Chapter 7 The impact of discards on scavengers in the sea: Suppl. Mat.

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Table 7.A Selected experimental field studies investigating the response of scavengers to marine carrion. Study information relevant to infer scavenging traits is listed under encounter probability (e.g. arrival times at the carrion, carrion quantities and background densities) and handling tactics (e.g. feeding duration, competitive abilities).

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Berghahn (1990)	Bait experiments (laboratory and field: traps)	- Shallow coastal zone of the Wadden Sea - Demersal	Flatfish or roundfish discards from shrimp trawlers (1 fish per trap)	*Crangon crangon*, *Liocarcinus spp.*, *Carcinus maenas*, *Asterias rubens*, *Buccinum undatum*	- Trap abundances 2 to 6-fold higher than background densities	- Crabs immediately fed on discards, while only mucus was available for shrimp before further decomposition - soft tissue was fully consumed within 8 hours
Hill and Wassenberg (1990); Wassenberg and Hill (1990)	Baited drop lines (field), sinking rate from tank experiments	- Coastal sites in Moreton Bay and Torres Strait, Australia - Surface, mesopelagic and demersal	Teleost, crustacean and cephalopod discards from prawn trawlers	Seabirds, sharks and dolphins, *Portunus spp.*, Ophiurids and nemipterid (teleost) fish	- Only discarded fish floated, the rest sank rapidly - Mesopelagic scavenging by sharks in Torres Strait but not in Moreton Bay - Scavenging at the seabed by sharks and teleosts rather than invertebrates	- Seabirds during the day, sharks and dolphins at night - Different scavenging behaviour in trawled vs non-trawled area suggested learning behaviour
Nickell and Moore (1991)	Baited trap experiment, small and large mesh sizes and funnel traps	- 13 and 113m depth in the Clyde Sea - Demersal	Salted *Gadus morhua*, salted *Pollachius virens*, fresh *Scyliorhinus canicula*	Dominant species: *Asterias rubens*, *Buccinum undatum*, *Ophiura albida*, *Pagurus bernhardus*, shrimp and crab spp; amphipod *Scopelocheirus hopei*, isopod *Natatolana borealis*	- higher species diversity at greater depths - max soaking time of 24 h - bottom current may explain catch variations	No information
Lapointe and Sainte-Marie (1992)	Time lapse photography and SCUBA diving	<15 m depth in Gul of Saint Lawrence - Demersal	800 g of *Clupea harengus*	*Buccinum undatum*	- max attraction over 20 m - detection by chemotaxis - whelks close to the bait benefited from faster current speed - crawling speed of 7-15 cm min^{-1}	- Negative correlation with number of predators at bait with time lags of up to 1 h; positive correlation with longer time lags, suggested due to facilitation of feeding by whelks - 24h post-feeding fastening
Kaiser and Spencer (1994)	Fish stomach analysis of BACI experiment following beam trawling	- Shallow east coast of Anglesey, Wales - Demersal	Carrion left in the trawled track	*Trigla* spp., *Merlangius merlangus*, *Scyliorhinus canicula*	No information	- increased stomach fullness of gurnards and whiting - plasticity in diet of dogfish, whiting and gurnards: shift towards scavenging amphipods and shrimp

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Priede et al. (1994); Priede and Merrett (1996)	Experiments using trawls, baited trap and an autonomous baited camera vehicle	- Between the Porcupine Bank and the Goban spur (480-4100 m depth) - Demersal	- damaged mackerel (*Scomber scombrus*)	Eel: *Synaphobranchus kaupi* Blue hake: *Antimora rostrata* Dogfish: *Centroscymnus coelolepis* and abyssal grenadier *Coryphaenoides armatus*; No attraction of *C. rupestris*	- first time of arrival correlated with abundance estimates from trawl data - fish arrival times: 2-40 min	- smaller eels consumed less bait - dogfish consumed more bait than eels
Evans et al. (1996)	Tank experiment (laboratory)	- Demersal	Invertebrates, flatfish and roundfish from beam trawling	*Buccinum undatum*	- max speed of 11 cm min^{-1}	- food preference for: *Liocarcinus depurator*, *Spatangus purpureus*, *Trisopterus minutus*, - *Pleuronectes platessa* was not eaten - return of appetite: 25-39h, carrion dependent - preference of energy-rich carrion
Kaiser and Spencer (1996)	Baited trap experiment	- Shallow east coast of Anglesey, Wales - Demersal	5 kg of freshly crushed scallops *Aequipecten opercularis*	*Limanda limanda*, *Merlangius merlangus*, *Pleuronectes platessa*, *Pagurus bernhardus*, *Asterias rubens*, *Buccinum undatum*, *Liocarcinus* spp., *Ophiura* spp.	- arrival times: plaice and whiting (20 min) > hermit crabs (40 min) > starfish (50 min) > whelk (110 min) - highest abundances between 8 and 14 h after deployment - high background densities of starfish and ophiurids	- no correlation between tides and diurnal variation for hermit crabs and starfish - highest abundance of whiting at sunset, of whelks with low water between sunset and sunrise - scavenger succession over time
Kaiser et al. (1996)	Experimental ghost fishing monitored by scuba divers over 238 days	- 12-14 m in SW Wales - Demersal	Gill and trammel net catches	Dominating species: *Maja squinado* and *Scyliorhinus canicula*; followed by crabs, sharks and gadoids	- crustaceans catches increased over time with decreasing net efficiencies, while fish catches decreased	No information
Moore and Howarth (1996)	Baited trap experiment (field and laboratory)	- <10m depth in the Clyde Sea - Demersal	- salted mackerel - treatments with freshly killed *C. maenas* - tinned tuna (lab)	*Carcinus maenas*, *Necora puber*, *Pagurus bernhardus*, *Buccinum undatum*, *Asterias rubens*	No information	- reduced scavenging response of *C. maenas* in presence of crushed conspecifics and increased of *A. rubens* - hunger overrides mortality risk in *C. maenas*

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Erzini et al. (1997)	Experimental ghost fishing monitored by scuba divers over 120 days	- 15-18 m along the Portuguese coast - Demersal	Trammel net catches	Species belonging to 23 families and 4 main groups: molluscs, gastropods, crustaceans and bony fish, dominated by *Sparidae* and *Labridae*	- range of species include scavenger and non-scavenging mobile species - Scavenging by octopuses, cuttlefish, moray eels, conger eels, and *Labridae* - crustaceans catches increased over time with decreasing net efficiencies	- Decaying dogfish attracted large numbers of invertebrate scavengers
Ramsay et al. (1997a); Ramsay et al. (1997b)	Baited time lapse camera and trap experiments	- Shallow east coast of Anglesey, Wales - Demersal	Fish and invertebrate discards from beam trawlers	*Pagurus* spp., *Asterias rubens*, *Buccinum undatum*, *Liocarcinus* spp., *Cancer pagurus*, *Ophiura* spp., *Callionymus lyra*, Ampihpods *Tmetonyx similis*, *Tryphosa nana*, *Scopelocheirus hopei*, isopod *Natatolana borealis*	- Attracted numbers only partially related to population density, - mobility-depending arrival (hermit crabs and crabs > starfish > whelks)	- increased competition of hermit crabs with increasing density and decreasing prey size - sequence of prey disruption: from soft tissue (eyes, flesh) to bones, skin - nocturnal feeding by *Liocarcinus* spp, but continuous feeding by hermit crabs, starfish and whelks - small (<3 kg) carrion biomass not consumed within 72 h (consumption rate of 6 g h^{-1}) - carrion clearance rate related to scavenger species at the bait
Jones et al. (1998)	Baited time lapse video and trap experiment	- 4000-4800 m depth in NE Atlantic - Demersal	- cetacean carcasses	Grenadier (*C. armatus*), ophidiids, zoarciids, liparids; *Paralicella* spp., *Orchomene* spp.; occasional visits of crabs, ophiuroids and gastropods	- *C. Armatus* and lyssianid amphipods arrived within 70 min - arrival from downstream, but no tidal effect on abundances of *C. armatus*	- grenadiers consumed most during first 18 h, and were then replaced by zoarcids and liparids with residence times of hours to days at the carrion - succession of amphipod spp. - consumption rates: 0.05-4 kg h^{-1} - fish apparently consumed amphipods rather than carrion
Olaso et al. (1998)	Stomach content analysis and comparison with discarded sizes and state of digestion	- Southern Bay of Biscay - Demersal	- Fish discards from trawlers	*Scyliorhinus canicula*	- Foraging of recently discarded dogfish is suggested	- wide feeding niche: echinoderms, polychaetes, molluscs, sipunculids, tunicates, crustaceans, with decapods and fish as their main food - wider niche of larger individuals suggested beneficial for discard consumption

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Collins et al. (1999a)	Experiments using an autonomous baited camera vehicle	- 2500m and 4800 m, Porcupine Seabight and Abyssal plain - Demersal	- a single (500 g) mackerel (*Scomber scombrus*)	4800 m: *C. armatus*, and occasionally eel *Histiobranchus bathybius*; 2500 m: blue hake (*A. rostrata*) and occasionally grenadier, ophidiids, ray, shark and eel species	- *C. armatus*: arrival within 30 min; mean swimming speed: 0.17 body length (BL) m s^{-1} - *A. rostrata*: arrival within 15 min; mean swimming speed: 0.39 BL m s^{-1} (similar to Atlantic cod)	- *A. rostrata*: bait consumption < 2 h
Collins et al. (1999b)	Experiments using an autonomous baited camera vehicle	- 900-1750 m along the Patagonian slope - Demersal	- 800 g squid or 10 kg toothfish	hagfish (*Myxine* spp.), zoarcids; crabs (*Lithotidae*), *A. rostrata* and amphipods	- Local but patchy high abundance of hagfish resulted in dominant scavenging at 900-1100 m - Fast arrival times of hagfish (max numbers at 200 min) with high swimming speeds of > 25 m s^{-1} - high aggregation number of hagfish	- Attraction but no consumption by Patagonian toothfish (*Dissostichus eleginoides*), although caught by longliners using squid bait - consumption rate by hagfish: 100-200 g h^{-1}; feeding first on soft tissue, entering bait through cavities
Laptikhovsky and Fetisov (1999)	Stomach content analysis: body parts were considered as fishery discards	- Patagonian shelf and slope (105-710 m) - Demersal	- Squid discards (*Illex argentinus*) from trawlers and jig-fishery	Common hake *Merluccius hubbsi*, southern cod, *Notothenia (Patagonotothen) ramsayi*, and grenadier, *Macrourus holotrachys*	- scavenging suggested from the seabed rather than the mesopelagic zone	- stomachs with squid discards did not contain prey, suggesting a preference for scavenging of hake
Tamburri and Barry (1999)	Bait experiments (laboratory)	- 300 m depth in Monterey Bay - Demersal	- solution of dead and live rockfish (*Sebastes miniatus*)	Pacific hagfish (*Eptatretus stouti*), gastropod (*Neptunea amianta*) and amphipod (*Orchomene obtusus*)	- animals with low mobility (hagfish and amphipod) have lower threshold for initiation of active search behaviour than more mobile gastropod and therefor responded faster (within seconds vs hours) - *O. obtusus* showed a chemically induced geotaxic or thigmotaxic search behaviour (orientation relative to gravity, reps. along a surface)	- no response to live prey - hagfish defended carrion by releasing slime when feeding - decreased activity when food deprived, survival without food: gastropod (>12 months), hagfish (>9 months), amphipod (4-6 weeks) - hagfish slime was effective in repelling *N. amianta* but *O. obtusus* also fed on the hagfish slime

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Groenewold (2000); Groenewold and Fonds (2000)	Bait experiments using various traps and funnel traps	- shallow (10-50 m) locations in the southern North Sea - Demersal	Fish, crustaceans, molluscs, echinoderms, polychaetes	*Liocarcinus holsatus*, *Pagurus bernhardus*, *Asterias rubens*, ophiurids, and small gadoids, as well as shrimp, ophiurids and crabs (*Cancer pagurus*); *Scopelocheirus hopei*, *Natatolana borealis*, *Tryphosa nana*	- Attraction areas for small gadoids (1200 m^2), *Natatolana*, hermit crabs, and swimming crabs (>100 m^2), whelks, dab, shrimp, and brittle stars (10- 100 m^2), gobies, solenette, sea urchins, and sandstars (<10m^2) - clearance rates varied between 0.9 and 4.5 g d^{-1} with water temperature being the main determinant.	- bait preferences by species: shrimp, whelks, starfish and *Tryphosa nana* preferred molluscs (and crustaceans), *Pagurus* and *Liocarcinus* also selected fish carrion. Gadoids did not show a preferences. Amphipods were highly specialised; occurred in high numbers - fish decay was 7.5d (15°C); 17d (5°C) - consumption rate: 3.8 g h^{-1} (AFDW)
Veale et al. (2000)	Baited time lapse camera	- shallow (25m), 600 m offshore in the Irish Sea - Demersal	Benthic discards (starfish, whelks, scallops, urchins) with various damage levels from dredge fisheries	Top 10 occurrence: *Asterias rubens*., *Pagurus* spp, *Liocarcinus* spp., *Astropecten irregularis*, *Callionymus lyra*, flatfish, *Cancer pagurus*, *Porania pulvillus*, *Agonus cataphractus*	- Directional relationship between the water current and arrival of starfish (related to unnatural high densities of scallops, independent of damage) - abundance increased between 40 and 200 times compared to the background abundance - scavengers can discern prey species from odour plumes	- light avoidance behaviour by *Cancer pagurus* and *Astropecten irregularis* - fewer scavengers take longer to consume a bait of a given size: handling time could persisted during time of monitoring (up to 4 days) - Differential reactions by species recorded: some aggregated, some not - bait preference: scallops
Hill and Wassenberg (2000)	- Discarding experiment using RV under commercial practices - baited video camera	- Shallow (15-45 m) coastal waters in the northern Great Barrier Reef - Surface and demersal	Discards from prawn trawlers, only comprising one or two fish in the baited video camera experiment	- Seabirds, sharks and dolphins at the surface - Sharks and teleost fish at the seabed, squid and crabs occasionally	- > 80 % (by weight) of discards sank - 33% and 45% (by numbers) of the fish resp. cephalopod discards floated	- diurnal scavenging: occasionally by dolphins during night time, birds, dolphins and sharks during day time - rapid removal of the entire carrion by sharks, followed by fish and crabs picking at the bait
Bergmann et al. (2002)	Experiments using baited traps (incl. funnel trap), time lapse video camera and SCUBA diving	- 45 m depth in the Clyde Sea - Demersal	Damaged crustacean and echinoderm discards from *Nephrops* trawlers	*Asterias rubens*, *Pagurus bernhardus*, brachyurans (particularly *Liocarcinus* spp.), gastropods *Neptunea antiqua*, *Buccinum undatum*, *Nephrops* spp.; *Pariambus typicus*, Amphipods: *Tryphosa nana*, *Scopelocheirus hopei*	- sinking rates: heavy shells (26-36 cm s^{-1}) > soft bodied (5-9 cm s^{-1}); live (34 cm s^{-1}) > dead lobsters (11 cm s^{-1}) - species diversity and abundances dependent on environment	- 108 organisms were consumed within 28 h and 48 h duration - bait preference: gadoid fish > soft tissue of benthos > exoskeleton - Fast-moving brachyurans typically arrived first, slow-moving gastropods and echinoderms last - starfish and whelks preference for crustaceans, hermit crabs for starfish

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Bozzano and Sardá (2002)	Baited time lapse video camera experiment	- 100-300m depth in NW Mediterranean - Demersal	Pelagic and demersal fish and cephalopod discards (350-1500 g) from trawlers	Echinoderms (ophiurids), cephalopods, decapod crustaceans (brachyurans, *Nephrops* spp.), and nine fish species with a benthic snake eel being most abundant, isopod *Natatolana borealis*, amphipod *Schopelocheirus hopei*	- arrival times tended to be shorter on deployments on the slope and on the shelf at night - arrival from up-current, suggesting olfactory attraction - arrival time between 10 min and 6 h, short for snake eel, isopods and amphipods	- 48-64% bait consumption within 12h (48-62 g h^{-1}), leaving bones after 24 h - Pelagic species usually did not remain near the carrion for long, benthic species (usually crabs) tended to stay at the bait longer and in small groups of not more than two or three individuals, feeding on it repeatedly - long (>10 h) residence times for eel
Olaso et al. (2002)	Stomach content analysis before and after discarding biota uncommon to the natural environment	- 90 m depth Southern Bay of Biscay - Demersal	50 kg of fish (*Micromesistius poutassou*) and 150 kg of invertebrate (*Munida* spp.) discards	*Scyliorhinus canicula*, *Pagellus bogaraveo*, *Trachinus draco*, *Pagellus acarne*, *Raja montagui*, *Leucoraja naevus* and portunid crabs and squid	- increased abundance and diversity of *Pagellus* spp., portunid crabs and the squid *Loligo forbesi* following fishing disturbance, but no difference of others	- discarded fish was recovered in fish stomachs, but not invertebrates - 3 to 10-fold increase in stomach biomass, depending on the species
Yau et al. (2002)	Experiments using an autonomous baited camera vehicle	- 625-1519m slope in SW Atlantic - Demersal	- 800 g squid and sardines	Dominant species: *Lithodidae* crabs and toothfish, next to shrimp and zoarcids	- toothfish: (slow) labriform swimming at speed of 0.22 BL s^{-1}	- bait consumption within 4-8 h, equalling ~100 g h^{-1}
Erzini et al. (2003)	Experimental fishing with vertical longlines and electric reels	- 30-500m depth along south coast of Portugal - Mesopelagic	Pelagic discards (*Scomber japonicus*, *Sardina pilchardus*)	- Pelagic fish: *Scomber japonicas* - pelagic sharks - demersal fish like *Conger conger*	- Sinking rates: gastropod (19 m min^{-1}) > fish (3 m min^{-1} to 10 m min^{-1}) - scavenging rate decreased significantly with increasing depth - soak time between ~1 and 3.3 h	No information
Jenkins et al. (2004)	Baited time lapse camera and dive surveys for background abundances	- shallow (25m), 600 m offshore in the Irish Sea - Demersal	Scallop discards with various damage levels from dredge fisheries	Brittlestar *Ophiocomina nigra*, *Cancer pagurus*, spider crabs, *Callionymus lyra*, gadoids and flatfish	- scavenger abundance only partly related to background densities - increase in abundance during the first 24 h, following continuous aggregation at lower levels until end of experiment (96 h)	- lightly damaged scallops were first decimated by large crabs, followed by scavenging of plaice and ophiurids - highly damaged scallops were attractive to several species

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Lee et al. (2004)	Bait experiments (laboratory and field)	Lower intertidal zone	Dead carrion of molluscs, polychaetes (and fish)	Polychaete *(Phyllodoce mucosa*), other spp: *Carcinus maenus*, *Crangon crangon*	Olfactory prey detection; mucus secretion for conspecifics to follow, i.e. chemical cues in thin water films	Predator avoidance through mucus excretion, nocturnal eat-and-run behaviour at low tides in cold temperatures (avoiding crustaceans); consumes 16-29% of its body weight
Castro et al. (2005)	Baited trap experiments	- 200-400m depth, south coast of Portugal - Demersal	Fish and squid discards from crustacean trawl fishery	*Conger conger*, decapod crustaceans, ophiurids and Asteroidea, Amphipod *Scopelocheirus hopei* and isopod *Natatolana borealis*	- consumption started within 1 h, followed by gradual increasing consumption over 24 h	- consumption varies widely within immersion times and traps - succession in consumption: intestines > muscle tissue > skin > skeleton
Catchpole et al. (2006)	Baited trap experiments (incl funnel traps), stomach content analysis	- Traps from fish quay wall and 50-90m depth in North Sea - Demersal	Benthic or fish discards from *Nephrops* trawlers	*Myxine glutinosa*, *Pagurus bernhardus*, gastropods, *A. rubens*, brachyurans; No consumption by gadoids, gurnards, flatfish or rays	- Catches were dominated by *Carcinus maenas* in fish quay experiments and by hagfish in offshore trials (up to aggregated number of 85 by trap)	- bait consumption within 2 h in 80 % of the deployments
Luque et al. (2006)	Encounter analysis	- North Sea - Surface	Discards from mackerel fishery	*Orcinus orca* (killer whales) during mackerel fishery; seals during herring fishery	- vessels were approached during retrieval of the net, as fish were being pumped aboard	- Feeding on spilled or discarded fish - Tail-slapping and blast of bubbles observed in 17 out of 19 encounters
Svane et al. (2008)	Baited experiments using time lapse video camera, funnel traps and laboratory	- Shallow (10-40 m) prawn fishery in Spencer Gulf, (Australia) - Demersal, mid-water	Discards of prawn fishery: squid and fish (red mullet, leatherjacket, sand trevally)	- no mid-water scavengers (30 min soak time) - Degens leatherjacket during the day, ispods and amphipods (*Natatolana woodjonesi*, *N. viridis*) during the night; portunid crabs, Port Jackson sharks and smooth stingray (day and night)	No information	- diurnal differences in scavengers - consumption rate: 10 g wet weight min^{-1} with a mean consumption per individual per 30 min observation of 25 g (sharks), 0.6 g (amphipods), 1.5 g groups of Degens leatherjacket, <0.05 g (blue crabs; 165 g h^{-1} (total) - consumption rate increased over time for leatherjackets and crabs, due to feeding facilitation
Baeta et al. (2009)	Experimental ghost fishing monitored by scuba divers over 285 days	- 10-30 m along the Portuguese coast - Demersal	Trammel net catches	3 crustacean, 1 gastropod, 2 cephalopods and > 28 bony fish species, dominated by *Solea* spp., *Scomber japonicus*, *Labrus* spp. and *Maja squinado*	- range of species include scavenger and non-scavenging mobile species - catches were habitat dependent - crustaceans catches increased over time with decreasing net efficiencies	No information

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Gilkinson et al. (2005); Harris et al. (2009)	Stomach content analysis of BACI experiment using dredging-only, discarding-only, and both	- 60-70 m depth in NW Atlantic - Demersal	Discards from experimental hydraulic dredging	*Ophiura sarsii*	- Active foraging for abundant amphipod *Ampelisca* spp. - Predation by ophiurids, a trophic generalist, was stimulated on mutual attraction of lyssianid amhipods (particularly poor swimming species) and ophiurids to carrion	- Wide feeding niche: 31 macrobenthic epifaunal and infaunal taxa drawn from four phyla, dominated by Ampeliscidae and Lysianassidae amphipods
Glover et al. (2010)	Baited video experiments	- 6-30 m depth in Skagerrak - Demersal	Harbour porpoise; fin bone of minke whale	Crab spp (*Hyas araneus*, *Cancer Pagurus*, *Carcinus maenas*, hermit crabs, starfish species, nassarid whelk, gadoids, scombrids, eelpout, wrasse, flounder and *Phoca vitulina*	- highest number of scavengers after 5-15 days, when a bacterial mat began to proliferate	- clear nocturnal cycle, although fish were generally not feeding, but attracted by light - slow succession of skin removal, followed by flesh and bones
Reeve et al. (2010)	Baited (field and laboratory) experiments	- 6-10 m depth in the Clyde Sea - Demersal	Dead, damaged crabs, scallops, mussel, herring	Dominant taxa in traps: brachyurans; *Buccinum undatum* (lab)	- attraction speed of whelks: 0.9 - 4.1 cm min^{-1}	- whelk responded to all damaged carrion types except for damaged scallops
Martinez et al. (2011)	- experiments to estimate fish abundance	- 100 m depth in the northern North Sea - Demersal	- 500 g fresh mackerel (*Scomber scombricus*)	Hagfish (most abundant) > flatfish mainly *Limanda limanda* > *Merlangius merlangus* > *Melanogrammus aeglefinus*	- non-linear relationship between bottom current speed and abundance of hagfish (poor swimmers when currents exceed threshold); no relationship for flatfish, whiting or haddock; arrival times < 2h	- lower number at night for whiting and flatfish; although no diurnal effect of light level on first time of arrival
Ansmann et al. (2012)	Encounter and social network analysis before-after reduced trawling effort	- Coastal sites in Moreton Bay - Surface	Discards from prawn trawlers	Trawler versus non-trawler dolphins (*Tursiops aduncus*)	- max 2h duration of observations - more and stronger associations between (clustering) individuals	- observations of daylight association - trawling changes the tradeoff between costs and benefits of group living versus competition
Cronin et al. (2012); Cosgrove et al. (2015)	Spatial overlap analysis of GPS-tagged seals and fishery, and monitoring of bites on catches	- west coast of Ireland, mean depth: 39-152 m - Demersal	Catches of whitefish gill net and tangle net fisheries	Grey and harbour seals; *Conger conger* and elasmobranch depredation was considered minimal	- low spatial overlap of female grey seals *Halichoerus grypus* with fishery, indicating a lacking population effect	- longer soak times increased seal depredation in shallow pollack fishery, but not in deeper hake fishery

Reference	Techniques	Location	Carrion type	Scavenger taxa	Encounter probability	Handling tactics
Davenport et al. (2016)	Baited time lapse video experiment	- west of Ireland, depth: 1-18 m - Demersal	1 whole mackerel (*Scomber scombrus*)	Direct feeders: crabs (*Carcinus maenas*, *Liocarcinus* spp., *Cancer pagurus*) and flatfish, *Scyliorhinus canicula*; indirect feeders: gobies and whelks (*Nassarius* spp.)	- arrival times: swimming forms (sec/min) > fast-moving, crawling portunid crabs (min) > lrage crabs, starfish, catsharks (min/hours)	- large scavenger consumed most - feeding time: crabs > fish - competition: crab presence depressed fish feeding, little aggression - crabs and fish were feeding directly, other indirectly on scraps
Quaggiotto (2016)	Baited time lapse video experiment	- 6-10 m depth in the Clyde Sea - Demersal	grey seal (*Halichoerus grypus*) pup	Dominant species: decapod crabs (*Portunidae*, *Cancer* spp., *Liocarcinus* spp., *Pagurus* spp.), Asteroidae and fish: *Pollachius* spp., *Limanda limanda*, perciformes	No information	- Max number of fish during the day, crabs during the night, no pattern for starfish - consumption rate: 0.07 kg h^{-1} - Feeding preference: eyes, soft tissue - Presence of fish and Asteroidae higher during in first two weeks than after one month; no differences for crabs
Elliott et al. (2017)	Baited stereo time lapse video experiment	- 4- 47 m depth in the Clyde Sea - Demersal	500 g damaged mackerel (*S. scombrus*)	*G. morhua*, *M. merlangus*, *M. aeglefinus*, Pleuronecti-formes, gobies and decapod crab species	- significant differences in max abundances by substratum, depth, wave fetch and epibenthic and demersal fauna diversity	- observations during daylight

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