## AMBIO

Electronic Supplementary Material *This supplementary material has not been peer reviewed.* 

## Title: What do we really know about the impacts of one of the 100 worst invaders in Europe? A reality check

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Excel file of supplementary Table S1 can be requested by E-Mail: <u>anouk.nguyen@unibas.ch</u>

Supplementary Table S1: Literature review Supplementary Table S2: Impacts on Yellow perch *Perca flavescens* 

scientific name	common name	reference	title subgroup o	of papers life stage fu	inction "importance" of th	ne sigoby life stage	location country water sys	tem tadditional info on sampli	in <sub>i</sub> salinity	depth Min. / Max. M	Me distance to shore	e season/months season/n	nont years of study year w	en effect warriv	val of gob <sup>,</sup> referenc round goby densi	imethod (data aquis	timethod (data aquisition)	method (data aqu	isition) sample method direct
Perca flavescens Micropterus dolomieu Phalacrocorax auritus Phalacrocorax auritus	Yellow perch Smallmouth bass Double-crested cormora Double-crested cormora	Duncan 2006 Thompson & Simon 2014 nt Tucker & Seefelt 2014 nt Van Guilder & Seefelt 2013	Behavioral interactions between not applicable Diet shift response in round goby vertebrate > 1 Double-Crested Cormorants ( <i>Pha</i> ) vertebrate > 1 Double-crested Cormorant ( <i>Phala</i> vertebrate > 1	studyeggsprostudyadults?prostudychickspro	ey native ey native edator under management edator under management	juvenile (about 60mm small < 65mm, large ≥ n/a n/a		near South Bass Island western part of lake Beaver Archipelago, northern par Beaver Archipelago, northern par		n/a shallow <2 m and den/a 2003: 11.8 ± 6.3, 201n/a not applicable n/a	n/a	May 27 June to 5 July 28 June to 5 17 May - 21 July May - July	2010, compared with c 2010 2010, compared with c 2010	n/a 2006 2006	n/a n/a Kaemingk (in 2009-2010 round go Clapp et al Lake Michigan-wide bo		food choice + habitat choice trotlines + seine net + otter trawl boat surveys surveys + monitoring + regurgitate	observations	food item food item
Perca flavescens - Gastropoda (natal and exotic; e.g. Pisio Lota lota	Burbot	Duncan 2006 Schiphouwer 2011 Iol Schiphouwer 2011 Stapanian et al. 2007	Behavioral interactions between not applicable What do Ponto-Caspian Gobiidae not applicable What do Ponto-Caspian Gobiidae not applicable Regional Differences in Size-at-a{vertebrate > 1	pre	ey ey edator a commercial fishery tar	juvenile (about 60 mm rgetir n/a	RhineNetherlandsriverRhineNetherlandsriverLake ErieCanada + USAlake	near South Bass Island Delta Delta eastern part of lake	fresh	-	n/a ed as "coldwater" species	-			d gobies bec; Charlebois "abundant"	lab experiment field field field	food choice + habitat choice several fishing methods several fishing methods gill net	behavioural observation stomach content stomach content stomach content	seldom p goby hav food item
Lota lota Platichthys flesus Platichthys flesus Micropterus dolomieu	Burbot European flounder European flounder Smallmouth bass	Stapanian et al. 2011 Karlson et al 2007 Karlson et al 2007 Steinhart et al 2004a	Recent changes in burbot growth vertebrate > 1 Indications of competition betweivertebrate, onlindications of competition betweivertebrate, onlindications of competition betweivertebrate, onlindication on Smallm vertebrate > 1	ly 1 peer-reviewed relevant study co ly 1 peer-reviewed relevant study co	ompetitor commercially harvested commercially harvested	n/a	Lake Erie Canada lake Baltic Sea sea Baltic Sea sea Lake Erie USA lake	eastern part of lake southern southern Bass Islands, Western Lake Erie	fresh	about 23 m Burbot prefer a te 2-4m n/a	emperature range of 10–1	L2 (August (+September) early May-June	1997-2007 pre-/post 1999+2001	nvasion compa 1999 1993		field field lab in-situ experiment	gill net? food choice food choice (simulated catch-and-	length + mass stomach content relscuba, visual and video	food item diet over diet over observation Beast softwfood item
Dikerogammarus spp. and other Amph Ambloplites rupestris Percina caprodes Percina caprodes	hipo Killer shrimp and other a Rock bass Logperch Logperch	am Schiphouwer 2011 Burkett 2013 Burkett 2013 Burkett 2013	What do Ponto-Caspian Gobiidae not applicable Long-term impacts of the invasivenot applicable Long-term impacts of the invasivenot applicable Long-term impacts of the invasivenot applicable	e ≤75 mm TL co e ≤75 mm TL co	ey ompetitor ompetitor ompetitor		RhineNetherlandsriverSt. Clair RiverUSAriverSt. Clair RiverUSAriverSt. Clair RiverUSAriver	Rhine delta		1 m 1 m 5 m		July				field field field field	several fishing methods seine net + trawling seine net + trawling seine net + trawling	stomach content stomach content	Ponto-Ka diet over diet over diet over
Etheostoma caeruleum Noturus stigmosus Noturus stigmosus Ardea cinerea	Rainbow darter Northern madtom Northern madtom Grey heron	Burkett 2013 Burkett 2013 Burkett 2013 Jakubas & Misoduszewska 2005	Long-term impacts of the invasive not applicable Long-term impacts of the invasive not applicable Long-term impacts of the invasive not applicable Diet composition and food consulvertebrate > 1	e < 75 mm TL co e ≤75 mm TL co e >75 mm TL co	edator n/a	n/a	St. Clair RiverUSAriverSt. Clair RiverUSAriverSt. Clair RiverUSAriverBaltic SeaPolandsea	Puck Bay, Gdansk Bay	fresh / brackish?	3 m 3 m n/a n/a		June September September breeding season breeding se	ason 1999-2001 1999-200	n/a	n/a n/a	field field field field	seine net + trawling seine net + trawling seine net + trawling pellet and regurgitated food	stomach content stomach content stomach content analysis of pellets and p	diet overl diet overl diet overl diet overl regurgitated food food item
Ardea cinerea Gymnocephalus cernua Perca fluviatilis	Grey heron Ruffe Eurasian perch Great cormorant	Jakubas 2004 Rakauskas et al 2013 Rakauskas et al 2013	The Response of the Grey Heron vertebrate > 1 Inceasing population of the invadvertebrate > 1 Inceasing population of the invadvertebrate > 1	studychicks (regurgitated food)pressurestudy10.7 ± 3.5 cm TL; Table 2costudysmall 8.9 +/- 0.3 cm TL; medium 13.1+/- pressure	edator n/a ompetitor n/a edator top predator	n/a 10.4 ± 1.7 mm 10.4 ± 1.7 mm 10.4 ± 1.7 mm	Baltic SeaPolandseaBaltic SeaLithuanialagoonBaltic SeaLithuanialagoon	Puck Bay, Gdansk Bay Curonian Lagoon Curonian Lagoon	fresh / brackish? fresh / brackish fresh / brackish fresh / brackish	n/a n/a < 1 m (and 2.0-3.5 m n/a < 1 m (and 2.0-3.5 m n/a not applicable n/a	shallow littoral zone shallow littoral zone	end of May - beginnirend of May Aug or Sept Aug or Sept	- begi 2000-2002 2000-200 2007-2012; additional 2010 2007-2012; additional 2010	1990 2002 2002 2002	Skóra & Stoup to 30 ind/m2 Bacevičius 1 - 251 ind / 1000m3 Bacevičius 1 - 251 ind / 1000 m3 Bacevičius 1 - 251 ind / 1000m3	field	regurgitated food beach seine + gill nets seine net + gill net	analysis of regurgitated stable isotopes	d food food item goby n=7;Fisher LSD Isimilar Isi ole isotop perch = 9 several food item
Phalacrocorax carbo Ardea cinerea Percopsis omiscomaycus Parvicardium spp.	Grey heron Trout-perch Bivalves	Rakauskas et al 2013 Rakauskas et al 2013 Burkett 2013 Azour 2011	Inceasing population of the invad vertebrate > 1 Inceasing population of the invad vertebrate > 1 Long-term impacts of the invasive not applicable Fødebiologi hos den sortmundede not applicable	study n/a pro >75 mm TL co pro		10.4 ± 1.7 mm	Baltic SeaLithuanialagoonBaltic SeaLithuanialagoonSt. Clair RiverUSAriver	Curonian Lagoon Curonian Lagoon	fresh / brackish	not applicable n/a not applicable n/a 11 m	not applicable not applicable	July July July July May autumn	2007-2012; additional 2010 2007-2012; additional 2010 2010		Bacevičius 1 - 251 ind / 1000m3 (Bornholm, in/a		feathers feathers seine net + trawling	stable isotopes stomach content	23 food item 23 food item diet overl
Sander vitreus - Mytilus edulis Potamopyrgus antipodarum	Walleye Sand grains Bivalves Gastropods	Roseman et al 2014 Thompson & Simon 2014 Azour 2011 Azour 2011	Angler-Caught Piscivore Diets Re vertebrate > 1 Diet shift response in round goby Non-animal Fødebiologi hos den sortmundedenot applicable Fødebiologi hos den sortmundedenot applicable	pro pro	ey ey	mostly < 150 mm TL; F	igi Lake Huron USA lake Lake Erie lake	main basin western part of lake	fresh	traditionally, most aın/a		May-October May-Octobe autumn autumn	2010 2010	2008 2008	1991 and wi Jude et al. n/a (Bornholm, in/a (Bornholm, in/a	field field	sport fishing	stomach content stomach content	food item food item
Palaemon spp. Percina maculata Amphipoda Ostracoda	Shrimps Blackside darter Amphipods Seed shrimps	Azour 2011 Kornis et al 2013 Hempel 2014 Rakauskas et al 2008	Fødebiologi hos den sortmundedenot applicable Invasion success and impact of a vertebrate, on Analyse der ökologischen Einnisc not applicable Expansion, Feeding and Parasites Invertebrate	ly 1 peer-reviewed relevant study co	ey	0+	catchment of Lake USA catchment Kiel Canal Germany sea Baltic Sea Poland/Lithuani sea	Curonian Lagoon				autumn	2010 2007, 2010		(Bornholm, in/a achtung: includes a comparison of invaded vs o	i field field field	electrofishing several fishing methods seine net + gill net	stomach content stomach content + stab	redundancy no effect important ole isotope food item
Ostracoda Dreissena polymorpha + Dreissena bug Bryozoa Amphipoda	Seed shrimps	Rakauskas et al 2013 Lederer et al 2006 Brandner et al 2013 Lederer et al 2006	Inceasing population of the invad Invertebrate Impact of Round Gobies ( <i>Neogob</i> Invertebrate Comparative feeding ecology of i Invertebrate Impact of Round Gobies ( <i>Neogob</i> Invertebrate	pro pro pro pro	ey ey ey	0+	Baltic Sea Poland/Lithuani sea Lake Michigan USA lake Danube Germany river Lake Michigan USA lake	Curonian Lagoon Door Peninsula east of Green Bay upper Danube Door Peninsula east of Green Bay				Aug or Sept	2007-2012 2010		2004 Paintner & up to 20 goby / m2	field + in situ experiment field	seine net + gill net	stomach content + stab stomach content stomach content	-
Chironomidae Corophium volutator and other Amphi Amphipoda	Chironomidae pod: Corophium (amphipods) Amphipods	Hempel 2014 Hempel 2014 Lederer et al 2008	Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable Impacts of the Introduced Round Invertebrate	·	ey ey ey		Kiel CanalGermanyseaKiel CanalGermanyseaLake MichiganUSAlake	Door Peninsula east of Green Bay	iy					2011		field field field + in situ experiment	several fishing methods several fishing methods rock transfer experiment	stomach content stomach content	important important possible
Gastropoda Copepoda Balanidae Nereis sp. and other polychaeta	Snails Copepods Barnacles Annelid worms	Lederer et al 2006 Hempel 2014 Hempel 2014 Hempel 2014	Impact of Round Gobies ( <i>Neogob</i> Invertebrate Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable	pro pro	ey ey ey		Trave River System GermanyriverTrave River System GermanyriverKiel CanalGermanysea	Door Peninsula east of Green Bay	ıγ			entire 2012 entire 2012		2011		field + in situ experiment field field field	several fishing methods several fishing methods several fishing methods	stomach content stomach content stomach content	possible important important important
- Esox lucius Sander vitreus Micropterus dolomieu	Fish Northern pike Walleye Smallmouth bass	Copp et al 2008 Taraborelli et al 2010 Taraborelli et al 2010 Taraborelli et al 2010	Preliminary study of dietary interanot applicable Round Goby ( <i>Neogobius melanos</i> vertebrate > 1 Round Goby ( <i>Neogobius melanos</i> vertebrate > 1 Round Goby ( <i>Neogobius melanos</i> vertebrate > 1	study n/a pro study n/a pro study n/a pro	ey edator native edator native edator native	0-2 years, populations 0-2 years, populations 0-2 years, populations	w Lake Ontario Canada lake w Lake Ontario Canada lake	near Bratislava Bay of Quinte, sampled two locat Bay of Quinte, sampled two locat Bay of Quinte, sampled two locat	nticfresh	transects: 1.5-3 m, 3 mean temp uppe transects: 1.5-3 m, 3 mean temp uppe transects: 1.5-3 m, 3 mean temp uppe	er baseveral methods	Aug/SeptAug/septMay-Oct./Nov.May-Oct./NMay-Oct./Nov.May-Oct./NMay-Oct./Nov.May-Oct./N	ov. 2004/2005 2004/200	lower	2003 n/a r bay 1999, upper bay 2(11.2 t/km2 lower bay, r bay 1999, upper bay 2(11.2 t/km2 lower bay, r bay 1999, upper bay 2(11.2 t/km2 lower bay,	field	electrofishing line + minnow trap + seine net line + minnow trap + seine net line + minnow trap + seine net	stomach content stomach content stomach content stomach content	not an im bioenergeti food item bioenergeti food item bioenergeti food item
Nereis sp. and other polychaeta Cyathura carinata + other Isopods Ascidiae Gammarus roeselii	Annelid worms Isopods Sea squirt Freshwater amphipod	Hempel 2014 Hempel 2014 Hempel 2014 Polacik et al 2009	Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable Invasive gobies in the Danube: in Invertebrate	e	ey ey ey		Kiel CanalGermanyseaKiel CanalGermanyseaTrave River System GermanyriverDanubeSlovakiariver							2012 2012		field field field lab experiment	several fishing methods several fishing methods several fishing methods food choice	stomach content stomach content	importani importani importani amphipoo
Gobidae Bivalvia Crustacea Gastropoda	Goby Bivalves Crustaceans Gastropods	Vasek et al 2014 Simonovic et al 1998 Simonovic et al 1998 Simonovic et al 1998	Diet of two invading gobiid specienot applicable Round Goby <i>Neogobius melanost</i> Invertebrate Round Goby <i>Neogobius melanost</i> Invertebrate Round Goby <i>Neogobius melanost</i> Invertebrate	e eggs pro pro pro pro pro	ey ey ey		Danube Czech Republic river Danube river Danube river Danube river	Dyje River System								field	electrofishing	stomach content	not an im
Insecta Copepoda -	Insects Copepods Fish Non-identifiable eggs	Simonovic et al 1998 Johnson et al 2008 Stevove & Kovac 2013 Stevove & Kovac 2013	Round Goby <i>Neogobius melanost</i> Invertebrate Diel Diet Composition and Feedir Invertebrate Do invasive bighead goby <i>Neogol</i> not applicable Do invasive bighead goby <i>Neogol</i> not applicable	-			Danube river Lake Ontario lake Danube Bratislava river Danube Bratislava river	nearshore								field field	electrofishing + line electrofishing + line	stomach content stomach content	food item not an im not an im
Amphipoda <i>Dreissena bugensis</i> Cladocera Ostracoda	Amphipods Dreissenid mussels Cladocera Ostracoda	Johnson et al 2008 Johnson et al 2008 Johnson et al 2008 Johnson et al 2008	Diel Diet Composition and Feedir Invertebrate Diel Diet Composition and Feedir Invertebrate Diel Diet Composition and Feedir Invertebrate Diel Diet Composition and Feedir Invertebrate	pro pro pro pro	ey ey ey		Lake OntariolakeLake OntariolakeLake OntariolakeLake Ontariolake	nearshore nearshore nearshore nearshore									U U		food item food item food item food item
Oligochaeta - -	Oligochaetes Fish Non-animal (Detritus, Pl	Simonovic et al 1998 Vasek et al 2014 an Vasek et al 2014	Round Goby <i>Neogobius melanost</i> Invertebrate Diet of two invading gobiid specienot applicable Diet of two invading gobiid specieNon-animal	pre	ey		DanuberiverDanubeCzech Republic riverDanubeCzech Republic river	Dyje River System Dyje River System								field field	electrofishing electrofishing	stomach content stomach content	not an im part of di
Proterorhinus semilunaris Proterorhinus semilunaris Proterorhinus semilunaris Bythotrephes	Western tubenose goby Western tubenose goby Western tubenose goby Bythotrephes	Vasek et al 2014 Vasek et al 2014 Johnson et al 2008	Diet of two invading gobiid specievertebrate, onl Diet of two invading gobiid specievertebrate, onl Diet of two invading gobiid specievertebrate, onl Diel Diet Composition and Feedir Invertebrate	ly 1 peer-reviewed relevant study co			DanubeCzech Republic riverDanubeCzech Republic riverDanubeCzech Republic riverLake Ontariolake	Danube basin Danube basin Dyje River System nearshore				May + June End of June + July				field field field	electrofishing electrofishing electrofishing	stomach content stomach content stomach content	diet overl diet overl small par food item
Dreissena polymorpha Dreissenidae Clupeidae Mollusca	Zebra mussel Dreissenid mussels Herring Molluscs	Naddafi & Rudstam 2014 Thompson & Simon 2014 Hempel 2014 Hempel 2014	Predation on invasive zebra muss Invertebrate Diet shift response in round goby Invertebrate Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable		ey ey ey		Trave River System Germany river Trave River Sytem Germany river					June + September				lab experiment field field	several fishing methods several fishing methods	stomach content stomach content	food item food item importan importan
<i>Sander Iucioperca</i> Amphipoda Gobiidae Isopoda	Zander Amphipods Goby Isopods	Hempel 2014 Thompson & Simon 2014 Thompson & Simon 2014 Thompson & Simon 2014	Analyse der ökologischen Einnisc not applicable Diet shift response in round goby Invertebrate Diet shift response in round goby not applicable Diet shift response in round goby Invertebrate	pre	edator ey ey ey		Kiel Canal Germany canal									field	electrofishing	stomach content	importan food item food item food item
- - Notropis spp. Nereis diversicolor	Fish Green algae Notropis spp. Common ragworm	Thompson & Simon 2014 Thompson & Simon 2014 Thompson & Simon 2014 Hempel 2014	Diet shift response in round goby not applicable Diet shift response in round goby Non-animal Diet shift response in round goby vertebrate, onl Analyse der ökologischen Einnisc not applicable	ly 1 peer-reviewed relevant study pro	ey ey ey	170-220 mm TL	Trave River System Germany river									lab experiment	food choice		food item food item food item food item preferred
Chironomidae Dikerogammarus villosus Dikerogammarus villosus	Chironomidae Killer shrimp Killer shrimp	Thompson & Simon 2014 Hempel 2014 Hempel 2014	Diet shift response in round goby Invertebrate Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable	pro pro pro pro	ey ey ey	80-125 mm TL 170-220 mm TL	Trave River System GermanyriverTrave River System GermanyriverTrave River System Germanyriver									lab experiment lab experiment	food choice food choice		food item killer shri killer shri
Corixidae <i>Gobio gobio</i> Cyclops -	Corixidae Gudgeon Cyclops Stones	Thompson & Simon 2014 Hempel 2014 Thompson & Simon 2014 Thompson & Simon 2014	Diet shift response in round goby Invertebrate Analyse der ökologischen Einnisc not applicable Diet shift response in round goby Invertebrate Diet shift response in round goby Non-animal	pro pro pro pro pro			Trave River System Germany river									lab experiment	food choice		food item are consu food item food item
Ephemeroptera Platyhelmintes Ostracoda -	Ephemeroptera Flatworm Seed shrimps Vascular plants	Thompson & Simon 2014 Thompson & Simon 2014 Hempel 2014 Thompson & Simon 2014	Diet shift response in round goby Invertebrate Diet shift response in round goby Invertebrate Analyse der ökologischen Einnisc not applicable Diet shift response in round goby Non-animal	pro pro pro pro pro	ey ey ey ey		Trave River System Germany river					entire 2012				field	several fishing methods	stomach content	food item food item most imp food item
Odonata Dreissena polymorpha, D. bugensis an Oligochaeta Dreissena polymorpha	Odonata d ol Dreissenid mussels Oligochaetes Zebra mussel	Thompson & Simon 2014 Diggins et al 2002 Thompson & Simon 2014 Hempel 2014	Diet shift response in round goby Non-animal Diet shift response in round goby Invertebrate Diet Choice by the Exotic Round (Invertebrate Diet shift response in round goby Invertebrate Analyse der ökologischen Einnisc not applicable	pro pro pro	ey ey ey	80-125 mm TL	Lake ErieUSAlakeTrave River System Germanyriver									lab experiment	food choice		food item prey pref food item not prefe
Dreissena polymorpha Nereis diversicolor Dreissena polymorpha Pomatoschistus sp. Pomatoschistus sp.	Common ragworm Zebra mussel	Hempel 2014 Hempel 2014 Hempel 2014	Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable	e pro	ey ey ey	80-125 mm TL 80-125 mm TL 170-220 mm TL	Trave River System GermanyriverTrave River System GermanyriverTrave River System GermanyriverKiel CanalGermanyseaKiel CanalGermanysea							2012 2011		lab experiment lab experiment lab experiment field field	food choice food choice food choice several fishing methods several fishing methods	stomach content stomach content	not prefe not prefe not prefe not impor small par
Clupeidae Echinogammarus ischnus Planaoridae heliosoma	Herring Amphipods Planaoridae heliosoma	Hempel 2014 Diggins et al 2002 Thompson & Simon 2014	Analyse der ökologischen Einnisc not applicable Diet Choice by the Exotic Round (Invertebrate Diet shift response in round goby Invertebrate	e pro pro pro	ey ey ey		Kiel CanalGermanyseaLake ErieUSAlake							2011		field lab experiment	several fishing methods food choice	stomach content	different prey pref food item
Clupeidae Gobiidae Lota lota Lota lota	Herring Goby Burbot Burbot	Hempel 2014 Hempel 2014 Coldwater Task Group CWTG (2009) Coldwater Task Group CWTG (2009)	Analyse der ökologischen Einnisc not applicable Analyse der ökologischen Einnisc not applicable Report of the Lake Erie Coldwaternot applicable Report of the Lake Erie Coldwaternot applicable	e eggs pro	edator		Kiel CanalGermanyseaKiel CanalGermanyseaLake ErieUSAlakeLake ErieUSAlake							2012 2012 2003		field field	several fishing methods several fishing methods	stomach content stomach content	different small par round go
Pleuroceridae goniobasis Rotifera Trichoptera -	Pleuroceridae goniobasi Rotifers Trichoptera Fish	s Thompson & Simon 2014 Thompson & Simon 2014 Thompson & Simon 2014 Johnson et al 2005a	Diet shift response in round goby Invertebrate Diet shift response in round goby Invertebrate Diet shift response in round goby Invertebrate A Potential New Energy Pathway not applicable	pro pro e age 0 co	ey ey ey ompetitor	0-4 y	Lake Erie USA lake	central part of lake		5-9.9 / 10-14.9 / 15-19.9 / > 20 m		May-October	1995-2002	2002	1994 standing stock 203-48	(field	trawling	stomach content	food item food item food item bioenergeti no compe
Cladocera - Gastropoda -	Water fleas Fish Snails Fish	Thompson & Simon 2014 Rakauskas et al 2008 Lederer et al 2008 Rakauskas et al 2013	Diet shift response in round goby Invertebrate Expansion, Feeding and Parasites not applicable Impacts of the Introduced Round Invertebrate Inceasing population of the invad not applicable	pro	ey ey ey		Baltic Sea Lithuania lagoon Lake Michigan USA lake Baltic Sea Lithuania lagoon	Curonian Lagoon Door Peninsula east of Green Bay Curonian Lagoon	у							field field + in situ experiment field	seine net + gill net rock transfer experiment seine net + gill net	stomach content + stab stomach content stomach content + stab	possible
Chironomidae Mollusca <i>Sphaeriidae (and other Bivalvia and M</i> Chironomidae	Chironomidae Molluscs <i>ollu</i> Bivalves Chironomidae	Rakauskas et al 2008 Brandner et al 2013 Vasek et al 2014 Rakauskas et al 2013	Expansion, Feeding and Parasites Invertebrate Comparative feeding ecology of i Invertebrate Diet of two invading gobiid speci Invertebrate Inceasing population of the invad Invertebrate	larvae and pupae pro pro larvae and pupae pro	ey ey ey	0+	Baltic SeaPoland/Lithuani seaDanubeGermanyriverDanubeCzech Republic riverBaltic SeaPoland/Lithuani sea	Curonian Lagoon upper Danube Dyje River System Curonian Lagoon				Aug or Sept	2010 2007-2012	2009 2009	2004 Paintner & up to 20 goby / m2 2002 1 - 251 ind / 1000m3	field field field field	seine net + gill net electrofishing electrofishing seine net + gill net	stomach content + stab stomach content + stab stomach content stomach content + stab	ble isotope food item food item
Dreissena polymorpha - -	Zebra mussel Non-identifiable eggs Non-identifiable eggs Non-identifiable eggs	Ghedotti et al 1995 Roseman et al 2006 Roseman et al 2006 Roseman et al 2006	Zebra mussel predation by round Invertebrate Predation on Walleye Eggs by Fis not applicable Predation on Walleye Eggs by Fis not applicable Predation on Walleye Eggs by Fis not applicable	eggs pro eggs pro	ey ey ey	6-10 cm SL 41-139 mm TL 41-139 mm TL 41-139 mm TL	St Clair RiverUSAriverLake ErieUSAlakeLake ErieUSAlakeLake ErieUSAlake	western part of lake western part of lake western part of lake						1998 1999 2004	-	lab experiment field field field	food choice gill net + egg pump gill net + egg pump gill net + egg pump	stomach content stomach content stomach content	food item small par small par small par
Sander vitreus Salvelinus namaycush Percopsis omiscomaycus	Walleye Lake trout Trout-perch Caddisfly	Roseman et al 2006 Coldwater Task Group CWTG (2009) French III & Jude 2001	Predation on Walleye Eggs by Fis vertebrate > 1 Report of the Lake Erie Coldwate not applicable Diets and Diet Overlap of Nonind vertebrate, onl	study eggs pro	ey ey	41-139 mm TL 139 mm TL	Lake ErieUSAlakeLake ErieUSAlakeSt. Clair RiverUSAriverThava River + Dani Czech Republicriver	western part of lake	fresh	2.3–4.2 m Figure 2		April - early May (peaspawning se	ason 1994-1999 and 2004 1998, 199	9, 2004 first a	appeared in ICharlebois > 20/m2 on open-lake	field	gill net + egg pump special nets + trawling	stomach content stomach content	small par food item
, , , , , , ,	Diptera (fly) Mayfly the Water louse + other Cru	Vasek et al 2014 Vasek et al 2014 Vasek et al 2014 staVasek et al 2014	Diet of two invading gobiid specielnvertebrate Diet of two invading gobiid specielnvertebrate Diet of two invading gobiid specielnvertebrate Diet of two invading gobiid specielnvertebrate	mainly Neureclipsis sp. And Hydropsych pro mainly chironomidae larvae pro mainly P.luteus and Caenis sp. Nympha pro pro	ey ey ey		Thaya River + Danı Czech Republic river Thaya River + Danı Czech Republic river Thaya River + Danı Czech Republic river	river basin river basin river basin		, , , , , , , , , , , , , , , , , , ,						field field field	electrofishing electrofishing electrofishing electrofishing	stomach content stomach content stomach content stomach content	food item food item food item food item
Micropterus dolomieu Micropterus dolomieu Salmo salar Oncorhynchus tshawytscha	Smallmouth bass Smallmouth bass Atlantic salmon Chinook salmon	Steinhart et al 2004b Steinhart et al 2004b Roseman et al 2014 Roseman et al 2014	High Growth Rate of Young-of-thevertebrate > 1 High Growth Rate of Young-of-thevertebrate > 1 Angler-Caught Piscivore Diets Revertebrate, on Angler-Caught Piscivore Diets Revertebrate, on	study >60 mm TL pro ly 1 peer-reviewed relevant study pro	edator angling fish edator angling fish edator edator	37–96 mm TL (mean 5 37–96 mm TL (mean 5		Bass Islands, Western Lake Erie Bass Islands, Western Lake Erie		n/a n/a n/a n/a		June-Sept June-Sept June-Sept June-Sept May-October May-Octobe May-October May-Octobe		1993 after			several fishing methods several fishing methods sport fishing sport fishing	stomach content stomach content stomach content stomach content	positive i positive i food item food item
Cottus bairdii Oncorhynchus kisutch <mark>Coregonus clupeaformis</mark> Oncorhynchus mykiss	Mottled sculpin Coho salmon Lake whitefish Rainbow trout	Thompson & Simon 2014 Roseman et al 2014 Coldwater Task Group CWTG (2009) Roseman et al 2014	Diet shift response in round goby vertebrate > 1 Angler-Caught Piscivore Diets Revertebrate, on Report of the Lake Erie Coldwate not applicable Angler-Caught Piscivore Diets Revertebrate, on	ly 1 peer-reviewed relevant study pro	ey native edator ey edator	small < 65 mm, large ≥	<ul> <li>≥ 6 Lake Erie USA lake</li> <li>Lake Huron USA lake</li> <li>Lake Erie USA lake</li> <li>Lake Huron USA lake</li> </ul>	western part of lake	fresh	shallow <2 m and den/a		27 June to 5 July 28 June to 5 May-October May-Octobe May-October May-Octobe	r 2009-2011 2009-201			field field field	trotlines + seine net + otter trawl sport fishing sport fishing	stomach content stomach content stomach content	food item food item food item food item
- Sander vitreus Noturus stigmosus Copepoda	Fish Walleye Northern madtom Copepods	Taraborelli et al 2010 Bowlby et al 2006 French III & Jude 2001 Schaeffer et al 2005	Round Goby ( <i>Neogobius melanos</i> not applicable The status of Walleye in Lake On not applicable Diets and Diet Overlap of Nonind vertebrate, onl Invasion History, Proliferation, an Invertebrate	pre pre	ey edator edator	ΥΟΥ	Lake Ontario Canada lake St. Clair River USA river Lake Huron USA lake	Bay of Quinte, sampled two locat Riverbank, tributaries western part of lake	itions upper and lower bay	several methods 5-7 m	several methods	May-November summer	2004/2005 1958-2006		r bay 1999, upper bay 2(11.2 t/km2 lower bay, 1999 Dietrich et al 2006		line + minnow trap + seine net special nets + trawling trawling	stomach content stomach content stomach content	bioenergeti food item shift from food item
Dreissena polymorpha Coregonus clupeaformis Bythotrephes	Zebra mussel Lake whitefish Bythotrephes	Thomas 1993 Pothoven & Madenjian 2013 Schaeffer et al 2005 Ng et al 2008	Diet of the Round Goby in the St. not applicable Increased Piscivory by Lake Whitevertebrate > 1 Invasion History, Proliferation, an Invertebrate Chemical amplification in an invanot applicable	study >400 mm TL pre pre	ey edator commercially important ey	17-95 mm, mean=52m		entire lake, divided into north, ce western part of lake	entfresh	n/a water temperatu	ire regimes experienced by	y L:all year spring + wir	ter; a 2002-2011 2007; 200	2-2006 vs 2007·1994	(southern La Marsden e peak in 2003	field field	gill net + trawling trawling	stomach content stomach content	total = 15 bioenergeti increase effect on
Amphipoda Gastropod mollusc <i>Culaea inconstans</i> Trichoptera	Amphipods Snails Brook stickleback Caddisfly	Thomas 1993 Thomas 1993 Thomas 1993 Thomas 1993	Diet of the Round Goby in the St. not applicable Diet of the Round Goby in the St. not applicable Diet of the Round Goby in the St. not applicable Diet of the Round Goby in the St. not applicable	e pro e 28mm pro	ey ey ey														
Oncorhynchus gorbuscha Phalacrocorax auritus -	Pink salmon Double-crested cormora Fish	Roseman et al 2014 nt Somers et al 2003 Schaeffer et al 2005	Angler-Caught Piscivore Diets Re vertebrate, onl The Invasive Round Goby ( <i>Neogo</i> vertebrate > 1 Invasion History, Proliferation, an not applicable	ly 1 peer-reviewed relevant study pro study chicks pro	edator edator breeding colonies of dou ey	uble- n/a	Lake Huron USA lake Lake Ontario Canada lake Lake Huron USA lake	Hamilton Harbour, western part of western part of lake	of fresh	cormorants feed in dn/a	not applicable	May-October May-Octobe June/July June/July	r 2009-2011 2009-201 2002 2002		1991 and widespread in late 90ties een 1995-2006 high density	field field field	sport fishing stimulate chicks to regurgitate trawling	stomach content analysis of regurgitated stomach content	not consu d food 205 chi-squarec important
Chironomidae Cladocera <i>Diporeira spp.</i> nematoda	Chironomidae Cladocera Diporeira spp. Nematoda	Schaeffer et al 2005 Schaeffer et al 2005 Schaeffer et al 2005 Schaeffer et al 2005	Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate	pro pro pro pro	ey ey ey		Lake HuronUSAlakeLake HuronUSAlakeLake HuronUSAlakeLake HuronUSAlake	western part of lake western part of lake western part of lake western part of lake								field field field field	trawling trawling trawling trawling	stomach content stomach content stomach content stomach content	
Ostracoda sphaeriidae <i>Mysis relicta</i> Oligochaeta	Ostracoda Sphaeriidae Mysis relicta Oligochaetes	Schaeffer et al 2005 Schaeffer et al 2005 Schaeffer et al 2005 Schaeffer et al 2005	Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate Invasion History, Proliferation, an Invertebrate	pro pro pro pro	ey ey ey ey		Lake Huron USA lake Lake Huron USA lake Lake Huron USA lake Lake Huron USA lake	western part of lake western part of lake western part of lake western part of lake								field field field field	trawling trawling trawling trawling	stomach content stomach content stomach content stomach content	
Perca flavescens Chironomidae Isopoda Veneroida	Yellow perch Chironomidae Isopods Fingernail clams	Taraborelli et al 2010 Thomas 1993 Lederer et al 2006 Thomas 1993	Round Goby ( <i>Neogobius melanos</i> vertebrate > 1 Diet of the Round Goby in the St. not applicable Impact of Round Gobies ( <i>Neogob</i> Invertebrate Diet of the Round Goby in the St. not applicable	larvae pro	edator native ey ey ev	in yellow perch	Lake Ontario Canada lake Lake Michigan USA lake	Bay of Quinte, sampled two locat Door Peninsula east of Green Bay		transects: 1.5-3 m, 3 mean temp uppe	er baseveral methods	May-Oct./Nov. May-Oct./N	ov. 2004/2005 2004/200	lower	r bay 1999, upper bay 2(11.2 t/km2 lower bay (		line + minnow trap + seine net rock transfer experiment	stomach content stomach content	lower bay bioenergeti importan possible
Ostracoda Neogobius melanostomus Isopoda Amphipoda	Ostracoda Round goby Isopods Amphipods	Thomas 1993 Wandzel 2003 Lederer et al 2008 Rakauskas et al 2008	Diet of the Round Goby in the St. not applicable The food and feeding of the roun vertebrate > 1 Impacts of the Introduced Round Invertebrate Expansion, Feeding and Parasites Invertebrate	e pre	ey ey ey	males	Lake Michigan USA lake Baltic Sea Lithuania lagoon	Door Peninsula east of Green Bay Curonian Lagoon	ıy							field + in situ experiment	rock transfer experiment seine net + gill net	stomach content stomach content + stab	possible   possible   important
- Bivalvia <i>Micropterus salmoides</i> Gastropoda	Benthic invertebrates Bivalves Largemouth bass Snails	Wandzel 2003 Wandzel 2003 Taraborelli et al 2010 Kipp et al 2012a	The food and feeding of the roun Invertebrate The food and feeding of the roun Invertebrate Round Goby ( <i>Neogobius melanos</i> vertebrate > 1) Impacts of predation by the Euras Invertebrate	study n/a pro < 14 mm pro	ey ey edator native	0-2 years, populations		Bay of Quinte, sampled two locat	nticfresh	transects: 1.5-3 m, 3 mean temp uppe	er baseveral methods	May-Oct./Nov. May-Oct./N	ov. 2004/2005 2004/200	lower	r bay 1999, upper bay 2(11.2 t/km2 lower bay,	field	line + minnow trap + seine net	stomach content stomach content	bioenergeti importan comparison preferred
- Esox lucius Sander vitreus	Benthic invertebrate cor Northern pike Walleye	nn Kuhns & Berg 1999 Reyjol et al 2010 Reyjol et al 2010	Benthic Invertebrate Community Invertebrate Do Native Predators Feed on Non vertebrate > 1 Do Native Predators Feed on Non vertebrate > 1	study 439–1064, mean 671±111 mm TL pro study 132–806, mean 390±155 mm TL pro	ey ey edator native edator native	n/a n/a	Lake MichiganUSAlakeSt. Lawrence RiverCanadariverSt. Lawrence RiverCanadariver	Calumet Harbour, southern Lake Lake St. Pierre Lake St. Pierre	Michigan fresh fresh	At mean water discharound 20°C At mean water discharound 20°C		August-October (27.82.10.) August-October (27.82.10.)	2007200720072007		(first time reMinistère (frequency of occurrence) (first time reMinistère (frequency of occurrence)	cfield	roof tiles colonised with zebra mus gill net gill net	ssel transferred into field stomach content stomach content	negative model calci important model calci important
Perca flavescens Micropterus dolomieu	Yellow perch Smallmouth bass	Kipp et al 2012b m Rakauskas et al 2008 Reyjol et al 2010 Reyjol et al 2010	Impacts of the Eurasian round go Invertebrate Expansion, Feeding and Parasites Invertebrate Do Native Predators Feed on Non vertebrate > 1 Do Native Predators Feed on Non vertebrate > 1		ey ey edator native edator native	1+ n/a n/a	St. Lawrence River CanadariverBaltic SeaLithuanialagoonSt. Lawrence River CanadariverSt. Lawrence River Canadariver	Lac Saint-Louis Curonian Lagoon Lake St. Pierre Lake St. Pierre	fresh fresh	At mean water discharound 20°C At mean water discharound 20°C	n/a n/a	August-October (27.82.10.) August-October (27.82.10.)	2007 2007 2007 2007		(first time reMinistère (frequency of occurrent (first time reMinistère (frequency of occurrent		scuba + gillnet + minnow trap seine net + gill net gill net gill net	stomach content stomach content + stab stomach content stomach content	perch = 2 model calcimportan model calcimportan
Dreissena polymorpha and other Mollu Dreissena polymorpha and other Mollu Chironomidae Myoxocephalus thompsonii	uscaZebra mussel and other Chironomidae Deepwater sculpin	m Rakauskas et al 2013 Brandner et al 2013 Mychek-Londer et al 2013	Expansion, Feeding and Parasites Invertebrate Inceasing population of the invad Invertebrate Comparative feeding ecology of i Invertebrate Using Diets to Reveal Overlap an vertebrate, onl	pro pro pro ly 1 peer-reviewed relevant study co	ey ey ey ompetitor	2+ 1+	Baltic Sea Lithuania lagoon Baltic Sea Lithuania lagoon Danube Germany river Lake Michigan USA lake	Curonian Lagoon Curonian Lagoon upper Danube		69-128 m		Aug or Sept	2007-2012 2010 2009, 2010	detec	2002 1 - 251 ind / 1000m3 2004 Paintner & up to 20 goby / m2 cted 1990 in Jude et al. 1992		seine net + gill net seine net + gill net electrofishing trawling	stomach content + stab stomach content + stab stomach content + stab stomach content	ble isotope most imp ble isotope importan no signifi
Chironomidae Crustacea Dreissena polymorpha and other Mollu Dreissenidae	Chironomidae Crustaceans usc: Zebra mussel and other small freshwater musse	ls Kipp et al 2012b	Do invasive bighead goby <i>Neogol</i> Invertebrate The food and feeding of the roun Invertebrate Inceasing population of the invad Invertebrate Impacts of the Eurasian round go Invertebrate	larvae pro pro pro pro	ey ey ey	2+	DanubeSlovakiariverBaltic SeaLithuanialagoonLawrence RiverCanadariver	Bratislava Curonian Lagoon Lac Saint-Louis				spring + summer + autumn Aug or Sept	2007-2012		2002 1 - 251 ind / 1000m3	field field field	electrofishing + line seine net + gill net scuba + gillnet + minnow trap	stomach content stomach content + stab stomach content	importan ole isotope most imp comparison not prefe
Mollusca <i>Cottus bairdii</i> Chironomidae Chironomidae	Molluscs Mottled sculpin Nonbiting midget Chironomidae	Wandzel 2003 French III & Jude 2001 Barton et al 2005 Borcherding et al 2013b	The food and feeding of the roun Invertebrate Diets and Diet Overlap of Nonind vertebrate > 1 Effects of Round Gobies ( <i>Neogob</i> Invertebrate Feeding and niche differentiation Invertebrate	study 35-74 mm TL co pro pro	<mark>ey</mark> mpetitor native species with decr ey ey	reasi 35-74 and >75 mm	St. Clair River USA river Lake Erie USA lake Rhine Germany river	Riverbank eastern part of lake lower Rhine	fresh	5-7 m n/a	transect perpendicula	ar t <sub>'</sub> May-Dec May-Dec	1994 1994 2002-2004 n/a	1990 n/a (a		field field field	special nets + trawling scuba + line electrofishing + seine net	stomach content stomach content stomach content	304 round gobies diet over importan importan
Mollusca <i>Morone chrysops</i> <i>Sander vitreus</i> Chironomidae	Molluscs White bass Walleye Chironomidae	Borcherding et al 2013b Campbell et al 2009 Johnson et al 2005a Borza et al 2009	Feeding and niche differentiation Invertebrate Re-Engineering the Eastern Lake vertebrate > 1 A Potential New Energy Pathway vertebrate > 1 Food Resource Partitioning betwe Invertebrate		ey edator n/a edator commercially and recrea	small <11.2 cm; large ation 0-4 y	RhineGermanyriver> 1Lake ErieCanadalakeLake ErieUSAlakeDanubeHungaryriver	lower Rhine eastern part of lake central part of lake middle Danube	fresh fresh	n/a n/a 5-9.9 / 10-14.9 / 15- see Fig. 3	n/a	July-August July-August May-October May-Octobe		n/a 1994 n/a	2006 n/a n/a Forage Tas standing stock 203-48	field	electrofishing + seine net gill net trawling	stomach content stomach content + stab stomach content stomach content	importan ole isotop WB 6. RCz-test. Char food item bioenergeti food item importan
Chironomidae Bryozoa Dreissenidae Sander lucioperca Morone chrysops	Chironomidae Bryozoa small freshwater musse Zander White bass	Stevove & Kovac 2013	Do invasive bighead goby <i>Neogol</i> Invertebrate Impacts of predation by the Euras Invertebrate Inceasing population of the invadvertebrate, only A Potential New Energy Pathway vertebrate > 1		ey ey edator edator n/a	0-4 y	DanubeHungaryriverDanubeSlovakiariverSt. Lawrence River CanadariverBaltic SeaLithuanialagoonLake ErieUSAlake	near Bratislava Lac Saint-Louis Curonian Lagoon central part of lake	fresh	5-9.9 / 10-14.9 / 15- see Fig. 3		spring spring + summer + autumn May-October May-Octobe	r 1995-2002	n/a 1994	2002 1 - 251 ind / 1000m3	field field field	electrofishing + line scuba + gillnet + minnow trap seine net + gill net trawling	stomach content stomach content stomach content stable isotopes stomach content	importan importan comparison not prefe food item bioenergeti food item
Morone chrysops Perca flavescens Amphipoda Amphipoda Micropterus dolomieu	White bass Yellow perch Amphipods Amphipods Smallmouth bass	Johnson et al 2005a Crane et al 2015 Pennuto et al 2010 Borza et al 2009 Crane et al 2015	A Potential New Energy Pathway vertebrate > 1 Trends in body condition of native vertebrate > 1 Seasonal abundance, diet, and er Invertebrate Food Resource Partitioning betwe Invertebrate Trends in body condition of native vertebrate > 1	study across all sizes / ages pro pro pro	edator n/a edator native ey ey edator native	0-4 y n/a n/a	Lake ErieUSAlakeLake Erie + Lake OIUSAlakecatchment of Lake USAcatchmentDanubeHungaryriverLake Erie + Lake OIUSAlake	central part of lake eastern part of lake middle Danube eastern part of lake	fresh fresh	see Einhouse, Cullig ca 16-22°C		May-October May-Octobe early autumn early autum summer + autumn early autumn early autum	2007		n/a n/a	field field field field	gill net electrofishing electrofishing + hand net	stomach content mass-at-length stomach content stomach content mass-at-length	bioenergeti food item quantile regfood item bioenergeti important important quantile regfood item
Mollusca Dikerogammarus spp. + other Amphip Salvelinus namaycush	Molluscs ods Killer shrimp + other am Lake trout	Borza et al 2009 phBrandner et al 2013 Chotkowski & Marsden 1999	Food Resource Partitioning betwe Invertebrate Comparative feeding ecology of i Invertebrate Round Goby and Mottled Sculpin vertebrate > 1	pro	edator native ey ey ey native ev	n/a 56-113 mm SL	Danube Hungary river Danube Germany river Lake Michigan USA lake	middle Danube, riverbanks upper Danube Calumet Harbour, southern Lake		see Einhouse, Cullig ca 16-22°C n/a 4.5-14.0°C		summer + autumn	n 1993-2012 pre-/post 2007 2010 ion ingoby collection 1994/1goby coll	n/a	n/a n/a 2004 Paintner & up to 20 goby / m2 n/a 28/m2 on cobble, 133/		gill net electrofishing + hand net electrofishing food choice electrofishing + seine net	stomach content stomach content + stab counts	important ole isotope important 10 round regression- food item
Amphipoda Bivalvia <i>Corophium</i> sp. <i>Micropterus dolomieu</i>	Amphipods Bivalves Corophium (amphipods) Smallmouth bass	Polacik et al 2009 Polacik et al 2009 Stevove & Kovac 2013 Crane et al 2015	Invasive gobies in the Danube: in Invertebrate Invasive gobies in the Danube: in Invertebrate Do invasive bighead goby <i>Neogol</i> Invertebrate Trends in body condition of native vertebrate > 1	pro pro study 140 - 510 mm TL (in categories) pro	ey ey ey edator native	n/a	DanubeBulgariariverDanubeBulgariariverDanubeSlovakiariverLake OntarioUSAlakeDanubaSlovakiariver	lower Danube lower Danube near Bratislava eastern part of lake	fresh	see Lantry (2013) forca 16-20°C		spring + summer + autumn late summer late summe	- 1993-2012 pre-/post	nvasion compa 1999	n/a n/a	field field field field	electrofishing + seine net electrofishing + seine net electrofishing + line gill net	stomach content stomach content stomach content mass-at-length	importani importani importani quantile re€food item
Cladocera Salvelinus namaycush Neogobius melanostomus Micropterus dolomieu	Water fleas Lake trout Round goby Smallmouth bass	Stevove & Kovac 2013 Fitzsimons et al 2006 French III & Jude 2001 Brownscombe & Fox 2013	Do invasive bighead goby <i>Neogol</i> Invertebrate Laboratory Estimates of Salmonin vertebrate > 1 Diets and Diet Overlap of Nonind vertebrate > 1 Living at the edge of the front; revertebrate > 1	study YOY pro study n/a pro	ey extirpated from most of ey invasive edator n/a	older than YOY 87 ± 0.72 mm	DanubeSlovakiariverLake Erie + Lake OI CanadalakeSt. Clair RiverUSAriverTrent RiverCanadariver1 Jake ErieCanadaJake	near Bratislava n/a vertex of of the canal 2 sites with differing time since g		n/a 1-12°C 3 m n/a 3 m 22.5 ± 0.33 C	not applicable n/a	spring + summer + autumn goby collection in summer May-Dec May-Dec June + July June + July	goby collection in 2001-2003 1994 1994 2010 2010 2002 2002 2002 2002		n/a used different densitie Jude et al. n/a ; 2009 Raby et al. low (freshly invaded si	field	electrofishing + line food choice special nets + trawling predator-prey experiment	stomach content counts stomach content thethering experiment	
Perca flavescens Perca flavescens Etheostoma flabellare Etheostoma nigrum	Yellow perch Yellow perch Fantail darter Johnny darter	Campbell et al 2009 Johnson et al 2005a Kornis et al 2013 Kornis et al 2013	Re-Engineering the Eastern Lake vertebrate > 1 A Potential New Energy Pathway vertebrate > 1 Invasion success and impact of a vertebrate > 1 Invasion success and impact of a vertebrate > 1	studyaverage 195.3mm TL (SD=56.8)pro-studyn/apro-studyn/acostudyn/aco	edator n/a edator commercially and recrea ompetitor native ompetitor native	small <11.2 cm; large :	Lake ErieUSAlakecatchment of LakeUSAcatchmentcatchment of LakeUSAcatchment	eastern part of lake central part of lake n/a n/a	fresh fresh fresh fresh	n/a n/a bottom trawl at 5-9.'see Fig. 3 <1 m; mean 0.38 ± 0 19.4 ± 3.5 °C <1 m; mean 0.38 ± 0 19.4 ± 3.5 °C	n/a	July-August July-August May-October May-Octobe n/a n/a n/a	r 1995-2002; data from 2002 2007, 2010 n/a 2007, 2010 n/a	n/a 1994 n/a (i n/a (i	n/a n/a Forage Tas standing stock 203-48 includes a ccn/a 0.07 - 0.36 fish / m2 includes a ccn/a 0.07 - 0.36 fish / m2	field (field field field	gill net trawling electrofishing electrofishing	stomach content + stab stomach content measured, enumerated measured, enumerated	and released and released redundancy no effect
Percina caprodes Cottus bairdii Ponticola kessleri Ponticola kessleri	Logperch Mottled sculpin Bighead goby Bighead goby	Kornis et al 2013 Kornis et al 2013 Brandner et al 2013 Brandner et al 2013	Invasion success and impact of a vertebrate > 1 Invasion success and impact of a vertebrate > 1 Comparative feeding ecology of i vertebrate > 1 Comparative feeding ecology of i vertebrate > 1	studyn/acostudyn/acostudyaverage 10.0 cm (SD = 1.9 cm)pre	ompetitor native ompetitor native edator invasive ompetitor invasive	n/a n/a average 9.6 cm (SD = 1 average 9.6 cm (SD = 1	catchment of Lake USAcatchmentcatchment of Lake USAcatchment1.3 DanubeGermanyriver1.3 DanubeGermanyriver	n/a n/a upper Danube upper Danube	fresh fresh fresh fresh	<1 m; mean 0.38 ± 0 19.4 ± 3.5 °C <1 m; mean 0.38 ± 0 19.4 ± 3.5 °C 60 cm n/a 60 cm n/a	shoreline shoreline	n/a n/a n/a n/a 29th March–18th Jun 29th March- 29th March–18th Jun 29th March-	2007, 2010         n/a           2007, 2010         n/a           -18th 2010         2010           -18th 2010         2010	n/a (i n/a (i 2004 2004	ncludes a cc n/a 0.07 - 0.36 fish / m2 ncludes a cc n/a 0.07 - 0.36 fish / m2 Paintner & up to 20 goby / m2 Paintner & up to 20 goby / m2	field field field	electrofishing electrofishing electrofishing electrofishing	measured, enumerated measured, enumerated stomach content + stab stomach content + stab	and released redundancy no effect and released redundancy no effect ble isotop 235 P. ke: Herder & Fr competiti ble isotop 235 P. ke: Herder & Fr predation
Amphipoda Echinogammarus sp. Dreissena bugensis Dreissenidae	Amphipods Amphipods Dreissenid mussels Dreissenid mussels	Barton et al 2005 Campbell et al 2009 Campbell et al 2009 Marentette et al 2010	Effects of Round Gobies ( <i>Neogob</i> Invertebrate Re-Engineering the Eastern Lake Invertebrate Re-Engineering the Eastern Lake Invertebrate Signatures of contamination in in not applicable	pro pro pro	ey ey ey	< 11.2 cm TL > 11.2 cm n/a	Lake ErieUSAlakeLake ErieCanadalakeLake ErieCanadalakeLake OntarioCanadalake	eastern part of lake eastern part of lake eastern part of lake Hamilton Harbour, western part of		<1m	n/a n/a	July-August July-August May 3 - Oct 26	2002-2004 2002-2003 2002-2003 2002-2003		after 1999) 1992	field field field field	scuba + line gill net gill net minnow trap	stomach content + stab stomach content + stab stomach content + stab toxicology of tissue	important ole isotope important
- Dreissena rostriformis bugensis Dreissenidae and other benthic inverte Eurycercus and other Chydoridae	Zooplankton Dreissenid mussels	Johnson et al 2005a Roseman et al 2006 Johnson et al 2005a Janssen & Jude 2001	A Potential New Energy Pathway Invertebrate Predation on Walleye Eggs by Fis Invertebrate A Potential New Energy Pathway Invertebrate Recruitment Failure of Mottled Sc Invertebrate	pro pro pro	ey ey ey	0-4 y 41-139 mm TL 0-4 y 22-50 mm TL	Lake OntarioCanadaTakeLake ErieUSAIakeLake ErieUSAIakeLake ErieUSAIakeLake MichiganUSAIake	central part of lake western part of lake central part of lake Calumet Harbour, southern Lake		5-9.9 / 10-14.9 / 15-19.9 / > 20 m 5-9.9 / 10-14.9 / 15-19.9 / > 20 m		May-October May-October	1995-2002 1995-2002	2002 2002	1994standing stock 203-481994standing stock 203-48	field	trawling gill net + egg pump trawling scuba + hand net	stomach content stomach content stomach content stomach content	bioenergeti importan 128 importan bioenergeti importan importan
Salvelinus namaycush Chironomidae Gymnocephalus baloni Mvsis	Lake trout Nonbiting midget Balon's ruffe	Rush et al 2012 Janssen & Jude 2001 Copp et al 2008	Long-term impacts of invasive sp vertebrate > 1 Recruitment Failure of Mottled Sc Invertebrate Preliminary study of dietary interavertebrate > 1	larvae pre	ey edator native top predator ey ompetitor native ev	22-50 mm TL 22-50 mm TL 3-4 y	Lake Ontario USA lake Lake Michigan USA lake Danube Slovakia river	US waters (?) Calumet Harbour, southern Lake near Bratislava	fresh	25-50 m around 10° isothe 0.5-2.5 m n/a 69-128 m	erm n/a	lake trout: September, forage iten Aug/Sept Aug/sept	2004 2004	2003	,	, field field field field	bottom-set graded mesh gill nets scuba + hand net electrofishing	stable isotopes stomach content stomach content	Isotope mix replacem important goby n=4; covariance diet overl
<i>Mysis</i> Ostracoda Amphipoda Dreissenidae	Mysida Ostracoda Amphipods small freshwater musse		Using Diets to Reveal Overlap an Invertebrate Using Diets to Reveal Overlap an Invertebrate Round Goby ( <i>Neogobius melanos</i> Invertebrate Round Goby ( <i>Neogobius melanos</i> Invertebrate	pro pro pro pro	ey ey ey		Lake MichiganUSAlakeLake MichiganUSAlakeLake OntarioCanadalakeLake OntarioCanadalake	Bay of Quinte, sampled two locat Bay of Quinte, sampled two locat		69-128 m 69-128 m several methods several methods	several methods several methods	May-November May-November	2009, 2010 2009, 2010 2004/2005 2004/2005	detec lower	cted 1990 in Jude et al. 1992 cted 1990 in Jude et al. 1992 r bay 1999, upper bay 2(11.2 t/km2 lower bay, r bay 1999, upper bay 2(11.2 t/km2 lower bay,		trawling trawling line + minnow trap + seine net line + minnow trap + seine net	stomach content stomach content stomach content stomach content	importani importani importani bioenergeti importani
Chironomidae - Mysis	<i>ifor</i> Dreissenid mussels Nonbiting midget Zooplankton Mysida	Walsh et al 2007 Taraborelli et al 2010 Taraborelli et al 2010 Walsh et al 2007	Occurrence and Food Habits of th Invertebrate Round Goby ( <i>Neogobius melanos</i> Invertebrate Round Goby ( <i>Neogobius melanos</i> Invertebrate Occurrence and Food Habits of th Invertebrate	pro pro pro pro	ey ey ey		Lake OntarioCanadalakeLake OntarioCanadalakeLake OntarioCanadalakeLake OntarioCanadalake	Profundal Bay of Quinte, sampled two locat Bay of Quinte, sampled two locat Profundal	itions upper and lower bay	55-130 m several methods several methods 55-130 m	several methods several methods	May-November May-November	2004/2005 2004/2005	lower	r bay 1999, upper bay 2(11.2 t/km2 lower bay, r bay 1999, upper bay 2(11.2 t/km2 lower bay,	field field	trawling line + minnow trap + seine net line + minnow trap + seine net trawling	stomach content stomach content stomach content stomach content	important bioenergeti important bioenergeti important important
Ponticola kessleri Cottus cognatus Salvelinus namaycush Sander vitreus	Bighead goby Slimy sculpin Lake trout Walleye	Copp et al 2008 Mychek-Londer et al 2013 Visha et al 2015 Visha et al 2015	Preliminary study of dietary interavertebrate > 1 Using Diets to Reveal Overlap an vertebrate > 1 A Bayesian assessment of the mevertebrate > 1 A Bayesian assessment of the mevertebrate > 1	study adults co study n/a	ompetitor native ompetitor native da da	3-4 y n/a	DanubeSlovakiariverLake MichiganUSAlakeLake OntarioCanadalakeLake OntarioCanadalake	near Bratislava offshore of Frankfort and Muskeg	fresh go fresh fresh fresh	0.5-2.5 m n/a 69-128 m n/a		Aug/Sept Aug/sept Jan - May Jan - May	200420042009, 20102009, 2021975-20111975-2011	2003 detec n/a n/a	reviewed inn/a cted 1990 in Jude et al. n/a n/a n/a	field field	electrofishing trawling	stomach content stomach content	diet overl no signifi food web food web
- Ostracoda Dikerogammarus spp. + other Crustac Amphipoda and other Crustacea	Fish Ostracoda	Walsh et al 2007 Walsh et al 2007 staBorcherding et al 2013b	Occurrence and Food Habits of the Invertebrate Occurrence and Food Habits of the Invertebrate Feeding and niche differentiation Invertebrate Invasive Ponto-Caspian Amphipo(Invertebrate		ey ey ey	average 137 mm	Lake Ontario Canada lake Lake Ontario Canada lake Lake Ontario Canada lake Rhine Germany river Rhine Germany river	Profundal Iower Rhine near Düsseldorf		55-130 m 55-130 m			n/a	iy d	2006	field field field field	trawling trawling electrofishing + seine net line	stomach content stomach content stomach content stomach content	90 small par important important important
Perca fluviatilis Cottus bairdii Cottus bairdii	Eurasian perch Mottled sculpin Mottled sculpin	Copp et al 2008 French III & Jude 2001 French III & Jude 2001	Preliminary study of dietary interavertebrate > 1 Diets and Diet Overlap of Nonind vertebrate > 1 Diets and Diet Overlap of Nonind vertebrate > 1	studyeggs and YOYprostudy>75 mm TLpro	edator native species with decr	reasi 35-74 and >75 mm	Danube Slovakia river St. Clair River USA river St. Clair River USA river	near Bratislava Riverbank Riverbank	fresh fresh fresh fresh	0.5-2.5 m n/a 5-7 m n/a 5-7 m n/a 5-7 m n/a	n/a transect perpendicula transect perpendicula transect perpendicula	ar t May-Dec May-Dec	20042004199419941994199419941994	2003 1990 1990 1990	Jude et al. n/a Jude et al. n/a	field field field	line electrofishing special nets + trawling special nets + trawling special nets + trawling	stomach content stomach content stomach content	goby n = covariance diet overl 304 round gobies food item 304 round gobies food item
Cottus bairdii Gymnocephalus cernua Dreissena polymorpha, D. bugensis an Neogobius kessleri Naagabius fuwiatilis	Bighead goby	French III & Jude 2001 Savino et al 2007 Diggins et al 2002 Adamek et al 2007	Diets and Diet Overlap of Nonind vertebrate > 1 Activity, Aggression, and Habitat vertebrate > 1 Diet Choice by the Exotic Round (Invertebrate Food Habits of Four Bottom-Dwel vertebrate > 1	study average 102.3 mm ± 1.5 SE in length co pro- study D: 87 ± 12 mm; H: 91± 22 mm co	edator native species with decrompetitor invasive ey ompetitor invasive	111.5 mm ± 1.9 SE 73 ± 21 mm	St. Clair RiverUSAriverSt. Clair River + Lak USAriver / lakeSt Clair RiverUSAriverDanube + HronSlovakiariverHron and Danuba [Slovakiariver	Riverbank Ruffe: Thunder Bay River near Alp Riverbank downstream of the town Stúrovo	fresh	5-7 m n/a not applicable, Lab 12°C at the start 5-7 m n/a n/a	transect perpendicula of each trial and increase n/a	ed kruffe: autumn Mai and August Mai and Aug	-	1997	great lakes by 1995 (fir experiments were con Stranai 199n/a	field (lab experiment field field field	special nets + trawling ruffe: trawl; goby: angling special nets + trawling electrofishing	stomach content video observations stomach content stomach content	304 round gobies food item ANOVA ruffe mor important NK: 16 (D COSTELLO': similar di
Neogobius fluviatilis Proterorhinus marmoratus Aplodinotus grunniens Catostomus commersonii	Monkey goby Tubenose goby Freshwater drum White sucker	Adamek et al 2007 Adamek et al 2007 Campbell et al 2009 Kornis et al 2014	Food Habits of Four Bottom-Dwel vertebrate, onl Food Habits of Four Bottom-Dwel vertebrate, onl Re-Engineering the Eastern Lake vertebrate > 1 Experimental evidence that ecolovertebrate, onl	Iy 1 peer-revi 48 ± 6 mmcostudyaverage 385.0 mm TL (SD=57.14)proIy 1 peer-reviewed relevant studyco	ompetitor invasive ompetitor native edator n/a ompetitor	73 ± 21 mm 73 ± 21 mm small <11.2 cm; large :	Little Suamico Rive USA river	downstream of the town Stúrovo downstream of the town Stúrovo eastern part of lake 10.3 km upstream of Lake Michig	n/a fresh gan	n/a n/a n/a n/a n/a n/a	n/a n/a n/a	Mai and August Mai and Aug Mai and August Mai and Aug July-August July-August	ust 2003	2003 2003 n/a	n/a n/a n/a	field field field in-situ experiment	electrofishing electrofishing gill net	stomach content	NF: 2 (Da COSTELLO':similar di PM: 14 (HCOSTELLO':similar di ole isotop FD 15. RGz-test. Char important growth ra
Catostomus commersonii Dreissenidae Lota lota Lota lota	White sucker Dreissenid mussels Burbot Burbot	Kornis et al 2014 Ruetz et al 2009 Crane et al 2015 Crane et al 2015	Experimental evidence that ecolo vertebrate, on Energy Density of Introduced Rou Invertebrate Trends in body condition of native vertebrate > 1 Trends in body condition of native vertebrate > 1	ly 1 peer-reviewed relevant study co n/a pro study 375 mm TL pro	ompetitor	mostly >10cm TL (arou n/a n/a	Little Suamico Rive USA river und Muskegon lake + river Lake Erie USA lake Lake Erie USA lake	10.3 km upstream of Lake Michig connected to Lake Michigan eastern part of lake; Lake Ontaric eastern part of lake; Lake Ontaric	gan io ) fresh	n/a see Markham (2013)ca 19-22°C see Markham (2013)ca 19-22°C	n/a	goby: July-October 2004; May/Jul August August August August	1993-2012 pre-/post	after nvasion compa 1999 nvasion compa 1999	1999 n/a n/a	in-situ experiment field field field	goby: fyke nets, electrofishing, an gill net gill net	stomach content	growth ra growth ra ng and drying the fi:information difference quantile reؤpositive e quantile reؤnegative
Gammaridae Perca flavescens Sander canadensis Nerodia sipedon insularum	Amphipods Yellow perch Sauger Water snake	Borcherding et al 2013 Duncan et al 2011 Reyjol et al 2010 Fernie et al 2008	Activity and competitive behavior Invertebrate > 1 Diet partitioning, habitat preferer vertebrate > 1 Do Native Predators Feed on Non vertebrate, on Temporal and spatial patterns of vertebrate > 1	study field: <95mm: n=29; 95-150mm: n=38; >co ly 1 peer-reviewed relevant study pre	ey	<pre>n/a &lt; 6 cm TL. Lab: overall ngere n/a</pre>	Rhine Germany river	lower Rhine Hatchery Bay, Western Lake Erie Lake St. Pierre Kelleys Island, South Bass Island,	e fresh		6°C ∙not stated. Transects	March-May	2010	n/a (a n/a (a 2006	after 1999) BORCHERDING et al. 2011	lab experiment field + lab experiment field field	food choice	0	round gol round gol avioural cperch = 9!discriminandiet overl model calcumportant predation
Micropterus dolomieu Sander vitreus Pomphorhynchus tereticollis, Dikeroga	Smallmouth bass Walleye <i>mm</i> Parasitic worm, Europea	Southward Hogan et al 2007 Crane et al 2015 n Emde et al 2012	How Non-native Species in Lake Evertebrate > 1 Trends in body condition of native vertebrate > 1 Invasive Ponto-Caspian Amphipoenot applicable	study140 - 510 mm TL (in categories)prostudy315 - 760 mm TLpropropro	edator top predator edator native ey	n/a n/a	Lake Erie USA lake Lake Erie + Lake OIUSA lake Rhine Germany river	western part of lake eastern part of lake near Düsseldorf	fresh fresh	n/a n/a n/a n/a see Einhouse, Cullig ca 16-22°C		July-Sept July-Sept early autumn early autum		1996 nvasion compa 1999	Chotkowsk high density n/a n/a	field field field	electrofishing + line gill net line	stomach content mass-at-length stomach content	comparison changes i quantile reį no effect new host
Perca flavescens Perca fluviatilis Lota lota Cottus perifretum Parkatula barbatula	Yellow perch Eurasian perch Burbot Chabot fluviatile	Crane et al 2015 Almqvist et al 2010 Johnson et al 2005a Van Kessel 2011	Trends in body condition of native vertebrate > 1 Has the invasive round goby caus vertebrate > 1 A Potential New Energy Pathway vertebrate > 1 Competition for shelter between vertebrate, only	study113-293 mm TLprestudyn/aprely 1 peer-revi69.4 mm SL, 1.6 SEne	sumed compet native edator commercially fished, imp edator n/a eutral	0-4 y 64.8 mm SL, 3.42 SE	Lake Erie + Lake OLUSA lake Baltic Sea Poland, Lithuanisea Lake Erie USA lake Rhine + Meuse Netherlands river	eastern part of lake Gdansk Bay central part of lake	fresh brackish fresh	see Einhouse, Cullig ca 16-22°C n/a n/a 5-9.9 / 10-14.9 / 15- see Fig. 3	n/a central basin	May-October May-Octobe Dec 2009, Feb 2010	feren 2003-2004 (Gulf of Gd 2003/200 r 1995-2002 2002 2009, 2010	nvasion compa 1999 n/a (l 1994	ate 1980's) Sapota anc n/a ("one of the domin Forage Tas standing stock 203-48	(field lab experiment	gill net net + long line trawling electrofishing	mass-at-length stomach content + stab stomach content	bioenergeti importan G Test no compe
Barbatula barbatula Micropterus dolomieu Chironomidae Lota lota	Stone loach Smallmouth bass Chironomidae Burbot	Van Kessel 2011 Johnson et al 2005a Johnson et al 2008 Jacobs et al 2010	Competition for shelter between vertebrate, only A Potential New Energy Pathway vertebrate > 1 Diel Diet Composition and Feedir Invertebrate Diet of Lake Trout and Burbot in Ivertebrate > 1	ly 1 peer-revi 47.6 mm SL, 1.47 SE ne study n/a pro larvae pro study 200-399mm TL pro	edator drastically reduced abun	•	Rhine + Meuse Netherlands river Lake Erie USA lake Lake Ontario lake Lake Michigan USA lake	central part of lake nearshore northern part of lake	fresh	5-9.9m; 10-14.9m; 1!see Fig. 3 3 m n/a		Dec 2009, Feb 2010 May-October May-Octobe Mai 8-15 Mai 8-15	2006-2008; different y 2006-200	, , , ,	Forage Tas standing stock 203-48 recent; the a n/a n/a	lab experiment (field	electrofishing trawling gill net	stomach content	G Test no compe bioenergeti important most imp 9 bioenergeti important
Lota lota Lota lota Phalacrocorax carbo Ambloplites rupestris	Burbot Burbot Great cormorant Rock bass	Jacobs et al 2010 Jacobs et al 2010 Bzoma & Meissner 2005 Campbell et al 2009	Diet of Lake Trout and Burbot in I vertebrate > 1 Diet of Lake Trout and Burbot in I vertebrate > 1 Some results of long-term counts vertebrate > 1 Re-Engineering the Eastern Lake vertebrate > 1	study400-599mm TLprostudy600-799mm TLprostudyn/aprostudyaverage 182.4 mm TL (SD=39.2)pro	edator drastically reduced abun edator drastically reduced abun edator n/a edator n/a	ndanın/a	Lake Michigan USA lake Lake Michigan USA lake Baltic Sea Poland sea > 1Lake Erie Canada lake	northern part of lake northern part of lake Gdansk Bay eastern part of lake	fresh fresh brackish fresh	3 m n/a 3 m n/a n/a n/a n/a n/a	n/a n/a	Mai 8-15Mai 8-15Mai 8-15Mai 8-15sightings: Sept-Aprilall yearJuly-AugustJuly-August	2006-2008; different y 2006-200 2006-2008; different y 2006-200 sighting surveys 1984-comparis 2002-2003 2002-200	; different year n/a (r ; different year n/a (r n of 1984-1990 1990 n/a	recent; the a n/a n/a recent; the a n/a n/a n/a n/a n/a n/a	field field field	gill net gill net sighting surveys and pellet collect gill net	stomach content stomach content tioranalysis of pellets stomach content + stab	49bioenergeti important17bioenergeti important17bioenergeti importantn/acounts and importantole isotop RB 18. RCz-test. Char important
Nerodia sipedon insularum	Water snake	King et al 2006	Gorging on gobies: beneficial effevertebrate > 1		edator endemic, threatened/en	naang n/a	Lake Erie USA lake	western part of lake	fresh	n/a n/a		n/a n/a	1980-1985; 1988-1992 after gob		1990s Marsden & n/a	TIEID	hand-capture	stomach content	comparison important

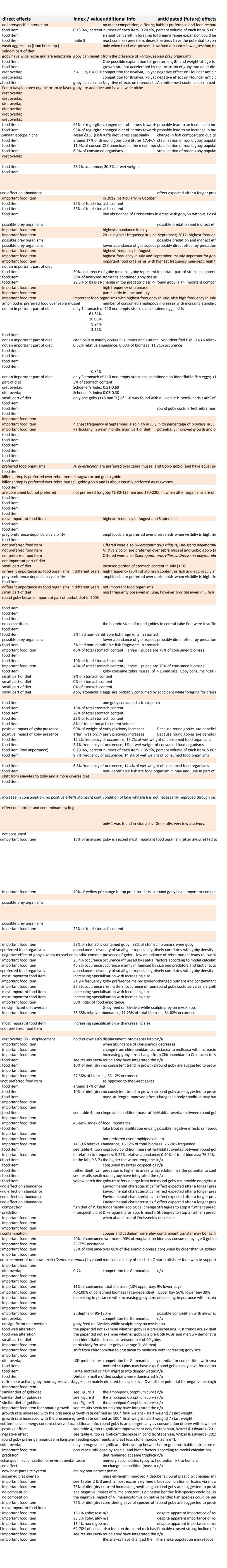


Table S2: Round goby interactions with Yellow perch (*Perca flavescens*) are context dependent. (n.a. = not available, TL = total length, SL = standard length)

Specie	es	Yellow perch (Perca flavescens) (1/2)											
Wate	r body			Lake Ontario		Lake Erie							
Sampling site		Easterr	n part	Lower Bay of Upper Bay of Quinte Quinte			Eastern p	part	Central part	Hatchery Bay, Western Lake Erie			
	Salinity	Fresh water		Fresh water		Fresh water			Fresh water	Fresh water			
Abiotic factors	Depth [m]	n.a. n.a.		Transects: 1.5-3 m, 3-5 m, 5-7m Traps, seining, angling: 1-5 m		n.a.	n.a.	n.a.	Bottom trawl at 5-9.9 m, 10-14.9 m, 15-19.9 m, and > 20 m	1-3 m			
Abioti	Temp.	See F	ig. 1			See F	ig. 1	n.a.	See Fig. 3	n.a. for field, 23.6 °C ± 1.1 SD and 20.8 °C ± 1.1 SD in lab experiments			
Year(s) of study		Pre-invasion: 1 Post-invasion:		2004/2005		Pre-invasion: 1993-1998 Post-invasion: 1999-2012		2002/2003	1995-2002, data from 2002	2002			
Seaso	n of study	Late summer		May-Oct./Nov.		Early autumn		July-August	May-Oct	June-Aug.			
First r goby	ecord round	2005		1999	2001	1999 n.a.		n.a.	1994	Early 1990s			
Age of	f round goby ation	0-7 years		6 years	4 years	0-13 years		n.a.	8 years	Approx. 10 years			
Round goby population density		n.a.		11.2 t/km²; see5 t/km²; see tabletable 11		n.a.		n.a.	Standing stock 203-4803 t/y, peak at 4.2 ± 1.5 billion ind. (1999), since then rel. stable probably due to predators, see table 2	n.a.			
Life stage or length of round goby		n.a.			dominated by age ally 2.3-13.6 cm TL,	n.a.	n.a.	Small: < 11.2.cm Large: ≥11.2 cm	0-4 years, see table 3	< 6 cm TL Lab: overall mean sizes of round goby 63.5 ± 2.8 SD (dreissenid habitat) and 62.2 ± 4.0 SD (macrophyte habitat)			
Life stage or length of native species		16.5-22.5 cm TL	27.5-34 cm TL	12.6-29 cm TL				average 19.53 ± 5.68 cm TL	n.a.	Field: < 95mm: n=29; 95– 150 mm: n=38; > 150 mm TL: n=32 Lab: overall mean sizes of yellow perch $63.5 \pm 0.6$ SD (dreissenid habitat) and $63.1 \pm 1.9$ SD (macrophyte habitat)			
Primary data acquisition method		Mass-at-length from field samples		Stomach content from field samples, bioenergetics modelling		Mass-at-length from field samples		Stomach content and stable isotopes from field samples	Stomach content from field samples	Stomach content from field samples and lab experiments			
Sample size of perch		Pre-invasion: 1154 Post-invasion: 1608		123	88	Pre-invasion: 59 Post-invasion: 8	-	33	n.a.	99			

Primary interaction and indices		Competition with round goby							
	n.a.		Mean percent composition by weight of round goby in perch stomach: spring 93%, summer 82%, fall 92%, table 5	ion by composition by round weight of round erch goby in perch stomach: %, spring 89%, 82%, summer 20%, fall			Round gobies are part of yellow perch diet, see figure 5	Yellow perch derived approximately 30% of their diet from round gobies	Significant diet overlap between juvenile perch (< 95 mm TL) and gobies (< 60 mm TL) in August, large yellow perch displayed very little diet overlap with any round goby size class, see figure 1
Resulting impact on native species	Mass-at- length partly deteriorated, see table 4	Mass-at- length generally improved, see table 4	Change in top pre		Mass-at- length partly deteriorated, see table 4	Mass-at- length generally improved, see table 4			Low to strong aggression depending on the amount of food present; differing habitat preference and food resource use allow coexistence
Anticipated future effects			n.a.		Changes in body condition may have implications for additional population and life history characteristics		Changes in energy flows between profundal, pelagic and littoral environments due to round goby	Round goby may provide energetic advantage over traditional prey (reduction in foraging cost); round goby transfer energy from benthos to higher trophic levels	Heterogeneous habitat structure may avoid negative effects
Authors	Crane et al. (2015)		Taraborelli et al. (	2010)	Crane et al. (202	15)	Campbell et al. (2009)	Johnson et al. (2005)	Duncan et al. (2011) (Duncanetal.É

Species			Yellow perch ( <i>Perca flavescens</i> ) (2/2)							
Water b	ody	St. Lawrence river	Lake Michigan							
Sampling site		Lake St. Pierre	Southern part							
() (0	Salinity	Fresh water	Fresh water							
otic	Depth [m]	1.5-3.9, average 3.2 m, navigation	Max. depth of Lake 265 m, mean 99 m							
Abiotic factors		channel 11.3 m	Sampling at 5 / 10 / 15 m							
~ +	Temp.	Around 20° C n.a.								
Year(s)	of study	2007	2002							
Season	of study	AugOct.	June-Aug.							
First rec	ord round goby	2006	1998							
Age of r	ound goby population	1 year	4 years							
			Diet 2002 compared to other studies from 1984 and 1992/93 (pre-invasion)							
Round g	oby population density	n.a.	n.a.							
Life stag	e or length classes of round goby	n.a.	21–170 mm TL							
Life stag	e or length classes of native species	92-319 mm TL, mean 177 ± 39 mm TL	10-11.9 cm TL         12-15.9 mm TL         16-18.9 mm TL         > 18.9 cm TL         < 10 cm TL							

Primary data acquisition method	Stomach content from field samples	Stomach content from field samples							
Sample size of perch	245	1984: 365 1992/93: 68 This study 2002: 365	1984: 127 1992/93: 167 This study 2002: 127	1984: 9 1992/93: 208 This study 2002: 9	1984: 5 1992/93: 401 This study 2002: 184	2212 total captured, out of them 1293 randomly sub- sampled for stomach analysis, out of them 268 contained alewife or round goby and were used for subsequent diet analysis			
Primary interaction		Predation on r	No predation on round goby						
	21.9% frequency of occurrence; 16.4% perch consume exclusively round goby; 4.4-100% of weight of consumed food organisms, table 1	10.2% of stomach content	33.3% of stomach content	68.9% of stomach content; yellow perch ≥ 150 mm LT consumed round goby as a major prey item	38.8% of stomach content	Perch < 10 cm TL were collected, but were found not to consume round goby			
Resulting impact on native species	Goby preference mainly governed by biotic (assemblage of predators) and geographic factors (round goby density)	Energetic link between zebra mussels and yellow perch; new food source for yellow perch; diet shift from mottled sculpin and johnny darter as prey items in 1984 to a diet with round goby in 2002				n.a.			
Anticipated future effects	Changes in nutrient and contaminant transfers	It appears that yellow p caused by environmen	n.a.						
Authors	Reyjol et al. (2010)	Truemper and Lauer (20	anthropogenic 005) and Truemper et a			Truemper and Lauer (2005)			

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