**Introuduction**

The lake is defined as a small to moderate sized internal water body with a surface exposed to climatic changes, and most of it is relatively poor due to the nature of the bottom formation and the weak chemical substance of the rocks adjacent to it (FAO,2008).

Small lakes where the distribution of fish is subject to rapid change, as well as that Predators have a big role in removing different types of fish, and the opposite is true for large lakes (Brown *et al.*, 2005).

Iraq has different bodies of water with an area of about 1.10 million hectares and environmental conditions suitable for fish growth and cultivation, and spread in its inland waters up to 68 species of fish Al-Daham, N.K. (1982).Failure to adopt the results of scientific research for any water body leads to a further deterioration of fish resource in Iraq (Abbas *et al.*, 2005).

Some species have disappeared relatively, such as (buzz) *Barbus esocinus*, (albuni)*Barbus sharpeyi*, , (Gattan) *Barbus xanthopterus*, and(shabbot) *Barpus grypus*. Other non economic species such as *carassius carassius* and *C. auratus* (Al-Temimy,2004) and (Al-Rudainy,2009).

Some local studies have dealt with the nature of fish community composition in some inland water bodies. *Liza abu* was recorded among 17 species in Haditha Dam Lake in 1995 (Al-Rudainy *et al.*,2001). It was also kishni and goldfish *C. auratus* among 15 fish species in Habbaniyah lake in 1997 (Al-Rudainy *et al.*,1999). Hussein(2000) mentioned the dominion and spread of some types of exotic fish in the waters of southern Iraq such as common carp and exotic species golden fish Both types.

These studies were showed and gave information's on fish stock assessments, commercial and non-commercial fishes, as well as, this information which support us to take care of fishes as rich national resources and to be as a basic for our planning for future to reserve this fortune (Sediq and Abbas, 2013).

Dukan Dam Lake has not received the attention of researchers except for some studies and research that dealt with fish species parasites in it as well as the relative abundance of fish species in it (Abdullah *et al.*2004).As for the ecology and biology of some fish (Ghani,1980) .

The most important of these studies was by (Abdullah, 2006) on the fishes endemic to Dokan Lake, as it recorded 23 species, belonging to 6 families, and the numerical dominance ranged between 45to 50% of fish (Tueni) *B. belayewi*.

**Collection of Fishes**

Samples of fishes were collected using gill nets of (100m) in length, (4 m) in depth and mesh size of (2.5 to 10 cm), also, cast net (or Selia as a local name) were used with mesh size of (1 x 1, 1.5 x 1.5 and 2 x 2). Monthly fish catches has been done during the period from December 2007 to November 2008 Fish were examined nearest 0.1 cm and 0.1gm for both Total Length (TL) and Weight (TW), respectively, and identified according to Beckman (1962) and Morgan D.L. and S.J. Beatty (2006).

**Ecological and Biological Index**

Water samples were collected from the Dukan dam lake once a month for a whole year. The samples were collected during the morning hours at the middle of each month. Some physical and chemical properties of water were measured (depth of 31 cm from the surface layer of the lake). Air and water temperature was measured using a simple mercury thermometer with a gradient of 0 to 100 ° C. The pH degree and the electrical conductivity of water pH - Ec-TDS Meter HI 9811 were measured. According to the salinity concentration of water using the following equation:

Salinity (g / L) = Electrical conductivity (microsimens / cm) x 0.0064

Use a Secchi disk to measure transparency and measure Dissolved oxygen concentration using an oxygen meter (Oxymeter YSI WTW.)

Numerical relative abundance (%) and weight (%) for species

The numerical and weight abundance was calculated using the percentages of number or weight monthly

Percentage of number or weight =

(The number or weight of fish type in the catch sample / Total number or weight of fish in the catch sample) x 100

**Result and Discussion**

**1- Water quality**

Temperature is one of the most important environmental factors that directly affect the abundance and diversity of the fish community and other aquatic as well as growth and control the reproduction process, as it has only impact equivalent to more than 50% of the variables in the growth rates (Houde,1989).

Monthly changes to the values ​​of water temperatures in dukan dam lake in 2008 (Sediq, 2009),the water temperature dropped to 6.5 ° C in January 2008, and the highest values ​​for water temperature was 30 º C recorded in the month of July of the same year (table 1). Current results coincided with temperature ranges recorded in the study to the waters of dukan dam lake, which ranged between 5.5 º C to 30 º C Abdullah (2006) and (Al-Rudainy, 2002). The seasonal changes were the water temperature in the lake were within range narrow range in the winter season and expanded during the summer, which are convenience range tolerate by fish in a water bodies environment Interior (Al-Temimy,2004) and (Al-Rudainy,2002).

Affected by the pH values ​​in the aquatic environment by several factors, including the process of photosynthesis and increase the concentration of dissolved oxygen in the water during the morning hours and decline during the night hours as a result of breathing to aquatic organisms, which is indication that there are daily changes in pH values (Lind, 1979).

Monthly changes to the values ​​of pH for the waters of Lake Dukan dam in 2008 (Sediq, 2009) Noting that differences monthly pH ranged between the lowest value recorded 6.9 per month in January 2008, and the highest value was 8, 5 and recorded in the month of July in the same year (table 1). The results suggest a study Sediq (2009) that changes monthly values pH of lake water were slightly and within the limits of the ranges tight an approach to his record Abdullah (2006). For the lake itself, it ranged from 7 to 8.4.

The higher the values of the pH during the summer season may return to stagnation of water (storage water) compared to the winter season(Ibrahim *et al.*,2006). The current values are Within the appropriate ranges and harmless to fish, which ranges Between 6.5 and 8.5, according to the researcher Post, (1983).

Represent salinity total concentrations overall positive and negative ions in water sample (APHA, 1985), and affected by many factors, including the events and activities of industrial as well as water temperature, which is one of the most important factors contribute effectively to increase the proportion of evaporation and thus increasing salinity (Al-Rudainy *et al.*, 2006).

Monthly changes of salinity values ​​for the waters of dukan dam lake in 2008 (Sediq, 2009). Registered as varied extents between the lowest value of 0.15 g / l in February 2008 and the highest value recorded was 0.33 g / l in August of the same year (table 1). Return oscillation happening to the values of concentration of water salinity at dukan dam lake decreases in season cold months and height in the season warm months to variation water temperatures in these seasons, as well as the rising waters because of rain in the winter season and the beginning of the spring season, which causes alleviate water salinity, either high temperature during the summer season leads to increased evaporation. For high temperature and heavy rains influence on water salinity concentration that is directly proportional to temperature and is inversely with the amount of rain(Al-Lami,1998) . It corresponds with the results Sediq (2009). The lake is classified as a freshwater which it does not exceed the concentration salinity water of 0. 50 gm / L according to divisions ( Reid,1961). It is very suitable for freshwater fish such us a cyprinidae fish.

Water transparency in any body of water one of the most important physical characteristics that indicate the effect and the reflection of light through the water column and therefore affect many vital activities within the framework of the aquatic environment (Wolfram et al., 1999).

Monthly changes to the values ​​of transparency water of dukan dam lake during the study Sediq (2009), as the results show the current high values ​​to record high 220 cm in February 2008 and the fall of the lowest 122 cm in August of the same year (table 1). The results of Sediq (2009) higher than the results of which were recorded in one of the artificial lakes west of Baghdad as how ranged from 27 to 89 cm (Al-Rudainy,2002).

Either study Al-Hamed (1976) has indicated purity waters of Dukan lake year round except the rain in the winter season, which leads to turbidity water it is close to current results. The high water transparency values of any body of water refers to the low primary productivity, which made it directly affects the presence of other aquatic organism's and the most important fish (Silva et al., 2006).

The transparency of water is one of the most important factors affecting the physical variation and installation of the fish community, especially those dependent species fed on sight or sense of smell and taste (Karve *et al*., 2008).

The importance of the concentration of dissolved oxygen in the water being refers to the circumstances of water, and provides conclusive evidence of the suitability of the aquatic environment for life (Reid, 1961).

As the need for aquatic organisms dissolved oxygen is very necessary to produce the energy needed to support the vital actions and sustaining life and growth and productivity (Degoux, 1983). The concentration of dissolved oxygen in the water of the most important and influential factors in the life of fish, in addition to being regulated metabolic actions in the body it makes the body of water suitable for the abundance of many other aquatic his relationship with fish.Generally, the concentration of 3 mg / liter or less is stressful to aquatic including fish (Lind, 1979).

Monthly changes to the values ​​of dissolved oxygen concentration to the waters of dukan dam lake during the study (Sediq, 2009). As the highest value for the concentration of dissolved oxygen water in the month of January in 2008 and amounted to 12 mg / L, and the lowest value reached 6.5 mg / L and recorded in the month of July of the same year (table 1). The current results indicate that the concentration of dissolved oxygen values ​​of water in dokan dam lake of not less than 6.5 mg / L, which is longer than the water very appropriate levels for the life of fish (FAO, 1987). This is consistent with many of the previous local studies that confirmed the nature of the good ventilation of water in different locations of the Tigris and Euphrates rivers and some other water bodies (Al-Temimy,2004) and (Al-Rudainy,2009).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Property   |  | | --- | |  |   Month | |  |  | | --- | --- | | Air Temperature   |  | | --- | | (C˚) | | | |  | | --- | | Water Temperature |   (C˚) | pH | |  | | --- | | Salinity |   (gm/l) | |  | | --- | | Transparency (cm) | | Dissolved of oxygen  (mg/l) |
| |  | | --- | | December 2007 | | **14.5** | **15.5** | **7** | **0.19** | **210** | **11** |
| |  | | --- | | January 2008 | | **5.5** | **6.5** | **6.9** | **0.17** | **215** | **12** |
| |  | | --- | | February | | **6.5** | **7.5** | **7.1** | **0.15** | **220** | **10.5** |
| |  | | --- | | March | | **18.5** | **16.5** | **7.2** | **0.18** | **187** | **8.5** |
| |  | | --- | | April | | **24** | **21.5** | **7.5** | **0.21** | **143** | **7.5** |
| |  | | --- | | May | | **28** | **24.5** | **7.8** | **0.24** | **137** | **7.2** |
| |  | | --- | | June | | **33.5** | **28** | **8.1** | **0.26** | **130** | **7** |
| |  | | --- | | July | | **37.5** | **30** | **8.5** | **0.30** | **127** | **6.5** |
| |  | | --- | | August | | **35.5** | **27.5** | **8** | **0.33** | **122** | **6.7** |
| |  | | --- | | September | | **30** | **25** | **7.7** | **0.29** | **152** | **6.8** |
| |  | | --- | | October | | **25.5** | **22.5** | **7.5** | **0.25** | **181** | **7.5** |
| |  | | --- | | November | | **21.5** | **19.5** | **7.2** | **0.22** | **195** | **9.5** |
| Average | **5.5-37.5**  **10.5±24.8** | **6.5-30**  **6.5±21.5** | **8.5-9**  **0.6±7.5** | **0.15-0.33**  **0.05±0.25** | **122-220**  **36.6±167.5** | **6.5-12**  **2.6±7.8** |

**Table (1): Values ​​of some environmental factors in Dukan dam lake(Sediq,2009).**

**2- Fish catches**

Tables ( 2 and 3) have been shown, 3006 fish were caught a total weight of 678.05 kg, the total catch is 27 species of fish, including 23 species of Cyprinidae fish, one type for each of Mastacembelidae, Mugilidae, Siluridae and Sisoridae of dukan dam lake during the study (Sediq, 2009). These results agree with other locality studies the dominated fish Cyprinidae (Al-Temimy,2004) and (Al-Rudainy,2009).

Al-Daham (1982) indicated that the dominance of the fish species of cyprinidae family is due to its existence is due to its being a freshwater fish that prefers cold, warm and well-ventilated water this is close to the current results, table (3) shown fish were occupied *B. grypus* first place in terms of number, with (13.4%) of the total catch, the Golden fish *C. auratus* came second (11.6%) , followed by in third place are fish of each of the *Ch. regium* (9.9%) and Tweeni fish *B. belayewi* (9.5%). Other types represented different centers to register *Gl. kurdistanicus* the last ranked numerically (0.1%).

Table (3) illustrated recording *B. grypus* fish also ranked first by weight (31%) from total catch, followed buzz fish *Barbus esocinus* (16%), Common carp *Cyprinus carpio* (15.4%), Gattan fish *Barbus xanthopterus* (11.4%) respectively, then came the last type is *Gl. kurdistanicus* (0.02%) (Sediq, 2009). In Habbaniyah lake found superiority to Kishni fish and Golden fish numerically ratio 39.6% and 24.7% respectively, while sovereignty was weight for Common carp *Cyprinus carpio* and Golden fish *C. auratus* ratio 43.2% and 23.5%, respectively (Al-Rudainy *et al.*,1999).

In Al-Haditha dam lake Kishni fish *Liza abu* and Common carp *C. carpio* dominated numerically ratio 44% and 31.2% respectively (Al-Rudainy *et al.*, 2001). In Lake Radwaniyah west of Baghdad Common fish *Cyprinus carpio* dominated numerically ratio 36.5% and weights of *B. lutues* fish ratio for 37.5% of the total catch. The difference in numbers and weights of fish in water bodies may be due to the different environmental conditions of these bodies of water, as well as site seasons fishing methods, finally the vertical distribution of fish Mayo and Jackson (2006).

|  |  |  |
| --- | --- | --- |
| Common name | Scientific name | Family |
| Acanthobrama | *Acanthobrama centisquama* (Heckel,1843) | Cyprinidae |
| Samnan | *A. marmid* (Heckel,1843) | Cyprinidae |
| Sink | *A. mossulensis* (Heckel,1843) | Cyprinidae |
| Slal | *A. sellal* (Heckel,1843) | Cyprinidae |
| Lasaffa | *Alburnus caeruleus* (Heckel,1843)   |  | | --- | |  | | Cyprinidae |
| ٭Shiliq | *Aspius vorax*(Heckel,1843) | Cyprinidae |
| ٭Nabbash | *B. barbulus* (Heckel,1846) | Cyprinidae |
| ٭Twainy | *B. belayewi* (Menon,1956) | Cyprinidae |
| ٭Buzz | *B. esocinus* (Heckel,1843) | Cyprinidae |
| ٭Shabbot | *B. grypus* (Heckel, 1843) | Cyprinidae |
| ٭Jassan | *B. kersin* (Heckel,1843) | Cyprinidae |
| ٭Himmri | *B. luteus*(Heckel,1843) | Cyprinidae |
| ٭Gattan | *B. xanthopterus*(Heckel, 1843) | Cyprinidae |
| ٭Golden fish | *Carassius auratus* ( L. 1758 ) | Cyprinidae |
| ٭Karssen | *C. carassius*(L. 1758) | Cyprinidae |
| ٭Balwt malwki | *Chondrostoma regium*(Heckel,1843) | Cyprinidae |
| ٭Common carp | *Cyprinus carpio* (Linnaeus,1758) | Cyprinidae |
| Bwnainy | *Cyprinion macrostomus*(Heckel,1843) | Cyprinidae |
| Red karkur | *Garra rufa*(Heckel,1843) | Cyprinidae |
| Saqanqwr | *Glyptothorax kurdistanicus*(Berg,1931) | Sisoridae |
| Sifals bwran | *Leuciscus cephalus*(Linnaeus,1758) | Cyprinidae |
| White bwran | *L. lepidus*(Heckel,1843) | Cyprinidae |
| Kishni | *Liza abu*(Heckel,1843) | Mugilidae |
| Marmarej | *Mastacembelus mastacembelus*(Russell,1794) | Mastacembelidae |
| ٭Asian jirri | *Silurus triostegus*  (Heckel,1843) | Siluridae |
| ٭Damascus tilla | *Varicorhinus damasciinus*(Valenciennes,1842) | Cyprinidae |
| ٭Tilla | *V. trutta*(Heckel,1843) | Cyprinidae |

**Table (2): Fish species caught in the Dukan dam lake (Sediq,2009).**

٭Commercial species

**Table (3): Types of fish catch according to their numbers and weights in the Dukan dam lake(Sediq,2009).**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species | Number | % | Weight  (Kg) | % | Ranges total length(cm) | Ranges total weight(gm) |
| ٭Common shabbot | 402 | 13.4 | 210.2 | 31 | 9.5 - 75 | 10.5 - 4500 |
| ٭Golden fish | 350 | 11.6 | 38 | 5.5 | 7.3 - 27.5 | 15.5 - 375 |
| ٭Balwt malwki | 297 | 9.9 | 9 | 1.3 | 5.6 - 27.3 | 6.5 - 175 |
| ٭Twainy | 281 | 9.5 | 48.6 | 7.2 | 10.8 - 50 | 15.5 - 500 |
| ٭Common carp | 237 | 7.9 | 104.7 | 15.4 | 6.4 - 50 | 7.5 - 3250 |
| ٭Gattan | 212 | 7.1 | 77.4 | 11.4 | 8.4 - 90 | 12.5 - 5000 |
| ٭Karssen | 171 | 5.6 | 7.9 | 1.2 | 6.1 - 23.5 | 6.5 - 165 |
| Samnan | 154 | 5.1 | 3 | 0.4 | 7.1 - 20 | 6.5 - 55 |
| Lasaffa | 148 | 4.9 | 2.3 | 0.4 | 6.2 - 19.6 | 4.5 - 55.5 |
| ٭Buzz | 117 | 3.9 | 108.8 | 16 | 12.5 - 115 | 340 - 20000 |
| Bwnainy | 106 | 3.5 | 2.4 | 0.4 | 6.1 - 18.5 | 4.5 - 120 |
| Sink | 70 | 2.3 | 1.3 | 0.2 | 5 - 18.6 | 5.5 - 45 |
| ٭Himmri | 62 | 2.1 | 2 | 0.3 | 9 - 21.5 | 8.5 - 120 |
| ٭Nabbash | 58 | 1.9 | 24.2 | 3.6 | 11.1 - 95 | 20 - 5250 |
| Slal | 49 | 1.6 | 0.4 | 0.08 | 4.2 - 14.5 | 3.5 - 15.5 |
| Acanthobrama | 45 | 1.5 | 0.6 | 0.1 | 8.2 - 17.5 | 6.5 - 80 |
| ٭Damascus tilla | 40 | 1.3 | 4.9 | 0.7 | 8.1 - 25 | 22.5 - 275 |
| ٭Jassan | 33 | 1.1 | 7.2 | 1.1 | 7.8 - 40 | 27.5 - 710 |
| ٭Shiliq | 31 | 1 | 9.1 | 1.3 | 10.1 - 42 | 20 - 720 |
| ٭Tilla | 20 | 0.7 | 3.1 | 0.5 | 8.2 - 34 | 45 - 375 |
| White bwran | 12 | 0.4 | 2.9 | 0.4 | 15.7 - 37 | 95 - 400 |
| Sifals bwran | 12 | 0.4 | 2.9 | 0.4 | 13.5 - 42 | 85 - 580 |
| Red karkur | 8 | 0.3 | 0.2 | 0.04 | 10 - 19.5 | 15 - 52.5 |
| Kishni | 55 | 1.8 | 1.2 | 0.2 | 6.5 - 16.5 | 5.5 - 65.5 |
| ٭Asian jirri | 24 | 0.8 | 5.4 | 0.8 | 11.5 - 40.2 | 25 - 915 |
| Marmarej | 9 | 0.3 | 0.3 | 0.06 | 9.2 - 23 | 15 - 85 |
| Saqanqwr | 3 | 0.1 | 0.05 | 0.02 | 9.7 - 13.5 | 14.5 - 20.5 |
| Total | 3006 |  | 678.05 |

٭Commercial species

From (table 4) it is clear that the number of types caught fish species decreased to 8 in January and increased to 22 species in March 2008. As for weight it decreased by 2.1% in January and returned to rise by 13.8% of the total catch in May 2008. It is noted that there is a decrease in the presence of fish species, numbers and weights in the cold months and an increase in their abundance during the warm and hot months (Sediq, 2009).

The abundance of fish species and their numbers and weights with high water temperature may be due to the presence of large fish for the purpose of reproduction as well as the presence of all types of resident fish prevailing as a result of increased nutrition activity (Al-Rudainy *et al.*,1999)., (Al-Rudainy,2009). and (Al-Rudainy *et al.*,2001). It may correspond to current results.

**Table (4) : Monthly changes of fish species, numbers and weights caught in Dukan dam lake (Sediq,2009).**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Number types of fish | Total number of fish | % | Total weight of fish (kg) | % |
| December2007   |  | | --- | |  | | 11 | 168 | 5.6 | 48.4 | 7.1 |
| January 2008   |  | | --- | |  | | 8 | 97 | 3.2 | 14.4 | 2.1 |
| February   |  | | --- | |  | | 11 | 92 | 3.1 | 19.5 | 2.9 |
| March | 22 | 367 | 12.2 | 74.2 | 11 |
| April | 14 | 283 | 9.4 | 77.1 | 11.4 |
| May | 15 | 327 | 10.8 | 93.8 | 13.8 |
| June | 15 | 317 | 10.6 | 75.8 | 11.2 |
| July | 11 | 203 | 6.8 | 41.5 | 6.1 |
| August | 9 | 272 | 9.1 | 40.5 | 6 |
| September | 15 | 390 | 12.9 | 80.05 | 11.8 |
| October | 20 | 312 | 10.4 | 48.9 | 7.2 |
| November | 14 | 178 | 5.9 | 63.9 | 9.4 |
| Total |  | 300 |  | 678.05 |

Total catches are distributed among commercial species (15 species) a total number of 2093 fish with a total weight of 652.5 kg, and non-commercial fish (12 species) a total number of 913 fish and a total weight of 25.55 kg (Table 5). It was also observed that the lowest number and weight of commercial fish was 41 fish with a total weight of 12.6 kg during January 2008, while there was an increase in the number of 291 fish during September, and weighed 92.1 kg in May of the same year. As for non-commercial fish, the lowest number was 24 fish with a weight of 0.5 Kg in February 2008, While the highest numbers represented 128 fish during March and weights 2.6 kg during April of the same year. Fluctuation is observed of the catch per unit effort during the study, the lowest value of 4.8 kg / hour for total catch and 4.2 kg / hour for commercial fishing was recorded in January and the value of 0.17 kg / hour for non-commercial fishing in February of the year 2008 (Table 6), While the catch increased in the following months and recorded the highest total catch by 31.3 kg / hour, for commercial fishing with a value of 30.7 kg / hour in May, and for non-commercial fishing with a value of 1.0 kg / hour in September of the year 2008 (Sediq, 2009).

**Table (5) : Number and weights of commercial and non-commercial fish caught in the Dukan dam lake (Sediq,2009).**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Month | Commercial fish | | Non- commercial fish | |
| Number | Weight(Kg) | Number | Weight(Kg) |
| December2007   |  | | --- | |  | | 141 | 46.7 | 27 | 1.7 |
| January 2008   |  | | --- | |  | | 41 | 12.6 | 56 | 1.8 |
| February   |  | | --- | |  | | 68 | 19 | 24 | 0.5 |
| March | 239 | 71.7 | 128 | 2.6 |
| April | 193 | 74.4 | 90 | 2.7 |
| May | 228 | 92.1 | 99 | 1.8 |
| June | 226 | 73 | 91 | 2.8 |
| July | 144 | 40 | 59 | 1.52 |
| August | 208 | 38 | 64 | 2.6 |
| September | 291 | 77.1 | 99 | 3.1 |
| October | 213 | 46.5 | 99 | 2.43 |
| November | 101 | 61.4 | 77 | 2 |
| Total | 2093 | 652.5 | 913 | 25.55 |

**Table (6) : Monthly changes in the values of total, commercial and non-commercial catch rates in the unit effort of fish caught in Dukan dam lake (Sediq,2009).**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Total fishing  (Kg / h) | Commercial fishing  (Kg / h) | Non-commercial fishing  (Kg / h) |
| December2007   |  | | --- | |  | | 16.2 | 15.6 | 0.6 |
| January 2008   |  | | --- | |  | | 4.8 | 4.2 | 0.60 |
| February   |  | | --- | |  | | 6.47 | 6.3 | 0.17 |
| March | 24.76 | 23.9 | 0.86 |
| April | 25.7 | 24.8 | 0.90 |
| May | 31.3 | 30.7 | 0.60 |
| June | 25.22 | 24.3 | 0.92 |
| July | 13.81 | 13.3 | 0.51 |
| August | 13.56 | 12.7 | 0.86 |
| September | 26.7 | 25.7 | 1.0 |
| October | 16.3 | 15.5 | 0.8 |
| November | 21.2 | 20.5 | 0.7 |
| Total | 226.02 | 217.5 | 8.52 |

The amount of catch in the CPUE (Catch Per Unit Effort) expresses the number of (individuals) or fish weight (kg) caught during the unit of time / hour (Paully,1984). It is considered one of the most important indicators that indicate the status of the fish community (it includes the number of fishermen, the number of boats, the number of fishing days, the types of nets and the number of their throws, as well as the lunar phase) which is very important during night fishing operations (Chisnall *et al.*, 2007). Results of an approach were recorded for the decrease in the number of caught fish in the cold months and increased with the water temperature rises with the beginning of spring and during the summer, it may be due to increased feeding activity or movement of fish during spawning (Bostanci *et al*., 2007).

The fluctuation in the amount of fish caught may be due to several factors, including the intensity of effort fishing and movement of fish for feeding and reproduction, in addition to various other environmental influences that play a large role in the distribution and spread of fish, especially the increase in water temperature. The current results indicate a decrease in the catch of fish caught in the cold months, and its height increased with the increase in the water temperature with the beginning of spring and during the summer (Sediq, 2009). The current results are agree with some previous local studies(Al-Rudainy *et al.*,2001) and (Al-Temimy,2004).

The spread and dominance of Golden fish *Carassius auratus* and Karsen fish *Carassius carassius* were noted for their numbers and weights in the Dukan Dam Lake, it is a disturbing result for Iraqi water bodies, as these fish have the ability to resist various environmental conditions and acclimatization, so they are physiological with them (Bostanci *et al*., 2007) and (Golovanov *et al,*. 2007).

Current results indicate the risk of dominion of fish of these species in Iraqi water bodies, including the Dukan Dam Lake (Sediq, 2009).

Conclusions

1 - Water temperatures were suitable for different types of fish.

2- Characterized by the values ​​of dissolved oxygen concentration of water as not less than 6.5 mg / l which is suitable to the presence and spread of fish in the lake.

3- Characterized by the waters of dukan dam lake as one of the fresh water which is suitable for living cyprinidae fish and other types.

4- The present study showed that the waters of Dukan dam lake tended to sprightly alkali

5- The present study area (Dukan Dam Lake) is an important store for commercial fish species in terms of numbers, weights, and dominance, such as Common shabbout, bizz, ghattan, and common carp.

6- The catch numbers of Golden fish and Karsen fish increased significantly, in addition to the disappearance of other important types of fish such as Bunni fish.