Abstract:
Caspian sea is the largest lake in the world that its extent is 438000 km². It takes into account the largest lake in the world. It is located between Iran, Russian Federal Republic, Azerbaijan, Turkmenistan and Ghashghaeastan countries. Caspian sea has 114 species, 63 subspecies and 114 fish race. This ecosystem is one of rare aquatic ecosystem in the world. In the recent years, this ecosystem is exposed to threat by invasion of Mnemiopsis Leidyi (Ctenophora). Despite planktons are important in food chain of aquatic ecosystem. The planktonic survey carried out by ten tonnes vessel in less than 10m and 2500 tonnes vessel (gilan ship) in more than 10 m in the caspian sea. This survey took place before entrance years of cetenophore (1994-1996) and after entrance of ctenophore (1999-2000). The comparison of this survey indicated that the main changes of densites percentage and biomass of planktons observed. Before 1997 in phytoplankton groups crysophyto phylum has been dominant phytoplankton in the southern caspian sea where as 1999-2000 years, pyrophyto phylum has shown large increase in summer and autumn seasons. Also, the zooplankton changes showed in coastal areas of caspian sea in 1991. The vertical and horizontal distribution of zooplankton varied in depths. The majority of zooplankton contain arthropoda phylom, copepoda order, naupli, cladocera order and rotiforia phylum. In 2001, during sampling from 50m depth, the marked decreasing in the percentage of zooplankton population observed. The general of eurytemora, calanipeda, podon, polyphemus and synchaeta in zooplankton population of caspian sea were not observed. After entrance years of cetenophora the survey showed the decrease of biomass in copepoda order. This decreasing is synchronous with increasing of cetenophora biomass in many coastal areas, Before entrance of cetenophora, kilka catch reached from 90000 up to 95000 tonnes, but after entrance of cetenophora, in 1998 –1999 this figure was decreased, this figure reached to 45000 tonnes in 2001, annuanlly, the decreasing had social and economical effects. The cooperation of mariginal countries in the caspian sea, policy makers and university community want to biological challenge against cetenophora of caspian sea.

Key word: Caspian sea, Mnemiopsis Leidyi, Phytoplankton, Zooplankton, Kilka.

Introduction:
Caspian sea, with the extent of 438000 km² and having 114 pspecies, 63 subspecies,and 114 fishrace, isthelargst lake in the world. It’s located between Iran, Federative Republic of Russian, Azerbaijan, Torkamanestan and Ghazghestan. Cetenophoras are a group of aquatic animals which are distributed throughout the world oceans. The species M. Leidyi (cetenophora) which lives in the coastal areas is a native in the waters of the northe oceans and the coats of Florida and has a distribution in these areas, that is entered from the mentioned coasts to Black (1980) and Marmareh (1982) Sea, by the balanced ship carring grains, and then entered the caspian sea, through Volga-Don river. (Ivano, 2000, Dumont, 1995). Although it has a distribution in the coasts of five exploitative countries, but the ecological conditions in the southern caspian sea are more appropriate for this species to live. The studies of phytoplankton, Zooplankton, and kilka, before and after the entrance of cetenophora to the caspian sea show that marked changes in dispersion and distribution of phyto, zoo, and also decrease in kilka catch, have been occurred,kilkas are one of the native
and valuable fishes in the caspian sea, which play an important role in the economics of the marginal countries of the caspian sea such as, Iran. Since, M.L. has a common food chain with kilka, its resources are exposed to the serious threat. The totals of the direct and indirect employees, in a didition to their families, in kilka catch industry, fish powder and conserve industry, are about 20,000 persons. In addition to the economical problems and social subordinations the continuation of the process, with respect to 40 percent decrease in kilka catch in 2001 have affected the resources of the other species, such as, caviare and bony fishes, that eventually will have dangerous social economical effects and ask the serious challenge for the researches managers and planning directors.

Materials and Methods:
For sampling, less than 10m in depth, a 10 tonnes vessel and more than the depth of 10m a 250 tonnes ship (Gilan) was used. The number of the stations before the entrance of cetenophora, was at first, 69 semilines perpendicular to the coast from Astara to Hosseingholi border, Then it decreased by 32 semilines. The number of these stations, regarding the gathered in formations, decreased by 18 semilines after the entrance of cetenophora. The sampling was accomplished in a manner of marine full round in every season. The sampling in every line, under the depth of 10m, by 0, 5, and 10m, and in depth from 10m to 100m and more than it, was done, phyto’s samples and the physical and chemical samples in the water was accomplished by Routener, but 200 samples was caught by a plankton catch net with 100 micron length and 36 cm² nozzle. Plankton samples were fixed in a 4 percent formalin and transfered in to the laboratory. (Newell, 1977). After the recognition of plankton species, by a revers Microscope in the volumes of 1, 0. (2 repetitions), and 10 ml, the samples with three- fold repetitions, was analysed quantitativ and qualitatively in the laboratory. The statistical calendar of iran fisheries (92- 2001), has been used in analysing the changes of kilka catch, during the years after and before the entrance of cetenophora in the caspian sea.

Results:
Five main species in phytoplanktons at a depth of 10m are as follow: chrysophyto, pyrophyta, cyanophyta, Chlorophyta, and Euglenophyta, have been studied. The results showed that the main changes of the densities percentage and biomass of planktons oberved during 94- 2001. So that, in phytoplankton groups, chrysophyta, has been dominant, in the southern caspian sea, whereas, phrophyta phylum showed large increase in summer and autumn seasons. Also zoo plankton changes at a depth of 10m in 94- 95, 96-99 and 2001 showed the large decrease in zooplankton population in summer 2001, so that their abundance was about 1450 n/m² and their biomass was about 12.93 ml/ m², which is 26 percent less than the last years, and decrease has an effect on caepoda populatiions, and the others species. Particularly, Meroplanktons in souther caspian sea. Also, the study of zooplanktons at a depth of 50m, show that the vertical and horizontal distribution of them, isl varied in depth in the coastal areas of the caspian sea, so that most zooplanktons pertain to Aquthropoda phylum copepoda and Naupli order, and cladocera order. And also Rotatoria phylum but, we have observed a marked decrease in the percentage of zooplankton population, during sampling at as depth of 50m, in 2001, so that the genuses Eurytemora, carinipeda, podon, polyphemus and syncheta were not obserred in the zooplankton, population of the caspian sea. The results are the same, in 2002. These studies showed a marked decrease of biomass in copepoda order, and it was synchronized with the increase of cetenophora biomass in most coastal areas of the caspian sea. Figure-1 shows kilka’s catch process during the last decade, in which it increased from 20,000 tonnes in 92 and 93 to 4000 tonnes in 94, and is decreased by 30.000t, but in 96, it reached to 5000t, tin 97, 55000t in 98, 90.000t, and in 99, 95000t, arisen from the increase of
the fishing activities, or in another words, the increase of fishing vessels, but Kilka. Catch decreased by 75000ts in 99 and 45000ts, in 2001. Planctonic changes and the decrease of Kilka catch were synchronized with the increase of cetenophora biomass, M.L., in the caspian sea.

Figure 1: Catch of the Kilka in the south of caspian sea (1991-2000)

Discussion:
Mnemiopsis Leidyi, is a native in the waters of the northoceans, and the coasts of Florida, which lives in the waters of the northoceans, and the coasts of Florida, which lives in the coastal areas and has a distribution in these areas that is entered from the mentioned coasts to the Black (1980) and Marmareh (1982) sea, by the balanced ship carring grains. The entrance of cetenophora indicated 88% decrease in kilka catch, after 8 years. Figure-2 shows that the catch rate, was equalled 30.000 tonnes in 1968-1970, and about 70.000 ts in 1972-73, and 1976 reached 90.000 tonnes, but it indicated a decrease in 1976. Developing the industrial catch (fishing), this figure has shown an increasing growth, from 1977 to 1986, in Black sea, so that it reached from 50.000 tonnes to 10.000ts in 1986, but it decreased by 60.000ts in 1990, and synchronized with the increase of M.L. biomass. Facing the increase of the catch process, in 1990, they campaigned against cetenphora, biologically. The entrance of the jelly hunter to the caspian sea, through volga-Don channel is reported, in 1995, that is a threat. (Dlumant, 1995). The first report was recorded by M.L. first entrance to the coasts of Ghazaghestan in autumn 1999. Late september, the lake was full of M.Leidyi, and it merged the southern caspian sea, and volga-Don, because of the excessive saltiness of the Northern oceans. (sharifi, 2002). Since, phytoplanktons, are important in the food chain of the aquatic ecosystems, these changes result in a change in phytoplankton, population, thus, planktonic survey, carried out by ten tonnes vessels, less than 10m in depth and 2500 tonnes vessels (Gilan ship), belonging to the Ecological Academy of the caspian sea, before and after the entrance of cetenophora to the caspian sea, sothat, the main changes in the density percentage and biomass of phytoplanktons, were observed, and it’s because of the environmental ecosystem, changes and the entrance and the increase of M.leidyi in the caspian sea. (Tahami, 2002). Since M.L. has a common food chain with kilka (nourished by zooplankton), the study of zooplankton, after and before the entrance of cetenophora was compared and
showed that zooplanktons, Population in the caspian sea affected by cetenophora invasion, so that a decrease in the varieties was observed, (Rohi Tabari 2001). The study of 68 samples caught from the coastal waters of Torkamanestan, Iran, Azarbaijan, and Russian, showed that the regional and vertical distribution of M. leidyi, in these areas, concentrated on the majority of the biomass of this migratory species, with 48 percent in the coastal waters of Iran, and then Azarbaijan, Torkamanestan and Russian, with 37, 14 and 1 percent, (Rohi, 2002). So the southern caspian sea has a better ecological conditions to multiply M.leidyi. There has been an increase in kilka catch in the caspian sea, in 90s. because of its valuable resources that reached from 20.000 tonnes in 1992 to more than 95000 tonnes, in 1999, but was decreased by 75000 tonnes, after the entrance of M.L. in 2001, and it reached 45000 tonnes in 2001, that indicates and annual decrease. By 30 percent in this species, (Ramezani, 2002). The increase of Kilka consumption by human, on the other hand, indicates an annual increase of 15% in the recent years, (salmani, 2000). The total number of the vessels, catching kilka, are amounted to 183 vessels in the southern coasts of the caspian sea, with a capacity from 600 tonnes to 700 tonnes a year on the average. According to the statistical studies, based on catching 45000 tonnes in 2001, the catch average in these years, was estimated to be about 250 tonnes, the annual income of a vessel, calculating 1000 Rials, each kilo, was estimated to be 25 million tomans, which equal the depreciation of the vessel’s annual asset and the current expense, consequently, this level remains unchanged in 2001, since, the fisherman does not profit, it should not be expected that the vessels, practically continue their navigation. On the other hand, if the average cost of the vessels was 70,000,000 tomans, 10,000,000 tomans of it, is depreciating, (Ramezani, 2002). Also, according to these surveys, 40, factories, producing fish powder were exploited, with a production capacity of 56000 ts per unit. (equivalent to 250,000 to 280,000 tonnes kilka in Mazandaran units). The studies show that the factories have made use of one- third (1/3) of the capacity, in spite of the maximum range of kilka catch in 1999. If we take kilka catch into consideration used in the powder production, the maximum range of kilka catch is sufficient for 3 units of 2000 tonners or 6 units of 1000 tonner in the fish powder factory. If it remains unchanged, we won’t profit from the investment in 34 units (equivalent to 45 milliard tomans in Mazandaran and Gilan province) and the expected Employment in those units, so, it has injurious economical- social effects.

Figure 2: The frequency of Anchovy catch and Mnemiopsis Liedyi in the black sea
**Recommendations:**

1. The fishermen and the relevant convertible industries which are certainly considered as legal persons, can claim for damage, sustained by the countries that are interfered in the entrance of ctenophora, by IRI government.

2. The catch of Kilka, should be stopped for 3 years in order to revive its resources.

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