



## Article

# Fishing Declines as a Driver of Human Mobility

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**Abstract:** Nowadays, improved fishing technology and depleted stocks cause fishery shocks in sensitive regions that lead to job losses and added insecurity. In fishery-dependent communities, more and more fishers are moving countries looking for a living. This study aims to know the perception of migrants in Spain about the sustainability of fishing in their countries of origin and how this perception influenced their individual behaviors and their decision to move. To this end, 203 families from 32 countries differentially affected by fishery shocks in Africa and Latin America were interviewed face-to-face to quantify the perceived weight of fishery changes on their decision to move, compared with socioeconomic and security reasons. The perception of fishing declines and their importance as a cause of mobility were positively and significantly correlated. Our study highlights the important and unexplored link between human mobility and fishery depletion, supporting the idea that fishing declines—induced at least partially by climate change—are one of the causes of mobility.

**Keywords:** fishing declines; international mobility; immigrant inclusion; fisherfolks; fishing sector



**Citation:** Márquez, L.; García-Vázquez, E.; Dopico, E. Fishing Declines as a Driver of Human Mobility. *Sustainability* **2024**, *16*, 8742. <https://doi.org/10.3390/su16208742>

Academic Editor: Colin Michael Hall

Received: 26 August 2024

Revised: 4 October 2024

Accepted: 7 October 2024

Published: 10 October 2024



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## 1. Introduction

Since their beginning as a species, humans have depended on freshwater and marine resources [1,2]. Communities living principally from fisheries have their own shared identity as fisherfolk [3], and this seems to be cross-cultural because it has been found in all continents. They establish personal and professional networks that differ between regions but can be strong, especially in small ports [4], and provide recognition and social support, thus contributing to social cohesion [5]. Fishing communities have not only a resilient sense of identity but also an attachment to fishing, which is seen as a way of living involving time far from home, more than a mere job. Fishing families consume a high quantity of fish in their diets [6], an example of a beneficial lifestyle trait of fisherfolks [7].

Although humans and fish have a long history together, their relationship is becoming increasingly complicated due to the current global change [8,9]. Fish stocks are declining worldwide. Many of the assessed fish stocks are overexploited, and only a few fisheries can be considered sustainable [10,11]; the latest FAO (Food and Agriculture Organization) report [12] is not optimistic. This is aggravated by climate change, especially in marine fisheries [13]. Climate alterations, together with pollution and other anthropogenic factors, cause biodiversity shifts and the depletion of numerous fish and shellfish stocks [14]. Consequently, the communities living principally off the fishery and seafood industry are highly vulnerable [15,16]. West African fisheries are amongst the most affected by climate change worldwide [17]. Climate-related alterations cause changes in the abundance, distribution, and productivity of different fish stocks, with some species collapsing and others increasing. The loss of local species is exacerbated in the region due to disrupting changes in sea temperatures that alter both population sizes and fish migration patterns [18]. There are many other examples. Bunce et al. [19] identified the decrease in fish catch mediated by climate instability as one of the main stressors of inhabitants of coastal regions

of Mozambique and Tanzania. In Latin America, the small-scale or artisanal fisheries that are key for food security are increasingly threatened by the effects of climate change, and poverty has grown in local communities in the last decades [20]. Ending the long list of examples, the decrease in fishing catch due to unusual floods and other extreme climate events is a significant challenge for Cambodian villagers [21].

To compensate for the lack of available resources, fishing technologies are getting more and more efficient, and the tons of fish extracted annually from the ocean increase despite stock decreases, which is driving fisheries closer to a collapse that would need rapid political and social actions to be averted [22]. An analysis of sudden drops in seafood production, i.e., fishery shocks, revealed regional differences between 1976 and 2011: they were frequent in North Africa and in the Caribbean, Central and South America, but their magnitude was larger in Sub-Saharan Africa, where some countries have not recovered from it yet [23]. The economic and social costs of fishery shocks are enormous, shocks being associated with an increase in piracy [24] and human trafficking to minimize production costs [25]. In Mexican coastal villages, the over-exploitation of sea cucumber stocks brought along an increase in poaching and armed violence [26]. Fish protein shortages with negative health consequences are expected, especially in Sub-Saharan countries on the Atlantic African coast, which depend on subsistence and artisanal fishing and have a projected decline in fisheries greater than  $-20\%$  [27].

For the reasons above, many communities that live from fisheries are becoming highly vulnerable [28]. As long as fish stocks decrease, fishers have to quit their usual way of life and work in other sectors or migrate. As an example, labor shortages in the fish processing industry in Iceland were responsible for migratory movements in the 1990s [29]. Migrations following fish have existed for centuries in many parts of the world, but they have intensified in the last decades. In Indonesian coastal villages, about 25% of fishers migrated, searching for a higher income, and many identified destructive fishing as a cause of the decrease in catch [30]. Migration waves associated with lobster and sea cucumber resources occurred in the Galapagos Islands, Ecuador [31]. Emigration due to the depletion of fishing resources has also been reported from other regions in Europe [32] and America [33], and its impact is greater in regions that are more dependent on fisheries.

In Africa, international labor migration has long been established in countries like Mozambique [34], but in the last decades, it seems to be increasing in other zones, apparently due to labor shortages in the fishing sector. Fishery-driven mobility has occurred historically at a regional scale due to fluctuations in catches. Senegal's artisanal fisheries exemplify this trend. Traditionally, Senegalese fishers—principally men—migrated seasonally within domestic waters to obtain the desired catch and returned home for rice harvest, but in the 1980s, the overexploitation of local stocks [35] forced them to look for farther fishing grounds, extending their migrations to last one year or more [36]. Similarly, seasonal migrations along the Gulf of Guinea following upwelling regimes usually lasted six months. However, nowadays, socioeconomic and political issues are forcing longer or permanent fishery-related migrations [37]. Matthews [38] suggested that European Union Sustainable fisheries partnership agreements (SFPAs) with some African countries, which allow European fleets to fish in their Economic Exclusive Zone waters, contribute to increasing migration to Europe.

Actually, there are other reasons. The decision to migrate is closely connected with security issues [39]. Structural factors such as widespread violence, war, corruption, unemployment, and economic displacement are also cited as motivating people to move [40]. Socioeconomic reasons are more often mentioned than the climate as causes of emigration by potential migrants, even in areas particularly vulnerable to climate change, such as Tuvalu [41]. Likely, fishery declines contribute to at least some part of human mobility.

In this study, we will use interviews [42] with migrants in Spain to investigate to what extent the perceived changes in climate and fisheries in their home country have pushed them to forced mobility [43] and to explore behavioral fisherfolk signatures in migrants with the potential to facilitate their adaptation in the host society. Spain receives many

immigrants from neighboring Africa, the Caribbean, and Central and South America due to the common language. To our knowledge, there are no studies addressed to decipher how much climate-driven fishery changes have contributed to migrants' decision to leave home. The aim of this study was to quantify the perceived weight of climate and fishery changes on the decision to migrate, in comparison with socioeconomic and security reasons, for African and Latin American immigrants in Spain. For this, we designed and validated a questionnaire that was used to test the following hypotheses:

- (1) The immigrants who worked in the fishing sector in their home country will exhibit higher mobility, as a fisherfolk signature [35–37].
- (2) Fisher immigrants will eat more seafood than non-fishers as a diet signature [6].
- (3) Being stressed by decreases in fish catch [19–21], immigrants from regions dependent on fishing resources will be more aware of fish stock declines than those from less fish-dependent regions.
- (4) Immigration due to fishing declines is a historical reason for migration [29–33]; fisher immigrants will perceive fishing declines in their home country (versus security) as a relatively more important reason for mobility than non-fishers.

## 2. Materials and Methods

### 2.1. Questionnaire

The questionnaire used in this study (Table 1) is part of a global questionnaire designed for studying the environmental constraints that drive human migrations [44]. The aim is to understand the level of change in fisheries perceived by migrants and the perceived causes for developing mobility behavior. The following sociodemographic questions were addressed: (1) country of origin; (2) current and previous occupations in Spain (of them and their relatives); (3) occupation in the home country; (4) relationship with marine fisheries in the home country (job, leisure, proximity, no significant relation); (5) number of fish meals per week; (6) number of previous international migrations undertaken. Gender and age were recorded. Subjects were classified as fishers according to their answer in question 3 (=job).

**Table 1.** Questionnaire employed in the present study.

<i>Perceived changes in fisheries</i>
<i>In your opinion, how much have the conditions in your country changed in the last decade regarding the following issues? Between 1 and 5, being 1 (nothing) and 5 (very much).</i>
FC.1. The fishing gears, such as nets and rigging.
FC.2. The fishing fleet (boats and vessels).
FC.3. The aquaculture.
FC.4. The fish market
<i>Perceived mobility causes</i>
<i>How much weight had/has each of the following factors in your decision/thoughts to emigrate from your country? Between 1 (not important) and 5 (very important).</i>
<b>Fishing problems</b>
FM.1. Family or friends migrated because of problems related to fisheries.
FM.2. Fishing is decreasing in my country.
<b>Security problems</b>
SM.1. Increase in economic and political insecurity.
SM.2. Increase in social insecurity (crime, drug trafficking, terrorism...)
SM.3. Family and/or friends migrated due to social insecurity.

Here, we selected nine items to be Likert-scaled from 1 (nothing/not important) to 5 (very much/very important) and organized into two constructs: perception of changes in the fisheries sector (Fishing Change or FC, four items) and perception of the causes that motivate mobility (weight of fishing declines as a personal cause of migration—Fishing and Mobility or FM, two items; weight of security issues as a cause of migration—Security and Mobility, SM, three items). The latter was included because, as we said before, insecurity increases with fishery shocks [45–47].

## 2.2. Survey

Through proxy random sampling, immigrants from 32 countries differentially affected by fishery shocks, arriving in Spain within the last years, were interviewed (Table 2) following multisite ethnographic research [48,49].

**Table 2.** Home countries and sample characteristics: % in Spain (percentage of immigrants from a country over the total number of immigrants in the Spanish provinces where the survey was conducted); N% (number-percentage of subjects from a country in this study); % females (percentage of women); Age range (percentage of subjects in different age ranges).

Country	% in Spain	N (%)	% Females	Age Range (in %)			
				<20	20–40	40–60	>60
Algeria	1.1%	5 (3%)	33	0	67	22	12
Angola	0.1%	2 (1%)	100	0	100	0	0
Argentina	3.3%	2 (1%)	50	50	0	0	50
Bolivia	4.6%	7 (4%)	72	0	72	28	0
Brazil	3.8%	1 (0.5%)	100	0	100	0	0
Cameroon	0.3%	7 (4%)	43	0	100	0	0
Cape Verde	0.2%	1 (0.5%)	100	0	100	0	0
Colombia	8.3%	10 (5%)	100	0	100	0	0
Congo	0.1%	1 (0.5%)	0	0	100	0	0
Cuba	2.1%	4 (2%)	0	0	0	50	50
Dominican Republic	4.7%	2 (1%)	100	0	0	0	100
Ecuador	7.1%	15 (8%)	87	13	67	20	0
El Salvador	0.1%	4 (2%)	50	50	50	0	0
Equatorial Guinea	0.9%	4 (2%)	57	0	86	14	0
Ghana	0.5%	1 (0.5%)	100	100	0	0	0
Guinea Conakry	0.4%	20 (11%)	5	45	55	0	0
Honduras	3.5%	6 (3%)	17	0	100	0	0
Ivory Coast	0.2%	7 (4%)	14	14	86	0	0
Kenya	0.1%	1 (0.5%)	100	0	100	0	0
Mali	1.0%	2 (1%)	100	0	0	100	0
Mauritania	0.3%	2 (1%)	0	0	100	0	0
Morocco	33.9%	27 (14%)	44	22	56	22	0
Nicaragua	1.5%	3 (2%)	100	0	33	67	0
Nigeria	2.2%	8 (4%)	50	0	88	12	0
Paraguay	5.7%	1 (0.5%)	100	0	0	100	0
Peru	4.9%	2 (1%)	88	0	75	25	0
Senegal	2.5%	25 (13%)	16	32	60	8	0
Sierra Leone	0.02%	2 (1%)	0	0	100	0	0
South Africa	0.1%	1 (0.5%)	0	0	0	100	0
Togo	0.02%	1 (0.5%)	0	0	100	0	0
Uganda	0.3%	1 (0.5%)	100	0	100	0	0
Venezuela	5.7%	15 (8%)	80	20	47	33	0

Snowball recruitment was mediated by Non-Governmental Organizations (NGOs) that help immigrants in Spain. Twenty of the 32 NGOs effectively contacted by email, phone, or social media collaborated with the researchers in the Spanish provinces of Asturias (north of Spain), Cadiz and Seville (south), Ceuta (Spanish territory in North Africa), and Madrid (center), providing latitudinal coverage of the host country. The

number of immigrants from each country in the considered Spanish regions in 2024 was retrieved from the Foreign Population Census [50]. Only one representative per family was interviewed; thus, the total sample size of  $N = 203$  reflects the number of families. The questionnaire was administered face-to-face for 10–15 mins, individually and privately, to each respondent to ensure independence within groups. The order of the questions was changed randomly. The researcher wore neutral clothes, did not manifest personal opinions or comments, and was introduced to immigrants by a person from the NGO who helped with translation when needed. The participants agreed to their answers being recorded in writing and were offered to revise them at the end of the interview and agree with the final content. Researchers keep the original records for creditable purposes.

### 2.3. Statistical Analysis

Constructs composed of several items were scored from the mean of their items after checking they were reliable in our sample using Cronbach's alpha (minimum value of 0.60 as sufficient) with the formula:  $\alpha = n/(n - 1) \times (1 - \Sigma \text{item variance}/\text{subject variance})$ .

Normality was checked by Shapiro–Wilk, and homoscedasticity of variances was checked using the generalized Breusch–Pagan test. Comparisons between groups of participants for quantitative variables were performed using two-way ANOVA, e.g., fisherfolk condition and geographical region as factors of variation with two (fisher, non-fisher) and three (Latin America, Maghreb, Sub Sahara) levels, respectively. Although the quantitative variables analyzed in this study are discrete (scores of perceived changes in fisheries, fishing problems, security problems, fish consumption, and mobility), ANOVA was employed as an approach because the counts were long, and normality and homoscedasticity were met. A chi-square contingency test was employed to compare groups for non-quantitative variables, like the proportion of fishers in different regions or gender ratios.

Probabilities of an event (such as working in the same sector in Spain and their home country) were compared between groups (fishers versus non-fishers) using risk ratio and  $z$  test. The level of significance was set at  $p < 0.05$ , with Bonferroni correction for multiple comparisons when relevant. Statistical analyses were computed using the free the free PAST 4.13 version software [51].

## 3. Results

### 3.1. Sample Overview and Immigrant Jobs

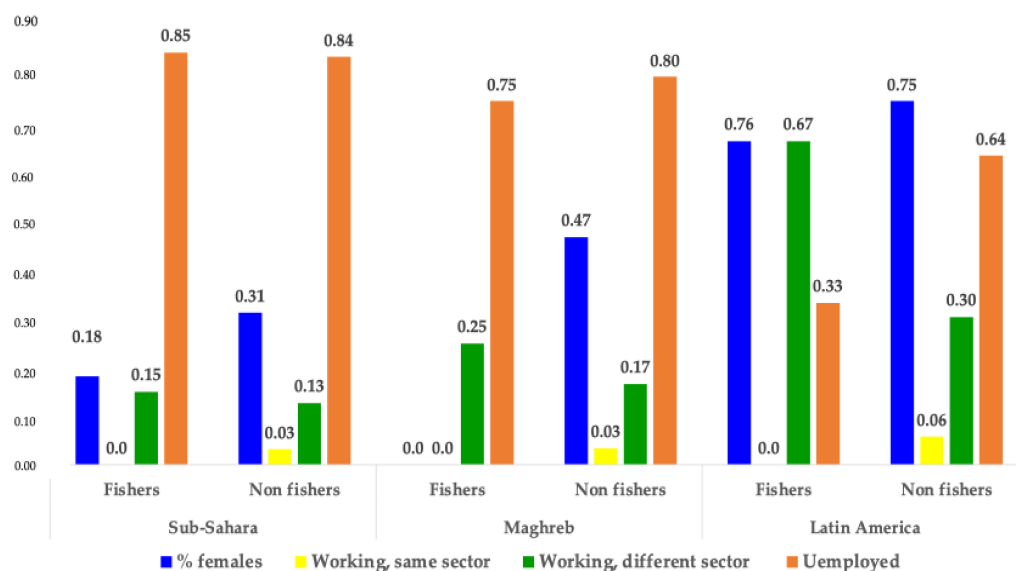
The sample interviewed corresponds to an independent selection of cases, where the choice of each person surveyed is not related to the choice of any other person, nor does it depend on it. The sample group, albeit relatively modest, being a few more than 200 families, could be considered roughly representative of the immigrants from those countries living in Spain.

The correlation between the proportion of immigrants from a country and the proportion of migrants from that country in our sample was positive and highly significant ( $r = 0.605$ , 30 d.f.,  $p = 0.0002$ ).

Of the 203 family representatives interviewed, 125 (32% females) were from Africa (36 from Maghreb, 89 from West and South African countries grouped here as Sub-Saharan), and 78 (73.1% females) were from Latin America. In the sociodemographic question #3 about their relationship with marine fisheries, 15.8% of the subjects answered it was their job in their home country, giving a total of 32 fisherfolk families in the sample. The proportion of fishers from Sub-Saharan countries was the highest (24.7%), followed by Maghreb (11.1%, four persons) and Latin America (7.7%, six persons). The difference among regions was statistically significant ( $\chi_{3,2} = 9.789$ ,  $p = 0.007$ ), with a higher proportion of fisher immigrants from countries experiencing more fishing shocks, in this case, African countries.

The proportion of females among fishers was 18.2% of Sub-Saharan, 0% of Maghreb, and 66.7% of Latin American fishers. For the comparison of gender ratios between fishers and non-fishers, regions were not considered separately because the sample sizes of Maghreb and Latin American fishers were small. In the total fisherfolk sample, the gender

ratio was 25% females, smaller than 52.6% of non-fisher females (contingency  $\chi_{1,1} = 4.93$ ,  $p = 0.026$ ; Monte Carlo  $p = 0.03$  for 9999 permutations). No one of the interviewed migrants (nor a relative of those who gave this information) worked or had worked in the fishing sector in Spain since their arrival (sociodemographic question #2). In Spain, former fishers worked in other sectors as caregivers or salespersons, and the majority (73.3%) were unemployed (Figure 1). Many non-fishers were unemployed too (77.5%), but 20% of the employed ones worked in the same sector as in their home country (social workers, lawyers, journalists, bartenders).



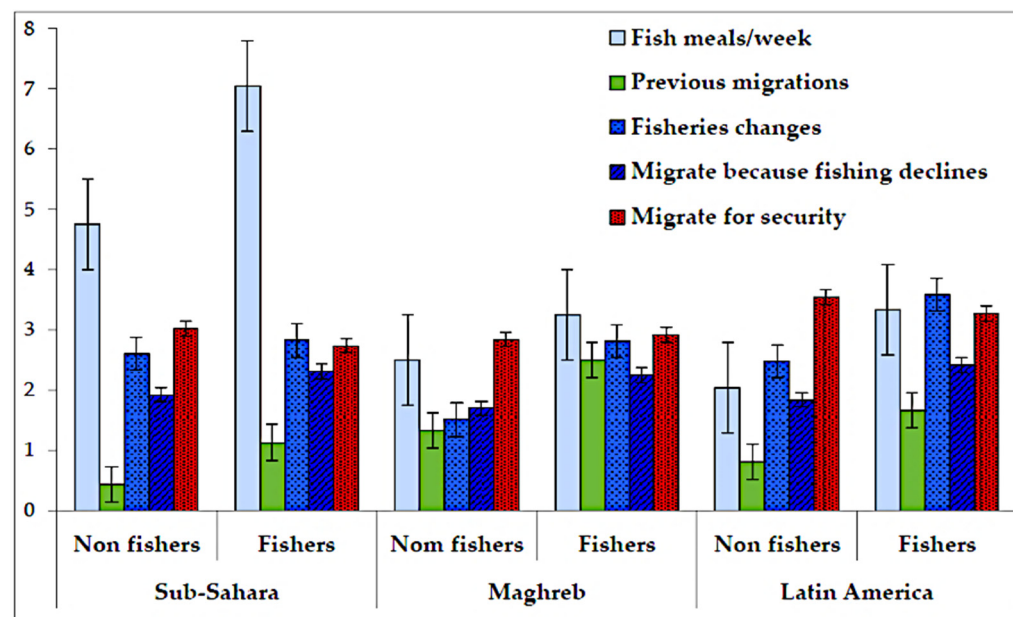
**Figure 1.** Proportions of immigrants working in Spain in the same sector, a different sector, and unemployed.

The risk ratio (that is, the probability that an event will occur) of working in the same sector between non-fishers and fishers was 1.25 [95% confidence 1.059–1.475],  $z = 2.64$  with  $p = 0.008$ . This means that being a fisher immigrant in Spain (versus a non-fisher) was associated in our sample with a significant reduction in the probability of working in the same sector as in the home country.

### 3.2. Differences between Fishers and Non-Fishers in Diet and Mobility

Differences between fishers and non-fishers and among regions were tested using two-way ANOVAs, with fisherfolk condition (yes/no) and region (three levels: Sub-Sahara, Maghreb, Latin America) as factors of variation. Confirming Hypotheses #1 and #2, fisher and non-fisher groups were significantly different in traits considered fisherfolk signatures: mobility and seafood consumption (Figure 2). As expected in Hypothesis #1, significant differences between fishers and non-fishers ( $F_{1,197} = 4.22$ ,  $p = 0.04$ ) and among regions ( $F_{2,197} = 3.68$ ,  $p = 0.03$ ) were found for the number of previous migrations. Fishers had migrated more times before arriving in Spain than non-fishers, being  $M = 1.4$ ,  $SD = 2.3$  for fishers and  $M = 0.77$ ,  $SD = 1.5$  for non-fishers. Regarding differences among regions, Maghreb immigrants had migrated more times ( $M = 1.5$ ,  $SD = 2.5$ ) than Latin Americans ( $M = 0.9$ ,  $SD = 1.4$ ) and Sub-Saharanans ( $M = 0.6$ ,  $SD = 1.3$ ), in our sample (being  $M$  = Mean values, and  $SD$  = standard deviation).





**Figure 2.** Mean values of the quantitative variables measured in fisher and non-fisher migrants from the three origin regions and considered in their decision of mobility. Standard error as capped bars.

Confirming Hypothesis #2, enormous differences in the average number of fish meals were found between fishers and non-fishers in all the regions. Also, among regions, differences were indeed significant (two-way ANOVA giving  $F_{1,197} = 12.64$  for the factor “fisherfolk” and  $F_{2,197} = 15.12$  for the factor “region”,  $p < 0.001$  in the two cases). This is reflected in a much greater fish consumption by fishers, with about six seafood meals per week, double that of non-fishers (mean of fishers  $M = 5.9$ ,  $SD = 6.1$  versus  $M = 3.2$ ,  $SD = 3.6$  in non-fishers), and in Sub-Saharan countries ( $M = 5.3$ ,  $SD = 5.3$ , versus  $M = 2.6$ ,  $SD = 3.7$  in Maghrebi and  $M = 2.1$ ,  $SD = 1.5$  in Latin American immigrants). Transforming the meals into annual kg of fish, using 200 g of whole fish as standard serving size (<https://www.fao.org/nutrition/education/food-based-dietary-guidelines> (accessed on 5 June 2024), these data represent an average of 61.4 kg/year (52 weeks/year  $\times$  5.9 fish meals/week  $\times$  0.2 kg fish/meal) for fisher immigrants, in clear contrast with an annual mean of 33.3 kg of fish for non-fishers.

### 3.3. Differences between Fishers and Non-Fishers in the Perception of Fishery Changes

Regarding the perception of changes in fishing and seafood production (Hypothesis #3), fishers perceived more changes than non-fishers, with  $M = 3.0$ ,  $SD = 1.3$  and  $M = 2.3$ ,  $SD = 1.5$  respectively ( $F_{1,197} = 4.81$  with  $p = 0.03$ ).

Differences among regions were also significant ( $F_{2,197} = 6.25$ ,  $p = 0.002$ ): Sub-Saharan ( $M = 2.7$ ,  $SD = 1.3$ ) and Latin American immigrants ( $M = 2.6$ ,  $SD = 1.5$ ) perceived greater changes in fishing than immigrants from Maghreb ( $M = 1.7$ ,  $SD = 1.7$ ).

### 3.4. Differences between Fishers and Non-Fishers in Declared Causes of Mobility

Significant differences between fishers and non-fishers were found for the influence of fishing declines in the home country on their decision to move ( $F_{1,197} = 4.2$ ,  $p = 0.04$ ). Fishers gave a higher weight for this reason ( $M = 2.3$ ,  $SD = 1.3$ ) than non-fishers ( $M = 1.8$ ,  $SD = 1.2$ ), as expected in Hypothesis #4. Moreover, in the whole sample, the perception of fishing declines and the importance of fishing declines as a cause of mobility were positively and highly significantly correlated (Pearson’s  $r = 0.28$ , 201 degrees of freedom,  $p = 0.00007$ ). No significant difference was found among regions ( $F_{2,197} = 0.64$ ,  $p = 0.53$ ).

The relative weight of security and fishing declines as causes of mobility were compared separately in fishers and non-fishers, using ANOVA of two factors: mobility cause (two levels: security, fishing declines) and region (three levels as above) within each group.

In the group of fishers, no significant differences were found between security and fishing declines as causes of mobility ( $F_{1,58} = 2.81$ ,  $p = 0.10$ ;  $M = 2.8$ ,  $SD = 1.2$  and  $M = 2.3$ ,  $SD = 1.3$  for security and fishing respectively), nor among regions ( $F_{2,58} = 0.29$ ,  $p = 0.75$ ). Thus, fishing declines (which is an economic reason because this group lived off fishing) were as important as security for them.

In the group of non-fisher immigrants, differences among regions were not significant ( $F_{2,336} = 2.54$ ,  $p = 0.08$ ). Here, insecurity was much more important than fishing declines as a cause of mobility ( $F_{1,336} = 94.76$ ,  $p < 0.001$ ;  $M = 3.2$ ,  $SD = 1.4$  and  $M = 1.8$ ,  $SD = 1.2$  respectively). This also confirmed Hypothesis #4.

#### 4. Discussion

All the departure hypotheses were confirmed by our data, and this confirmation gives rise to new research hypotheses. The results of this study strongly indicate that unsustainable fishing declines are at least part of the causes that activate mobility behavior. For fisher families, they seem to be as important as economic and social insecurity. On the other hand, fishers migrated more frequently and were more dependent on seafood than non-fishers, as fisherfolk signatures. These characteristics, as we have been pointing out, are shared by fisherfolk from different countries, which allows us to assume that they are universally applicable.

Our study highlights the important and unexplored link between human mobility, climate change, and fishery depletion, supporting the idea that fishing declines—induced at least partially by climate change—are one of the causes of mobility. This is also considered by the immigrants and correlated with the perception of such changes in fisheries and the need to develop an adaptation strategy to cope with environmental change [52]. Fisherfolk immigrants perceived significant changes in fisheries in their home countries, and they were certainly right. The changes in fisheries are not simple, involving both biological and technological issues [53,54]. Declines of traditional artisanal fisheries are higher because they are threatened by more efficient—and less sustainable—commercial fishing fleets [55–57]. The influence of fishing declines in the home country is notably manifested among the fishing families of the Maghreb and Sub-Sahara. In fact, we collected more testimonies about it from fisherfolks from African countries, especially Sub-Saharan ones. This coincides with further fishing declines linked to global change in these marine fisheries. It therefore seems necessary to continue investigating the relationship between fisheries' depletion, climate change, and human mobility, addressing explicitly the issues of climate change as a perceived driver for moving.

One of the outstanding issues in our results is the importance of fish for fisher immigrants. Fish are the main dishes in their diet in Spain, where the average fish consumption is 44.21/person-year [58], which, although relatively high compared with other European countries [59], is much lower than six times a week. The fish consumed by fisher immigrants of our sample would be equivalent to more than 60 kg/year. Although migrants change their dietary habits by adapting them to those of the host countries [60–62], our results suggest that diet signatures are more persistent in fishers and, in general, in immigrants from fishing-dependent regions in Spain. This is shown by the sample interviewed, where fishing families consumed much more fish than non-fishing families. Thus, the fisherfolk identity [63,64] was still preserved, as reflected in the diet. This lifestyle signature of fishing families [65] is a healthy habit that, if preserved in the host country, likely represents a benefit for them [66].

Gender made a difference between fishers and non-fishers in our results. In many regions of the world, there are gender issues related to fisheries [67,68] and fishery-driven migration [69]. Here, we find that the majority of males work in the fishery sector in their home countries. This is consistent with other studies, particularly in Africa; only 10% of African women in our sample worked in fisheries compared to more than a quarter of the men. Fishery-driven migration is male-dominated in West Africa [70], where the few migrant women are mainly fish processors and fishmongers. Young males tend to migrate



following the fish along the coast in their home country; if their migration is long-term or far from their home region, they suspend the tradition of regularly returning home with revenues for their families, with bad consequences for the home economy. Perhaps encouraging immigrant fishers to visit their families regularly or to use their rights to family reunification [71], if any, would improve the situation of their families.

Despite the signs of the importance of fishing as a way of life found in our study, not one of the fisher families interviewed in our study worked in the fishing sector. Being a fisher immigrant in Spain (compared to a non-fisher) was associated in our sample with a significant reduction in the probability of working in the same sector as in the country of origin. While some of the non-fishing immigrants were able to find work in Spain within the same sector as they worked in their countries of origin, none of the fisherfolks interviewed worked in fishing in Spain. This is consistent with the professional activities of foreigners in this country. Of the total of 2,549,823 foreign people affiliated with Social Security (Spanish health insurance), some 4,504 people (0.17%) belonged to the Special Regime for Sea Workers [72]. They are not many people, but their presence in the fishing ports alleviates the endemic lack of personnel in the fishing fleet, especially when the sector is affected by a worrying lack of generational replacement [73].

A limitation of the present study was the sample selection, which would be proxy random because snowball was employed. This was somewhat compensated by the way the interviews were conducted, being as independent as possible and private with the respondents. Indeed, larger sample sizes are always recommendable.

## 5. Conclusions

In our research on mobility, we wanted to analyze the perception of climate and fishing changes in the decision to move, compared to socioeconomic and security reasons. To attain this, we were able to interview 203 families (one person per family) of African immigrants (divided between Maghrebi and Sub-Saharan Africans) and Latin Americans in Spain. In our sample, we had a higher proportion of fisherfolks from African countries that experience more fishery crises. The data have shown that in the host country, immigrants related to the fishing sector recognize that fishing declines contributed to a certain extent to their decision to move: Sub-Saharan and Latin American fisherfolks expressed greater awareness of the changes in fishing than fishers from the Maghreb. Moreover, they keep signals of their former fisherfolk identity, although they no longer work in the fisheries sector in Spain.

We separately compared the relative weight of security and fishing decline as causes of mobility between fishers and non-fishers. In the group of fisherfolks, no significant differences were found between safety and the decline in fishing as causes of mobility. The reason was that the decline in fishing (which is an economic reason because this group lived from fishing) was as important to them as security. In the group of non-fishers, insecurity was much more important than the decline in fishing as a cause of mobility. Taking it all together, the present study would support the idea of human displacements caused by the depletion of fisheries. The time has come, as other authors have reported [74–77], for people living in regions highly dependent on fishing to be forced to migrate for better resources.

Finally, our research also suggests the need to quickly incorporate the fishing sector into the list of resources of immigration agencies. Fisherfolk identity could be employed to facilitate the adaptation and integration of migrants in the host country and to encourage the generational replacement necessary to revitalize the Spanish fishing fleet.

**Author Contributions:** Conceptualization, L.M. and E.G.-V.; methodology, L.M., E.G.-V. and E.D.; software, E.G.-V.; validation, L.M., E.G.-V. and E.D.; formal analysis, L.M. and E.G.-V.; investigation, L.M., E.G.-V. and E.D.; resources, E.G.-V.; data curation, L.M. and E.G.-V.; writing—original draft preparation, L.M. and E.G.-V.; writing—review and editing, E.G.-V. and E.D.; visualization, L.M., E.G.-V. and E.D.; supervision, L.M., E.G.-V. and E.D.; project administration, L.M., E.G.-V. and E.D.; funding acquisition, E.G.-V. All authors have read and agreed to the published version of the manuscript.

**Funding:** This study was supported by the Principality of Asturias (Spain) with the Grant GRUPIN IDI/2018/000201.

**Institutional Review Board Statement:** This study has been approved by the competent Committee of Research Ethics of the Principality of Asturias (Spain) with reference number 200/17. Non-discriminatory, culturally respectful procedures were followed according to the ethical principles of scientific research (European Commission, 2013). The participants gave their informed consent to be interviewed and knew they could withdraw from the project at any moment. Researchers adhere to the ethical principles of the 1964 Helsinki Declaration.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The raw dataset is available on the public repository B2SHARE through this access link: <https://doi.org/10.23728/B2SHARE.8A702B93DF6A4DCEA7774C019ED61377> (accessed 21 August 2024).

**Acknowledgments:** We are grateful to the NGOs that made this study possible and to all the immigrants who kindly helped the researchers in many ways with patience and understanding. They are inspiring examples of resilience. We also express our gratitude to Aida Dopico García for the review and editing of the entire manuscript.

**Conflicts of Interest:** The authors declare no conflicts of interest.

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