

# **Study of lipid and protein contents of freshwater crayfish, *Astacus leptodactylus*, in respect to length- weight relationship**

**Katayoon karimzadeh & Asgar Zahmatkesh**



Islamic Azad university branch of Lahijan, Applied university, Mirza koochak khan higher Education  
center for fisheries science



## Introduction

The narrow- clawed crayfish, *Astacus leptodactylus* (Escholtz, 1823) occupies lakes, rivers, ponds and coastal areas in south part of Caspian Sea. It also inhabits some wetlands, such as Anzali Lagoon in Iran.

# Introduction

- ❑ determine and comparison of whole body composition in various organs respect to different sexes to get to proper catching age on a commercial basis.
- ❑ determine weight of various organs of body, the length – weight relationship and proportion of meat to whole body,

## **Methods**

Ponds were located at the Sefid Roud Fisheries Research Station, branch of IFRI in Giulan province in Iran. Sampling was conducted during different stages of life cycle.



Sefid Roud Fisheries Research Station

## **Methods**

After biometry, body biochemical composition of different organs (cephalothorax, tail and chelae) were determined by standard methods (AOAC 1990).



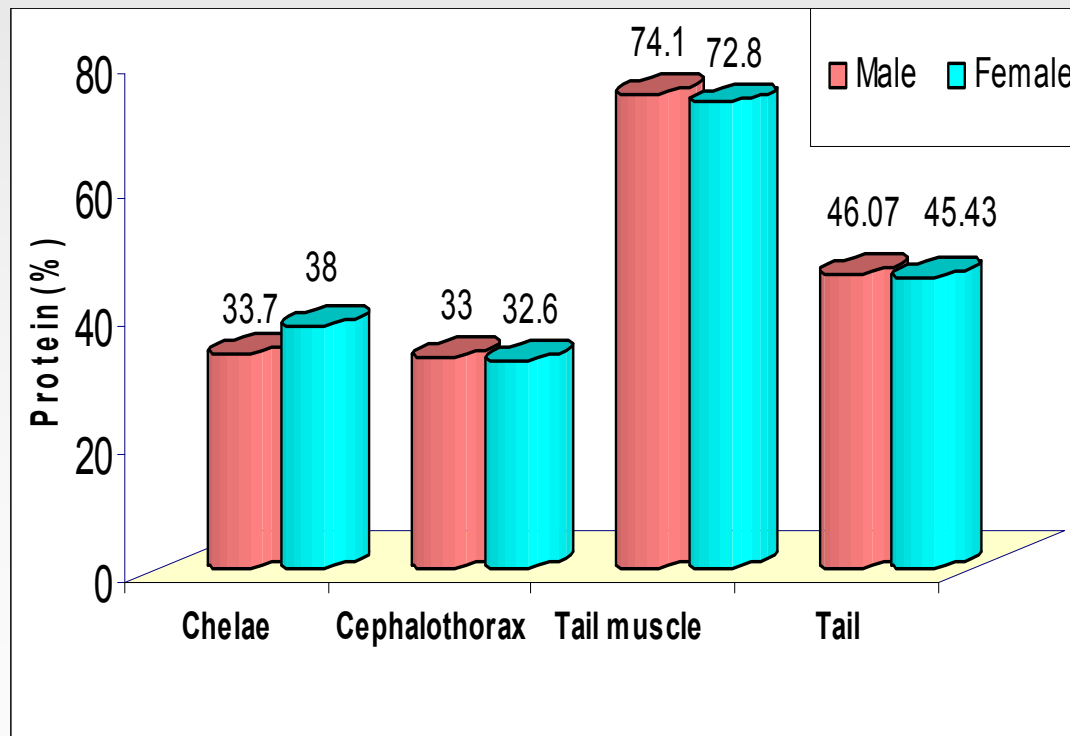
**TABLE 1.** Means ( $\pm$ SE) for whole body chemical composition of males in *Astacus leptoductylus* in different ages.

Variable	Moisture (%)	Protein (%)	Lipid (%)	Fiber (%)	Ash (%)
Age					
120 days	63.28 $\pm$ 0.4	45.7 $\pm$ 1.55	2.2 $\pm$ 0.1	11.54 $\pm$ 0.9	26.95 $\pm$ 1.37
180days	67.83 $\pm$ 0.1	43.78 $\pm$ 2.82	2.3 $\pm$ 0.1	12.15 $\pm$ .0.5	33.99 $\pm$ 1.44
460days	65.94 $\pm$ 0.1	38.98 $\pm$ 3.2	3.03 $\pm$ 0.12	13.51 $\pm$ 0.6	35.75 $\pm$ 1.85

**TABLE 2.** Means ( $\pm$ SE) for whole body chemical composition of females in *Astacus leptodactylus* in different ages.

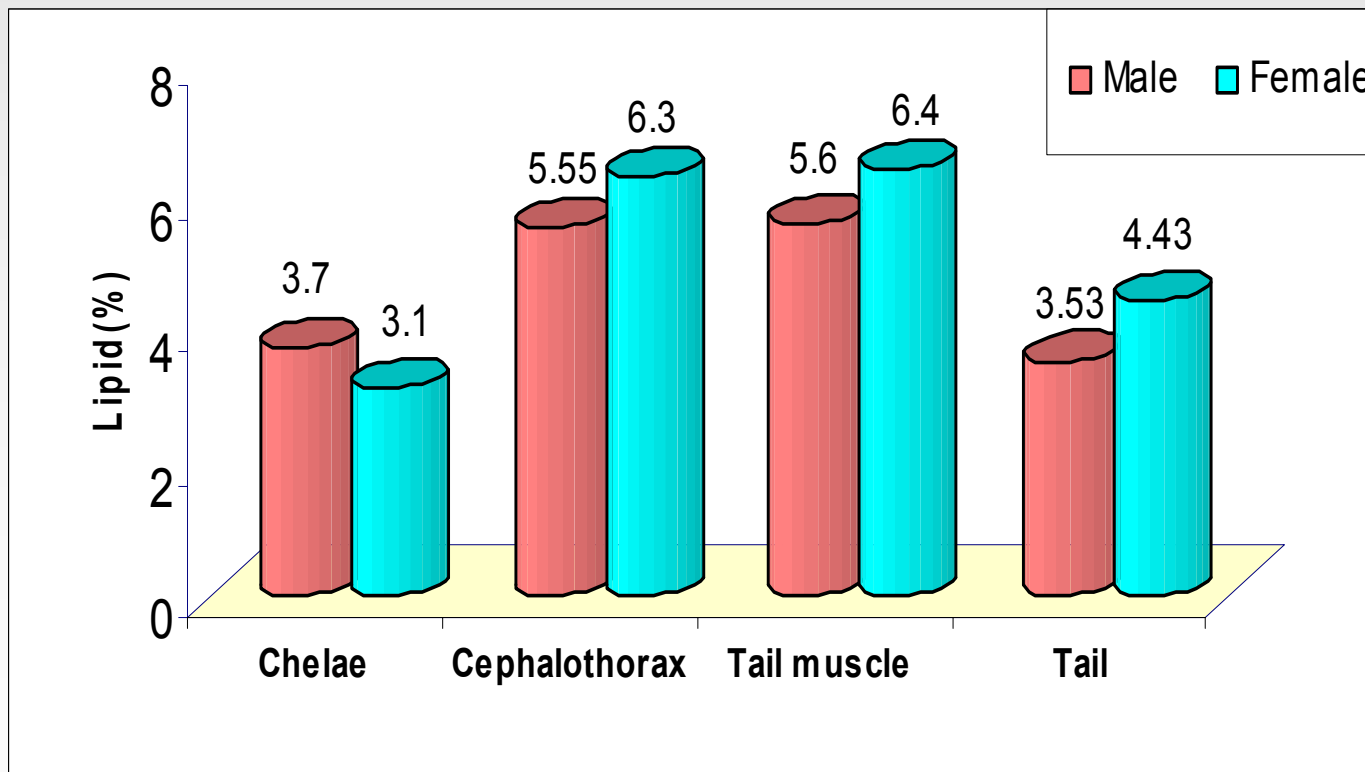
Variable	Moisture (%)	Protein (%)	Lipid (%)	Fiber (%)	Ash (%)
Age					
120 days	65.3 $\pm$ 2.77	34.52 $\pm$ 1.85	2.4 $\pm$ 0.2	11.23 $\pm$ 0.7	32.7 $\pm$ 1.96
180days	66.9 $\pm$ 3.09	35.24 $\pm$ 2.81	2.6 $\pm$ 0.2	11.77 $\pm$ 0.4	34.30 $\pm$ 1.65
460days	65.1 $\pm$ 0.6	37.26 $\pm$ 1.96	3.4 $\pm$ 0.1	13.52 $\pm$ 0.5	34.74 $\pm$ 1.41

**Protein percentage (%) in different organs of male and female, *Astacus leptodactylus*. There is no significant difference between means of protein percentage in male and female ( $P>0.05$ )**





Lipid percentage (%) in different organs of male and female, *Astacus leptoductylus*. There is no significant difference between means of lipid percentage in male and female ( $P > 0.05$ )



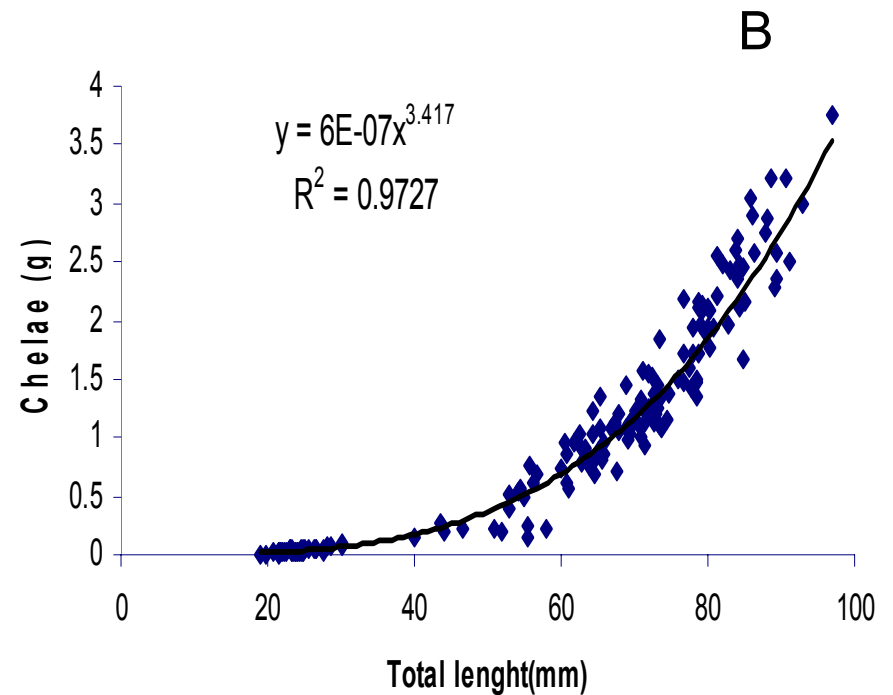
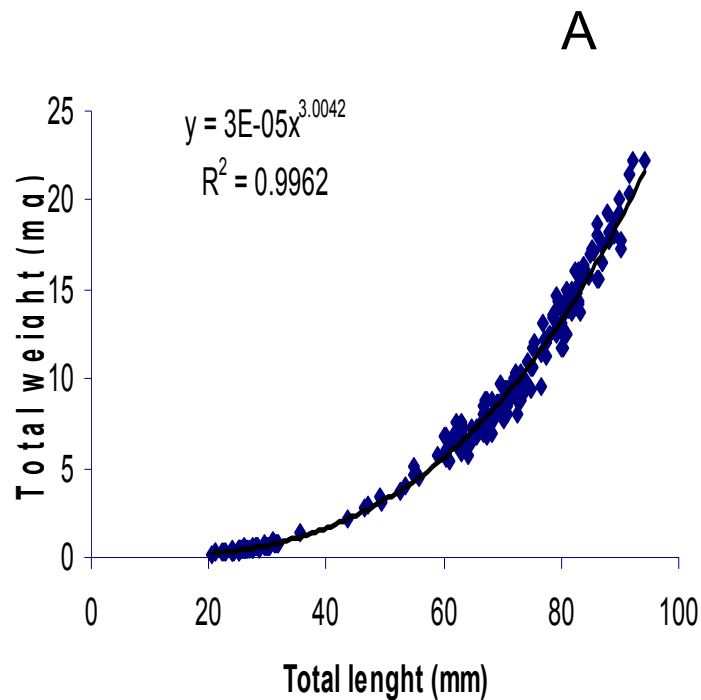
Relative weight percentages of edible and inedible parts of body in female crayfish, *Astacus leptodactylus* in different weight groups.

Tail (%)	Cephalotorax (%)	Chelae (%)	Weight
25.05±1.87 <sup>a</sup>	61.75±2.59 <sup>a</sup>	9.22±2.72 <sup>d</sup>	<1 gr
25.52±1.35 <sup>a</sup>	60.04±2.42 <sup>b</sup>	11.51±2.97 <sup>c</sup>	1-5gr
25.09±1.43 <sup>a</sup>	59.65±3.43 <sup>b</sup>	13.51±1.61 <sup>b</sup>	5-10gr
25.15±1.99 <sup>a</sup>	50.01±2.05 <sup>c</sup>	14.58±1.53 <sup>ab</sup>	10-15gr
24.45±1.17 <sup>a</sup>	50.03±1.66 <sup>c</sup>	15.59±1.46 <sup>a</sup>	15-20 gr
25.08±1.63	57.08±5.62	12.63±3.11	average

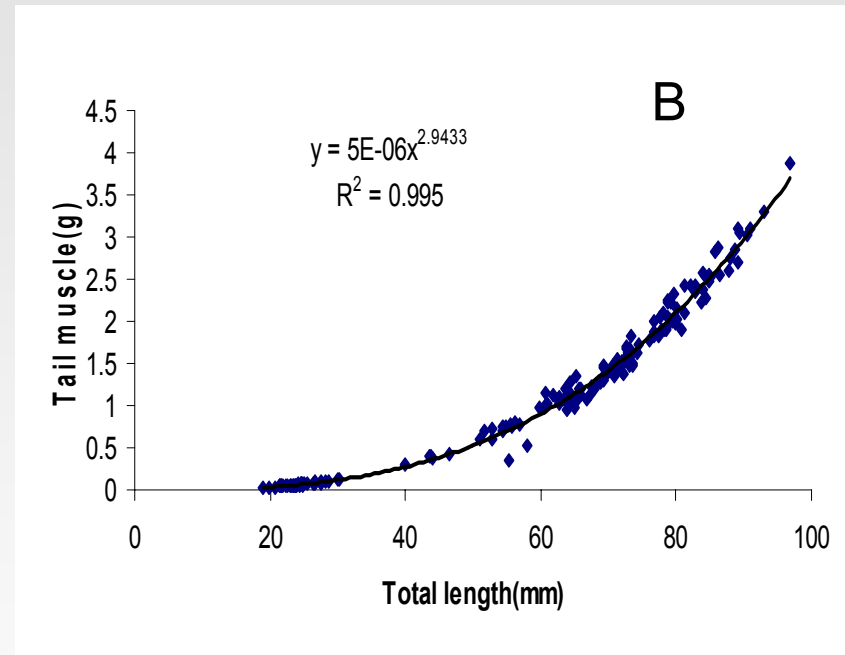
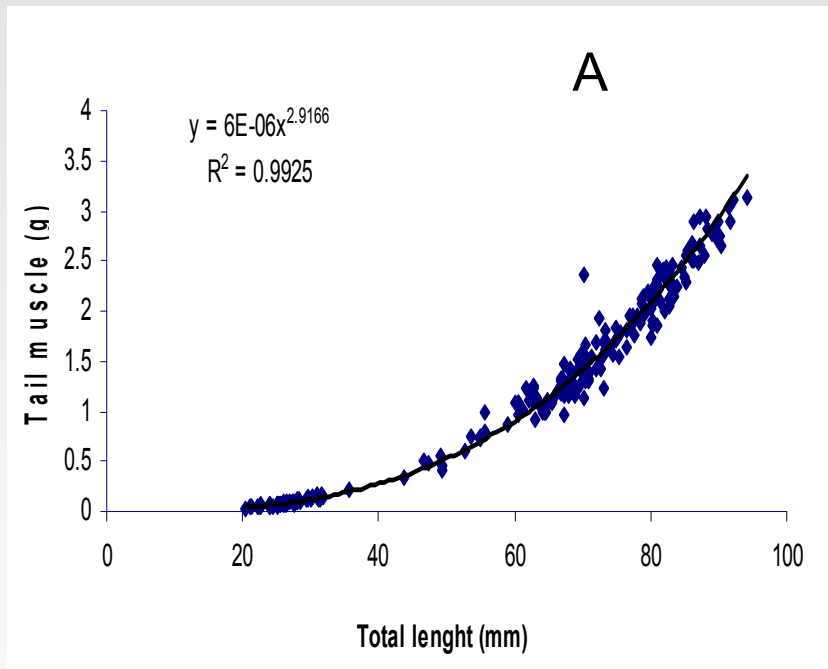
**Relative weight percentages of edible and inedible parts of body in female crayfish, *Astacus leptodactylus* in different weight groups.**

<b>Tail (%)</b>	<b>Cephalotorax (%)</b>	<b>Chelae (%)</b>	<b>Weight</b>
<b>25.15±2.06a</b>	<b>61.73±3.16a</b>	<b>9.36±2.49e</b>	<b>&lt;1gr</b>
<b>24.64±1.65a</b>	<b>60.43±1.75b</b>	<b>11.85±2.48d</b>	<b>1-5 gr</b>
<b>24.81±1.69a</b>	<b>60.15±3.50b</b>	<b>13.18±2.54c</b>	<b>5-10 gr</b>
<b>23.44±1.14b</b>	<b>59.32±2.20bc</b>	<b>15.70±2.20b</b>	<b>10-15 gr</b>
<b>22.43±1.15c</b>	<b>58.29±2.71c</b>	<b>17.02±1.84a</b>	<b>15-20 gr</b>
<b>24.25±1.88</b>	<b>60.12±3.08</b>	<b>13.16±3.56</b>	<b>average</b>

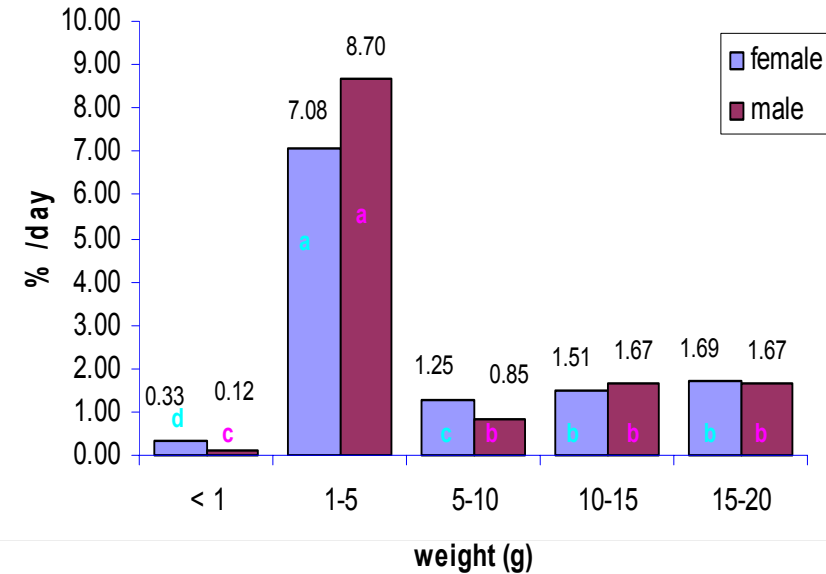
# Total length - weight relationship of male (a) and female (b) crayfish



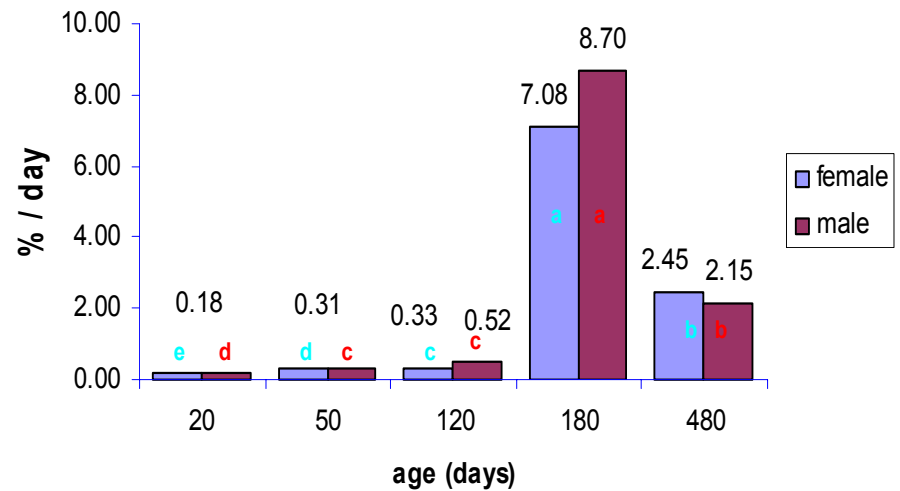
# Total length – tail muscle weight relationship of male (a) and female (b) crayfish



■ Growth specific rate of male and female crayfish in various weights



■ Growth specific rate of male and female crayfish in various ages



## **Conclusion**

***A.leptoductyls* .Relative weight of chelae are significantly increased in crayfish with weight greater than 10 g, especially in male crayfish.**

**lipid percentages increased in both sexes in higher age. Although protein percentage was increased in female with age but reduction was observed in male. In both males and females, large crayfish**