

Appendix S1: Additional figures and tables

Journal: Ecology

Article Title: Moray eels inconspicuously predominate heavily fished coral reefs.

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Table S1. Comparison of eel biomass and abundance densities estimated in the Hawaiian Archipelago by various surveying methods used by past studies and the current study, ordered chronologically. ‘Chemical collection’ refers to the application of the piscicide rotenone and ‘SPC’ is the stationary point count method (Ayotte et al. 2011). ‘Total area’ is the combined estimated area surveyed, derived from study area descriptions. Because the present study used three baited cameras per survey transect, ‘MaxN’ (the maximum number of individuals observed at one time) is presented in two ways: the maximum number of eels observed at one time across all three cameras (a combined, simultaneous MaxN) and as an average of the MaxN of each of the three cameras (non-simultaneous).

Study	Survey method	Region	Locality	Habitat	Abund. (eels/100m ²)	Biom. (g/100m ²)	Total area (m ²)	Total eels (n)	Total biom. (g)
Wass 1967 (MS thesis)	Chemical collection	MHI	O'ahu (Kāne'ohe Bay)	isolated patch reef, 44 m diameter at 9 m depth contour	7.9	1618	1513	119	24273
	Visual (belt transects, search)	MHI	O'ahu (Kāne'ohe Bay)	same reef, censused prior to rotenone application	0	0	1513	0	0
Brock et al. 1979, Brock 1982	Chemical collection	MHI	O'ahu (Kāne'ohe Bay)	same reef of Wass 1967, re-censused 11 years later	14	-	1513	212	-
Norris 1985 (MS thesis)	Chemical collection	NWHI	French Frigate Shoals and Midway Atoll	four isolated lagoonal patch reefs of 10 m - 17 m dia.	18	-	611	110	-
Parrish et al. 1986	Chemical collection	NWHI	French Frigate Shoals and Midway Atoll	four shallow isolated patch reefs of 80 - 120 m ²	16	-	400	65	-
Schroeder 1989 (PhD diss.)	Chemical collection	NWHI	Midway Atoll (Welles Harbor)	eight shallow lagoonal patch reefs of 8.2 to 173 m ²	50	-	549	272	-
	Visual (belt transects, search)	NWHI	Midway Atoll (Welles Harbor)	same reefs, censused prior to rotenone application	4	-	549	22	-
Longenecker 2001 (PhD diss.)	Chemical collection	MHI	O'ahu (Kāne'ohe Bay)	27 collections within 3333 m ² of forereef spur-and- groove habitat	-	-	undefined	16	-
Greenfield 2003	Chemical collection	MHI	O'ahu (Kāne'ohe Bay)	75 collections of approx. 90 m ² area in various habitats	3.2	-	6750	215	-
Heenan et al. 2017 (NOAA visual SPC database)	Visual (SPC), n = 863	MHI	All 8 Main Hawaiian islands	shallow coral reefs of various habitats	0.053 ± 0.0044	51 ± 12	152505	169	156964
	Visual (SPC), n = 514	NWHI	10 islands and atolls	shallow coral reefs of various habitats	0.013 ± 0.0028	8.5 ± 3.1	90831	26	19509
Zill et al. 2023 (pres. study)	BRUV (eel-specific), n = 33	MHI	Hawai'i, O'ahu, Ni'ihau	shallow coral reefs of various habitats	3.3 ± 0.32	1096 ± 127	5832	190	63898
	Visual (SPC), n = 33				0.10 ± 0.039	73 ± 44	5832	6	4243
	MaxN (simultaneous), n = 33				1.6 ± 0.12	-	5832	91	-
	MaxN (averaged), n = 33				0.78 ± 0.046	-	5832	45.33	-
	BRUV (eel-specific), n = 27	NWHI	Kure, Midway, Maro, Lisianski, Laysan, Fr. Frig. Shoals, Pearl & Hermes	shallow coral reefs of various habitats	2.4 ± 0.24	204 ± 44	4771	114	9750
	Visual (SPC), n = 27				0.021 ± 0.021	1 ± 1	4771	1	498
	MaxN (simultaneous), n = 27				1.4 ± 0.17	-	4771	67	-
	MaxN (averaged), n = 27				0.65 ± 0.065	-	4771	31	-

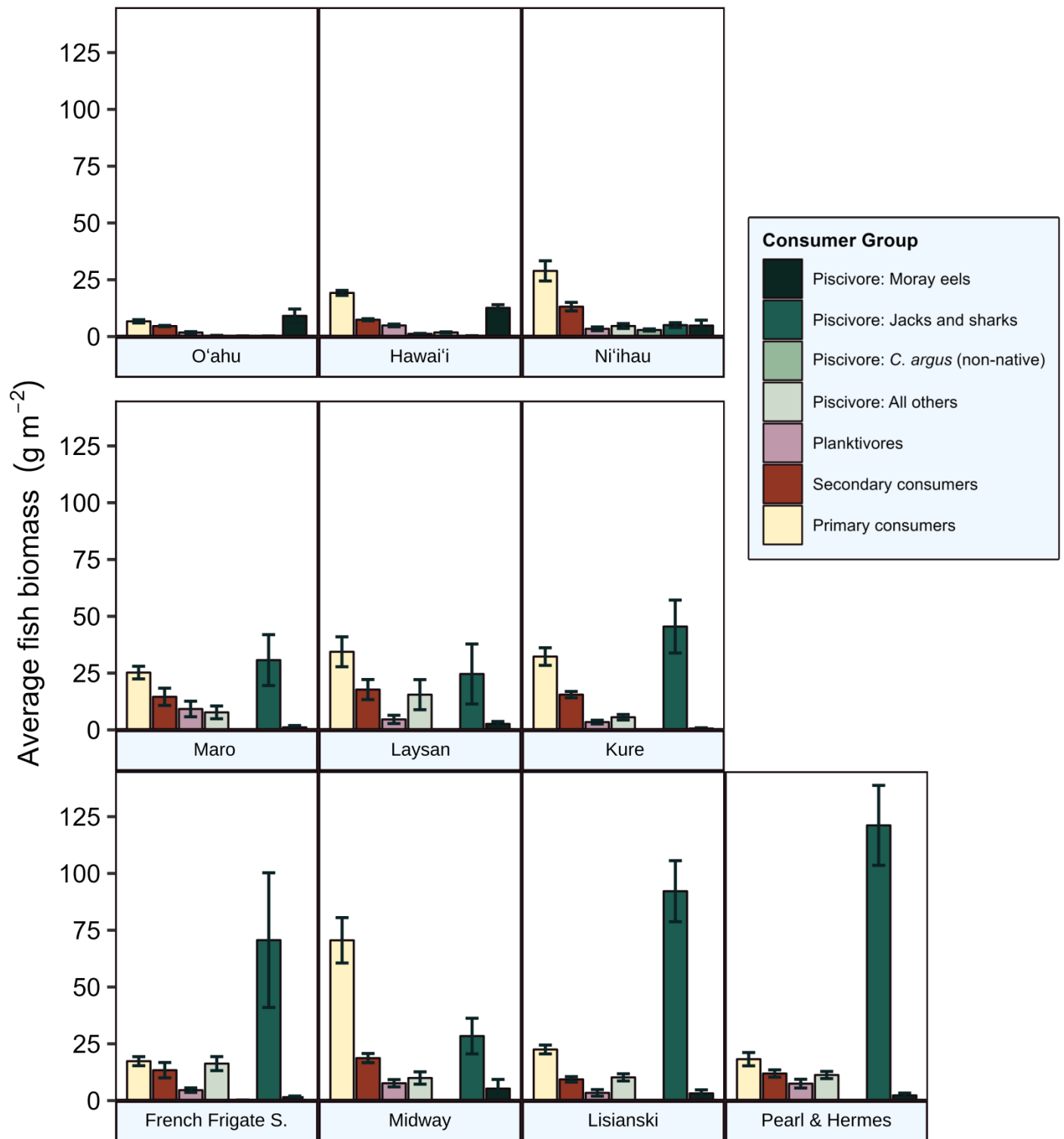


Figure S1. Standard error bars for the average fish biomass of each trophic group of interest by island, which correspond to Fig. 2a of the main text.

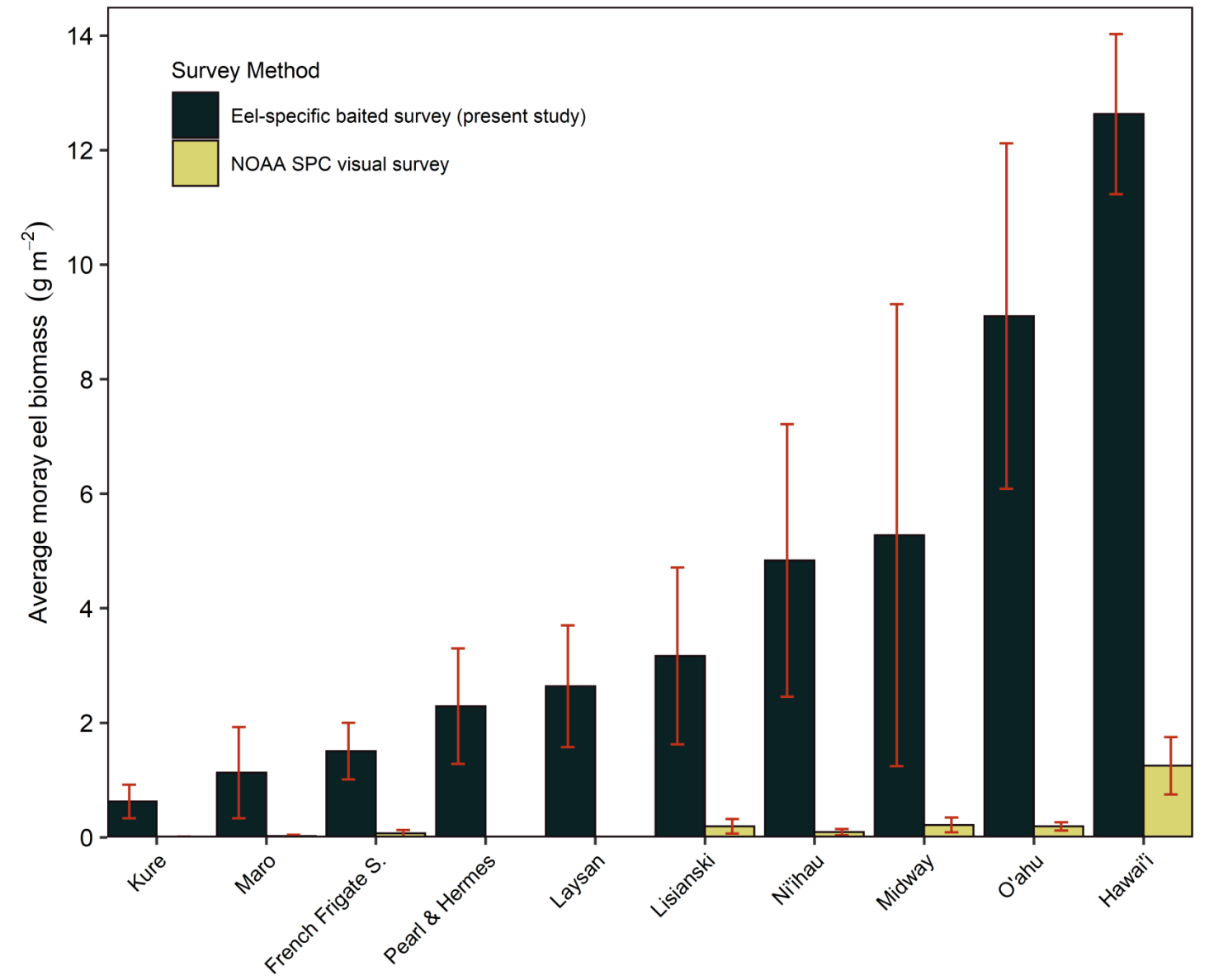


Figure S2. A comparison of moray eel biomass detected using eel-specific BRUV surveys (this study) vs. eel biomass in the NOAA database observed using the Stationary Point Count visual fish survey method (average \pm SE).

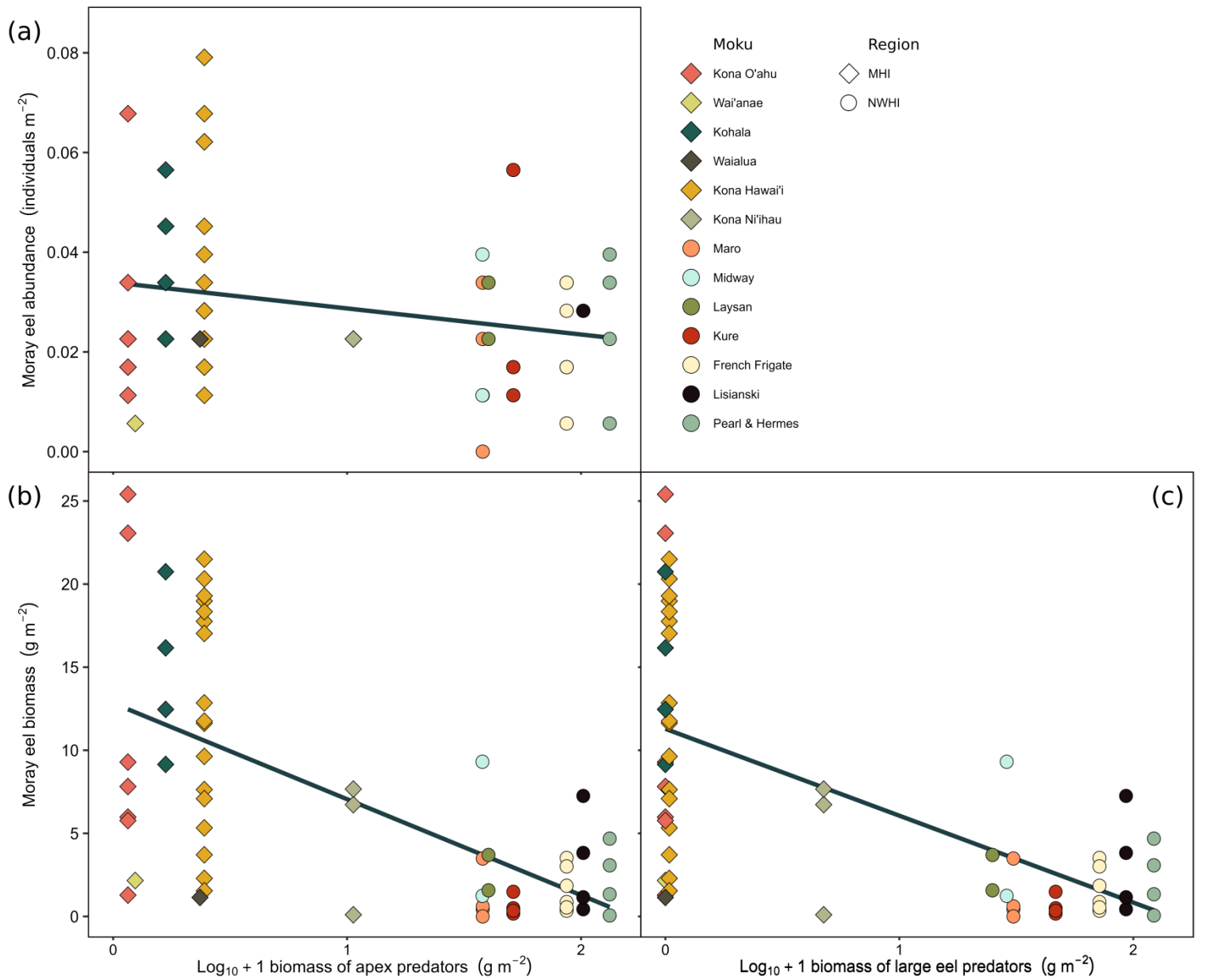


Figure S3. (a) Moray abundance and (b) moray biomass density (untransformed) by moku across a gradient of large (40+ cm) apex predator biomass. (c) Moray biomass density (untransformed) across a biomass gradient of large (40+ cm) known predators of eels (Appendix S1: Table S2). MHI and NWHI sites are shown as diamonds and circles, respectively.

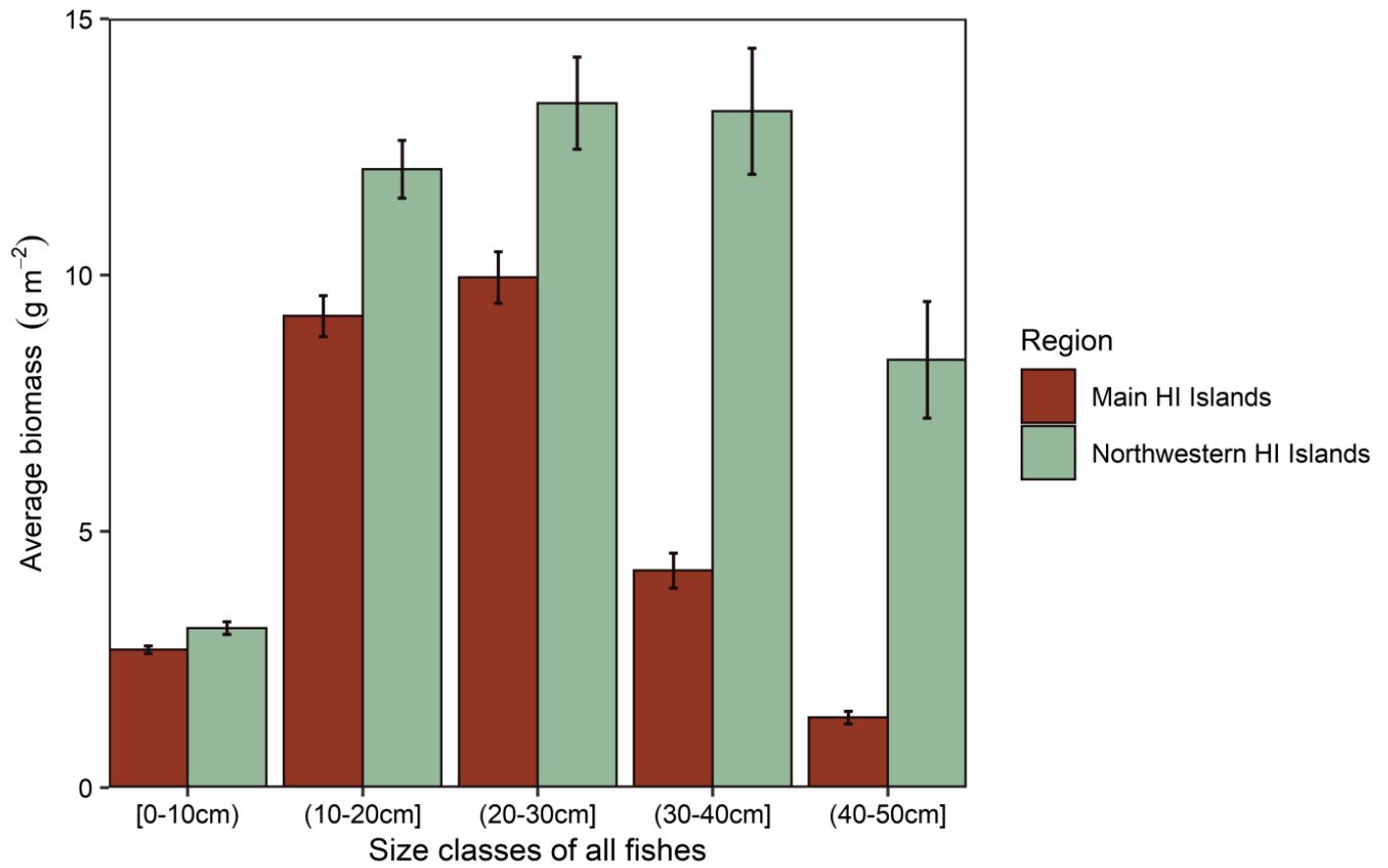


Figure S4. A size class comparison of biomass of all fishes in the NOAA SPC database under 50 cm in total body length, from Hawai‘i surveys that took place in less than 18 m water depth and greater than 50% hard bottom seafloor habitat (n = 1360 surveys). The difference in average biomass between regions was the smallest for fish under 10 cm body length.

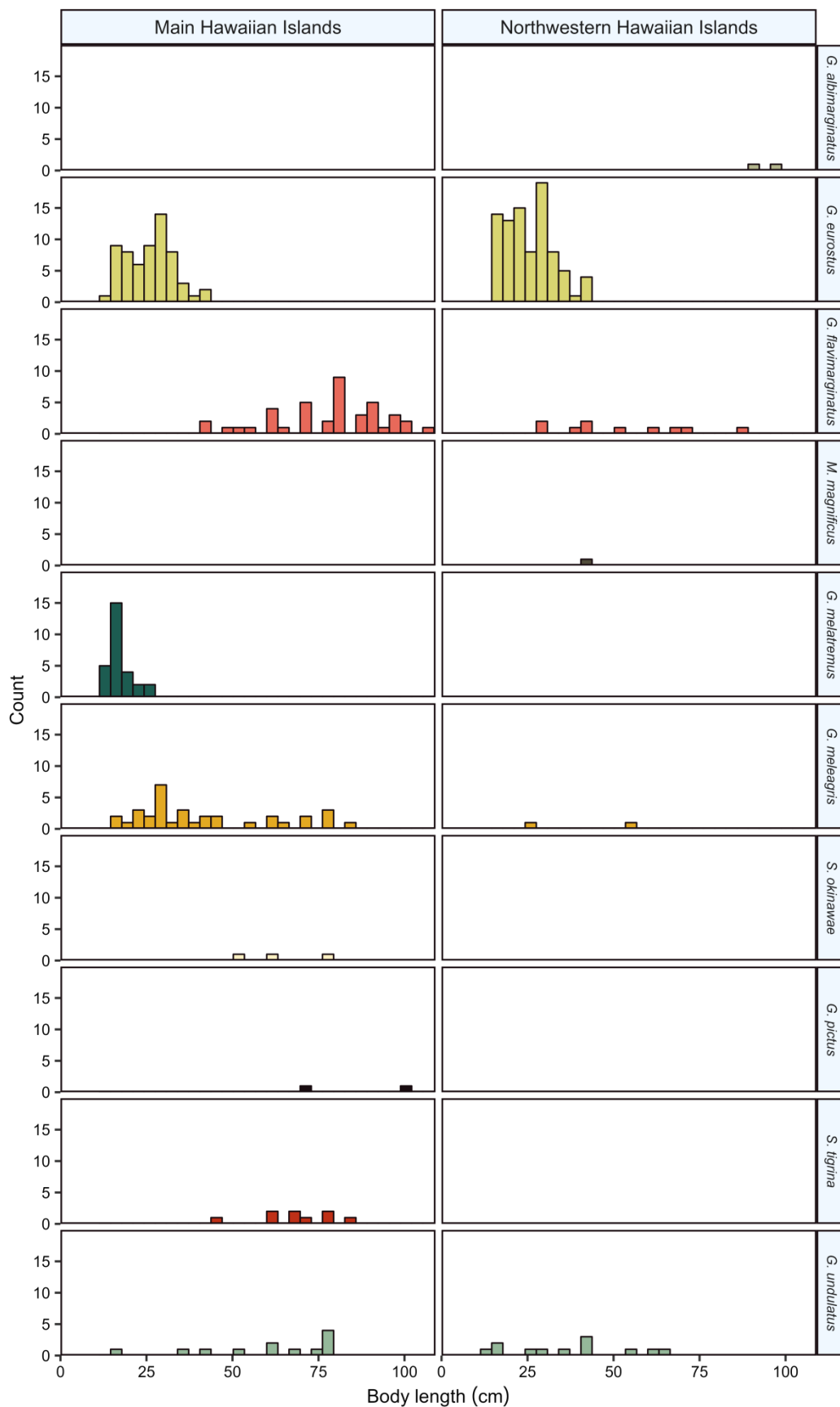


Figure S5. Size frequency distribution of all eels observed within 40 minutes of baited camera deployment in the MHI (n = 33 surveys) and NWHI (n = 27 surveys). Detailed records of every observed eel individual are available publically as data uploaded to Dryad.

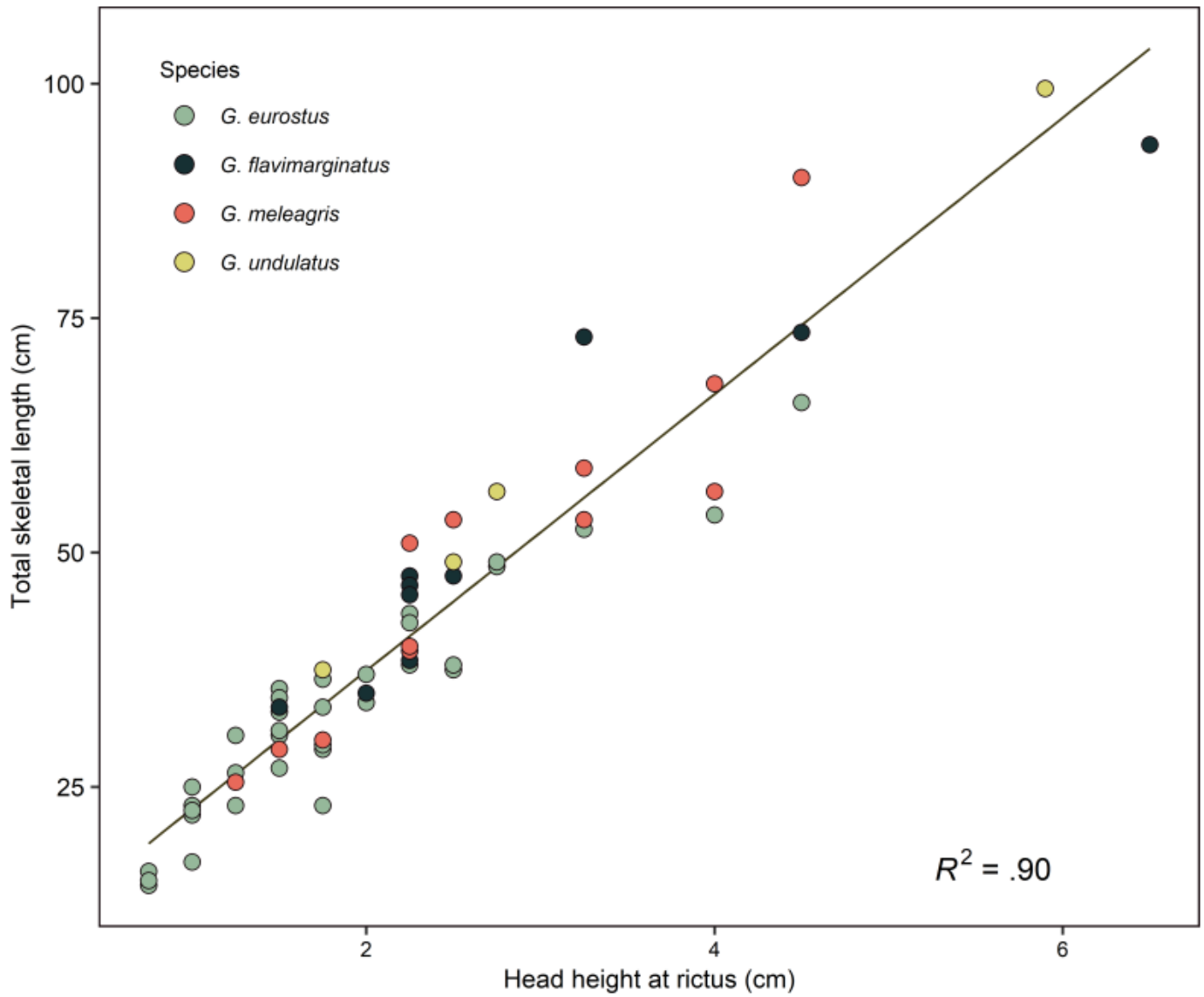


Figure S6. Relationship between eel head height (taken at the rictus of the eel's jaw) and total skeletal length, generated from preserved museum specimens of the four most commonly observed eel species in Hawai'i. See Appendix S1: Section S3 for more details.

Table S2. List of piscivorous fishes that were classified as predators of eels in this study, generated from a non-exhaustive review of previous studies on diet composition of piscivores that occur in Hawai‘i. *Caranx lugubris* is assumed to be an eel predator due to its similarity in life history with its listed congeners. The Hawaiian monk seal (*Monachus schauinslandi*) is not included in our analyses or this species list, but it should be noted that they are a unique and facultative eel predator (Goodman-Lowe 1998, Parrish et al. 2008, Longenecker 2010), and disparities in eel biomass distribution could help explain regional variation in monk seal survival rates (Cahoon et al. 2013).

Species	Family	Citation	Study location
<i>Carangoides orthogrammus</i>	Carangidae	Meyer et al. 2001	Hawai‘i (MHI)
<i>Caranx ignobilis</i>	Carangidae	Sudekum et al. 1991	Hawai‘i (NWHI)
<i>Caranx lugubris</i>	Carangidae		
<i>Caranx melampygus</i>	Carangidae	Meyer et al. 2001	Hawai‘i (MHI)
<i>Caranx sexfasciatus</i>	Carangidae	Gaffney 2000	Hawai‘i (unspecified)
<i>Elagatis bipinnulata</i>	Carangidae	Miller et al. 2015	SW Pacific Ocean
<i>Seriola dumerili</i>	Carangidae	Humphreys & Kramer 1984	Hawai‘i (MHI, NWHI)
<i>Carcharhinus amblyrhynchos</i>	Carcharhinidae	Frisch et al. 2016	Australia (Great Barrier Reef)
<i>Carcharhinus galapagensis</i>	Carcharhinidae	Wetherbee et al. 1996	Hawai‘i (MHI)
<i>Carcharhinus melanopterus</i>	Carcharhinidae	Frisch et al. 2016	Australia (Great Barrier Reef)
<i>Carcharhinus plumbeus</i>	Carcharhinidae	McElroy et al. 2006	Hawai‘i (MHI)
<i>Triaenodon obesus</i>	Carcharhinidae	Randall 1977	Pacific Ocean (tropical)
<i>Galeocerdo cuvier</i>	Carcharhinidae	Hobson 1974, Lowe et al. 1996	Hawai‘i (MHI)
<i>Katsuwonus pelamis</i>	Scombridae	Dragovich 1970	Atlantic Ocean (tropical and subtropical)
<i>Sphyrna lewini</i>	Sphyrnidae	Bush 2003	Hawai‘i (MHI)

Table S3. Trophic group categorizations of all fish species observed in NOAA SPC database. Consumer group classification (Primary, Secondary, Planktivore, Piscivore) was provided by NOAA. We further classified non-muraenid piscivore species (at the level of individual fish record) into more specific trophic groups of interest: apex predators (> 40 cm body length), eel predators (documented to consume eels; Appendix S1: Table S2), and non-eel mesopredators. Non-eel mesopredators were potential competitors of eels; this included piscivores that were at least 20 cm in body length but excluded eel predators that were larger than 40 cm (at which size they are better categorized as apex predators in the context of this study). A value of ‘1’ indicates that the listed species had at least one database record that met the criteria of the trophic group of interest.

Scientific name	Family name	Common family name	Consumer group	Apex predator	Eel predator	Non-eel mesopredators
Acanthuridae	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus achilles	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus achilles X nigricans hybrid = rackliffei	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus blochii	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus dussumieri	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus guttatus	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus leucopareius	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus nigricans	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus nigrofusus	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus nigroris	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus olivaceus	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus sp	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus thompsoni	Acanthuridae	Surgeonfish	Planktivore	0	0	0
Acanthurus triostegus	Acanthuridae	Surgeonfish	Primary	0	0	0
Acanthurus xanthopterus	Acanthuridae	Surgeonfish	Primary	0	0	0
Ctenochaetus hawaiiensis	Acanthuridae	Surgeonfish	Primary	0	0	0
Ctenochaetus sp	Acanthuridae	Surgeonfish	Primary	0	0	0
Ctenochaetus strigosus	Acanthuridae	Surgeonfish	Primary	0	0	0
Naso annulatus	Acanthuridae	Surgeonfish	Planktivore	0	0	0
Naso brevirostris	Acanthuridae	Surgeonfish	Planktivore	0	0	0
Naso hexacanthus	Acanthuridae	Surgeonfish	Planktivore	0	0	0
Naso lituratus	Acanthuridae	Surgeonfish	Primary	0	0	0
Naso sp	Acanthuridae	Surgeonfish	Planktivore	0	0	0
Naso unicornis	Acanthuridae	Surgeonfish	Primary	0	0	0
Zebrasoma flavescens	Acanthuridae	Surgeonfish	Primary	0	0	0
Zebrasoma veliferum	Acanthuridae	Surgeonfish	Primary	0	0	0

Apogon kallopterus	Apogonidae	Cardinalfish	Planktivore	0	0	0
Apogon maculiferus	Apogonidae	Cardinalfish	Planktivore	0	0	0
Apogon sp	Apogonidae	Cardinalfish	Planktivore	0	0	0
Apogonidae	Apogonidae	Cardinalfish	Planktivore	0	0	0
Atherinomorus insularum	Atherinidae	Silverside	Planktivore	0	0	0
Aulostomus chinensis	Aulostomidae	Trumpetfish	Piscivore	1	0	1
Balistes polylepis	Balistidae	Triggerfish	Secondary	0	0	0
Balistidae	Balistidae	Triggerfish	Secondary	0	0	0
Melichthys niger	Balistidae	Triggerfish	Planktivore	0	0	0
Melichthys vidua	Balistidae	Triggerfish	Primary	0	0	0
Rhinecanthus aculeatus	Balistidae	Triggerfish	Secondary	0	0	0
Rhinecanthus rectangulus	Balistidae	Triggerfish	Secondary	0	0	0
Sufflamen bursa	Balistidae	Triggerfish	Secondary	0	0	0
Sufflamen fraenatum	Balistidae	Triggerfish	Secondary	0	0	0
Xanthichthys auromarginatus	Balistidae	Triggerfish	Planktivore	0	0	0
Xanthichthys mento	Balistidae	Triggerfish	Planktivore	0	0	0
Belonidae	Belonidae	Needlefish	Piscivore	0	0	1
Platybelone argalus	Belonidae	Needlefish	Piscivore	0	0	0
Tylosurus crocodilus	Belonidae	Needlefish	Piscivore	1	0	0
Blenniidae	Blenniidae	Blenny	Planktivore	0	0	0
Cirripectes obscurus	Blenniidae	Blenny	Primary	0	0	0
Cirripectes sp	Blenniidae	Blenny	Primary	0	0	0
Cirripectes vanderbilti	Blenniidae	Blenny	Primary	0	0	0
Exallias brevis	Blenniidae	Blenny	Secondary	0	0	0
Plagiotremus ewaensis	Blenniidae	Blenny	Secondary	0	0	0
Plagiotremus goslinei	Blenniidae	Blenny	Secondary	0	0	0
Bothus mancus	Bothidae	Flounder	Secondary	0	0	0
Caracanthus maculatus	Caracanthidae	Velvetfish	Secondary	0	0	0
Caracanthus typicus	Caracanthidae	Velvetfish	Secondary	0	0	0
Carangoides ferdau	Carangidae	Jack	Piscivore	1	0	1
Carangoides orthogrammus	Carangidae	Jack	Piscivore	1	1	1
Caranx ignobilis	Carangidae	Jack	Piscivore	1	1	0
Caranx lugubris	Carangidae	Jack	Piscivore	1	1	0
Caranx melampygus	Carangidae	Jack	Piscivore	1	1	1
Caranx sexfasciatus	Carangidae	Jack	Piscivore	1	1	1
Decapterus macarellus	Carangidae	Jack	Planktivore	0	0	0
Elagatis bipinnulata	Carangidae	Jack	Piscivore	1	1	0
Pseudocaranx dentex	Carangidae	Jack	Piscivore	1	0	0
Scomberoides lysan	Carangidae	Jack	Piscivore	1	0	0
Selar crumenophthalmus	Carangidae	Jack	Planktivore	0	0	0
Seriola dumerili	Carangidae	Jack	Piscivore	1	1	0
Carcharhinus amblyrhynchos	Carcharhinidae	Requiem	Piscivore	1	1	0
Carcharhinus galapagensis	Carcharhinidae	Requiem	Piscivore	1	1	0
Triaenodon obesus	Carcharhinidae	Requiem	Piscivore	1	0	0
Chaetodon auriga	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon citrinellus	Chaetodontidae	Butterflyfish	Secondary	0	0	0

Chaetodon ephippium	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon fremblii	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon kleinii	Chaetodontidae	Butterflyfish	Planktivore	0	0	0
Chaetodon lineolatus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon lunula	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon lunulatus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon miliaris	Chaetodontidae	Butterflyfish	Planktivore	0	0	0
Chaetodon multicinctus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon ornatissimus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon quadrimaculatus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon reticulatus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon trifascialis	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Chaetodon unimaculatus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Forcipiger flavissimus	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Forcipiger longirostris	Chaetodontidae	Butterflyfish	Secondary	0	0	0
Hemitaenichthys polylepis	Chaetodontidae	Butterflyfish	Planktivore	0	0	0
Hemitaenichthys thompsoni	Chaetodontidae	Butterflyfish	Planktivore	0	0	0
Heniochus diphreutes	Chaetodontidae	Butterflyfish	Planktivore	0	0	0
Chanos chanos	Chanidae	Milkfish	Primary	0	0	0
Goniistius vittatus	Cheilodactylidae	Morwong	Secondary	0	0	0
Amblycirrhitus bimacula	Cirrhitidae	Hawkfish	Secondary	0	0	0
Cirrhitops fasciatus	Cirrhitidae	Hawkfish	Secondary	0	0	0
Cirrhitus pinnulatus	Cirrhitidae	Hawkfish	Secondary	0	0	0
Oxycirrhites typus	Cirrhitidae	Hawkfish	Planktivore	0	0	0
Paracirrhites arcatus	Cirrhitidae	Hawkfish	Secondary	0	0	0
Paracirrhites forsteri	Cirrhitidae	Hawkfish	Piscivore	0	0	0
Spratelloides delicatulus	Clupeidae	Herring etc	Planktivore	0	0	0
Diodon holocanthus	Diodontidae	Porcupinefish	Secondary	0	0	0
Diodon hystrix	Diodontidae	Porcupinefish	Secondary	0	0	0
Encrasicholina purpurea	Engraulidae	Anchovy	Planktivore	0	0	0
Fistularia commersonii	Fistulariidae	Cornetfish	Piscivore	1	0	0
Gobiidae	Gobiidae	Goby	Secondary	0	0	0
Myripristinae	Holocentridae	Soldierfish	Planktivore	0	0	0
Myripristis amaena	Holocentridae	Soldierfish	Planktivore	0	0	0
Myripristis berndti	Holocentridae	Soldierfish	Planktivore	0	0	0
Myripristis kuntee	Holocentridae	Soldierfish	Planktivore	0	0	0
Myripristis vittata	Holocentridae	Soldierfish	Planktivore	0	0	0
Neoniphon sammara	Holocentridae	Soldierfish	Secondary	0	0	0
Neoniphon sp	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron diadema	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron ensifer	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron sp	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron spiniferum	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron tiee	Holocentridae	Soldierfish	Secondary	0	0	0
Sargocentron xantherythrum	Holocentridae	Soldierfish	Secondary	0	0	0
Kuhlia sandvicensis	Kuhliidae	Aholehole	Planktivore	0	0	0

Kyphosus cinerascens	Kyphosidae	Chub	Primary	0	0	0
Kyphosus hawaiiensis	Kyphosidae	Chub	Primary	0	0	0
Kyphosus sandwicensis	Kyphosidae	Chub	Primary	0	0	0
Kyphosus sp	Kyphosidae	Chub	Primary	0	0	0
Kyphosus vaigiensis	Kyphosidae	Chub	Primary	0	0	0
Anampses chrysocephalus	Labridae	Wrasse	Secondary	0	0	0
Anampses cuvier	Labridae	Wrasse	Secondary	0	0	0
Anampses sp	Labridae	Wrasse	Secondary	0	0	0
Bodianus bilunulatus	Labridae	Wrasse	Secondary	0	0	0
Cheilio inermis	Labridae	Wrasse	Secondary	0	0	0
Cirrhilabrus jordani	Labridae	Wrasse	Planktivore	0	0	0
Coris ballieui	Labridae	Wrasse	Secondary	0	0	0
Coris flavovittata	Labridae	Wrasse	Secondary	0	0	0
Coris gaimard	Labridae	Wrasse	Secondary	0	0	0
Coris venusta	Labridae	Wrasse	Secondary	0	0	0
Cymolutes lecluse	Labridae	Wrasse	Secondary	0	0	0
Epibulus insidiator	Labridae	Wrasse	Secondary	0	0	0
Gomphosus varius	Labridae	Wrasse	Secondary	0	0	0
Halichoeres ornatissimus	Labridae	Wrasse	Secondary	0	0	0
Iniistius aneitensis	Labridae	Wrasse	Secondary	0	0	0
Iniistius pavo	Labridae	Wrasse	Secondary	0	0	0
Iniistius umbrilatus	Labridae	Wrasse	Secondary	0	0	0
Labridae	Labridae	Wrasse	Secondary	0	0	0
Labroides phthirophagus	Labridae	Wrasse	Secondary	0	0	0
Macropharyngodon geoffroy	Labridae	Wrasse	Secondary	0	0	0
Novaculichthys taeniourus	Labridae	Wrasse	Secondary	0	0	0
Oxycheilinus bimaculatus	Labridae	Wrasse	Secondary	0	0	0
Oxycheilinus unifasciatus	Labridae	Wrasse	Piscivore	1	0	0
Pseudocheilinus evanidus	Labridae	Wrasse	Secondary	0	0	0
Pseudocheilinus octotaenia	Labridae	Wrasse	Secondary	0	0	0
Pseudocheilinus tetrataenia	Labridae	Wrasse	Secondary	0	0	0
Pseudojuloides cerasinus	Labridae	Wrasse	Secondary	0	0	0
Pseudojuloides sp	Labridae	Wrasse	Secondary	0	0	0
Stethojulis balteata	Labridae	Wrasse	Secondary	0	0	0
Thalassoma ballieui	Labridae	Wrasse	Secondary	0	0	0
Thalassoma duperrey	Labridae	Wrasse	Secondary	0	0	0
Thalassoma duperrey X quinquevittatum hybrid	Labridae	Wrasse	Secondary	0	0	0
Thalassoma lutescens	Labridae	Wrasse	Secondary	0	0	0
Thalassoma purpureum	Labridae	Wrasse	Secondary	0	0	0
Thalassoma quinquevittatum	Labridae	Wrasse	Secondary	0	0	0
Thalassoma sp	Labridae	Wrasse	Secondary	0	0	0
Thalassoma trilobatum	Labridae	Wrasse	Secondary	0	0	0
Monotaxis grandoculis	Lethrinidae	Emperor	Secondary	0	0	0
Aphareus furca	Lutjanidae	Snapper	Piscivore	1	0	1
Aprion virescens	Lutjanidae	Snapper	Piscivore	1	0	1

Lutjanus fulvus	Lutjanidae	Snapper	Secondary	0	0	0
Lutjanus kasmira	Lutjanidae	Snapper	Secondary	0	0	0
Malacanthus brevirostris	Malacanthidae	Tilefish	Secondary	0	0	0
Gunnellichthys curiosus	Microdesmidae	Wormfish	Planktivore	0	0	0
Nemateleotris magnifica	Microdesmidae	Dartfish	Planktivore	0	0	0
Aluterus scriptus	Monacanthidae	Filefish	Secondary	0	0	0
Cantherhines dumerilii	Monacanthidae	Filefish	Secondary	0	0	0
Cantherhines sandwichiensis	Monacanthidae	Filefish	Primary	0	0	0
Cantherhines verrecundus	Monacanthidae	Filefish	Primary	0	0	0
Monacanthidae	Monacanthidae	Filefish	Primary	0	0	0
Pervagor aspricaudus	Monacanthidae	Filefish	Secondary	0	0	0
Pervagor spilosoma	Monacanthidae	Filefish	Secondary	0	0	0
Mullidae	Mullidae	Goatfish	Secondary	0	0	0
Mulloidichthys flavolineatus	Mullidae	Goatfish	Secondary	0	0	0
Mulloidichthys mimicus	Mullidae	Goatfish	Secondary	0	0	0
Mulloidichthys pfluegeri	Mullidae	Goatfish	Secondary	0	0	0
Mulloidichthys vanicolensis	Mullidae	Goatfish	Secondary	0	0	0
Parupeneus cyclostomus	Mullidae	Goatfish	Piscivore	1	0	0
Parupeneus insularis	Mullidae	Goatfish	Secondary	0	0	0
Parupeneus multifasciatus	Mullidae	Goatfish	Secondary	0	0	0
Parupeneus pleurostigma	Mullidae	Goatfish	Secondary	0	0	0
Parupeneus porphyreus	Mullidae	Goatfish	Secondary	0	0	0
Echidna nebulosa	Muraenidae	Moray	Secondary	0	0	0
Enchelycore pardalis	Muraenidae	Moray	Piscivore	0	0	0
Enchelynassa canina	Muraenidae	Moray	Piscivore	0	0	0
Gymnomuraena zebra	Muraenidae	Moray	Secondary	0	0	0
Gymnothorax eurostus	Muraenidae	Moray	Secondary	0	0	0
Gymnothorax flavimarginatus	Muraenidae	Moray	Piscivore	0	0	0
Gymnothorax javanicus	Muraenidae	Moray	Piscivore	0	0	0
Gymnothorax melatremus	Muraenidae	Moray	Secondary	0	0	0
Gymnothorax meleagris	Muraenidae	Moray	Piscivore	0	0	0
Gymnothorax sp	Muraenidae	Moray	Piscivore	0	0	0
Gymnothorax undulatus	Muraenidae	Moray	Piscivore	0	0	0
Muraenidae	Muraenidae	Moray	Piscivore	0	0	0
Aetobatus narinari	Myliobatidae	Eagle Rays	Secondary	0	0	0
Manta birostris	Myliobatidae	Manta Ray	Planktivore	0	0	0
Myrichthys magnificus	Ophichthidae	Worm or Snake Eel	Secondary	0	0	0
Brotula multibarata	Ophidiidae	Cusk Eel	Secondary	0	0	0
Oplegnathus fasciatus	Oplegnathidae	Knifejaw	Secondary	0	0	0
Oplegnathus punctatus	Oplegnathidae	Knifejaw	Secondary	0	0	0
Lactoria fornasini	Ostraciidae	Boxfish	Secondary	0	0	0
Ostracion meleagris	Ostraciidae	Boxfish	Secondary	0	0	0
Ostracion whitleyi	Ostraciidae	Boxfish	Secondary	0	0	0
Parapercis schauinslandii	Pinguipedidae	Sandperch	Secondary	0	0	0
Parapercis sp	Pinguipedidae	Sandperch	Secondary	0	0	0

<i>Apolemichthys arcuatus</i>	Pomacanthidae	Angelfish	Secondary	0	0	0
<i>Centropyge fisheri</i>	Pomacanthidae	Angelfish	Primary	0	0	0
<i>Centropyge loricula</i>	Pomacanthidae	Angelfish	Primary	0	0	0
<i>Centropyge potteri</i>	Pomacanthidae	Angelfish	Primary	0	0	0
<i>Genicanthus personatus</i>	Pomacanthidae	Angelfish	Planktivore	0	0	0
<i>Abudefduf abdominalis</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Abudefduf sordidus</i>	Pomacentridae	Damselfish	Primary	0	0	0
<i>Abudefduf vaigiensis</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis acares</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis agilis</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis hanui</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis leucura</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis ovalis</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis vanderbilti</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Chromis verater</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Dascyllus albisella</i>	Pomacentridae	Damselfish	Planktivore	0	0	0
<i>Plectroglyphidodon imparipennis</i>	Pomacentridae	Damselfish	Secondary	0	0	0
<i>Plectroglyphidodon johnstonianus</i>	Pomacentridae	Damselfish	Secondary	0	0	0
<i>Plectroglyphidodon sindonis</i>	Pomacentridae	Damselfish	Primary	0	0	0
<i>Stegastes fasciolatus</i>	Pomacentridae	Damselfish	Primary	0	0	0
<i>Stegastes</i> sp	Pomacentridae	Damselfish	Primary	0	0	0
<i>Heteropriacanthus cruentatus</i>	Priacanthidae	Bigeye	Planktivore	0	0	0
<i>Priacanthus meeki</i>	Priacanthidae	Bigeye	Planktivore	0	0	0
<i>Ptereleotris heteroptera</i>	Ptereleotridae	Dartfish	Planktivore	0	0	0
<i>Calotomus carolinus</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Calotomus zonarchus</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Chlorurus perspicillatus</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Chlorurus sordidus</i>	Scaridae	Parrotfish	Primary	0	0	0
Scaridae	Scaridae	Parrotfish	Primary	0	0	0
<i>Scarus dubius</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Scarus psittacus</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Scarus rubroviolaceus</i>	Scaridae	Parrotfish	Primary	0	0	0
<i>Scarus</i> sp	Scaridae	Parrotfish	Primary	0	0	0
<i>Euthynnus affinis</i>	Scombridae	Tuna	Piscivore	1	0	0
<i>Dendrochirus barberi</i>	Scorpaenidae	Scorpionfish	Secondary	0	0	0
<i>Pterois sphex</i>	Scorpaenidae	Scorpionfish	Piscivore	0	0	0
<i>Scorpaenopsis cacopsis</i>	Scorpaenidae	Scorpionfish	Piscivore	0	0	0
<i>Scorpaenopsis diabolus</i>	Scorpaenidae	Scorpionfish	Piscivore	0	0	0
<i>Scorpaenopsis</i> sp	Scorpaenidae	Scorpionfish	Piscivore	0	0	0
<i>Sebastapistes ballieui</i>	Scorpaenidae	Scorpionfish	Secondary	0	0	0
<i>Sebastapistes coniota</i>	Scorpaenidae	Scorpionfish	Secondary	0	0	0
<i>Taenianotus triacanthus</i>	Scorpaenidae	Scorpionfish	Piscivore	0	0	0
<i>Cephalopholis argus</i>	Serranidae	Grouper	Piscivore	1	0	1

Pseudanthias bicolor	Serranidae	Anthias	Planktivore	0	0	0
Pseudanthias thompsoni	Serranidae	Anthias	Planktivore	0	0	0
Pseudanthias ventralis hawaiiensis	Serranidae	Anthias	Planktivore	0	0	0
Sphyraena barracuda	Sphyraenidae	Barracuda	Piscivore	1	0	0
Sphyraena helleri	Sphyraenidae	Barracuda	Piscivore	0	0	0
Saurida flamma	Synodontidae	Lizardfishes	Piscivore	0	0	0
Saurida gracilis	Synodontidae	Lizardfishes	Piscivore	0	0	0
Synodontidae	Synodontidae	Lizardfishes	Piscivore	0	0	0
Synodus binotatus	Synodontidae	Lizardfishes	Piscivore	0	0	0
Synodus dermatogenys	Synodontidae	Lizardfishes	Piscivore	0	0	0
Synodus ulae	Synodontidae	Lizardfishes	Piscivore	0	0	0
Synodus variegatus	Synodontidae	Lizardfishes	Piscivore	0	0	0
Arothron hispidus	Tetraodontidae	Pufferfish	Secondary	0	0	0
Arothron meleagris	Tetraodontidae	Pufferfish	Secondary	0	0	0
Canthigaster amboinensis	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster coronata	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster epilampra	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster jactator	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster rivulata	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster solandri	Tetraodontidae	Pufferfish	Primary	0	0	0
Canthigaster valentini	Tetraodontidae	Pufferfish	Primary	0	0	0
Zanclus cornutus	Zanclidae	Moorish idol	Secondary	0	0	0

Appendix S1 References

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