Supplementary Table 3. Literature review discussing links between cold seeps and commercial fisheries.
Literature are separated according to Ocean/Sea and characterized according to whether the paper discussed i) a hypothesis regarding cold seeps supporting commercial fisheries, ii) the spatial overlap of cold seeps and commercially fisheries and (or) iii) the presence of commercially important species at cold seeps.

Ocean/Sea	Location	Characterization of Reference	Summary of Reference	Reference
Arctic	Svalbard (W. Barents Sea)	Commercially Important Species Present	A number of commercially important species were observed at cold seeps within the western Barents Sea, including: Atlantic cod (*Gadus morhua*), the northern shrimp (*Pandalus borealis*), haddock (*Melanogrammus aeglefinus*) and Greenland halibut (*Hippoglossoides platessoides*). Atlantic cod and the northern shrimp were particularly abundant at the seep site. Snow crab (*Chionoecetes opilio*), a new species to the area, was also observed grazing on bacterial mats at the seep site.	(Sen et al., 2018)
North Sea	Norwegian Trench and wider North Sea	Hypothesis	Within the Skandi Ocean, pockmarks with carbonate rock, mollusks, crabs and starfish were observed. Pockmarks housing an abundance of shrimp were also observed in the Norwegian sector of the North Sea, covering an area of ~100m across at a depth of 75m. Knowing that the Norwegian Trench is heavily fished, the authors question whether cold seeps could support the North Sea fish stocks. The potential for chemosynthetic productivity from methane seeps to support North Sea fish stocks was later acknowledged but the need for further research was expressed.	(Hovland et al., 1985; Judd and Hovland, 1989)

North Atlantic	Europe	Hypothesis	Authors hypothesize that cold seeps, particularly areas with high methane flux (e.g., mud volcanoes), may be important breeding grounds for some commercially important fish populations on the continental margins of Europe.	(Berndt, 2005)
	Canada	Hypothesis	Authors hypothesize that in areas where there are numerous cold seeps, chemosynthetic productivity may substantially contribute to benthic productivity and may be reflected in commercial fisheries on the Labrador Shelf, the Grand Banks of Newfoundland, the Scotian Shelf and on Georges Bank, which is home to valuable scallop and ground-fish fisheries.	(Levy and Lee, 1988)
	France (Bay of Biscay)	Spatial Overlap	The Aquitaine Shelf is known to host numerous active cold seeps and is an important area for the anchovy fishery.	(Dupré et al., 2014)
	United States (Mid-Atlantic Bight)	Spatial Overlap	Hudson Canyon is known for containing areas of active methane seepage. Hudson Canyon is a key spot for commercial and recreational fisheries including: silver and red hake, tilefish, long fin squid, lobster and deep-sea red crabs.	(Rona et al., 2015)
	Mauritania	Spatial Overlap	Off the coast of Banc d'Arguin, the presence of cold seeps is presumed following the collection of seep taxa from commercial fishing vessels that were trawling for deep-water shrimp (e.g., *Aristeomorpha foliacea, Plesiopenaeus edwardsianus*, *Aristeus antennatus*, and *Acanthephyra* sp.). Seep taxa included: *Bathymodiolus mauritanicus* and five species of vesicomyid bivalves (*Waisiuconcha haeckeli, Isorropodon bigoti, Isorropodon curtum*, *Callogonia mauritanica*, *Elenaconcha guiness*). A population of *Elenaconcha guiness* was discovered at cold seeps within the nearby Gulf of Guinea (von Cosel and Olu, 2009).	(von Cosel, 2002; von Cosel et al., 2001)

	Spain (Gulf of Cádiz)	Commercially Important Species Present	Within *El Laberinto* (an area containing three mud volcanoes at depths ranging between 500 and 600m), the soft-bottom community adjacent to the mud volcanoes includes the commercially important Norway lobster (*Nephrops norvegicus*), rose shrimp (*Parapenaeus longirostris*), European hake (*Merluccius merluccius*), black-bellied angler (*Lophius budegassa*) and blue whiting (*Micromesistius poutassou*). In addition, fishing activity around eight mud volcanoes within the Gulf of Cádiz is described by Sitjà et al. (2019).	(Rueda et al., 2012; Sitjà et al., 2019)
Mediterranean	Gulf of Lyon / Lions	Spatial Overlap & Commercially Important Species Present	The continental slope within the Gulf of Lyon contains numerous submarine canyons with cold seeps, providing a refuge for several commercially important species that are thought to spawn within the area, including the European hake (*Merluccius merluccius*), monkfish (*Lophius* spp.), as well as blue and red shrimp (*A. antennatus*). Some fishing activity is present in the area (i.e., trawling, gillnets and long-line fishing for hake).	(De Juan and Lleonart, 2010)
North Pacific	United States (Alaska)	Commercially Important Species Present	At Snakehead Bank (south of Kodiak Island, Alaska), rockfishes were associated with carbonate pavements in the vicinity of active bubbling (Figure 7). The authors note that more observations are needed to determine the importance of carbonate pavements as rockfish habitat.	(Jones et al., 2012)
	United States (Washington)	Spatial Overlap & Commercially Important Species Present	In close proximity to the methane seeps in Grays Canyon aggregations of glass sponges provide habitat for commercially important species, including multiple species of rockfish and the spot prawn *Pandalus platyceros*. Images appear to show sponges on authigenic carbonate (e.g., Figure 5C). Grays Canyon is one of the primary spot-prawn fishing grounds.	(Powell et al., 2018)

	United States (California)	Commercially Important Species Present	Commercially important species were observed living near the Del Mar seep (San Diego Trough), including: longspine thornyhead (*Sebastolobus altivelis*), Pacific dover sole (*Microstomus pacificus*) and lithodid crabs (*Paralomis verrilli*). *S. altivelis* appeared to aggregate near the most active seep sites, with densities double that of those away from the seep.	(Grupe et al., 2015)
	United States (California)	Commercially Important Species Present	The commercially important sablefish (*Anoplopoma fimbria*), which is marketed as "black cod", was observed swarming around the Del Mar seep (San Diego Trough). Thornyheads were observed in high densities around carbonate mounds on the Palos Verdes margin located off Los Angeles. Dover sole and thornyheads were also observed on or near the Point Dume seep.	(Levin et al., 2016b)
	Canada	Commercially Important Species Present	Dense aggregations of the commercially important tanner crab (*Chionoecetes tanneri*) were found on Clayoquot Slope (British Columbia) in 2012, with crabs sifting through sediment in actively bubbling regions and feeding on or around microbial mats. In 2014, dense aggregations were also observed around the nearby Barkley Canyon seep. Molecular gut content analysis and compound specific stable isotope analysis shows that crabs sampled from Clayoquot Slope directly ingested seep associated bacteria and archaea. Photosynthetically derived carbon was the dominant source of nutrition, but the seep site provided some trophic support.	(Seabrook et al., 2019)
	Costa Rica	Commercially Important Species Present	Lithodid crabs (believed to be *P. diomedeae*; H. Niemann pers. comm.) are the dominant consumer at an active mud volcano located on the Costa Rica subduction zone. Stomach content and stable isotope analysis reveal that chemosynthetic bacterial mats are an important component of the crabs diet, with additional nutrition provided by seep macro and megafauna, as well as	(Niemann et al., 2013)

			photosynthetically derived carbon. According to Levin et al. (2016a) this is a commercially important species, but the presence of a fishery for *P. diomedeae* could not be confirmed.	
South Pacific	Chile	Spatial Overlap	On the bathyal slope of the Chile-Peru Trench two specimens of a chemosymbiotic clam (identified as *Calyptogena* [*Ectenagena*] *australis*) were collected by bottom long-liners operating off the port of Lebu at ~1400m depth.	(Stuardo and Valdovinos, 1988)
	Chile	Commercially Important Species Present	The commercially important Patagonian toothfish (*Dissostichus eleginoides*) is known to occupy the Concepción methane seep area, with greater abundances at the seep site than at control sites. Carbon isotope values suggested some nutritional input from lighter carbon sources (i.e., chemosynthetically derived carbon) but this was not supported by high nitrogen isotope values. It is suggested that the seep area acts as a foraging ground, attracting *D. eleginoides* due to the greater prey availability and habitat heterogeneity.	(Sellanes et al., 2008, 2012)
	New Zealand	Spatial Overlap	Seep fauna were collected by trawlers, providing the first evidence of seep sites on the Hikurangi margin. Seep fauna included: 5 species of vesicomyid clams, 1 species of thyasirid clam, a live *Bathymodiolus tangaroa* specimen, 8 species of gastropod and 2 species of provannid snails. Since 1989 the margin has been subject to bottom trawling for orange roughy (*Hoplostethus atlanticus*) and oreo (*Pseudocyttus maculates*). Trawling impacts at seep sites were observed in the Rock Garden region (i.e., Uruti Ridge, the Opouawe Bank region, Omakere Ridge and Ritchie Ridge).	(Baco et al., 2010; Bowden et al., 2013)