Towards EU Jellyfisheries

D3.1 Fishery guidelines. Description of improved methodology for the capture and transport of JF biomass.

sustainability

MDPI

Review

Jellyfishing in Europe: current status, knowledge gaps and future directions towards a sustainable practice

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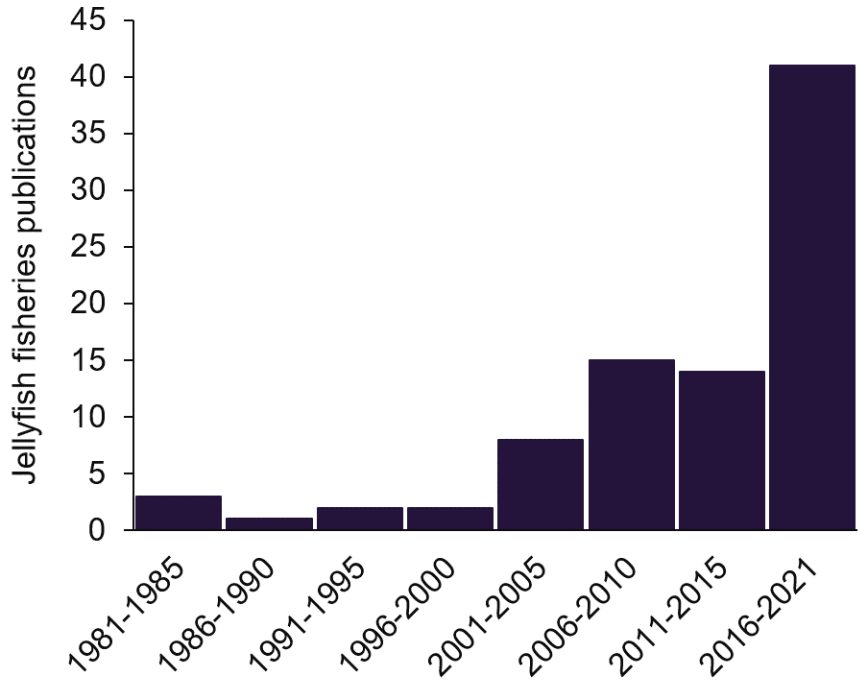
(**A**) benthic trawl for *Periphylla periphylla* and (**B**) hand net for *Rhizostoma pulmo* (Photo credit: **A**: Nicole Aberle-Malzahn, **B**: Bor Krajn).

Go Jelly

- Google Scholar search words: “jellyfish fisheries" , “jellyfish fishing" , “jellyfish catch"
- 89 out of 648 publications shortlisted

- Literature review showed a recent surge in our spatial and temporal knowledge.
- China is the world leader. Recent expansion to Latin America. What about Europe?

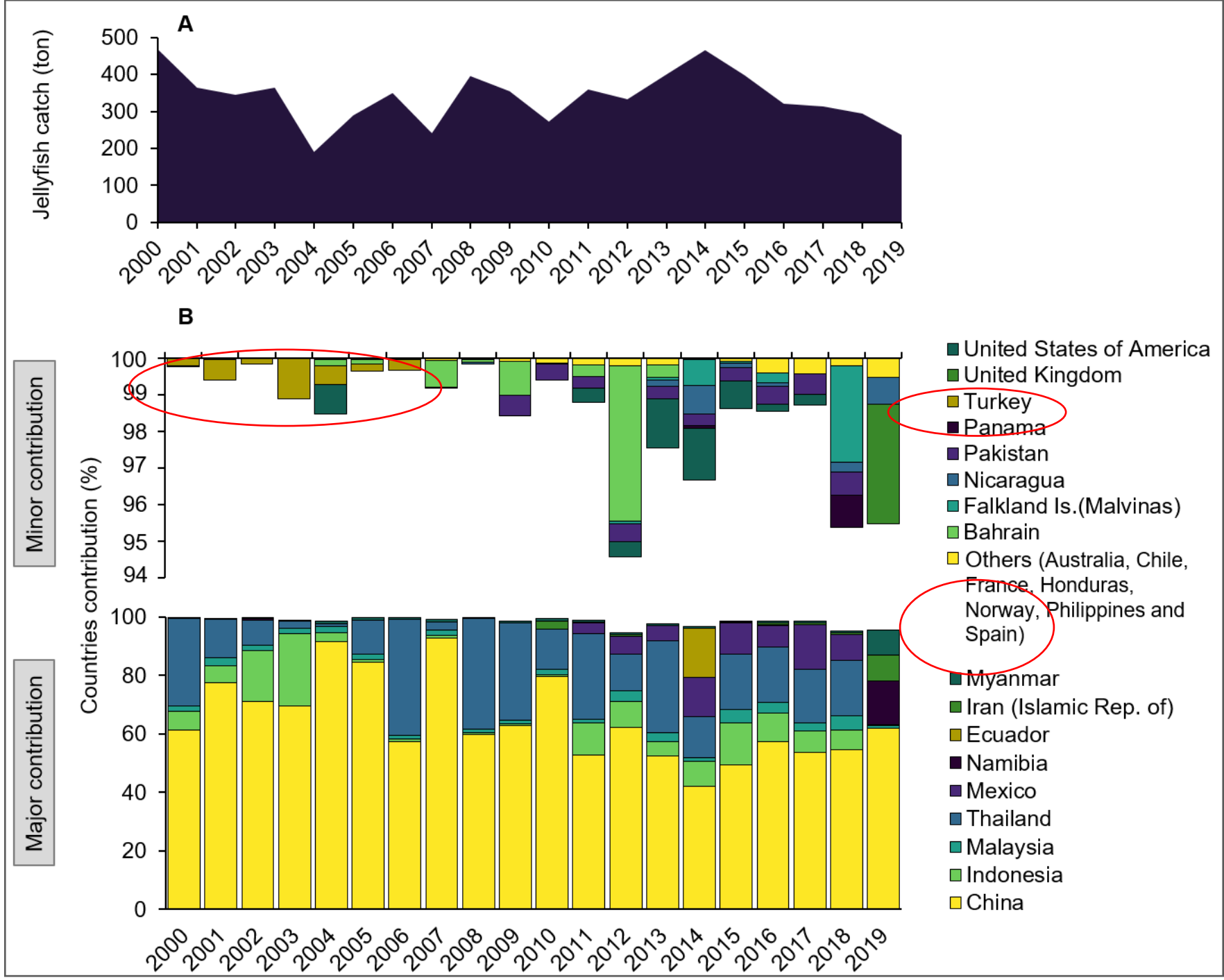


LITERATURE – WHEN?

PRODUCTION – WHERE?

Figure 3. Global annual jellyfish catches from 2000 to 2019 in thousands of tons (A) and catch proportion by country (B) as reported to FAO.

Note that catches from **India** (mainly *Crambionella* spp.), **Japan** (*R. esculentum*) **Vietnam** and from several other countries are not included as they are reported to FAO under miscellaneous invertebrates. Source: FAO (2021).

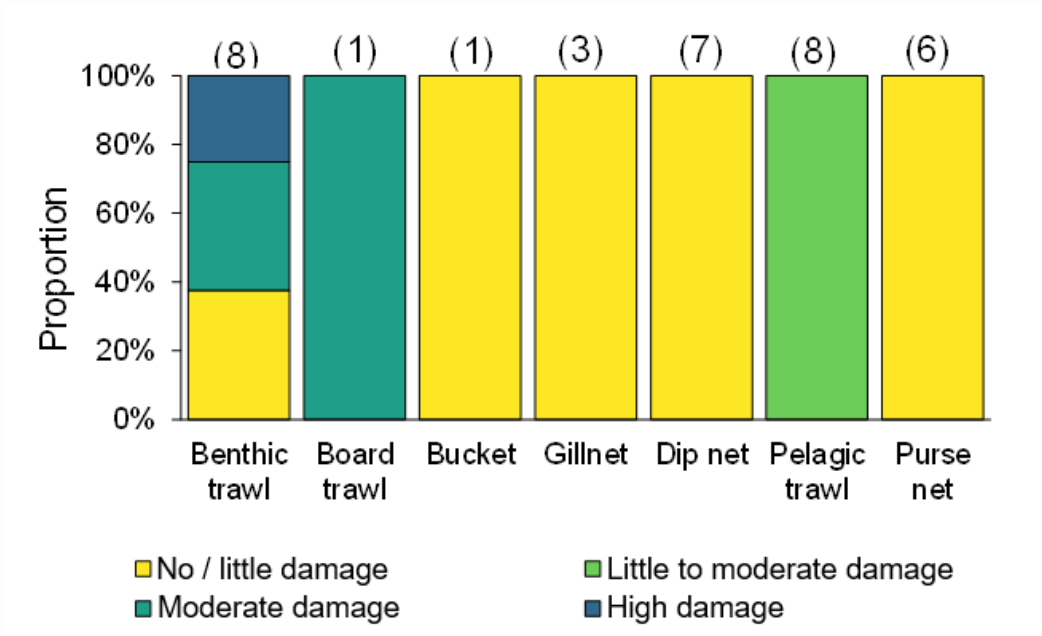


Traditional jellyfishing methods employ set-nets, driftnets, hand-nets and scoop-nets utilizing small crafts or beach-seines

* Labor intensive, hence, provide jobs, but offer little job security to fishers
* Economically inefficient yet entail low bycatch and higher jellyfish integrity

A fisherman collects a jellyfish at sea using a small hand net, after jellyfish concentration in a surface net structure (**A**). Animals are directly transferred to plastic boxes or buckets and often kept individually (**B**). Many artisanal fishers use traditional and rather primitive boats (**C**) for the capture of jellyfish. Source: J. Javidpour.

Damage assessment for jellyfish extracted in different fishing methods by the GoJelly Project



Novel vs. Traditional fishing methods

Main 14 jellyfish species in EU waters that show potential for a commercial fishery.
(*) Non-Indigenous Species

Developing products and markets is key to developing an EU jellyfishery

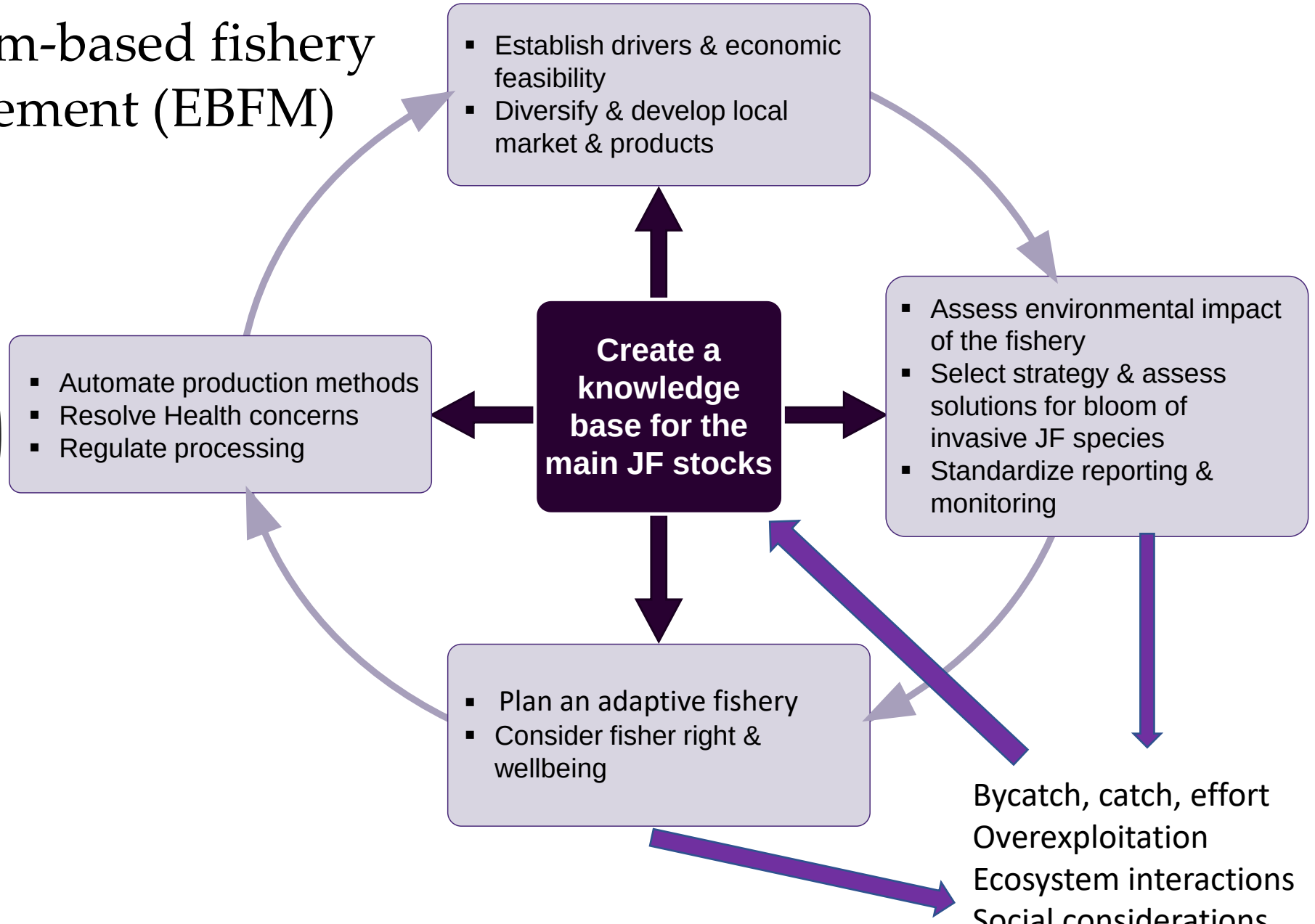
Species	Distribution in European Seas and ecoregions (Following Spalding et al. 2007)	Explored uses	Reference for potential fisheries development in European Seas
Aurelia spp	Baltic Sea, North Sea, Celtic Seas, Bay of Biscay and Iberia, Mediterranean Sea, Black Sea Macaronesia: 24-36, 44	Food, Animal feed, Pharmaceuticals, fertilizer, Bioactive molecules, Microplastic filter	[0, 24, 31, 56, 75, 76, Present study]
Catostylus tagi	Bay of Biscay and Iberia (Tagus estuary) Macaronesia: 27	Food, Pharmaceuticals, Animal feed	[, 47, 77, 78, Present study]
Chrysaora hysoscella	Baltic Sea, North Sea, Celtic Seas, Bay of Biscay and Iberia, Mediterranean Sea, Macaronesia	Food, Pharmaceuticals	[75, 79-81]
Cotylorhiza tuberculata	Mediterranean Sea: 24-36, 44	Food, Pharmaceuticals, Animal feed	[10, 24, 82, Present study]
Cyanea capillata	Baltic Sea, North Sea, Celtic Seas, Bay of Biscay and Iberia: 21-29	Food, fertilizer	[31, 75, Present study]
Cyanea lamarckii	Baltic Sea, North Sea, Celtic Seas, Bay of Biscay and Iberia: 21-29	Food, feed?	[31, 75, Present study]
*Mnemiopsis leidyi**	Baltic Sea, North Sea, Mediterranean Sea, Black Sea: 24,25, 31-36, 44	Microplastic filter	[83-85, Present study
Pelagia noctiluca	Celtic Seas, Bay of Biscay and Iberia, Mediterranean Sea, Black Sea, Macaronesia: 21, 25-3	Food, Bioactive molecules	[31, 86, 87, Present study]
Periphylla periphylla	North Sea: 22, 25	Pharmaceuticals, Microplastic filter	74, Present study]
*Phyllorhiza punctata**	Mediterranean Sea, Black Sea: 31, 32, 44	Food	[88]
Rhizostoma luteum	Bay of Biscay, Iberia and Macaronesia: 27-29	Food	[31]
Rhizostoma octopus	Baltic, North and Celtic Seas: 21-26	Pharmaceuticals	[58]
Rhizostoma pulmo	Mediterranean Sea, Black Sea: 31-36, 44	Food, Pharmaceuticals, Animal feed, Microplastic filter	[24, 72, 101, 102 Present study]
*Rhopilema nomadica**	Mediterranean Sea: 31-34	Food, Pharmaceuticals, Fertilizer, Bioactive molecules, Microplastic filter	13, 63, 89, 90, Present study]

Identification of Jellyfishing harvest and presence seasons for the main species

Area	Region	Species	Occurrence											
			Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mediterranean Sea	Adriatic Sea, Gulf of Trieste, Slovenia	*Rhizostoma pulmo*												
		Cotylorhiza tuberculata												
		Aurelia solida												
		Mnemiopsis leidyi												
	Ionian Sea, Italy	*Rhizostoma pulmo*												
		Pelagia noctiluca												
	Israeli coast	*Rhopilema nomadica*												
	Mar Menor, Spain	*Cotylorhiza tuberculata*												
Eastern North Atlantic,	Tagus, Portugal	*Catostylus tagi*												
Baltic Sea		*Aurelia aurita*												
		Cyanea spp.												
		Mnemiopsis leidyi												
Norwegian Sea	Trondheimsfjorden, Norway	*Aurelia aurita*												
		Cyanea spp.												
		Periphylla periphylla												

Ecosystem-based fishery management (EBFM)

A framework for sustainable exploitation




QUESTIONS?