

## HELLENIC MARICULTURE SAFETY AND HEALTH: INITIAL REPORT ON WORK RELATED INJURIES AND ILL HEALTH

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### ZDRAVLJE I BEZBEDNOST ZAPOSLENIH U SEKTORU GAJENJA MORSKIH RIBA U GRČKOJ: INICIJALNI IZVEŠTAJ O POVREDAMA NA RADU I ZDRAVSTVENOM STANJU

#### *Apstrakt*

U ovom radu predstavljene su analize povreda na radu u industriji gajenja morskih riba. Ove analize služe kao osnova za dalje unapređenje zdravlja i bezbednosnih uslova rada. Ovaj inicijalni pristup navodi, između ostalog, indikatore, kao što je učestalost nezgoda tokom sezone i kako one utiču na proizvodnju. LEONARDO DA VINCI program Evropske Unije je finansijski podržao ovaj projekat (Izvršilac za INTRANEMMA projekat, Ugovor br. 2010-1-GR1-LEO 05-03986). Akvakultura u istočnom delu Mediterana se jako brzo razvila u proteklih 20 godina, što je dovelo do povećanog broja ribnjaka, kao i do povećane proizvodnje koja je dostigla 100000 t (u 2001. godini). Takođe, očekuje se trostruki porast proizvodnje u bliskoj budućnosti. Ova stopa rasta povećava broj povreda na radu u industriji gajenja. Grčka je najveći proizvođač morskih riba u Mediteranu gde ukupan broj radnika dostiže skoro 0.2% ukupne radne snage u Grčkoj, od kojih je 20% zaposleno u marinskom sektoru, naročito na farmama riba sa kaveznim

sistemima. U ovoj studiji razmatran je ukupan broj radnika u oblasti akvakulture u toku jedne godine, iako je, između ostalog, broj radnika u marinskom sektoru sezonski promenljiv. Izveštaji o povredama na radu u ovom sektoru su već dati u godišnjim izveštajima koje je objavila Grčko Društvo za Ispitivanje Rada (SEPE). Analiza trenutne studije zasnovana je na podacima iz 2009-2011 datim u ESAW 2001 (Eurostat, Evropska statistika za nezgode na poslu). Do 2009. godine, bilo je teško dobiti rezultate analiza o nezgodama na radu u akvakulturi i ribarstvu, zato što su Grčke vlasti davale izveštaj o tim podacima zajedno sa podacima o preradi i pakovanju poljoprivrednih i ribljih proizvoda. Iako su nezgode kao i bolesti na radu najvažniji za opisivanje i ustanovljavanje uslova za zdravlje i bezbednost na radu, ne možemo dobiti pouzdane rezultate za ovaj period. Jedini način na koji možemo da stvorimo sliku o ovom sektoru za ovaj izveštaj je da se oslonimo na međunarodne publikacije. U ove nezgode i bolesti spadaju mišićno skeletni poremećaji, efekti UV radijacije, itd. Dalje analize radi dobijanja podataka o nezgodama na radu su već isplanirane. One će uključiti više faktora koji utiču na uslove pod kojima se nesreće dešavaju. Na primer, slučajevi povreda na radu vezani za klizanje i spoticanje (39%), rukovanje (5%) i objekte koji su pali (16%) nisu sasvim precizni zbog nedostatka izveštaja. Ipak, podaci koje imamo ukazuju da su ove povrede učestalije u ovom sektoru nego u drugim sektorima u Grčkoj (na primer 18%, 23% and 10%, za svaku od ovih nesreća u 2011. godini). Zbog ovoga možemo zaključiti da diskrepance u izveštajima o nesrećama na radu u sektoru akvakulture mogu da dovedu do pogrešnih tumačenja uslova za zdravlje i bezbednost.

*Ključne reči: akvakultura, opasnost, bezbednost, zdravlje, Grčka*  
*Keywords: aquaculture, hazards, safety, health, Greece*

## INTRODUCTION

Aquaculture activities in the Eastern Mediterranean have been rapidly expanded during the last 20 years leading to an increase of both the number of fish farms and their production reaching 100,000 t in 2011, whereas a three-fold increase is expected in the future years. These facts also increase the numbers of work related incidences within the workers of the farming industries.

## MATERIALS AND METHODS

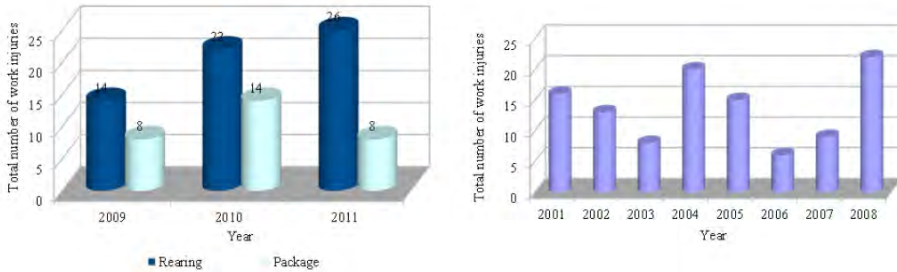
The analysis of the present study based on the data reported (SEPE annual report 2011) during 2009-2011 through the ESAW 2001 (Eurostat, European Statistics on Accidents at Work). In contrast, prior to 2009, analyses on work accidents data in aquaculture and fisheries are rather difficult to take place, because Hellenic (Greek) authorities reported the corresponding data together with the processing and packaging of agricultural and fishery products.

## RESULTS

### *Injuries*

During 2009-11 within the Aquaculture sector occurred:

- 3 fatalities representing less than 1.5% of the total numbers of reported fatalities to SEPE, which they account to 25% of the Agriculture, Forestry and Fisheries sector (SEPE annual report 2011)
- no contractor worker or third party employee was injured
- the percentage of the serious injuries and/or no injuries per year was fluctuated without any trend (this percentage was also estimated to be higher than the percentage of the total number of injuries reported per each year in all sectors)
- and a decreasing trend was shown for the reported work related fatal injuries which was also depicted by an increasing trend for the total number of all injuries in the farming sector



**Figure 1.** Annual work related injuries in Aquaculture during 2009-2011 (ESAW 2001) and 2001-2008 (National Statistics)

### *Fatalities*

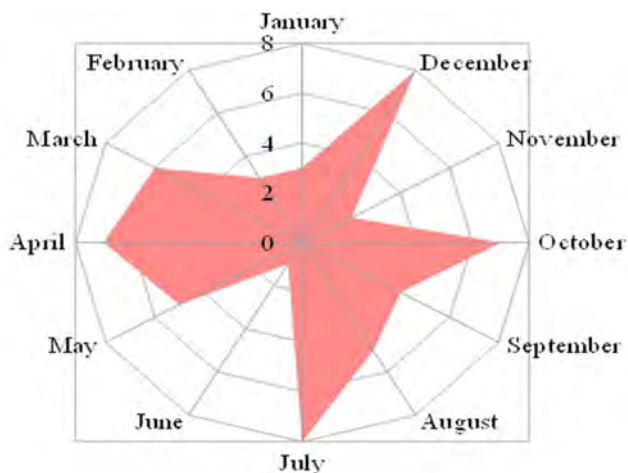
During 2009-2011 3 fatal injuries occurred (Fig. 2) accounting for 10 per 100,000 workers. This number is stable throughout the three-year period.

### *Serious injuries*

Positive trends were shown for the total number of accidents within the Aquaculture sector and for the rate of the total number of accidents per 100,000 workers during 2009-2011. These seemed to be comparable to the number of work related injuries in the Agriculture, Forestry, Fisheries and Aquaculture sector during 2001-2008.

### *Over 3 days absence*

The decrease in the percentage of the number of injuries at work that led to over three days of absence in 2011 was compared with those in 2010, but it is rather optimistic to consider that this is attributed to the improvement in Safety and Health standards and policies implemented by the sector companies. More data is needed in order to better analyse the influencing factors.

*Seasonal and monthly distribution*

**Figure 2.** Cumulative monthly distribution of the total number of accidents in mariculture during 2009-2011.

Accidents follow a monthly and seasonal pattern (Fig. 6) that seemed to coincide with the sector's production cycle (e.g. stocking, raising, fishing, etc)

## DISCUSSION

Work related accident analyses in Mariculture Industry are presented herein, serving as a reference base for further improvement of health and safety. This initial approach proposes, among others, indicators, such as seasonal distribution of accidents that they also correlated with the production line.

Greece is the largest Mariculture fish producer in the Mediterranean.

The total number of workers in the Greek farming industries reaches almost the 0.2% of the total workforce in Greece, of which 20% is employed within the Mariculture sector and in particular on cage farms.

In the present study the total annual number of Aquaculture employees was taken into account due to the fact that, amongst other factors, the number of aquaculture workers is seasonally fluctuated.

Work related hazards within the sector have been already reported through the annual reports of the Hellenic Labour Inspection Body (SEPE).

## CONCLUSIONS - INDUSTRY PROFILE

Hellenic (Greek) Aquaculture sector shows lower rate (1 in 400 workers) in work related accidents when compared to other European Countries (Eurostat).

Throughout Europe, the Agriculture, Forestry, and Fisheries are the most Hazardous sectors showing high rates for work related injuries (Eurostat). Hellenic Aquaculture as a whole represents less than 2 per thousand of the total work force, 3 per thousand of all serious injuries and 16 per thousand of fatal injuries during 2009-2011.

Future analyses on work related accident data has been already planned to account for incorporating more factors influencing the conditions under which accidents occurred. In this context, work injuries related with factors such as slips and trips (39%), handling (5%) and fallen objects (16%) includes high uncertainty due to the absence of reports, even though there are higher when compared with the remaining sectors in Greece (i.e. 18%, 23% and 10%, respectively for 2011).

Thus, discrepancies in the reports of the work related accidents in the Aquaculture sector might lead to false interpretations about the health and safety conditions.

### **ACKNOWLEDGEMENTS**

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