	Weaver Ant	phytate	171.0	mg/100g DM	Chakravorty et al., 2016
e	*Oecophylla smaragdina*	Weaver Ant	phytate	19.7	mg/100g DM	Sailo, 2019

Table S3

Age group	Gender	Country	Study	Study Year	Sample size	Mean vitamin B12 intake	SD	CV	Citation
Adults (age 19-64 years)	Male	Germany	German National Nutrition Study II	2005–2007	4912	6.6	3.7	56.1	Roman Viñas et al., 2011
Adults (age 19-64 years)	Male	Spain	ENCAT	2002–2003	706	5	1	20.0	Roman Viñas et al., 2011
Adults (age 19-64 years)	Male	Finland	National FINDIET Survey	2007	730	6.6	6.5	98.5	Roman Viñas et al., 2011
Adults (age 19-64 years)	Male	Greece	Greek EPIC study	1994–1999	500	5.3	11.4	215.1	Roman Viñas et al., 2011
Adults (age 19-64 years)	Male	Ireland	SLAN	2007	662	5.4	3.7	68.5	Roman Viñas et al., 2011
Adults (age 19-64 years)	Male	Portugal	EPI Porto study	1999–2003	917	9.3	4.1	44.1	Roman Viñas et al., 2011
Elderly (age >64 years)	Male	Germany	German National Nutrition Study II	2005–2007	1469	5.9	2.5	42.4	Roman Viñas et al., 2011
Elderly (age >64 years)	Male	Spain	ENCAT	2002–2003	163	3.8	0.6	15.8	Roman Viñas et al., 2011
Elderly (age >64 years)	Male	Finland	National FINDIET Survey	2007	229	6.5	6	92.3	Roman Viñas et al., 2011
Elderly (age >64 years)	Male	Portugal	EPI Porto study	1999–2003	246	8.2	3.8	46.3	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Germany	German National Nutrition Study II	2005–2007	6016	4.4	2.1	47.7	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Spain	ENCAT	2002–2003	875	4	0.8	20.0	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Finland	National FINDIET Survey	2007	846	4.3	3.4	79.1	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Greece	Greek EPIC study	1994–1999	451	3.8	9.7	255.3	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Ireland	SLAN	2007	717	4.1	3.6	87.8	Roman Viñas et al., 2011
Adults (age 19-64 years)	Female	Portugal	EPI Porto study	1999–2003	1472	8.8	4	45.5	Roman Viñas et al., 2011
Elderly (age >64 years)	Female	Germany	German National Nutrition Study II	2005–2007	1562	4.3	2	46.5	Roman Viñas et al., 2011
Elderly (age >64 years)	Female	Spain	ENCAT	2002–2003	179	3.5	0.5	14.3	Roman Viñas et al., 2011
Elderly (age >64 years)	Female	Finland	National FINDIET Survey	2007	234	5.2	4.8	92.3	Roman Viñas et al., 2011
Elderly (age >64 years)	Female	Portugal	EPI Porto study	1999–2003	339	7.5	4.1	54.7	Roman Viñas et al., 2011
Children (age 4-8)	Both	Zambia		2012–2013	202			21.5	Caswell et al., 2020
Adolescents (age 12-19)	Male	Brazil	Health Survey of São Paulo	2007–2008	140	5.6	5.9204	105.7	Verly Junior et al., 2010
Adolescents (age 12-19)	Female	Brazil	Health Survey of São Paulo	2007–2008	133	4.7	2.62504	55.9	Verly Junior et al., 2010
Pregnant women (age 14-51 years)	Female	Malawi		1988–1991	184			81.0	Nyambose et al., 2002
MEDIAN								**55.3**	

TABLE S4
Full results by individual region: Sub-Saharan Africa

Nutrient	Unit	Per capita daily supply	Estimated average requirement (EAR)	Current rate of deficiency (%)	Amount supplied by 5 grams of insects	Absolute change in rate of deficiency with insects (%)	2020 population removed from risk of deficiency with insects (millions)
Protein	g	52.0 (50.8 – 53.3)	26.5	17.5 (16.5 – 18.5)	2.6 (1.0 – 3.8)	-1.6 (-2.1 – -0.4)	15 (3 – 19)
Zinc (absorbable)	mg	2.33 (2.30 – 2.36)	1.76	27.2 (26.2 – 28.0)	0.10 (0.07 – 0.13)	-3.6 (-4.9 – -2.6)	33 (23 – 44)
Folate	mcg	414 (384 – 475)	281	25.8 (18.8 – 30.7)	18 (9 – 45)	-3.0 (-7.9 – -1.4)	27 (12 – 70)
Vitamin B12	mcg	2.61 (1.30 – 4.08)	1.72	45.2 (24.4 – 76.1)	0.14 (0 – 3.51)	-3.9 (-58.2 – -0.8)	35 (7 – 523)
Iron	mg	25.2 (21.4 – 28.6)	*	*	0.48 (0.01 – 3.2)	*	*

TABLE S5
Full results by individual region: Central and South Asia

Nutrient	Unit	Per capita daily supply	Estimated average requirement (EAR)	Current rate of deficiency (%)	Amount supplied by 5 grams of insects	Absolute change in rate of deficiency with insects (%)	2020 population removed from risk of deficiency with insects (millions)
Protein	g	55.5 (53.8 – 57.1)	27.1	9.3 (8.1 – 10.6)	2.7 (1.9 – 3.8)	-1.4 (-2.0 – -0.9)	28 (18 – 40)
Zinc (absorbable)	mg	2.49 (2.46 – 2.54)	1.95	27.9 (26.4 – 29.1)	0.1 (0.07 – 0.13)	-3.3 (-4.5 – -2.4)	67 (48 – 90)
Folate	mcg	303 (287 – 320)	295	48.6 (43.1 – 54.3)	19 (9 – 45)	-5.9 (-13.6 – -2.9)	118 (58 – 269)
Vitamin B12	mcg	1.42 (1.16 – 1.74)	1.82	76.6 (66.5 – 84.3)	0.14 (0 – 3.51)	-4.4 (-74.8 – 0)	85 (0 – 1461)
Iron	mg	21.5 (18.1 – 30.2)	*	*	1.1 (0.08 – 2)	*	*

TABLE S6
Full results by individual region: East and Southeast Asia

Nutrient	Unit	Per capita daily supply	Estimated average requirement (EAR)	Current rate of deficiency (%)	Amount supplied by 5 grams of insects	Absolute change in rate of deficiency with insects (%)	2020 population removed from risk of deficiency with insects (millions)
Protein	g	69 (66.2 – 74.5)	29.3	10.8 (8.7 – 12.2)	2.7 (1.1 – 3.7)	-1.1 (-1.5 – -0.5)	23 (10 – 31)
Zinc (absorbable)	mg	2.92 (2.84 – 3.01)	2.06	19.3 (17.7 – 21.1)	0.1 (0.07 – 0.13)	-2.5 (-3.3 – -1.8)	54 (39 – 71)

Folate	mcg	406 (350 – 629)	302	29.9 (22.2 – 38.9)	21 (9 – 32)	-3.5 (-6.5 – -1.3)	74 (27 – 138)
Vitamin B12	mcg	4.31 (2.67 – 6.12)	1.88	17.4 (5.2 – 37.7)	0.05 (0 – 3.51)	-0.6 (-23 – 0)	13 (0 – 492)
Iron	mg	26.6 (21.6 – 45.8)	*	*	0.32 (0.05 – 1.66)	*	*

TABLE S7

Full results by individual region: Northern Africa and Western Asia

Nutrient	Unit	Per capita daily supply	Estimated average requirement (EAR)	Current rate of deficiency (%)	Amount supplied by 5 grams of insects	Absolute change in rate of deficiency with insects (%)	2020 population removed from risk of deficiency with insects (millions)
Protein	g	77.8 (75.5 – 79.6)	28.4	4.6 (4.1 – 5.2)	2.7 (1.6 – 3.8)	-0.6 (-0.8 – -0.3)	2 (1 – 3)
Zinc (absorbable)	mg	2.58 (2.56 – 2.6)	1.92	25.1 (24.3 – 25.9)	0.08 (0.06 – 0.1)	-2.4 (-3.2 – -1.7)	10 (7 – 14)
Folate	mcg	425 (409 – 447)	291	22.9 (20.4 – 25.4)	19 (9 – 45)	-3.1 (-6.8 – -1.5)	13 (7 – 30)
Vitamin B12	mcg	2.89 (1.88 – 4.62)	1.8	36.1 (16.9 – 60.6)	0.14 (0 – 3.51)	-2.4 (-46.9 – 0)	10 (0 – 203)
Iron	mg	21 (19.3 – 22.9)	*	*	0.36 (0 – 1.66)	*	*

Supplemental Methods and References

1. Methods

1.1. Nutritional intakes and possible additional contributions from insects

For all nutrients except vitamin B12, we used the existing publicly accessible Global Expanded Nutrient Supply (GENuS) dataset, which reports the contribution of 225 foods to 23 macro- and micronutrients for 34 age-sex groups (5-year age bins by sex) across 152 countries (95.5% of the global population) through 2011 (1,2). We used 2011 for this analysis, the most recent year in GENuS. GENuS relies on data from the Food and Agriculture Organization of the United Nation's (FAO) food balance sheets combined with additional FAO data on commodity production and trade paired with regional food composition tables to estimate the range of potential nutrients supplied by the diet. Though FAO and GENuS only report food available to be eaten rather than food actually eaten, here we use GENuS nutrient supply estimates as a proxy for nutrient intake, as in many previous studies (3–6).

For protein, we applied an additional coefficient to account for its varying digestibility depending on the food source. Here, we assumed that plant-based protein was 80% digestible and animal-based protein was 95% digestible (7). For insects, we relied on a handful of studies that have examined digestibility specifically, which showed some variation by species. Compared with soy protein, for example, some insects are of equivalent or superior protein quality (8,9). In a large study, insect protein digestibility for 87 species ranged from 76-96%, higher than that of most plant proteins but slightly lower than egg protein (95%) or beef (98%) (10). Another study measured protein digestibility of farmed *T. molitor* and *A. domesticus* fed to rats. Digestibility for both raw (84-92%) and heat-treated insects (84-90%) was high (11). Among these variable estimates, we used 85% as an average value.

Lastly, converting the amount of total dietary zinc to that which is absorbable by the body requires another step. For this, we used the total zinc and phytate in the diet, with and without insects, as inputs into an equation for estimating absorbable zinc derived by Miller et al. (12) with updated coefficients from Hambidge et al. (13). Because zinc and phytate are thus paired in our dietary absorbable zinc calculations, for this step we winnowed our list of insect nutritional data to only those species that had data for both zinc and phytate. This left only five species with the necessary paired data, which was then insufficient to elucidate differences among regions. Therefore, for zinc only, we used a single global food composition table which combined the possible contributions from only those five species with appropriate data, which we then applied to all study countries (Supplemental Table S2).

1.2. Estimating human nutritional requirements

For absorbable zinc, the physiological requirements for each age-sex group were estimated by the International Zinc Nutrition Consultative Group (14). Because pregnant and lactating women require extra zinc, we account for these additional requirements within the relevant age-sex groups by using the 2015 age-specific fertility rates in each country provided by the United

Nations Population Division (15) multiplied by the average fraction of the year occupied by pregnancy: 40/52 weeks. To estimate the number of lactating women in each country, fertility rates were multiplied by the average duration of breastfeeding collected from the World Health Organization (WHO) Global Data Bank on Infant and Young Child Feeding (16) and the World Breastfeeding Trends Initiative (17). Countries lacking data from either source were estimated using a regional average.

To estimate protein requirements, we used the method previously employed in Smith and Myers (6). Protein requirements are not derived solely as a function of an individual's age and sex, but also their weight (18). However, lacking a global standard for an acceptable weight from which to determine protein deficiency, we used the WHO recommendation of a body mass index (BMI) of 18.5 as the lowest acceptable weight-for-height before being deemed underweight. NCD-RisC (19) data on adult height by age, sex and country was used to calculate corresponding minimal acceptable weights in each group, and WHO BMI-for-age and height-for-age curves were used to extrapolate adult BMIs and heights to equivalent values for adolescents and children older than 5. For children under 5, BMI data was unavailable, so the fiftieth percentile weight was used in each country to determine deficiency. For pregnant and lactating women, additional protein requirements were estimated as for zinc.

For folate and vitamin B12, the recommended nutrient intake values for each age-sex group were collected from FAO-WHO (20) and converted to estimated average requirements (EARs) using conversion factors from WHO-FAO (21) for use in the next step. When the reported age-sex categories for the physiological requirements did not align with the 5-year age bins in our model, we used simple weighted averages of the requirements to harmonize our definitions.

For iron, the link between dietary intake and physiological iron deficiency is complicated by several interceding variables (22,23): the relative amounts of non-heme and heme iron consumed, the individual's iron status at the time, other dietary components eaten simultaneously that can inhibit (e.g., calcium, phytate, alcohol, tannins) or enhance (e.g., ascorbic acid, animal protein) absorption, menstruation in women of childbearing age, and concurrent diseases. Because we have sufficient data for only some of these factors, we have an incomplete picture of the bioavailability of iron for any individual or population. Furthermore, the iron requirements for menstruating women are not normally distributed, which violates the conditions for using the EAR cut-point method in the next step. Due to these limitations, we are unable to estimate the prevalence of those at risk of deficiency either before or after addition of insects. Instead, we model only the amount of additional iron that could be provided by insects in each region to give a rough idea of the potential importance to increasing iron sufficiency.

References for Supplemental Methods

1. Smith M. Nutrient Totals by Age and Sex (2011) [Internet]. Harvard Dataverse; 2018 [cited 2020 Oct 9]. Available from: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/XIKNDC

2. Smith MR, Micha R, Golden CD, Mozaffarian D, Myers SS. Global Expanded Nutrient Supply (GENuS) Model: A New Method for Estimating the Global Dietary Supply of Nutrients. PLOS ONE. 2016 Jan 25;11(1):e0146976.

3. Wessells KR, Brown KH. Estimating the global prevalence of zinc deficiency: results based on zinc availability in national food supplies and the prevalence of stunting. PloS One. 2012;7(11):e50568.

4. Medek DE, Schwartz J, Myers SS. Estimated Effects of Future Atmospheric CO2 Concentrations on Protein Intake and the Risk of Protein Deficiency by Country and Region. Environmental Health Perspectives. 2017 02;125(8):087002.

5. Beal T, Massiot E, Arsenault JE, Smith MR, Hijmans RJ. Global trends in dietary micronutrient supplies and estimated prevalence of inadequate intakes. PLOS ONE. 2017 Apr 11;12(4):e0175554.

6. Smith MR, Myers SS. Impact of anthropogenic CO 2 emissions on global human nutrition. Nature Climate Change. 2018 Sep;8(9):834–9.

7. Millward DJ, Jackson AA. Protein/energy ratios of current diets in developed and developing countries compared with a safe protein/energy ratio: implications for recommended protein and amino acid intakes. Public Health Nutrition. 2004 May;7(3):387–405.

8. Finke MD, DeFoliart GR, Benevenga NJ. Use of a four-parameter logistic model to evaluate the quality of the protein from three insect species when fed to rats. J Nutr. 1989 Jun;119(6):864–71.

9. Yi L, Lakemond CMM, Sagis LMC, Eisner-Schadler V, van Huis A, van Boekel MAJS. Extraction and characterisation of protein fractions from five insect species. Food Chem. 2013 Dec 15;141(4):3341–8.

10. Ramos-Elorduy J, Moreno JMP, Prado EE, Perez MA, Otero JL, de Guevara OL. Nutritional Value of Edible Insects from the State of Oaxaca, Mexico. Journal of Food Composition and Analysis. 1997 Jun;10(2):142–57.

11. Poelaert C, Francis F, Alabi T, Megido RC, Crahay B, Bindelle J, et al. Protein value of two insects, subjected to various heat treatments, using growing rats and the protein digestibility-corrected amino acid score. Journal of Insects as Food and Feed. 2018 May 29;4(2):77–87.

12. Miller LV, Krebs NF, Hambidge KM. A mathematical model of zinc absorption in humans as a function of dietary zinc and phytate. The Journal of Nutrition. 2007 Jan;137(1):135–41.

13. Hambidge KM, Miller LV, Westcott JE, Sheng X, Krebs NF. Zinc bioavailability and homeostasis. The American Journal of Clinical Nutrition. 2010 May;91(5):1478S-1483S.

14. International Zinc Nutrition Consultative Group (IZiNCG), Brown KH, Rivera JA, Bhutta Z, Gibson RS, King JC, et al. International Zinc Nutrition Consultative Group (IZiNCG) technical document #1. Assessment of the risk of zinc deficiency in populations and options for its control. Food and Nutrition Bulletin. 2004 Mar;25(1 Suppl 2):S99-203.

15. United Nations DESA Population Division. World Population Prospects (WPP) [Internet]. 2017 [cited 2020 Oct 9]. Available from: https://population.un.org/wpp/

16. World Health Organization (WHO). WHO Global Data Bank on Infant and Young Child Feeding [Internet]. World Health Organization; [cited 2020 Oct 9]. Available from: https://www.who.int/nutrition/databases/infantfeeding/en/

17. WBTi Country Reports [Internet]. [cited 2020 Oct 9]. Available from: https://www.worldbreastfeedingtrends.org/wbti-country-report.php

18. Joint FAO/WHO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition (2002 : Geneva S, Nations F and AO of the U, Organization WH, University UN. Protein and amino acid requirements in human nutrition : report of a joint FAO/WHO/UNU expert consultation [Internet]. World Health Organization; 2007 [cited 2020 Oct 8]. Available from: https://apps.who.int/iris/handle/10665/43411

19. NCD Risk Factor Collaboration (NCD-RisC). A century of trends in adult human height. Franco E, editor. eLife. 2016 Jul 26;5:e13410.

20. World Health Organization, Food and Agriculture Organization of the United Nations, editors. Vitamin and mineral requirements in human nutrition. 2nd ed. Geneva : Rome: World Health Organization ; FAO; 2004. 341 p.

21. Allen L. Guidelines on food fortification with micronutrients. Geneva: World Health Organization [u.a.; 2006.

22. Hallberg L, Hulthén L. Prediction of dietary iron absorption: an algorithm for calculating absorption and bioavailability of dietary iron. The American Journal of Clinical Nutrition. 2000 May;71(5):1147–60.

23. Zimmermann MB, Hurrell RF. Nutritional iron deficiency. Lancet (London, England). 2007 Aug 11;370(9586):511–20.

References for Supplemental Tables

Abdel-Moniem, A. S. H., El-Kholy, M. Y., & Elshekh, W. E. A. (2017). The Red Palm Weevil, Rhynchophorus ferrugineus Olivier, as Edible Insects for Food and Feed a Case Study in Egypt. *Research Journal of Pharmaceutical Biological and Chemical Sciences*.

Adepoju, O. T., & Daboh, O. O. (2013). Nutrient Composition of Cirina forda (Westwood)-Enriched Complementary Foods. *Annals of Nutrition and Metabolism*, *63*(1–2), 139–144. https://doi.org/10.1159/000353885

Akinnawo, O., & Ketiku, A. O. (2000). Chemical composition and fatty acid profile of edible larva of *Cirina forda* (Westwood). *African Journal of Biomedical Research*, *3*(2), 93–96. https://doi.org/10.4314/ajbr.v3i2.

Alves, A. V., Sanjinez-Argandoña, E. J., Linzmeier, A. M., Cardoso, C. A. L., & Macedo, M. L. R. (2016). Food Value of Mealworm Grown on Acrocomia aculeata Pulp Flour. *PLOS ONE*, *11*(3), e0151275. https://doi.org/10.1371/journal.pone.0151275

Banjo, A. D., Lawal, O. A., & Songonuga, E. A. (2006). The nutritional value of fourteen species of edible insects in southwestern Nigeria. *African Journal of Biotechnology*, *5*(3), 298–301. https://doi.org/10.4314/ajb.v5i3.

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

Bhattacharyya, B., Choudhury, B., Das, P., Dutta, S. K., Bhagawati, S., & Pathak, K. (2018). Nutritional Composition of Five Soil-Dwelling Scarab Beetles (Coleoptera: Scarabaeidae) of Assam, India. *The Coleopterists Bulletin*, *72*(2), 339–346. https://doi.org/10.1649/0010-065X-72.2.339

Borah, A. (2016, August 10). The Majuli beetle turns from pest to delicacy. *India Climate Dialogue*. https://indiaclimatedialogue.net/2016/08/10/majuli-beetle-turns-pest-delicacy/

Caswell, B. L., Talegawkar, S. A., Siamusantu, W., West, K. P., & Palmer, A. C. (2020). Within-person, between-person and seasonal variance in nutrient intakes among 4- to 8-year-old rural Zambian children. *The British Journal of Nutrition*, *123*(12), 1426–1433. https://doi.org/10.1017/S0007114520000732

Chakravorty, J., Ghosh, S., Jung, C., & Meyer-Rochow, V. B. (2014). Nutritional composition of Chondacris rosea and Brachytrupes orientalis: Two common insects used as food by tribes of Arunachal Pradesh, India. *Journal of Asia-Pacific Entomology*, *17*(3), 407–415. https://doi.org/10.1016/j.aspen.2014.03.007

Chakravorty, J., Ghosh, S., Megu, K., Jung, C., & Meyer-Rochow, V. B. (2016). Nutritional and anti-nutritional composition of Oecophylla smaragdina (Hymenoptera: Formicidae) and Odontotermes sp. (Isoptera: Termitidae): Two preferred edible insects of Arunachal Pradesh, India. *Journal of Asia-Pacific Entomology*, *19*(3), 711–720. https://doi.org/10.1016/j.aspen.2016.07.001

Chieco, C., Morrone, L., Bertazza, G., Cappellozza, S., Saviane, A., Gai, F., Di Virgilio, N., & Rossi, F. (2019). The Effect of Strain and Rearing Medium on the Chemical Composition, Fatty Acid Profile and Carotenoid Content in Silkworm (Bombyx mori) Pupae. *Animals*, *9*(3), 103. https://doi.org/10.3390/ani9030103

Chinarak, K., Chaijan, M., & Panpipat, W. (2020). Farm-raised sago palm weevil (Rhynchophorus ferrugineus) larvae: Potential and challenges for promising source of nutrients. *Journal of Food Composition and Analysis*, *92*, 103542. https://doi.org/10.1016/j.jfca.2020.103542

Clarkson, C., Mirosa, M., & Birch, J. (2018). Potential of Extracted Locusta Migratoria Protein Fractions as Value-Added Ingredients. *Insects*, *9*(1), 20. https://doi.org/10.3390/insects9010020

Dierenfeld, E. S. (2002). *Some preliminary observations on herbivorous insect composition: Nutrient advantages from a green leaf diet?* Symposium of the Comparative Nutrition Society, Antwerp, Belgium.

Dignan, C., Burlingame, B., Kumar, S., & Aalbersberg, W. (2004). The Pacific Islands food composition tables. *The Pacific Islands Food Composition Tables.*, *Ed.2*. https://www.cabdirect.org/cabdirect/abstract/20043191618

Dreyer, J. J., & Wehmeyer, A. S. (1982). *Nutritive value of Mopanie worms*. https://researchspace.csir.co.za/dspace/handle/10204/2349

Ehounou, G. P., Ouali-N'goran, S.-W. M., Soro, D., & Bedikou, M. E. (2019). Nutrient contributions of *Rhynchophorus phoenicis* Fabricius, 1801 (Coleoptera: Curculionidae), very appreciated larvae in Côte d'Ivoire compared with beef (N'Dama breed) and thon (*Thunnus thynnus*). *International Journal of Biological and Chemical Sciences*, *13*(4), 2092–2103. https://doi.org/10.4314/ijbcs.v13i4.16

Ekop, E. A., Udoh, A. I., & Akpan, P. E. (2010). Proximate and anti-nutrient composition of four edible insects in Akwa Ibom State, Nigeria. *World Journal of Applied Science and Technology*, *2*(2), 224–231.

Elemo, B. O., Elemo, G. N., Makinde, M. A., & Erukainure, O. L. (2011). Chemical evaluation of African palm weevil, Rhychophorus phoenicis, larvae as a food source. *Journal of Insect Science*, *11*(1). https://doi.org/10.1673/031.011.14601

Finke, M. D. (2002). Complete nutrient composition of commercially raised invertebrates used as food for insectivores. *Zoo Biology*, *21*(3), 269–285. https://doi.org/10.1002/zoo.10031

Finke, M. D. (2007). Estimate of chitin in raw whole insects. *Zoo Biology*, *26*(2), 105–115. https://doi.org/10.1002/zoo.20123

Finke, M. D. (2015). Complete nutrient content of four species of commercially available feeder insects fed enhanced diets during growth. *Zoo Biology*, *34*(6), 554–564. https://doi.org/10.1002/zoo.21246

Fombong, F. T., Van Der Borght, M., & Vanden Broeck, J. (2017). Influence of Freeze-Drying and Oven-Drying Post Blanching on the Nutrient Composition of the Edible Insect Ruspolia differens. *Insects*, *8*(3). https://doi.org/10.3390/insects8030102

Frye, F. L., & Calvert, C. C. (1989). Preliminary Information on the Nutritional Content of Mulberry Silk Moth (Bombyx mori) Larvae. *Journal of Zoo and Wildlife Medicine*, *20*(1), 73–75.

Ghaly, A. E., & Alkoaik, F. N. (2009). The yellow mealworm as a novel source of protein. *American Journal of Agricultural and Biological Sciences*, *4*(4), 319–331.

Ghosh, S., Lee, S.-M., Jung, C., & Meyer-Rochow, V. B. (2017). Nutritional composition of five commercial edible insects in South Korea. *Journal of Asia-Pacific Entomology*, *20*(2), 686–694. https://doi.org/10.1016/j.aspen.2017.04.003

Glew, R. H., Jackson, D., Sena, L., VanderJagt, D. J., Pastuszyn, A., & Millson, M. (1999). Gonimbrasia belina (Lepidoptera: Saturniidae): a Nutritional Food Source Rich in Protein, Fatty Acids, and Minerals. *American Entomologist*, *45*(4), 250–253. https://doi.org/10.1093/ae/45.4.250

Haber, M., Mishyna, M., Martinez, J. J. I., & Benjamin, O. (2019). *The influence of grasshopper (Schistocerca gregaria) powder enrichment on bread nutritional and sensorial properties*. https://pubag.nal.usda.gov/catalog/6536520

Igbabul, B. D., Agude, C., & Inyang, C. U. (2015). Nutritional and microbial quality of dried larva of Cirina forda. *International Journal of Nutrition and Food Sciences*, *3*(6), 602–606.

Jonathan, A. A. (2012). *Proximate and anti-nutritional composition of two common edible insects: Yam beetle (Heteroligus meles) and palm weevil (Rhynchophorus phoenicis)*. 5.

Khalil, R. M. (2018). *Locust (Schistocerca Gregaria) as an Alternative Source of Protein Compared with Other Conventional Protein Sources* [Thesis, Sudan University of Science and Technology]. http://repository.sustech.edu//handle/123456789/21581

Kinyuru, J N, Kenji, G. M., Muhoho, S. N., & Ayieko, M. (2010). Nutritional potential of Longhorn Grasshopper (Ruspolia Differens) consumed in Siaya District, Kenya. *Journal of Agriculture, Science and Technology*, 15.

Kinyuru, John N. (2020). Nutrient content and lipid characteristics of desert locust (Schistoscerca gregaria) swarm in Kenya. *International Journal of Tropical Insect Science*. https://doi.org/10.1007/s42690-020-00308-3

Kinyuru, John N., Kenji, G. M., Muhoho, S. N., & Ayieko, M. (2011). Nutritional Potential Of Longhorn Grasshopper (Ruspolia Differens) Consumed In Siaya District, Kenya. *Journal of Agriculture, Science and Technology*, *12*(1), Article 1. http://journals.jkuat.ac.ke/index.php/jagst/article/view/7

Kinyuru, John N., Kenji, G. M., Njoroge, S. M., & Ayieko, M. (2010). Effect of Processing Methods on the In Vitro Protein Digestibility and Vitamin Content of Edible Winged Termite (Macrotermes subhylanus) and Grasshopper (Ruspolia differens). *Food and Bioprocess Technology*, *3*(5), 778–782. https://doi.org/10.1007/s11947-009-0264-1

Kovitvadhi, A., Chundang, P., Thongprajukaew, K., Tirawattanawanich, C., Srikachar, S., & Chotimanothum, B. (2019). Potential of Insect Meals as Protein Sources for Meat-Type Ducks Based on In Vitro Digestibility. *Animals*, *9*(4), 155. https://doi.org/10.3390/ani9040155

Kuntadi, K., Adalina, Y., & Maharani, K. E. (2018). Nutritional Compositions of Six Edible Insects in Java. *Indonesian Journal of Forestry Research*, *5*(1), 57–68. https://doi.org/10.20886/ijfr.2018.5.1.57-68

Lamberti, C., Gai, F., Cirrincione, S., Giribaldi, M., Purrotti, M., Manfredi, M., Marengo, E., Sicuro, B., Saviane, A., Cappellozza, S., Giuffrida, M. G., & Cavallarin, L. (2019). Investigation of the protein profile of silkworm (Bombyx mori) pupae reared on a well-calibrated artificial diet compared to mulberry leaf diet. *PeerJ*, *7*, e6723. https://doi.org/10.7717/peerj.6723

Latunde-Dada, G. O., Yang, W., & Vera Aviles, M. (2016). In Vitro Iron Availability from Insects and Sirloin Beef. *Journal of Agricultural and Food Chemistry*, *64*(44), 8420–8424. https://doi.org/10.1021/acs.jafc.6b03286

Linn, W. W., Htwe, D., & Than, W. W. (2016). *Identification, Morphology, and Nutrient Composition of Edible Fungi and Insects in Myanmar* (Leaflet No. 18; pp. 1–24). Forest Department, Ministry of Natural Resources and Environmental Conservation. https://www.forestdepartment.gov.mm/sites/default/files/Research%20Books%20file/18.%20Wah%20Wah%20Linn.pdf

Liu, C., Masri, J., Perez, V., Maya, C., & Zhao, J. (2020). Growth Performance and Nutrient Composition of Mealworms (Tenebrio Molitor) Fed on Fresh Plant Materials-Supplemented Diets. *Foods*, *9*(2), 151. https://doi.org/10.3390/foods9020151

Longvah, T., Mangthya, K., & Ramulu, P. (2011). Nutrient composition and protein quality evaluation of eri silkworm (Samia ricinii) prepupae and pupae. *Food Chemistry*, *128*(2), 400–403. https://doi.org/10.1016/j.foodchem.2011.03.041

Madibela, O. R., Mokwena, K. K., Nsoso, S. J., & Thema, T. F. (2009). Chemical composition of Mopane worm sampled at three sites in Botswana and subjected to different processing. *Tropical Animal Health and Production*, *41*(6), 935–942. https://doi.org/10.1007/s11250-008-9282-7

Manyeula, F., Tsopito, C., Kamau, J., Mogotsi, K. K., Nsoso, S. J., & Moreki, J. C. (2013). Effect of Imbrasia belina (Westwood), Tylosema esculentum (Burchell) Schreiber and Vigna subterranea (L.) Verde as protein sources on growth and laying performance of Tswana hens raised under intensive production system. *Scientific Journal of Animal Science*, *2*(1), 1–8.

Mazumdar, M. D. (2019). A Study On Biochemical Composition Of Eri Pupae (Pilosamia Ricini). *International Journal of Scientific & Technology Research*, *8*(12), 2189–2191.

Mohamed, E. H. A. (2015). Determination of Nutritive Value of the Edible migratory locust Locusta migratoria, Linnaeus, 1758 (Orthoptera: Acrididae). *International Journal of Advances in Pharmacy, Biology, and Chemistry*, *4*(1), 5.

Moreki, J., Tiroesele, B., & Chiripasi, S. C. (2012). Prospects of utilizing insects as alternative sources of protein in poultry diets in Botswana. *Journal of Animal Science Advances*, *2*, 649–658.

Nantanga, K. K. M., & Amakali, T. (2020). Diversification of mopane caterpillars (Gonimbrasia belina) edible forms for improved livelihoods and food security. *Journal of Arid Environments*, *177*, 104148. https://doi.org/10.1016/j.jaridenv.2020.104148

Nigeria Food Database. (2019). http://nigeriafooddata.ui.edu.ng/Database

Nirmala, I. R., & Pramono, M. S. (2017). Sago worms as a nutritious traditional and alternative food for rural children in Southeast Sulawesi, Indonesia. *Asia Pacific Journal of Clinical Nutrition*, *26*(Supplement), S40.

Nyambose, J., Koski, K. G., & Tucker, K. L. (2002). High intra/interindividual variance ratios for energy and nutrient intakes of pregnant women in rural Malawi show that many days are required to estimate usual intake. *The Journal of Nutrition*, *132*(6), 1313–1318. https://doi.org/10.1093/jn/132.6.1313

Ohtsuka, R., Kawabe, T., Inaoka, T., Suzuki, T., Hongo, T., Akimichi, T., & Sugahara, T. (1984). Composition of local and purchased foods consumed by the Gidra in Lowland Papua. *Ecology of Food and Nutrition*, *15*(2), 159–169. https://doi.org/10.1080/03670244.1984.9990820

Oibiokpa, F. I., Akanya, H. O., Jigam, A. A., & Saidu, A. N. (2017). Nutrient and Antinutrient Compositions of Some Edible Insect Species in Northern Nigeria. *Fountain Journal of Natural and Applied Sciences*, *6*(1), Article 1. http://fountainjournals.com/index.php/FUJNAS/article/view/159

Okunowo, W. O., Olagboye, A. M., Afolabi, L. O., & Oyedeji, A. O. (2017). Nutritional value of Rhynchophorus phoenicis (F.) larvae, an edible insect in Nigeria. *African Entomology*, *25*(1), 156–163. https://doi.org/10.4001/003.025.0156

Oliveira, J. F. S., Carvalho, J. P. de, Sousa, R. F. X. B. de, & Simão, M. M. (1976). The nutritional value of four species of insects consumed in Angola. *Ecology of Food and Nutrition*, *5*(2), 91–97. https://doi.org/10.1080/03670244.1976.9990450

Omotoso, O. T. (2006). Nutritional quality, functional properties and anti-nutrient compositions of the larva of Cirina forda (Westwood) (Lepidoptera: Saturniidae). *Journal of Zhejiang University SCIENCE B*, *7*(1), 51–55. https://doi.org/10.1631/jzus.2006.B0051

Omotoso, O. T., & Adedire, C. O. (2007). Nutrient composition, mineral content and the solubility of the proteins of palm weevil, Rhynchophorus phoenicis f. (Coleoptera: Curculionidae). *Journal of Zhejiang University SCIENCE B*, *8*(5), 318–322. https://doi.org/10.1631/jzus.2007.B0318

Omotoso, O. T., & Adesola, A. A. (2018). Comparative studies of the nutritional composition of some insect orders. *International Journal of Entomology and Nematology Research*, *2*(1), 1–9.
Oonincx, D. G. a. B., & Poel, A. F. B. van der. (2011). Effects of diet on the chemical composition of migratory locusts (Locusta migratoria). *Zoo Biology*, *30*(1), 9–16. https://doi.org/10.1002/zoo.20308
Opara, M. N., Sanyigha, F. T., Ogbuewu, I. P., & Okoli, I. C. (2012). Studies on the production trend and quality characteristics of palm grubs in the tropical rainforest zone of Nigeria. *International Journal of Agricultural Technology*, *8*(3), 851–860.
Osasona, A. I., & Olaofe, O. (2010). Nutritional and functional properties of Cirina forda larva from Ado-Ekiti, Nigeria. *African Journal of Food Science*, *4*(12), 775–777. https://doi.org/10.5897/AJFS.9000201
Parker, M. E., Zobrist, S., Lutterodt, H. E., Asiedu, C. R., Donahue, C., Edick, C., Mansen, K., Pelto, G., Milani, P., Soor, S., Laar, A., & Engmann, C. M. (2020). Evaluating the nutritional content of an insect-fortified food for the child complementary diet in Ghana. *BMC Nutrition*, *6*. https://doi.org/10.1186/s40795-020-0331-6
Ramos-Elorduy, J., Moreno, J. M. P., Prado, E. E., Perez, M. A., Otero, J. L., & de Guevara, O. L. (1997). Nutritional Value of Edible Insects from the State of Oaxaca, Mexico. *Journal of Food Composition and Analysis*, *10*(2), 142–157. https://doi.org/10.1006/jfca.1997.0530
Rangacharyulu, P. V., Giri, S. S., Paul, B. N., Yashoda, K. P., Rao, R. J., Mahendrakar, N. S., Mohanty, S. N., & Mukhopadhyay, P. K. (2003). Utilization of fermented silkworm pupae silage in feed for carps. *Bioresource Technology*, *86*(1), 29–32. https://doi.org/10.1016/S0960-8524(02)00113-X
Rapatsa, M. M., & Moyo, N. A. G. (2017). Evaluation of Imbrasia belina meal as a fishmeal substitute in Oreochromis mossambicus diets: Growth performance, histological analysis and enzyme activity. *Aquaculture Reports*, *5*, 18–26. https://doi.org/10.1016/j.aqrep.2016.11.004
Ravzanaadii, N., Kim, S., Choi, W. H., Hong, S., & Kim, N. J. (2012). Nutritional Value of Mealworm, Tenebrio molitor as Food Source. *International Journal of Industrial Entomology*, *25*(1), 93–98.
Roman Viñas, B., Ribas Barba, L., Ngo, J., Gurinovic, M., Novakovic, R., Cavelaars, A., de Groot, L. C. P. G. M., van't Veer, P., Matthys, C., & Serra Majem, L. (2011). Projected prevalence of inadequate nutrient intakes in Europe. *Annals of Nutrition & Metabolism*, *59*(2–4), 84–95. https://doi.org/10.1159/000332762
Sailo, S. (2019). *Nutritional and Antinutritional Properties of Some Edible Insects of Assam* [Thesis, AAU, Jorhat]. https://krishikosh.egranth.ac.in/handle/1/5810147674
Schmidt, A., Call, L.-M., Macheiner, L., & Mayer, H. K. (2019). Determination of vitamin B12 in four edible insect species by immunoaffinity and ultra-high performance liquid chromatography. *Food Chemistry*, *281*, 124–129. https://doi.org/10.1016/j.foodchem.2018.12.039
Siulapwa, N., Mwambungu, A., Lungu, E., & Sichilima, W. (2014). Nutritional Value of Four Common Edible Insects in Zambia. *International Journal of Science and Research*, *3*(6), 9.
Ssepuuya, G., Smets, R., Nakimbugwe, D., Van Der Borght, M., & Claes, J. (2019). Nutrient composition of the long-horned grasshopper Ruspolia differens Serville: Effect of swarming season and sourcing geographical area. *Food Chemistry*, *301*, 125305. https://doi.org/10.1016/j.foodchem.2019.125305
Tang, C., Yang, D., Liao, H., Sun, H., Liu, C., Wei, L., & Li, F. (2019). Edible insects as a food source: A review. *Food Production, Processing and Nutrition*, *1*(1), 8. https://doi.org/10.1186/s43014-019-0008-1

Taufek, Norhidayah M., Muin, H., Raji, A. A., Razak, S. A., Yusof, H. M., & Alias, Z. (2016). Apparent Digestibility Coefficients and Amino Acid Availability of Cricket Meal, Gryllus bimaculatus, and Fishmeal in African Catfish, Clarias gariepinus, Diet. *Journal of the World Aquaculture Society*, *47*(6), 798–805. https://doi.org/10.1111/jwas.12302

Taufek, Norhidayah Mohd, Muin, H., Raji, A. A., Yusof, H. M., Alias, Z., & Razak, S. A. (2018). Potential of field crickets meal (Gryllus bimaculatus) in the diet of African catfish (Clarias gariepinus). *Journal of Applied Animal Research*, *46*(1), 541–546. https://doi.org/10.1080/09712119.2017.1357560

Tomotake, H., Katagiri, M., & Yamato, M. (2010). Silkworm Pupae (*Bombyx mori*) Are New Sources of High Quality Protein and Lipid. *Journal of Nutritional Science and Vitaminology*, *56*(6), 446–448. https://doi.org/10.3177/jnsv.56.446

Tong, L., Yu, X., & Liu, H. (2011). Insect food for astronauts: Gas exchange in silkworms fed on mulberry and lettuce and the nutritional value of these insects for human consumption during deep space flights. *Bulletin of Entomological Research*, *101*(5), 613–622. https://doi.org/10.1017/S0007485311000228

Udomsil, N., Imsoonthornruksa, S., Gosalawit, C., & Ketudat-Cairns, M. (2019). Nutritional Values and Functional Properties of House Cricket (*Acheta domesticus*) and Field Cricket (*Gryllus bimaculatus*). *Food Science and Technology Research*, *25*(4), 597–605. https://doi.org/10.3136/fstr.25.597

Verly Junior, E., Fisberg, R. M., Cesar, C. L. G., & Marchioni, D. M. L. (2010). Sources of variation of energy and nutrient intake among adolescents in São Paulo, Brazil. *Cadernos De Saude Publica*, *26*(11), 2129–2137. https://doi.org/10.1590/s0102-311x2010001100014

Yhoung-Aree, J., Puwastien, P., & Attig, G. A. (1997). Edible insects in Thailand: An unconventional protein source? *Ecology of Food and Nutrition*, *36*(2–4), 133–149. https://doi.org/10.1080/03670244.1997.9991511

Zhao, X., Vázquez-Gutiérrez, J. L., Johansson, D. P., Landberg, R., & Langton, M. (2016). Yellow Mealworm Protein for Food Purposes—Extraction and Functional Properties. *PLOS ONE*, *11*(2), e0147791. https://doi.org/10.1371/journal.pone.0147791

Zielińska, E., Baraniak, B., Karaś, M., Rybczyńska, K., & Jakubczyk, A. (2015). Selected species of edible insects as a source of nutrient composition. *Food Research International*, *77*, 460–466. https://doi.org/10.1016/j.foodres.2015.09.008