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THE ATTITUDE OF HUNTERS TOWARDS SNAKE'S POPULATION DECLINE IN NORTH CYPRUS

MASTER THESIS

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ABSTRACT

THE ATTITUDE OF HUNTERS TOWARDS SNAKE'S POPULATION DECLINE IN NORTH CYPRUS

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Loss of biodiversity is one of the major issues of current era. Snakes are an important part of the ecosystem. They are one of the most effected groups that face population decline. Turkish Republic of Northern Cyprus is home to a number of snake species. This study is oriented to find out information about these snakes, how humans impact these snakes and what are the related impacts, what is the awareness level of old generation and young generation about the importance of snakes and how are they declining. The study reveals that hunters are enormous in number. Almost 80% percent responses reveal hunters have negative impact on snakes. Only one out of eleven species of snakes in study area is venomous where two are semi poisonous. The level of awareness is very low as 80 percent people do not know how many species there are and how many and which snake species are poisonous. The blunt nosed viper is venomous; other snake species are confused with this specie on the basis of color and slightly similar pattern as poisonous and are killed. Young generation hunters and old generation hunters have almost same impact on snake population. Almost 100% hunters accepted that they kill the snakes if their dogs are intact while hunting. The awareness programs to hunters can change their attitude towards non-venomous snakes completely as they are harmless. They should be also taught how to deal venomous snakes without killing them. This will bring a major change in snake species conservation by changing their attitude towards snakes.

***Keywords*:** Attitude, Education, Hunters, North Cyprus, Snakes.

ÖZET

KUZEY KIBRIS'TA AVCI TUTUMUNUN YILAN POPÜLASYONUNA ETKİSİ

Zeeshan NASRULLAH

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Biyolojik çeşitlilik kaybı, çağımızın en önemli sorunlarından biridir. Ekosistemin önemli bir parçası olan yılanlar popülasyonu azalma eğilim ile karşı karşıya olan en önemli gruplardan birisidir. Kuzey Kıbrıs Türk Cumhuriyeti 12 yılan türüne ev sahipliği yapmaktadır. Bu çalışma, bu yılanlar hakkında daha fazla bilgilenme, insanların bu yılanları nasıl etkilediği ve bu etkilerin neler olduğunu ortya koymayı amaçlamaktadır. Çalışmanın amaçlarından bir diğeri yaşlı neslin bilinç düzeyi ile genç neslin bilinç düzeyini karşılaştırmaktır. Ayrıca yılanların öneminin ne olduğunu ve azalma nedenlerini ortaya koymak da makalenin diğer amaçlarındandır. Karşılıklı görüşmeler avcıların sayıca çok fazla olduğunu vei avcıların % 80'ninin yılanlar üzerinde olumsuz etkisi olduğunu ortaya koymaktadır. Çalışma alanındaki on iki yılan türünden sadece biri zehirli ve ikisi yarı zehirlidir. Bu konuda avcıların farkındalık düzeyi çok düşüktür. Avcıların yüzde 80'i kaç tür yılan olduğunu ve hangi yılan türünün zehirli olduğunu bilmez;Avcıların tamamı sağır yılanın zehirli olduğunu bilir fakat sağır yılanı diğer yılan türlerinden ayırmada sorun yaşlar. Bu yüzden diğer yılan türleri de renk ve desen olarak benzerlik gösterdiği için zehirli olarak karıştırılır ve öldürülür. Genç nesil avcılar ve eski nesil avcıların yılan popülasyonu üzerindeki etkisi yüzdelik olarak birbirine yakındır. Avcıların % 100'ü avlanırken köpekleri yanlarında ise köpeğini koruma maksadı ile yılanları öldürdüklerini kabul etmektedir. Avcılar için eğitici farkındalık programları, zehirli olmayan yılanlara karşı tutumlarını tamamen değiştirebilir. Eğitici çalışmalar, avcıların yılanlara karşı tutumlarını değiştirerek yılan türlerinin korunmasında büyük bir değişiklik getirecektir.

Anahtar kelimler: Tutum, Eğitim, Avcılar, Kuzey Kıbrıs, Yılanlar.

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CHAPTER I
INTRODUCTION

Environmental issues have been given increasing importance throughout the world during the recent times. All the major problems are connected with each other as thread hold, impacting one another. One of the major concerns is the loss of biodiversity. Biodiversity is affected by other issues such as deforestation, climate change, urbanization, natural resource depletion and over population (Kibert, 2000).The Loss of biodiversity, which is mostly due to urbanization, which is affecting all kind of species. The loss in numbers is due do different environmental issues, which finally leads to extinction of specie. Reptiles are also affected by the environmental issues and are constantly decreasing in numbers. Many of them are put in endangered species list. The snake population is one of the most affected groups in reptiles, but with their population decline there are number of social issues also connected as with the environmental issues.

Presently people are causing one of the fastest and vast disappearing occasions on the records of Earth (Pimm et al., 1995). The lack of biodiversity threatens the long term sustainability of this modern society (Chapin et al., 2000). Even though international extinctions or disappearance have a specific reason, i.e. in particular growing human population, the mechanisms that pushed the population of different species threatened and extinct are complicated, many in number, and synergistic (Forester and Machlis, 1996). Commonly some anthropogenic activities that are consisting of agriculture, housing, and transportation infrastructure result in dropping and fragmentation of habitat that is utilized by different species. This lack of connectivity turn lead to decrease genetic diversity and inbreeding despair in impacted population, making them greater liable to illnesses and stochastic environmental events (Frankham et al., 2002).

Human influences also are causing increase in the frequency of many stochastic environmental activities via mechanisms along with altered wildfire regimes, invasive

species creation, and weather change (Coblentz, 1990; Meehl et al., 2000; Syphard et al., 2007). The worldwide biodiversity crisis has acquired good sized interest during the last decade (Pickett et al., 1997). The decline of some of vertebrate taxa has been documented, especially mammals, birds and lately, amphibians. However, as a set, squamate reptiles (lizards and snakes) have acquired extensively less interest (Dodd, 1993). It's broadly diagnosed that understanding of distribution and abundance of organisms on the subject of variation in ecological factors is a crucial step in control. Despite the fact that the ecological relationships of lizards were tested in a few element over the past 30 years (Pianka, 1986), snakes have obtained rather little interest in this regard (Vitt, 1987).

Reptiles are 250 million years old species appeared in the late Palaeozoic Era (Hedges and Poling, 1999). Reptiles such as snakes evolved extensively adopting into almost every temperature, tropical and desert environment, and to terrestrial, freshwater and marine habitats.

Reptiles play vital roles in natural structures, as predators, prey, grazers, seed dispersers and commensal species. They serve as bio indicators for environmental health, and their regularly unique microhabitat associations offer the perfect look at machine to illustrate the biological and evolutionary processes underlying speciation (Raxworthy et al., 2008; Read, 1998).

Snakes usually have narrower distribution levels than other vertebrates along with birds and mammals (Anderson, 1984; Anderson and Marcus, 1992), making them extra prone to hazard events, but there are few marked version in variety among special clades of reptiles, so that generalizations and comparisons won't hold genuine universally e.g., variety sizes of snakes are generally larger than those of lizards (Anderson and Marcus, 1992). This combination of often small variety and narrow area of interest necessities makes reptiles prone to anthropogenic risk techniques, and they're therefore a group of conservation challenge. Regional tests in Europe (Cox and Temple, 2009) and southern Africa suggest that one-fifth and one-tenth of reptilian species respectively are threatened

with extinction. It has additionally been proposed that reptilian declines are comparable in taxonomic breadth, geographic scope and severity to those presently found in amphibians (Gibbons et al., 2000), although this claim become now not quantitatively assessed by means of the authors. Reptilian declines have been attributed to habitat loss and degradation, in addition to unsustainable exchange, invasive species, pollution, disorder and climate exchange (Cox and Temple, 2009; Gibbons et al., 2000; Todd et al., 2010). Almost 9,084 species of reptiles had been discovered to this point (Uetz, 2010), and new molecular evidence continues to unearth several cryptic species that had no longer previously been detected through morphological analyses (Adalsteinsson et al., 2009; Nagy et al., 2012; Oliver et al., 2009).

Reptiles are perhaps one of the least studied vertebrate species. For example, 65% of reptiles have now not been evaluated in IUCN red list (Böhm et al., 2013). Additionally, of these species that have been evaluated, 20% of them were deemed at risk (Böhm et al., 2013). That given latest concerns that reptiles perhaps experiencing worldwide declines on par with the ones in other taxa (Gibbons et al., 2000; Böhm et al., 2016). Among reptiles, snakes perhaps high-quality epitomize the hassle of each an extensive lack of statistics and current enigmatic declines across several continents (Winne et al., 2007; analyzing et al., 2010; Todd et al., 2010). Accordingly, figuring out which traits in snakes are associated with sensitivity to human land use described here as the absence of a species from human-dominated landscapes, either because of habitat loss or due to local extirpations may offer well timed statistics to save declines of those regularly omitted or understudied species.

1.1 Ecology of Cyprus

1.1.1 Geomorphology

The island of Cyprus is divided into three different regions which are the Girne mountain range, the Trodos mountain range and the alluvial Mesaoria plains. The Girne range starts from Kayalar range in the west to Karpaz Peninsula in the east and almost exceeds 5km. The stones are mostly recrystallized lime stones which in turn are embedded

in sedimentary rocks. The Trodos mountain range is the geographical base of the island. It have an extensive network of streams, torrents and rivers. The northern side is comprised of deltaic and alluvial sediments which results from erosion, the center is composed of plutonic rocks while the south the recrystallized limestone rocks and igneous rocks are scattered throughout. This topography of the Trodos range is main regulator of climatic condition in Cyprus and also have given evolution to many endemic species of the island. The alluvial Mesaoria plains extends between the Trodos and Girne mountain ranges. It joins both the zones with each other lying in the middle. It is flat to slightly sloping surfaces. The altitude is between 0 to 300m. This extensive geomorphological situation gives wide variety of environment for different snake species on the island (Tsintides et al, 2012).

1.1.2 Geology

Cyprus is divided into three geotectonic zones; a) the geotectonic zone of Troodos including its extension below the Mesaoria plain, b) the geotectonic zone of Mamonia and c) the geotectonic zone of kyrenia. The geotectonic zone of Troodos including its extension below the Mesaoria plain: the geotectonic zone of Troodos consists of the ophiolite rocks of Troodos, aged 92 million years, which comprise part of the oceanic crust and extend below the Mesaoria plain. The collision of the African and Eurasian lithospheric plates and the subsequent subduction of the former beneath the latter resulted in the uplifting and final placement of the Troodos range. Troodos ophiolite has an elliptical shape and its longer axis has a NW – NE direction. It is dome-shaped with Olympus the highest peak (1952 m altitude). Its most distinguishing characteristic is that the lower stromatographic rocks (namely the ultrabasic plutonic rocks), topographically appear at the highest parts of the range, replaced gradually towards the circumference by the stromatigraphically overlaid rocks. The rocks that form the ophiolite complex are: harzburgite, dunite, wehrlite, pyroxenite, gabbro, plagiogranite, dunite, and pillow lavas.

The geotectonic zone of Mamonia consists of a series of allochthones, igneous (serpentines, pillow lavas) and sedimentary (sandstones, siltstones, mudstones) rocks and,

to a lesser degree, metamorphic rocks (recrystallized limestones, schists), which are between 210 and 95 million years old. The geotectonic zone of kyrenia is the northernmost geomorphologic unit of Cyprus it consist of narrow, cliffy series of mountains. The autochthonous sedimentary rocks have not been removed from the place of their initial formation. Their deposition began mainly in the area south of the line of the uplift of the kyrenia zone, after the tectonic calm that followed the uplift and the joining of the geotectonic zones of Troodos and Kyrenia. Sedimentation continued with some interruptions during the period between 67 and 22 million years and during the geological changes in the geotectonic zone of kyrenia. The sedimentary rocks (pelagic sediments, mainly chalks and marts) cover a large part of the three geotectonic zones. The basic geological formations, in chronological order of their formation are: Lefkara, Kalograia, Ardana, Pachna, Lapithos, Kalavasos, Lefkosia, Athalassa, and Fanglomerate (Tsintides et al, 2012).

1.1.3 Climate

The island lies between 34.34'and 35.51' N. North Cyprus lies in temperate zone. It have typical Mediterranean climate, having hot summers and mild winters with low waterfall. The summers are hot and dry due to angle of incidence of the sun's rays, though Kyrenia mountain range and Troodos do not go with the pattern, cause of the high altitude upto1951m from sea shore. Troodos have the coolest summer and winters on the island, having most rainfall on the island around 1200mm occurs in this region. Kyrenia Range is less cool than Troodos so the winters are mild and wet. As these hills lay parallel to the coast, the humidity approaching from Mediterranean is shed as mountain side rainfalls, therefore the northern side of Kyrenia range and Karpaz Peninsula having highest rainfall in the North Cyprus and at low altitudes rarely frost. In this region summer months are hot and rather dry, rainfall mainly occurring between November and March. Temperature variations are overseen by altitude and to a lesser extent, distance from the cost. The average annual temperature varies from a winter minimum of 9º c in December to a summer maximum of 35º c in August (Makhzoumi & Pungetti, 1999, Seffer et al. 2011).

1.1.4 Vegetation

The natural vegetation in the island of Cyprus and diversity of park trees are determined on basis of climate, soil, topography and human factors. Forests can be found on Kyrenia Mountains in the north and Trodos Mountains in the south. Trodos Mountains are in three different zones, which are Calabrian pine forests almost 1000meters above sea level, Cedar forests which are 1400meters from the sea level and Black pine trees between 1200 to 1950 meters from sea level. Oriental Alder, Gray Elm, Maple and Oriental Plane are commonly found in these ranges. Cedar tress grown in Cedar Valley in Trodos Mountains (Ilseven et al., 2014). Black pines are mixed with Calabrian pines in the Trodos Mountains. In the kyrenia range Calabrian pines, cypress and juniper trees are mostly common. Grey elm and oriental plane trees near northern valleys of Lapta Mountains as coppice forests. The most common herbs and shrubs contains Maquis, Carrigue and steppe. Which can be found easily throughout the island. The island also contains diverse species of orchids (Ilseven, 2014). Cyprus mimosa, Eucalyptus, Judas tree, weeping willow, desert palm and stone pine are example of some trees which were brought to Cyprus and now have adopted to the island climate (Ilseven, 2017).

1.1.5 Fauna

Fauna of Cyprus includes birds, reptiles and amphibians, mammals and insects. Throughout the year, North Cyprus has plenty to offer to birds and birders alike. In spring the scrublands, forests, plains, and wetlands are brimming with life after the wet winter and over 70 species are able to raise their young in these diverse habitats. In fact, two of the regular breeders, the Cyprus warbler (Sylvia melanothorax) and Cyprus wheatear (Oenanthe cypriaca), are endemic to Cyprus, breeding on the island and nowhere else. During spring and autumn, Cyprus hosts more than 200 passage migrant species. Cyprus's temperate winters also attract over 90 winter visitor species that flock to the island to escape the cold. Although Cyprus is home to a number of varieties of snakes, all of them hibernate during winter and tend to sluggish during summers. In Cyprus there are variety of snakes which includes the harmless species like pink worm snake (Typhlpos vermicularis), the whip snake (Coluber jugularis), and the Cyprus whip snake (Coluber

cypriensis). The only snake to be aware of for safety reasons is the blunt-nosed viper (Vipera lebetina). In Cyprus lizards are almost everywhere. The largest species of lizard on the island is the starred agama (Agama stellio). The European chameleon also habitats parts of the north. Sea turtles are species who throughout June and July, make the tiring journey up the beach to lay their eggs, 70 to 180 in each clutch. In mammals, the Cyprus mouflon (Ovis musimon) is the largest mammal on the island. Vegetation is perfect for herds of sheep and goats. Other mammals include foxes, hedgehogs and bats. Cyprian hares (Lepus cyprius) keep themselves scarce, darting for cover to protect themselves from predators. Donkeys ranging from 800 to over 2000 who live freely. The insects includes butterflies, spring and summer bring out the Cyprus festoon butterfly (Zerynthia cerisyi cypria) and Cleopatras (Gonepteryx cleopatra) (Drake & Stewart, 2015).

1.2 Snakes of Cyprus

The island of Cyprus have a variety of 11 species of snakes, from the families Typhlopidae, Colubridae, Viperidae and Boidae (Gocmen et al, 2009). Hierophis cypriensis, in SC (i.e., Troodos island) at the same time as Platyceps najadum (Göçmen et al., 1 996) and Natrix tessellata (Göçmen and Böhme, 2 002) is observed most effective in North Cyprus (i.e., Kyrenia island) and also at the mainland. The presence of Typhlops vermicularis, Dolicophis jugularis, Hemorhois nummifer, Telescopus fallax, Malpolon monspessulanus and Macrovipera lebetina in NC is set up, as a result of numerous excursions to the area. no matter the rarity of springs in NC, a few authors had reported the presence of Natrix Natrix and N. tessellata, but no specimen become found since Nineteen Sixties, so, we think that those species have become extinct then.

Typhlops vermicularis (computer virus Snake) of family Typhlopidae is a slender snake as an earthworm. Head inconspicuous, now not effortlessly distinguishable from the tail; mouth sub terminal; very quick tail extensive as long, with a small spine at tip. Eyes underneath scales, visible as small black dots. Overall length of the cylindrical snake round 25-35 cm, diameter can also up to be 1 cm. Especially subterranean, inhabits damp soils or located underneath stones, fossorials preys on insect larvae and ants. While dealt

with, attempts to sting with the small backbone on the give up of its tail. No exact information on its breeding biology, a lady lays 4-8 eggs. From Afghanistan, full-size in Cyprus, Turkey, Greece, E Bulgaria, Albania and the southern components of former Yugoslavia; with a vertical distribution to 1500-1600 m (Böhme & Wiedl, 1994; Göçmen et al., 1996a; Baran & Atatür, 1998).

Dolichophis jugularis (large Whip Snake) from family Colubridae has a head nicely described; overall period up to 300 cm, being the longest snake of Cyprus. Pupils are spherical. The dorsum of young grey brown with dun-colored and black maculation's, in adults vibrant black. In younger the venter is yellowish-white, with blackish markings handiest at the rims. Lives in dry, open places, meadows, Rocky River banks, rocky-stony slopes, fields and swamps; also can be seen in gardens, vineyards and cemeteries. Hides underneath stones and in rodent galleries. Feeds on rodents, birds, chicks and lizards; on occasion even on other snakes. Not poisonous, but bites readily. Usually does now not retreat and tries to defend itself through generating a hissing sound. A female lays 7-eleven eggs. Pretty beneficial in agricultural pest manage, eating crop-harming rodents. Good sized in Cyprus, Turkey, Syria, Iraq, Lebanon, Jordan and Israel; with a vertical distribution to a thousand m. happens in Cyprus everywhere (Böhme & Wiedl, 1994; Göçmen et al., 1996a; Baran & Atatür, 1998).

Hierophis cypriensis (Cyprus Whip Snake) has a well-defined head, it has a long and slender body attaining in duration up to one hundred ten cm. it is an epidemic and seemingly unusual species from Cyprus. Commonly resembles juveniles of the massive Whip Snake, Coluber jugularis. The dorsum is black, dark brown or olive-brown with dun-colored and black maculation's, and additionally a described white ring across the eyes. They prefer rocky places protected with flora, is a diurnal species and that they fed in particular on lizards. It has big mouth with sharp enamel that are very small however without poison, Budak Snake-eyed Skink, Ablepharus budaki (Göçmen et al., 1996) is an appropriate pray for these species. By using searching its frame, it have to be an amazing climber. That is a pandemic reptile species of Island Cyprus. In Akamas, the Paphos

woodland and in a few different areas of the Paphos district. There may be no file discovered from Northern Cyprus yet (Schätti, 1985; Böhme & Wiedl, 1994; Göçmen et al., 1996).

Platyceps najadum (Dahl's Whip Snake) is a narrow snake with a total period as much as 140 cm. Have huge eyes, with pupils that are round. The dorsum is gray or bluish-brown anteriorly, reddish-brown or yellowish posteriorly. Sides of the neck with a row that comprise roundish black markings, that had the rims which might be lighter in shade; these get smaller posteriorly and disappear before accomplishing the body. The front and back edges of the eyes are surrounded with a thin band which includes yellow coloration. The venter is immaculate and yellowish-white. They generally discovered in stony, dry and furry places; which are visible in gardens, at the edges of cultivated fields and pretty near to the homes. They can climb on trees and bushes. They feed themselves on bugs and lizards. They pass quickly, continues the anterior a part of the body above ground at the same time as rushing alongside, hence nicknamed as "arrow snake". A less toxic diurnal species, which lay 3-five eggs. That are recognized from Northern Cyprus, the southern elements of the Balkan Peninsula, Turkey, Syria and Iran (Göçmen et al., 1996a). Reputedly, this snake species faces a severe risk of extinction in Cyprus as the Schneider's Skink, Eumeces schneideri and the Grass Snake, Natrix Natrix.

Hemorrhois nummifer (Coin Snake) has head big and distinct; total period as much as 140 cm, round scholar, the dorsum is yellowish or gray brown, commonly with roundish dun-colored maculation's which now and again join together. Darkish markings on top and sides of head. Lateral and dorsal traces on tail. The venter element is yellowish-white with spots which can be blackish kind. The areas which are rocky with vegetation this is scanty. They normally feed on lizards, birds, small mammals and chicks; additionally on gekkonids, occurring on the cearthen roofed homes. A fast transferring and simply biting species, however are poisonless. A female that lays 5-10 eggs. huge in Cyprus Island, Syria, Lebanon, Israel, Jordan, Egypt, Turkey and Aegean islands; with a vertical distribution to 2000 m (Göçmen et al., 1996a; Baran & Atatür, 1998).

Eirenis levantinus (Dwarf Snake) is a narrow bodied species with a complete length as much as 70 cm. Having round student, the dorsum coloration is yellowish-brown; black patches at the nape and head distinct in young, absolutely missing in mature and antique specimens. The dorsum in the main immaculate, however in some with extra or less dun-colored markings. The venter is yellowish-white, without maculation. Lives in rocky areas with sparse plant life. Shelters underneath stones. Feeds on bugs and spiders, even earthworms etc. A lady lays three-eight eggs. Enormous in Cyprus, the Caucasus, NW Iran, Turkey, Syria, and Lebanon and in some Aegean islands; with a vertical distribution to 2000 m. In Cyprus, it is reputedly an uncommon species (Schmidtler, 1984; Osenegg, 1989; Baran & Atatür, 1998).

Natrix natrix (Grass Snake) is a rather slim necked snake, with a complete duration as much as 150 cm. The dorsum is gray or buff-brown, rarely black. Over this ground shade, usually two light colored longitudinal strains present, but from time to time now not distinct or absent. Among and lateral to those strains, black blotches are visible. Yellow half-moons typically wonderful at posterolateral of head. A row of black markings on flanks. The venter is yellowish-white, extra or much less with black markings. Select grasslands and rocky-stony places close to a water body; also visible in calm waters or streams, in gardens and cultivated fields, barns or homes. While dealt with does no longer chew, but secretes a bad smelling liquid from the gland referred to as anal gland; it is able to play dead regularly, lying on again with opened mouth. It feeds on frogs and toads, small fish and rodents. A girl lays 6-thirteen eggs, on occasion a number of eggs are laid within the identical nest via a number of females. Its variety extends from Europe, NW Africa in the direction of east to middle Asia, together with Cyprus; with a vertical distribution to 2400 m. it is the rarest snake of Cyprus and, because of its edition to aquatic habitats, additionally the maximum susceptible and endangered one. Believed to be extinct for the reason from Sixties (Schmidtler, 1984; Osenegg, 1989; Schätti & Sigg, 1989). This indicates a formerly huge distribution rather than restrict to better and therefore cooler elevations. This specimen belongs to N. n. Persa (Göçmen et al., 1996).

Telescopus fallax (Cat Snake) has a slender necked and is a huge headed snake with a total duration as much as 70-80 cm. Eyes small, with vertical pupils. The dorsum is grey brown with black maculation, which turn out to be dwindled towards the posterior of body. A darkish temporal stripe gift. A row of maculation additionally on flanks. The venter is yellowish-white, with dun-colored marbling. Stony regions, sunny rocky slopes, sandy places with furry plant cowl adjoining to roads and ruins are on the whole desired. They feed themselves on lizards and small mammals. They hunt at sunrise and dusk, killing its prey with their venom, then swallow the prey. Has fangs at lower back of upper jaw, so no longer risky to guy. A female lays 7-8 eggs. Presence is in Cyprus, SW Asia, Balkan international locations, Turkey and Aegean islands; with a vertical distribution to 1600 m. It is one of the maximum regularly encountered snake species in Northern Cyprus and represented with a deadly disease subspecies, T. f. cyprianus (Baran, 1976; Göçmen et al., 1996).

Malpolon insignitus (Montpellier Snake) has a narrow bodied slender headed snake with a total period up to 200 cm. Their eyes are huge, with a longitudinal despair or groove among them. The dorsum of adults' greenish-gray brown and without maculation; in younger, grey or brown, with small blackish blotches, the edges of which are lined in white. The venter is whitish or yellowish-white, with black or gray spots. Prefers open, carefully vegetated, rocky and dry habitats, additionally seen around irrigation ditches in gardens. They fed themselves on lizards, small mammals and birds. The prey animals are get killed inside mins by using its venom, but its fangs are small and at lower back of upper jaw, so now not very effective on people, however nevertheless can produce numbing, stiffness and swelling. A woman lays four-12 eggs. Its variety consists of Cyprus, S Europe, Turkey, N Africa and W Asia; with a vertical distribution to 1500 m. The race inhabited in Cyprus and adjoining mainland's is M. m. insignitus. They may be countered or observed anywhere in Cyprus (Böhme & Wiedl, 1994; Baran & Atatür, 1998).

Macrovipera lebetina (Blunt-nosed Viper) is a regular sized snake with a total duration as much as a hundred thirty-one hundred eighty cm, the stoutest and threatening snake species of Cyprus. The pinnacle of this snake's head is blanketed with small, keeled scales, such as over the eyes. Have vertical students; the hoop of scales around the eyes includes 14-18 scales. Typically 3, hardly ever 2 rows of scales between eyes and supralabials. The dorsum is grey or dun-brown, generally with wonderful large blackish maculation that are every now and then two pieced, and their edges surrounded with dun-colored bands, their middles brick-crimson. The temporal traces or stripes diminished and lighted; a row of dark maculation on flanks. The venter is barely pinkish-yellow or white, with black spots. Frequents flat meadows or pastures without timber and rocky locations; visible also in ruins, cultivated fields and gardens. They're largely nocturnal, feeds on small rodents, birds, lizards and snakes; swallowing its prey after placing and killing it. A poisonous species with a venom which may be dangerous to guy, or fatal if no longer handled, however does no longer strike if now not disturbed. The ovoviviparous women provide delivery to 5-7 younger. Range consists of Cyprus, N Africa, Cyclades, Turkey, W and middle Asia; with a vertical distribution to 2000 m. This venomous snake species of Northern Cyprus, is often seen inside the vicinity of Geçitköy (Panagra), Karsiyaka (Vasilia) and Lapta (Lapethos) (District Kyrenia) and additionally in Karpaz District. It is represented with the nominate race, V. lebetina lebetina that is an endemic subspecies for Cyprus (Böhme & Wiedl, 1994; Göçmen et al., 1996). Böhme & Wiedl (1994) detected a specimen from the place of Paphos, which had a markedly raised top notch ciliary facet at the proper aspect best, shape a small but wonderful, anterodorsally-directed horn.

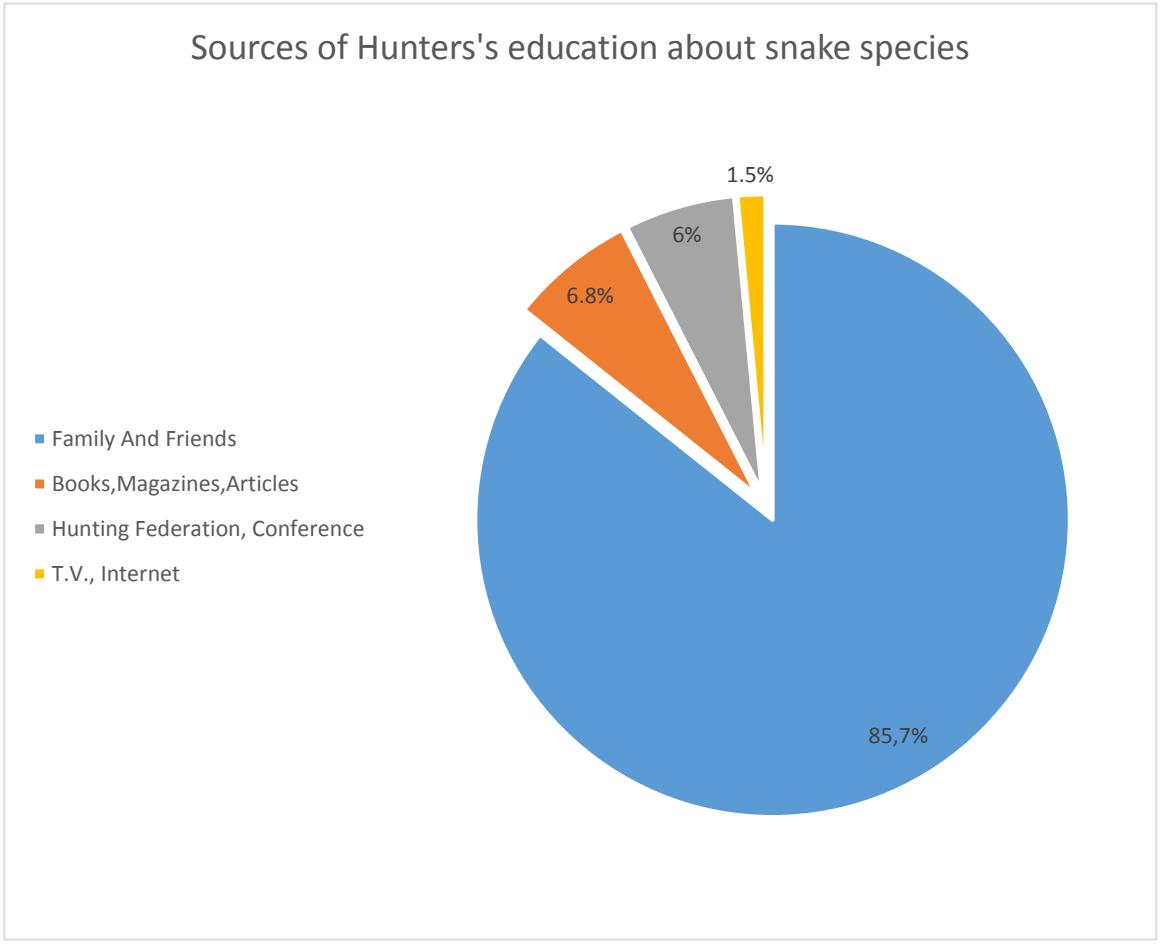
1.3 Hunting in Cyprus

North Cyprus Hunting Federation has taken some steps for conservation by managing its members and giving them lessons about species awareness. The hunt is limited to a number of days on Sundays and Wednesdays and is restricted to designated areas, even the number of hunters is very high (Drake & Stewart, 2015). Most of the hunting is done in Karpaz region, Tatlisu, Ikidere and Dikmen respectively. There are two main seasons of hunting on the island, the big hunt which stars from November and

finishes at December and the small hunt which is between Januarys to February. The big hunt is usually 10 to 15 days while the small hunt is 17 to 20 days. The fish hunting on the island is lower than bird hunting, which means more hunters on the ground. The number of registered rifles among hunters are not same. More than 20% of hunters have more than two rifles which show their keen interest in hunting. 70% of the hunters have dogs for hunting, in which 24.5 % are trained in proper schools, 66% are trained by the hunters themselves while 8 % get no training at all (Avcilik Araştirmasi, 2011).

Figure 1.

Sources of hunter's education about different species.



According to the data collected by Cyprus hunting federation, the hunter knowledge about species mostly come from family and friends which was 94% of the respondents answer. A very small proportion that was 6 to 6.8% have studied books, magazine and articles or been educated by the hunting federation. Only few that is 1.5% of proportion got their knowledge from T.V channels or internet sources about the species of the island. There are two main seasons of hunting on the island, the big hunt which stars from November and finishes at December and the small hunt which is between Januarys to February. The big hunt is usually 10 to 15 days while the small hunt is 17 to 20 days. The fish hunting on the island is lower than bird hunting, which means more hunters on the ground. The number of registered rifles among hunters are not same. More than 20% of hunters have more than two rifles which show their keen interest in hunting. 70% of the hunters have dogs for hunting, in which 24.5 % are trained in proper schools, 66% are trained by the hunters themselves while 8 % get no training at all (Avcilik Araştirmasi, 2011).

1.4 Problem

Most of the natural population got affected by several impacts concurrently. Too much effects have interactive or synergistic feedbacks that drive population towards extinction, a phenomenon termed as an ‘‘extinction vortex’’ (Gilpin and Soule, 1986).

The recent increase in unplanned urbanization in NC, also to some degree in SC, gradually destroys the habitats of the snake species. A serious decrease in springs and creeks is evident within the region, which has rather arid summers. In addition to these factors, the frequent killing of snake species, which are thought to be venomous by local people, make them susceptible to extinction (Gocmen et al, 2007).

People attitude towards snakes are based on some extent to factual knowledge of snakes influencing fear of snake in humans. Public support is crucial to saving endangered species. There is an evidence that fear of snakes may have an innate component and is shared with other non-human primates (Weiss et al., 2015). Therefore, it does not

necessarily require a traumatic experience to be triggered, as opposed to other specific phobias (Doctor et al., 2008). The problem is the attitude of hunters affecting the population of snakes while hunting and their attitude towards snake's presence.

1.4.1 Sub Problem

- Do hunters have proper knowledge about snake species?
- Do hunters know about importance of snakes in our environment?
- Do snake population is increasing or decreasing?
- Which factors are impacting snake population?
- What is the impact of hunting on the snake population?
- How is young generation impacting snake population compared to old generation while hunting?
- How hunters react while facing snakes when hunting?

1.5 Aim of Study

Our goal in this study was to determine which traits are linked with sensitivity of snakes to the attitude of hunters. We used a quantitative measure of species sensitivity to hunting in the country to identify intrinsic factors of snakes that may help explain variation in their sensitivity to this major threat. The influence of hunting on snake population play key role during their reproduction seasons. As hunting is carried out in the wild so mostly the face snake population and are prone to attacks from both hunters and hunting dogs. The aim is to have appositive management system that can provide safety for snake population, suffering from hunting activities.

1.6 Importance Of study

There have been few long-term studies of snake community structure (Parker and Plummer, 1987; Vitt, 1987; Fitch, 1999). Most available studies addressed communities of North American snakes, and only a handful examined snake populations in relation to human activities and possible declines.

A number of investigators have discussed the potential negative impact of roadways on local animal populations (Fahrig et al., 1995), including snakes (Dodd et al.,

1993; Rosenand Lowe, 1994). Snakes are likely to be negatively impacted by roadways in the light of their propensity to move large distances on a regular basis, and to actively use roadways for thermoregulation (Dodd, 1993; Parker and Plummer, 1987).

1.7 Assumptions

- It is assumed that qualifications of the study group chosen for this research are appropriate.
- The participants of this research have answered the questions frankly and candidly.
- It is believed that the data obtained by going through the related literature is sufficient.
- It is believed that the related literature obtained for this study is satisfactory and sufficient for use.

1.8 Limitations

- The research was conducted in limits mentioned below:
- This study is limited to hunters in the areas of North Cyprus.
- The research participants or respondents were limited to only 70.
- The materials/resources used were restricted.

CHAPTER II
LITERATURE REVIEW

2.0 Overview

Environment is the combination of concrete beings, energy and activities (Tont, 2001). Environment can be described as the sum of general, their bodily, chemical and organic elements which have many effects on the lives of residing beings in a specific habitat. In short, all of the factors which can be concerned affecting the lives of residing beings, are their environment (Yucek, 2006).The mode of dwelling elements of the surroundings are people, microorganisms, plants and the non-residing element of the environment are the natural beings or the beings created with the aid of the people along with air, water, soil, geographical formations, buildings, bridges, homes (Yildiz, et al., 2005). The human beings, the environment and the society are notions that have a near courting with every other. The surroundings isn't best the sector out of doors of our bodies, however it's also the region we affect, we get affected, we form, we integrate with our inner global and on the same time, we realize approximately ourselves (Kavruk, 2002). Commonly it means, environment might be a surrounding where the living beings stay, and which they have an effect on and are affected in special ways they may be relied on the crucial occasions. People are also part of the environment, and they can maintain their lives with it (Yildiz et al., 2005).

2.1 Relation between Environment and Humans

The environment that began its existence with the primary living being, is the surrounding in which all the residing beings maintain their lives. At the same time as being aware about those sports, the living beings are usually interacting with the surroundings. Despite all this commerce, the surroundings become no longer a trouble for a long time. However, with time, rapid boom in world population, un-deliberate urbanization and industrialization, and aid depletion, some of these reasons mixed have brought about lots to the environment. After the environmental issues, there was increase within the efforts

of their mitigation and overtime, this has determined the notion “environmental schooling” through focusing at the human beings who are the primary motives of these issues (Colakoglu, 2010).

The usual point of all the important definitions of the environment is that there is a relationship between the environment and humans. However, these happens, over time changes in ecological balance because of the interferences by the living beings, and these changes affect the environment in an irreversible or altered way (Yuksek, 2010).

The reasons that include unplanned urbanization, inefficiencies in infrastructures, lack of recycling facilities, unconscious agricultural activities and overpopulation (Yucel and Morgil, 1998).

Accordingly environment has a completely multidimensional, full-size and complicated nature. Environmental training is a multidimensional, giant and complicated, because of this component, the notion of environmental training continually adjustments from individual to character, from organization to employer. At this very factor, there are certain definitions of environmental schooling. “Environmental education may be kingdom as developing environmental focus in each segment of society, carry the individual’s behavioral adjustments practical to surroundings, everlasting and superb, protecting nature, historic, cultural and socio-aesthetic values and providing participation actively in fixing the troubles” (MEF, 2004).

Environmental training provides the human beings to realize the surroundings, their roles in it, lead them to acquaint with all the elements effecting the surroundings as tons as it is feasible (Gibbons et al., 2000). Environmental schooling is the manner of growing attitude, well known of judgement, abilities and understanding for the safety of the environment and it is also the manner of displaying environment behaviors and accomplishing the outcomes of these types. As it is understood from all the above described statements, in forming and elevating focus of the surroundings, bringing the

human beings fine in approximately the protection of the environment, coaching that the environment have to not be polluted and it need to be included with efficient and radical schooling (Bayazit Hayta, 2006). Consequently environmental training is surely aimed at the environmental attitudes, behaviors and cognizance. So, in the studies, the truth that concerned interdisciplinary technique on the students' attitude behaviors approximately the surroundings has been examined.

2.2 Environmental Attitude

Attitude is a way of behaving in which a person gift's special approaches of any state of affairs that confronts with. As the attitudes are not innate however acquired by means of the people through learning, that can modified and progressed. However, changing and improving attitudes may require a protracted process. Parents, teachers and friends have crucial roles in developing attitudes (Gezer and Erol, 2006). In line with a examine lady students have a more sensitivity towards surroundings the male students in Northern Cyprus (Gündüz et al., 2017).

2.3 The Purpose of Environmental Education

In environmental education the targeted group are all the individuals whose purpose is to develop sensible and positive behaviors and attitudes about protecting the environment (Tombul, 2006).

According with the conference in Stockholm, a survey, named "useful resource assessment for Environmental schooling: requirements and Priorities of The Member nations" changed into performed with the aid of UNESCO environment office in 136 international locations in 1975. In step with the outcomes of this survey, environmental education became inefficient in phrases of excellent and quantity. So one can dispose of this inefficiency, international Environmental education program-IEEP changed into carried out in cooperation with UNESCO and UN surroundings program (UNEP). Once more in cooperation with UNESCO and UNEP, Environmental training conference became held in Tiflis in 1977, the primary conference on this area. The young era play a

key position in saving the surroundings and to trade the angle towards it but the attitudes and behaviors of college students with different cultures closer to environment and sustainable development are insufficient (Gündüz, 2017).

2.4 Reptiles

Their instant disposed ancestors had a complex evolutionary history, having first seemed on the earth in the late Palaeozoic technology, greater than 250 million years ago (based on molecular phylogeny estimates and early fossil facts. Excessive prices of cladogenesis in the Triassic and Jurassic periods (Vidal and Hedges, 2009) advanced a numerous group of animals that are tailored to almost every temperate, tropical and desolate tract surroundings, and to terrestrial, freshwater and marine habitats. Reptiles play important roles in herbal structures, as predators, prey, grazers, seed dispersers and commensal species; they function bio signs for environmental fitness, and their regularly precise microhabitat institutions offer the best take a look at device to demonstrate the organic and evolutionary methods underlying speciation (Raxworthy et al., 2008).

Generally reptiles have narrower distributional tiers than different vertebrates, consisting of many birds and mammals (Anderson and Marcus, 1992), making them more susceptible to danger tactics but, it have to be mentioned that there may be some marked variation in variety length among distinctive clades of reptiles, in order that generalizations and comparisons won't maintain actual universally [e.g., range sizes of snakes are generally larger than those of lizards (Anderson and Marcus, 1992). This mixture of often small variety and slender area of interest necessities makes reptiles prone to anthropogenic hazard tactics, and they may be consequently a group of conservation situation. Local tests in Europe (Cox and Temple, 2009) suggest that one-5th and one-10th of reptile’s species respectively are threatened with dying. It has also been proposed that reptilian declines or deaths are similar in taxonomic breadth, geographic scope and severity to those presently determined in amphibians (Gibbons et al., 2000), despite the fact that this claim turned into now not quantitatively assessed by the authors. Reptilian

extinction have been attributed to habitat loss and degradation, in addition to unsustainable change, invasive species, pollutants, disorder and weather change (Cox and Temple, 2009; Gibbons et al., 2000; Todd et al., 2010).

Overall 9,084 species of reptiles had been discovered till now (Uetz, 2010), the brand new molecular proof continues to unearth several cryptic species that had no longer formerly been identified by way of morphological analyses (Adalsteinsson et al., 2009; Nagy et al., 2012; Oliver et al., 2009). As in a collection, reptiles are presently poorly-represented on the IUCN pink listing of Threatened Species, 35% of described species evaluated in a non-systematic manner (IUCN, 2011). although the worldwide Reptile assessment (GRA), in the long run deal with this bias, cutting-edge assessment procedure is predicated on local workshops and the formation of IUCN SSC expert organizations for particular reptilian taxa, which introduces geographical as well as taxonomic bias into the analysis. Mainly, the global Reptile evaluation has finished comprehensive exams for North the United States, Madagascar and New Caledonia, with entire endemic simplest tests having been performed inside the Philippines, Europe and selected island groups (Seychelles, Comoros and Socotra). As a result of this, there are nonetheless huge geographical gaps that are slowly being addressed, specifically in Africa, Latin the USA, Asia and Australia. this boundaries our knowing that how hazard tactics have an effect on reptiles, so those taxa are typically disregarded in conservation containing choices, mainly because the geographical, taxonomic and threatened species are added in IUCN red list.

Centered conservation motion requires statistics approximately species which might be in brief defined, their distribution, systematic and ecology in addition to the distribution of danger strategies which have an effect on them. Research shows that expertise of reptilian diversity stays enormously disparate, and modern approach of gaining fast perception into the reputation of reptiles are wanted so as to spotlight pressing conservation instances and tell environmental coverage with suitable biodiversity statistics in a timely manner. We gift the first ever global evaluation of extinction chance in reptiles, primarily based on a random consultant pattern of 1500 species (16% of all

currently acknowledged species). in accordance to our knowledge, our effects offer the first evaluation of the global conservation popularity and distribution patterns of reptiles and the threats affecting them, highlighting conservation priorities and know-how gaps which need to be addressed urgently to make certain the ongoing survival of the arena's reptiles. Almost one in five reptilian species are threatened to demise, with any other one in five species classed as statistics deficient. The share of threatened reptile species is maximum in freshwater environments, tropical areas and on oceanic islands, while statistics deficiency turned into maximum in tropical regions, such as crucial Africa and Southeast Asia, and among fossorial reptiles. Our outcomes emphasize the want for research interest to be focused on tropical areas which can be experiencing the most dramatic rates of habitat loss, on fossorial reptiles for which there's a persistent lack of statistics, and on sure taxa consisting of snakes for which extinction threat can also presently be underestimated because of lack of population statistics. Conservation movements mainly want to mitigate the outcomes of human triggered habitat loss and harvesting that are the fundamental threats to reptiles (Bohm et al., 2013).

The abundance and distribution of the snakes alongside transect across an ecotone from a very well woodland-chaparral mosaic to a more arid grassland in north-central California lived. Eleven taxa documented within the Nineteen Seventies, 10 had been keenly found in Nineties; most effective Tantillaplaniceps, a rare shape within the Seventies, turned into absent in the 1990s. 9 of the 11 taxa had been recorded comparable in abundance throughout sampling intervals. Juvenile Pituophis catenifer and Crotalus viridis multiplied dramatically within the 1990s; grownup Pituophis catenifer declined, whereas grownup Crotalus viridis elevated. Analysis of these taxa indicated that abundance along transect changed into about comparable within the 1970sand 1990s; snakes had been most considerable in the ecotone. Snake abundance turned into comparable for the Nineteen Seventies and Nineteen Nineties in spite of elevated avenue track, persisted on road vehicle use and sheep and cattle grazing, and gathering for the pet-alternate (Sullivan, 2000).

To recognize and apprehend how trends affect species responses to threats like habitat might also loss assist prevent deaths, located that snake species who feed basically on vertebrates, that use an excessive percentage of aquatic habitats, and which have small geographic degrees came about in extra natural and less human ruled landscapes. In comparison, frame length, clutch (or clutter) size, the diploma of publicity to human ruled landscapes, reproductive mode, habitat specialization, and whether or not a species was venomous or no longer had less impact on their sensitivity to human land use. Higher trophic position is correlated with extinction hazard in many vertebrates by way of displaying that snake species that feed normally on vertebrates are greater touchy to human land use that is a number one driving force of extinction. It is probably that conversion of natural landscapes for human land use alters biotic groups, causing losses of critical trophic companies, in particular in aquatic and riparian groups. Practitioners should consequently prioritize preserving aquatic habitat and herbal landscapes with intact biotic groups which can guide species at higher trophic stages, in addition to consciousness tracking on populations of variety constrained species (Todd et al., 2017).

Arid Australia reveals a wealthy and ecologically diverse snake fauna, the results of an extensive street-cruise have a look at finished inside the MacDonnell stages bioregion analyzing the effectiveness of the technique for sampling snakes, the effect of climate variables on snake pastime, and the magnitude of avenue kill within the place. Road kill snakes comprised simplest nine% of all snakes encountered, suggesting that street-mortality is not currently causing huge damage at the local snake fauna (McDonald, 2012).

Diverse anthropogenic habitat loss such as pressures, threaten the population of reptiles worldwide. For lots reptile species Riparian zones are essential, however these habitats also are often modified by using anthropogenic activities. Our take a look at on this specific location investigated the outcomes of two riparian habitat changes damming and urbanization on usual and species particular reptile occupancy styles. We exactly used time limited seek strategies to compile come upon histories for 28 reptile species at 21

exceptional websites along the huge and Pacolet Rivers of South Carolina. And by using the usage of a hierarchical Bayesian evaluation, we modeled reptile occupancy responses to a website's distance upstream from dam, distance downstream from dam, and percent urban land use. The suggest occupancy response with the aid of the reptile community indicated that reptile occupancy and species richness have been maximized whilst websites have been farther upstream from dams. Species unique occupancy estimates confirmed a similar fashion of decrease occupancy at once upstream from dams. Despite the fact that the suggest occupancy response of the reptile community turned into positively associated with distance downstream from dams, the occupancy response to distance downstream various among species. Percentage urban land use had little effect on the occupancy response of the reptile community or person species. Our consequences suggest that the conditions of impoundments and subsequent degradation of the riparian zones upstream from dams may not offer suitable habitat for some of reptile species (Hunt et al., 2013).

This specific studies investigates whether or not the perceived species are primarily based on unique aesthetic and negativistic attitudes, and whether or not these along with different attitudes, naturalistic activities, and gender predict offer support for the defense of threatened species. 228 undergraduate college students finished a survey in which they rated pictures of 10 endangered species on aesthetic and negativistic attitudes, and help for safety and defense. Findings confirmed that the two-striped garter snake, Ozark large-eared bat, and doll off cave spider had been conceptualized in a different way than different species, which can be the result of ‘‘irrational’’ fears linked to animal phobias, subculture, and emotional reactions to pix. The consequences of the regression supports the commonplace perception or concept that aesthetics is a crucial determinant in perceptions of endangered species and that the significance of negativistic attitudes may be waning. In general, the outcomes had been constant throughout both models. The quantity of variance explained 3by aesthetic and negativistic attitudes was 23 percent better within the other species models than inside the bat, snake, and spider models (Knight, 2008).

Populace declines showed consequences from a diffusion of factors, including the habitat loss, inbreeding despair, climate alternate and sickness that described the current decline of the final acknowledged populace of timber rattlesnakes (Crotalus horridus) within the kingdom of latest Hampshire. Executed studies with the aid of the usage of polymorphic nuclear DNA markers to examine genetic diversity of this population to different populations within the location that aren't isolated. We also compare outcomes from ongoing discipline tracking of these populations. Genetic analyses monitor that the brand new Hampshire population lacks genetic range and reveals signs and symptoms of a latest bottleneck. New Hampshire snakes additionally exhibited excessive stages of morphological abnormalities (specific piebald shade, amelanistic tongues) indicative of inbreeding depression. Moreover, after a 12 months with noticeably excessive summer rainfall, a pores and skin infection of unknown etiology triggered massive mortality within the New Hampshire population, whereas different surveyed non-inbred populations were unaffected. This particular case observe explains how specific anthropogenic influences on herbal environments can interact in surprising ways to drive threatened populations toward extinction (Clark et al., 2011).

The habitats of shrubs are vital refuges that maintains and allows biodiversity. These habitats were dramatically altered over the past several decade’s for sensible and esthetic reasons. Continuity of rapid boom in sub urban regions has improved this shift in habitat quality. Management strategies that promote shrub habitat inside developed regions are rarely greeted with public reputation due to the fact furry thickets (e.g. Rubus brambles) safe haven undesired species of animals (e.g. snakes, small mammals) and are normally related to a lack of belongings protection. We conducted a test in a heavily impacted suburban habitat (populace density of ~2700 people/km2). Our observe website online, containing forest and meadow habitats, turned into adjoining to a massive metropolis (~320,000 inhabitants) and visited through N70, 000 humans yearly. We manipulated the forest habitat with the aid of getting rid of trees, and via energetic protection, thereby selling the growth of brambles. Inside six years, we discovered that

newly-created shrub habitat was rapidly colonized with the aid of snakes, considerably Vipera aspic. The full number of detected people extended markedly through the years. but, the complaints from the public have been absent which demonstrates that control techniques that want unpopular organisms are possible, even in densely populated areas (Bonnet et al., 2016).

Prediction of the general effect of weather change on venomous terrestrial species, hypothesized that given the close relationship among terrestrial venomous species and weather; a converting global environment can also bring about elevated species migration, geographical redistribution, and longer seasons for envenomation, which would have repercussions on human health. Retrospective evaluation of environmental, ecological, and clinical literature turned into performed with a focus on climate exchange, toxicology, and future modeling precise to venomous terrestrial creatures. Empirical proof demonstrates that geographic distributions of many species have already shifted because of converting climatic situations, for the reason that maximum terrestrial venomous species are ectotherms closely tied to ambient temperature, and that climate change is transferring temperature zones far away from the equator, further good sized ant distribution and populace adjustments have to be anticipated. Species that were capable of migrate to match the alternate in temperatures, new geographical places may also open. The species with limited distribution abilities, the rate of climate alternate can also boost up quicker than species can adapt, inflicting populace declines. Mainly, dangerous snakes and spiders will likely keep their population wide variety however will shift their geographic distribution to historically temperate zones greater frequently inhabited by way of people. Sand and fireplace Africanized the honey bees which might be predicted to have an elevated range distribution due to expected warming trends. Human encounters with these styles of creatures are probable to increase, resulting in ability human morbidity and mortality. So this concluded inside the manner that temperature extremes and adjustments to climatic norms might also have a dramatic effect on venomous terrestrial species. As climate change affects the distribution, populations, and lifestyles histories of

those organisms, the threat of encounters will be altered, therefore affecting human health and the survivability of these creatures (Needleman et al., 2017).

Huge predatory that includes sea snakes live-bearing sea reptiles. Australia is thought to be a biodiversity hotspot for actual sea snakes at the side of nearly half of the 70 extant species (consisting of 11 endemics). two Australian endemics, Aipysurus foliosquama and Aipysurus aprae frontalis, had been listed as significantly Endangered (CR) below IUCN red listing(2010) criteria and Australia's Threatened Species law (2011) because of their restricted geographic tiers being b10 km2. They used intensive area surveys, habitat data, and molecular genetics to file the first unequivocal records of residing A. foliosquama (n=sixteen) and A. apraefrontalis (n=7) since they were indexed as critically Endangered, in coastal WA. Our facts substantially increases the known geographic variety and habitats of A. foliosquama, to encompass seagrass meadows in subtropical Shark Bay (latitudes 24.five°S to 26.6°S), which is500 km in addition south than any previous sighting. Most sea snakes have been accrued from demersal prawn trawl by using-capture surveys, indicating that these species are prone to demersal trawl gear. Nonetheless, the disappearance of those species from Ashmore Reef (which coincided with extirpations of as a minimum three other sea snake species) couldn't be attributed to trawling and continue to be unexplained. Key threatening strategies will need to be diagnosed if powerful conservation strategies are to be carried out to shield these newly observed coastal populations of two severely endangered species (D'Anastasi et al., 2016).

A situation that is stressful enhances reactive oxygen species manufacturing with capability damage or destruction to macromolecules and alterations in oxidant defenses stages. The antioxidant enzyme response of the endemic Majorcan Midwife toad (Alytesmuletensis) and the Balearic inexperienced toad (Bufotes balearicus) tadpoles against an invasive predator, the viper in snake (Natrix maura) was investigated. Tadpoles have been added in aquaria containing N. maura exudates during24 hours. Antioxidant enzyme activities catalase (CAT), glutathione peroxidase (GPx), glutathione reductase (GR), superoxide dismutase (SOD) and decreased glutathione (GSH) and

malondialdehyde (MDA) concentrations had been measured in tadpoles. The existence of snake exudates caused a vast increase in GR and CAT sports and in GSH ranges (p b 0.05) in A. muletensis tadpoles, whereas no full-size variations were reported in any of the parameters analyzed in B. balearicus tadpoles. In end, the presence of N. maura exudates is capable to induce an antipredator reaction within the endemic A. muletensis tadpoles but not in B. balearicus (Pinya et al., 2016).

The analyzation of microsatellite markers for A. fuscus and A.laevis sampled across 4 Timor Sea reefs to evaluate evidence for latest inter-unique gene glide and historic introgression. Our records is fitting into an Isolation–Migration version, that confirmed widespread and asymmetrical stages of gene drift following species divergence, and highest prices of introgression from the big A.laevis population into the much smaller A. fuscus population. populace venture analyses recovered ancestral clusters that widely corresponded to morphological species designations, however discovered excessive frequencies of hybrids on all 4 reefs and individuals of pure A. fuscus ancestry handiest at Scotland (historically) Ashmore. Most unexpectedly, 95% of snakes sampled at Hibernia have been hybrids that resembled A. laevis in phenotype, revealing a dis integrate of reproductive limitations (‘reverse speciation’) at this reef. Those consequences have dire implications for the conservation reputation of A. fuscus, and spotlight the fragility of reproductive limitations in a current marine radiation (Sanders et al., 2014).

The rediscovery of Natrix tessellata in Cyprus, apart from a single specimen observed before1900 and having the locality categorized as “(Nicosia) Cyprus”, there has been only juveniles collected 1960 in Northern Cyprus and recovered inside the herpetological collection of the Zoological branch of the Ege College, Izmir. These two specimens were categorized with “Gönyeli Lake”, a reservoir lake near Nicosia. The discovery of a dwelling sub grownup specimen at this locality in 2007 documents the persisting presence of a relict N. tessellata population in Cyprus. Ventral scale counts of all 4 preserved specimens are in comparison with cube snakes from distinct regions inside

the Jap Mediterranean. They show intermediate values among the ones from Egypt within the south and people from north along the southern coast of Turkey. Due to the dice snake's rarity and continuing habitat modifications for agriculture and urbanization on Cyprus, immediate safety measures for this population are urgently needed (Gocmen & Mebert, 2011).

Tens of millions of human beings global be afflicted by specific kind of phobias. Nearly any stimulus may also cause a phobic response, but above all snakes are a number of the maximum feared objects. 1/2 of the population feels disturbing approximately snakes and 2–3% meet the diagnostic criteria for snake phobia. Purpose of this look at was to develop standardized Czech translation, describe its psychometric properties and analyze the distribution of snake fears. In a counter-balanced design 755 respondents had been asked to finish the English and Czech SNAQ (first or remaining) witha2–three month postpone; 300 of them completed both contraptions. We observed super check-retest reliability (0.94), despite the fact that the full rankings differed appreciably while the English version become administered first. The mean score became five. Eighty and Generalized Linear models revealed considerable consequences of intercourse and subject of look at (women and people and not using a biology education scored higher than guys and biologists). A cut off point for snake phobias as derived from a preceding take a look at diagnosed 2.6% of the subjects' as phobic. Ultimately, the rating distribution changed into much like different international locations assisting the view that worry of snakes is prevalent (Polak et al., 2016).

The behavioral thermoregulation is predicted to be essential in figuring out the potential of reptiles to reply to climate warming and the way that reaction will range with latitude. We used radio-telemetry to evaluate behavioral thermoregulation amongst rat snake (Elaphe obsoleta) populations in Texas, Illinois, and Ontario, altitudinal distance of 41500 km. regardless of numerous particular variations among populations, ordinary the thermal ecology became pretty similar throughout the months that snakes in all 3 populations were active. Preferred temperatures numerous most effective barely across

the snakes' variety, the volume of thermoregulation turned into similar, and via various when at some stage in the day and season they thermos regulated, snakes in all 3 populations found out body temperatures inside their preferred Temperature range 15–20% of the time. The capacity to apply exceptional-scale behavioral thermoregulation (i.e., Selective use of habitats and micro climates) to a comparable extent and attain comparable out comes across this type of wide latitudinal and climatic gradient is made possible via big-scale variations in timing of interest (rat snakes in Texas switch to nocturnal interest in the course of summer, in which as in Illinois and Ontario hobby is exclusively diurnal and hibernation lasts five–7 months). Modeling indicated that a 31C boom in ambient temperature will usually improve thermal situations for all three populations. Our empirical analyses suggest that the snakes' ability to reply to weather warming will be decided greater with the aid of their potential to modify while they're lively than with the aid of changes within the volume of exceptional-scale behavioral thermoregulation. The ability of fixing time of the interest appears to make many snakes fundamentally one of a kind from lizards. As such, the effects of weather warming can be very extraordinary for these groups of reptiles (Weatherhead et al., 2012).

In this research it's concluded that, to what quantity real information of snakes may also influence the fear of snake in human beings. Overall number of 100 college students, that ranged from age 18, of each sexes have been asked to fill questionnaires that consisted of 21 statements regarding the mindset to the snake and of 28 false statements approximately snake anatomy and behavior .Experimental subjects had been requested to agree or disagree with every statement given in questionnaire. Lack of information of snake anatomy and conduct. Negative responses statements have been believed to factor to the absence of fear of snakes and presence of genuine expertise of snake anatomy and conduct respectively. Need of coaching inside the classrooms and efficacy of combination of training with different processes in reducing snake fear is of utmost importance (Makashvili et al., 2014).

CHAPTER III
METHODS

The research method used in this study is outlined in this chapter which will give details about the procedure for data collection and the method of analysis used and also the limitation will be discussed. This study is to know the attitude of hunters towards snake's habitat due to snake population decline and the management system of snake habitat in TRNC.

3.1 Research Model

The main aim of the study is to find out the attitude of hunters towards snake population in TRNC. This study is based on field study in TRNC. The method of data collection was done by quantitative analysis of qualitative data collected through interviews. The questions were adopted from articles, books and internet according to the need of finding about attitude towards snakes.

3.2 Participants and sample

The study was carried out in TRNC. The study is cross sectional among 80 hunters around TRNC. This study focused only on the adult population. An eligible criteria used in this study include (i) Hunters licensed from TRNC Hunting Association. (ii) Hunters which are living permanently in the study area (iii) the respondent's willingness to oblige to the study protocols and completion of study. Every hunter was interviewed by organized set of questions about the problem. The questionnaire focused on location, education, awareness about the species, knowledge of poisoned snakes, importance of snakes in our ecosystem, factors affecting their population and hunter's impacts on their habitat and population (See detailed interview questionnaire).The format of the interview that was administered to the study participants comprised of three sections in which the first part deals with demographic data, the second part inquires the participant knowledge about snakes and the third part about their attitude towards them.

3.3 Data Gathering Tools

In this study the data collection tools which will be used in determining hunter's attitude, knowledge and awareness is by interviewing the participants.

3.4 Scoring Scale Classification of the Substance

The attitude of hunters towards snake's habitat due to decline in snake population was revealed according to the data gathered by interviewing.

3.5 Data Analysis

The associations between attitude, habitat and declination will be explored by means of the descriptive statistics and analysis of level of knowledge with demographic characteristics. Data will be analyzed using the statistical software SPSS 21.0. No medical and laboratory tests were conducted.

3.6 Research Ethics

For the research to be reliable, valid and scientific process research ethics were considered the people that participated in studies were asked direct questions by interviews The researcher demonstrated an objective attitude during the research by demonstrating good work behavior in order not to influence the study.

Table 1.

Sex of Respondents

Sex	**Frequency**	**Percent**
Male	70	100.0

Table 1 shows that 70 respondents which is 100% if the data are male. The study was dominated by male hunters entirely as all the hunters we interviewed were men. The figure show about the sex of respondents.

Table 2.

Age of respondents.

Age Group	Frequency	Percent
25-30	16	22.9
31-45	29	41.4
46-60	13	18.6
60+	10	14.3
Total	70	100.0

Table 3 show that 16 respondents were from age 25-30,31-45, 46-6-, 60+ which are 22%, 41.4%, 18.6%, and 14.3% of the data respectively. Most of the respondents were between the ages of 30 to 45 and the least were the ages of 60 above. Hunters of ages 25-30 were 16, 31-45 were 29, 46-60 were 13 and 60 above were 10.

Table 3.

The Education level of respondents.

Level of study	Frequency	Percent
Elementary	16	22.9
College	40	57.1
University	14	20.0
Total	70	100.0

Table 3 shows that 16, 40, 14 respondents which is 22.9%, 57.1%, 20 % of the data have elementary, college and university level education respectively. Mostly the

education level of hunters were college level. 40 hunters had college level education, 16 just had elementary level while 14 respondents had university level education.

Table 4.

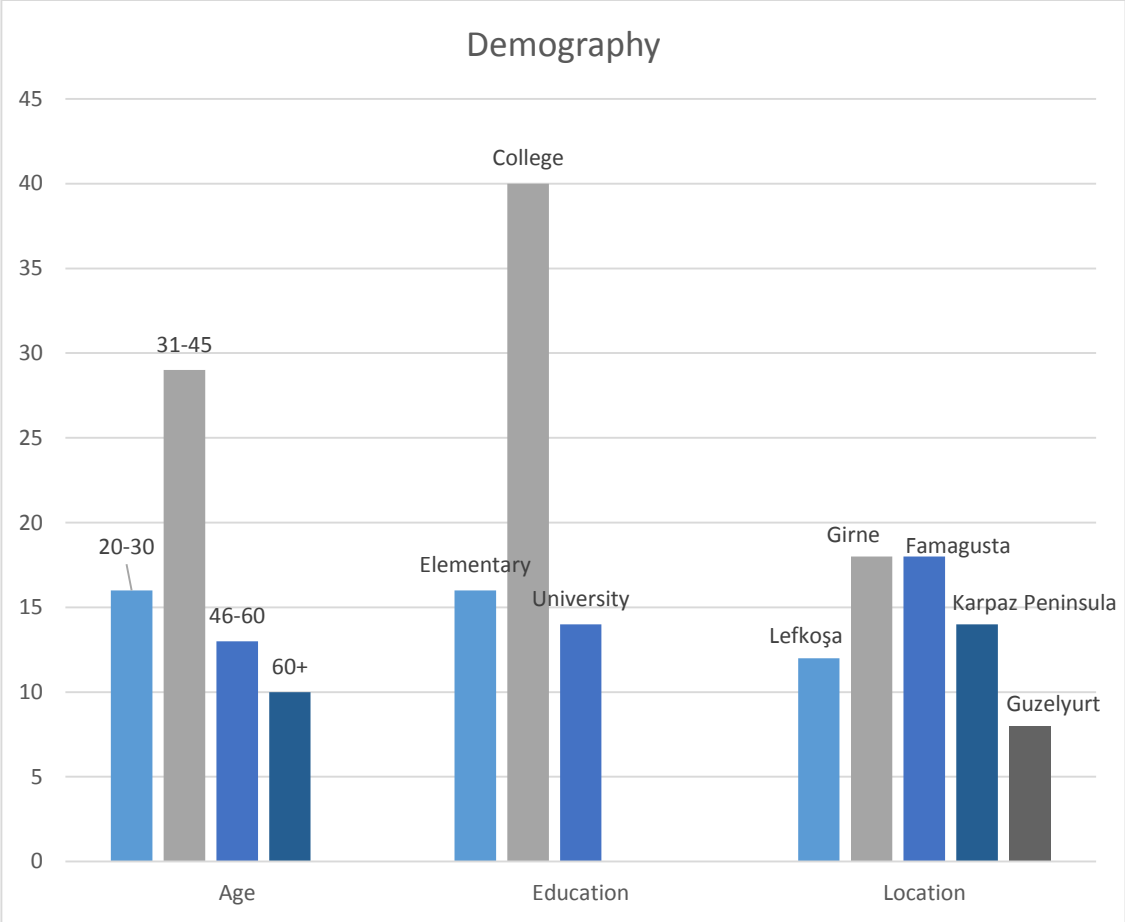
Location of the respondents.

Location	Frequency	Percent
Lefkoşa and surroundings	12	17.1
Girne	18	25.7
Famagusta	18	25.7
Karpaz Peninsula	14	20.0
Guzelyurt	8	11.4
Total	70	100.0

Table 6 shows that 12,18,18,14,8 respondents which is 17.1%, 25.7%, 25.7%, 20%, 11.4%, of the data are from Lefkosha, Girne and Lapta area, Famagusta, Karpaz Peninsula and Guzelyurt region respectively. The hunters from Lefkosha and its surrounding areas were 12, From Girne and Lapta region we had18 hunters, from Famagusta and its surrounding areas we had also 18 hunters, from Karpasya region we had 14 hunters and from Guzelyurt we had 8 hunters.

Figure 2.

Demographic distribution of study



The figure show the age of the interviewed respondents. Most of the respondents were between the ages of 30 to 45 and the least were the ages of 60 above. Hunters of ages 25-30 were 16, 31-45 were 29, 46-60 were 13 and 60 above were 10. Mostly the education level of hunters were college level. 40 hunters had college level education, 16 just had elementary level while 14 respondents had university level education. The hunters from Lefkosha and its surrounding areas were 12, From Girne and Lapta region we had18 hunters, from Famagusta and its surrounding areas we had also 18 hunters, from Karpasya region we had 14 hunters and from Guzelyurt we had 8 hunters.

3.7 Reliability

Table 5.

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Knowledge of Snake species	11.4857	1.688	.727	.722
Poisonous species' Knowledge	12.8571	1.747	.722	.783
Impacts on snake population	12.6571	1.562	.657	.788
Hunter's Impact	12.8571	1.284	.518	.753
Hunter's Response	11.4143	1.739	.611	.784

This table indicates the summary of the total reliability test. The reliability of the construct was examined using Cronbach's alpha. The construct reliability should exceed 0.7 to fall within acceptable level (Fraenkel, 2000). The reliability of this study construct ranges from 0.722 to 0.788 which shows excellent internal consistency.

CHAPTER IV
RESULTS AND DISCUSSION

This chapter explains the results in details from the statistical analysis carried out from respondents answer to the questionnaire and then discussed according to the outcome of analysis

4.1 How many snake species are present in North Cyprus?

Table 6.

Knowledge of snake species number

Number of species	Frequency	Percent	Cumulative Percent
3	26	37.1	37.1
4	30	42.9	80.0
5	11	15.7	95.7
6	2	2.9	98.6
11	1	1.4	100.0
Total	70	100.0	

The table show how many hunters were aware of number of snake species in North Cyprus. 26 hunters know only 3 species of snakes, 30 hunters had the knowledge of 4 species, 11 hunters were aware about 5 species, 2 hunters know about 6 species and only 1 about 11 species.

4.2 How many names of the snake species of North Cyprus you know?

Table 7.

Knowledge of names of snake species.

Names of species	**Responses**		**Percent of Cases**
	Number of Respondents	Percent	
Large Whip Snake *(Dolichophis jugularis)*	70	26.0%	100.0%
Worm Snake *(Typhlops vermicularis)*	6	2.2%	8.6%
Cyprus Whip Snake *(Hierophis cypriensis)*	1	0.4%	1.4%
Dahls Whip Snake *(Platyceps najadum)*	1	0.4%	1.4%
Coin Snake *(Hemorrhois nummifer)*	64	23.8%	91.4%
Dwarf Snake *(Eirenis levantinus)*	5	1.9%	7.1%
Grass Snake *(Natrix Natrix)*	7	2.6%	10.0%
Cat Snake *(Telescopus fallax)*	42	15.6%	60.0%
Montpellier Snake *(Malpolon insignitus)*	3	1.1%	4.3%
Blunt Nosed Viper *(Macrovipera lebetina)*	70	26.0%	100.0%
Total	269	100.0%	384.3%

The table shows that Large Whip Snake (Typhlops vermicularis) and Blunt Nosed Viper (Macrovipera lebetina) was known by 70 respondents which is 100% of the data means by all of the respondents, Coin Snake (Hemorrhois nummifer)was also well known by 64 respondents. Cat Snake (Telescopus fallax) was known by majority but also most of them were unaware of it, as 42 respondents know about it. Worm Snake (Typhlops vermicularis), Dwarf Snake (Eirenis levantinus), Grass Snake (Natrix Natrix) and Montpellier Snake (Malpolon insignitus) was known by very few as 6, 5, 7 and 3 respondents respectively. Cyprus Whip Snake (Hierophis cypriensis) and Dahl's Whip Snake (Platyceps najadum) was among the rarest as only one respondent was aware of them.

The table 5 and 6 demonstrate the lack of knowledge about the snake species in Northern Cyprus among the hunters, and the most common and rear snakes on the island. A lot of hunters have no idea about how many species exist in the country. Majority of people only know about three and four species of the snakes and the knowledge of remaining seven to eight species for them is unknown.

Every hunter know about Large Whip Snake (Typhlops vermicularis) as black in color and quietly large in size, but the problem arises when after sexual maturity the Large Whip Snake (Typhlops vermicularis) changes its color to lightly grey snake. That time people confuse this snake with viper even its more in length than viper and mostly it get killed. The Coin Snake (Hemorrhois nummifer) is the most misunderstood specie on the island with the Blunt Nosed Viper (Macrovipera lebetina). Coin Snake (Hemorrhois nummifer) is widely known by hunters but due to its similarity with Blunt nosed Viper (Macrovipera lebetina). It gets killed most of the time as it share same grey color and less similar pattern. The moment of encounter is sudden so the hunters are not able to differentiate it from the Blunt Nosed Viper (Macrovipera lebetina) and shoot them. Cat Snake (Telescopus fallax) is also confused with Blunt Nosed Viper (Macrovipera lebetina) sometime as the Coin Snake (Hemorrhois nummifer) because most hunters don't know

about the species and is sharing the almost same grey color and less similar pattern hence getting shot by the hunters most of the time.

4.3 How many snake species are poisonous/venomous?

Table 8.

Venomous species number

Number of Venomous species	Frequency	Percent	Cumulative Percent
1	38	54.3	54.3
2	26	37.1	91.4
3	4	5.7	97.1
4	2	2.9	100.0
Total	70	100.0	

The table shows the knowledge among hunters about the poisonous species of snakes. 38 respondents which is more than half of the samples know about that only 1 snake species is poisonous, 26 respondents had the idea of 2 poisonous snakes and 4 respondents know 3 snake species are poisonous.

4.4 Which snake species are venomous?

Table 9.

Venomous snake species

Snake Specie	**Responses**		**Percent Of Cases**
	Number of Respondents	Percent	
Coin Snake	28	25.9%	40.0%
Cat Snake	10	9.3%	14.3%
Blunt Nosed Viper	70	64.8%	100.0%
Total	108	100.0%	154.3%

The table show about Blunt Nosed Viper (Macrovipera lebetina) is known as the poisonous snake by all the hunters. 28 respondents think of Coin Snake (Hemorrhois nummifer) as a poisonous specie while 10 think of Cat Snake (Telescopus fallax) as a poisonous specie as well.

The table 8 and 9 shows the knowledge of snake species which are poisonous amongst the hunters. Most of the hunters know about The Blunt Nosed Viper (Macrovipera lebetina) as the only poisonous specie on the island but they only had the knowledge of 3 or 4 species so they mostly confuse the Blunt Nosed Viper (Macrovipera lebetina) with other species such as Coin Snake (Hemorrhois nummifer), Cat Snake (Telescopus fallax) and Large Whip Snake (Typhlops vermicularis) during sexual maturity, which lead to the problem for all these 4 species. Most of the hunters think Coin Snake (Hemorrhois nummifer) is also poisonous due to its similarity with Blunt Nosed Viper (Macrovipera lebetina). Cat Snake (Telescopus fallax) is also thought to be

poisonous among some hunters. Mostly the color grey and dot, square or ring like patterns are thought to be among the traits of a poisonous snake. Coin Snake (Hemorrhois nummifer) is the main victim of killing due to its similarity with the Blunt Nosed Viper (Macrovipera lebetina).

4.5 Does snake have importance in our environment?

Table 10.

Snake as importance factor in our environment

Idea	Frequency	Percent	Cumulative Percent
Agree	70	100.0	100.0

The table show that 70 out of 70 hunters had idea of snake as an important factor in our environment. This data demonstrate that each and every hunter had the idea of snake as being an important factor in our environment, yet they are killed by hunters while hunting.

4.6 How are snake important in our environment?

Table 11.

Snake's Importance in our environment

Importance	Responses		Percent of Cases
	Number of Respondents	Percent	
Rodent control	70	65.4%	100.0%
Killing Poisonous snakes	13	12.1%	18.6%
Eating Dead Animals	13	12.1%	18.6%
Medicinal Use	11	10.3%	15.7%
Total	107	100.0%	152.9%

This table show that all of the respondents were aware as snakes control the rodent population, 13 respondents believe in snake killing other poisonous snakes, 13 respondents believe in snake as eating dead animals and 11 respondents believe in snake used in medicinal use.

The table 10 and 11 illustrate that every hunter have the idea of snake's population as an important factor in our environment as controlling the rodent population, killing poisonous snakes, eating dead animals and also used in medicines. Every hunter have the idea of snake as rodent control cause of excess increase in snake population in the history in 19th century, in which it was controlled by introducing a non-poisonous snake specie the Large Whip Snake (Typhlops vermicularis) at that time, which eventually controlled the snake population. The Large Whip Snake (Typhlops vermicularis) is also known for

eating Blunt Nosed Viper (Macrovipera lebetina), and controlling its territory by living in gardens, which save the garden from poisonous snakes. Dead animals are also eaten by some snakes in the wild. Blunt Nosed Viper (Macrovipera lebetina) is known to be used in some of the medicines.

4.7 Do snake population increasing or decreasing?

Table 12.

Snake population ratio

Ratio	Frequency	Percent	Cumulative Percent
Decreasing	38	54.3	54.3
Uncertain	10	14.3	68.6
Increasing	22	31.4	100.0
Total	70	100.0	100.0

The table shows that 38 respondents which are more than half believe that the population snakes are decreasing, 10 people were uncertain about the snake population while 22 hunters believe that the snake population is increasing.

4.8 Which factors are impacting the snake population negatively?

Table 13.

Factors affecting snake's population

Factors	Responses		Percent Of Cases
	Number of Respondents	Percent	
Road Kills	11	9.6%	15.7%
Hunting	22	19.3%	31.4%
Pesticides/Chemicals	14	12.3%	20.0%
Land Use	13	11.4%	18.6%
Wild Fires	5	4.4%	7.1%
Habitat Loss	17	14.9%	24.3%
Not Decreasing	32	28.1%	45.7%
Total	114	100.0%	162.9%

The table describe the factors responsible for the snake population decrease according to the hunting population. The highest threat according to the data is hunting as 22 respondents believe in hunting is a major threat, 14 respondents believe in pesticides and chemicals as a threat, 17 people believe in habitat loss of snakes as building parks and

farms on the snake habitats and destroying their habitat, 13 hunters think of land use by farmers and for construction as a threat and 5 people believe in wild fires as completely whipping the area from snakes and other species.

Most of the hunters know about the snake population is decreasing day by day and the biggest threat to them is killing them while hunting. Due to excessive hunters and hunting on a small island, the snakes of every area are getting targeted by the hunters as avoiding them is impossible which leads to hunting as a major threat. The second major threat is habitat loss due to land use. North Cyprus, as the newly developing country, construction of buildings, land use by farmers and other recreational places is on its peak. Mostly they are done without any regard of species habitat and without specie welfare planning's, which leads in loss of habitat of snake species as well. Use of chemicals and pesticides on plants lead to poisoning of snakes and also has major threat to the snakes which dwells in field for the search of rodents. Road kills is also a threat as on roads mostly snakes are overrun by vehicles as the roads are in the middle of different species habitat. Wildfires which does not occur often but when it does has a major blow on every specie of that area as it wipeout the whole ecosystem of that area.

4.9 How are hunting impacting snake population?

Table 14.

Hunting impacts on snake's population

Impact	Frequency	Percent	Cumulative Percent
Positively	2	2.9	2.9
Negatively	46	65.7	68.6
Not Sure	2	2.9	71.4
No impact	20	28.6	100.0
Total	70	100.0	

The table shows that 46 respondents believe that hunting is impacting the snake population negatively, 20 respondents think that hunting has no impact on snake population, 2 were unsure about the snake population status and 2 respondents thought that hunting is affecting it positively.

This table present that most of the hunters are aware that hunting is a threat for snake population as most of the time when they encounter snakes while hunting. Hunting on this island is very common and it is constantly happening in every part of the country so no habitat is safe from hunting impacts. The unawareness of species is threat as many cannot differentiate between poisonous and non-poisonous snakes. Some hunters think as hunters have no impact on snake population as they don't see them usually or as often. Two of the respondents are not sure about what is the impact of hunting on snakes while some think it's increasing and hunting is helping them to be in constant number, otherwise there number will grow high. Which means that they are killing them.

4.10 Which generation is more protective against snake population?

Table 15.

Old and New generation's comparison

Generation	Frequency	Percent	Cumulative Percent
Old Generation 50+	34	48.6	48.6
Young Generation up to 50	36	51.4	100.0
Total	70	100.0	

The table shows that 34 respondents which is 48.6% of the data think that old generation is more protective and 36 which is 51.4% of data thinks that young generation is more protective in snake population.

The data here is almost equal as each generation thinks they are more protective in nature towards snake's population, as young generation think old generation is not protective and old generation think young generation is not protective.

4.11 What is your response when you see a snake while hunting?

Table 16.

Hunter's response towards snake while encountering them in the wild

Response	Frequency	Percent	Cumulative Percent
Kill	4	5.7	5.7
Leave as it is	59	84.3	90.0
Run Away	7	10.0	100.0
Total	70	100.0	

The table shows that how hunters deal with snakes when they encounter one while hunting. 59 respondents which is 84.3% of the data leave the snake, 7 respondents which is 10% of the data run away from the situation and 4 respondents which is 5.7% of the data kills them.

This data illustrates the response to a situation when hunters face snakes while hunting. Most of the hunters leave the snake as it as and continue their hunt according to the data.

4.12 What is your response if dogs are intact with the snake while hunting?

Table 17.

Hunter's response towards snake while their dogs are intact

Response	Frequency	Percent	Cumulative Percent
Kill	64	91.4	91.4
No Dogs	6	8.6	100.0
Total	70	100.0	

This table shows that 64 respondents which is 91.4% of the data kill the snake if the dogs are intact and 6 respondents which is 8.6% of the data have no dogs while hunting. This data reveals the every hunter who use dogs for hunting will kill the snake on sight if encounter a snake while hunting. They never put their dogs at risk and kill the snake as the dogs attack the snake.

CHAPTER V
CONCLUSION AND RECOMMENDATION

This chapter summarizes the result of the study from the perspective of the respondent outcome of the research according to statistical evaluation on attitude of the hunters towards the snake population in TRNC.

5.1 Conclusion

The awareness of species can play a key role in snake population control. Most of the hunters are unaware that a total of 11 species are present on the island as they have mostly the idea about 3 or 4 species. The confusion between species is also critical as most of hunter think of different species as the same one. They usually differentiate them by color and pattern, which most of the snakes share the same. Coin Snake (Hemorrhois nummifer), Cat Snake (Telescopus fallax) and Blunt Nosed Viper (Macrovipera lebetina) shares the same color and slightly similar pattern which confuse the hunters to think of them as Blunt Nosed Viper (Macrovipera lebetina) because the attach those traits with the Blunt Nosed Viper(Macrovipera lebetina) . Large Whip Snake (Typhlops vermicularis) is known by every hunter, but the problem arises when at sexual maturity they change the color to slightly grey which majority of hunters don't know, and think of it as Blunt Nosed Viper (Macrovipera lebetina). Blunt Nosed Viper (Macrovipera lebetina) and Large Whip Snake (Typhlops vermicularis) was known by every hunter as it is abundant in number and Blunt Nosed Viper (Macrovipera lebetina) is territorial and did not go away if they see a threat in their territory which makes them more visible than other snakes. Coin Snake (Hemorrhois nummifer) was also known by most of the hunters but they may confuse the Blunt Nosed Viper (Macrovipera lebetina) with the Cat Snake (Telescopus fallax). More than half of the hunters know about Cat Snake (Telescopus fallax) because it can be only differentiated by its eyes. Dwarf Snake (Eirenis levantinus), Grass Snake (Natrix Natrix) and Montpellier Snake (Malpolon insignitus) were known by very few which makes them very rare species. Worm Snake (Typhlops vermicularis) is also know by few cause most of hunters think it is a lizard due to its similarity with some lizards.

Cyprus Whip Snake (Hierophis cypriensis) and Dahls Whip Snake (Platyceps najadum) are only known by a single respondent which may be a sign that hunters confuse them with other species or these specie is almost at the edge of extinction. So the knowledge can play critical role as stated in study of (Bohm et al., 2013) which stated that affective and targeted conservation required detailed information about the species.

The awareness of poisonous and non-poisonous species is crucial as most of the hunters kill the poisonous snakes at sight which cause the non-poisonous species to suffer as well with the poisonous species. There is only 1 poisonous specie which is Blunt Nosed Viper (Macrovipera lebetina) but most of people confuse other non-poisonous species with Blunt Nosed Viper (Macrovipera lebetina) due to slight similarities in color and pattern. Most of the hunters think Cat Snake (Telescopus fallax) and Coin Snake (Hemorrhois nummifer) are also poisonous which leads to their killing as well. Some hunters think 3 snake species are poisonous leading to misunderstanding of venomous and non-venomous snake species. All the hunters know that snakes are an important factor in our environment and all of the species play an important role. Every hunter knew about the rodent control by snake population. They also knew that Large Whip Snake (Typhlops vermicularis) lives in the gardens and eat Blunt Nosed Viper (Macrovipera lebetina), it encounters each other. They also believe in snake as eating dead animals and for the use of medicines. Knowing all the benefits of snake population about how they are beneficial for the environment, the hunters still while hunting kill the snakes. The people living near to hilly areas are also more aware then the people living in plain areas about snake species and which are venomous and which are non-venomous. The knowledge of venomous and non-venomous is also important for hunters as that decide how to their attitude will change with them as stated in (Weatherhead et al., 2012).

Most of the hunters believed in the decline of snake population due to various reasons. Among them hunting is the main reason as most of the hunters they kill the snakes while hunting. Habitat loss is also among the main factors as lots of new construction of buildings, parks, road etc. are done without planning about environmental impacts on

species near the site. Land use by farming is also impacting the habitats of snakes. Wild fires are not often but when it occurs it wipes out the entire area of all the species giving a massive blow to their numbers. Pesticides and use of other chemicals also impact the snake population as some species lives in farms in search of rodents. Road kills also play a role in snake population decrease as they can easily be overrun by vehicles while crossing the roads. The results match the studies of (Clark et al., 2011) and (McDonald, 2012) which stated these factors as snake specie decline factors.

Most of the hunters believe in hunting as the main problem for decline in snake population. The problem is that North Cyprus is a small island and the number of hunters on the island are too much to sustain and there are more licenses issued every few months which means the number will increase with time. There are also not licensed hunters on the island the count of them are unknown. There are no specific spots for hunting which also increase the threat of affecting every area. Constant hunting also adds to the problem as every time the snake population face hunters throughout the year. As little specie awareness they don't know about venomous and nonvenomous species or get confused and kill them. Some of hunters think they have no impact on snake population is usually because they encounter them especially Blunt Nosed Viper (Macrovipera lebetina). Blunt Nosed Viper (Macrovipera lebetina) is territorial and stay at its spot when encounter a human and don't run away by which they think there is no decrease in their number. Thus the hunters disturb the habitat due to constant hunting which leads to decline in the snake's population as stated in (bonnet et al., 2016).

The old generation hunters and the young generation hunters both have almost the same impact on snake population as both kills them while hunting. The reaction of most of the hunters depend on snake specie color which they recognize from a distance, usually they think grey as venomous which leads in their killing. Mostly they leave black color snakes as they know Large Whip Snake (Typhlops vermicularis) is non-poisonous. The situation also depends on the dogs, as all the hunters' response while they have dogs is negative towards snake. Every hunter agreed that they kill the snake on sight while they

have dogs in contact. As dogs usually attack the snake and the snake can also bit them so for the safety of dogs they shoot the snake immediately. Usually if they encounter Blunt Nosed Viper (Macrovipera lebetina) they kill them instantly but as most of the hunters are confused about Coin snake (Hemorrhois nummifer), Cat snake (Telescopus fallax) and Large Whip Snake (Typhlops vermicularis) at maturity, so they kill them also. The phobia of snake has also a key role as most of the hunters are afraid and shoot them which is similar to the study of (Polak et al., 2016) and (Makashvili et al., 2014) both of which states as snakes are among the most feared species.

5.2 Recommendations

Due to the attitude of hunters towards snakes the following recommendations will be viable in adopting to some strategies that will be helping in control and management to help control the decrease in number of snake population.

- The awareness about different snake species is critical for hunters, they must know about all species they would encounter during hunting.
- The awareness about difference between venomous and non-venomous snake species of snake is of utmost important, if they knew a specie is venomous or non-venomous they won't panic and the non-venomous species will get no harm from hunters and the hunters will stay at a safe distance from venomous species.
- The awareness about the need of saving snake population among hunters should be thought. They should know how important these species are and what would happen if they are not around to our environment, that way their attitude towards them will change significantly.
- As the study reveals other factors then hunting, strategies to save snake population from different factors such as habitat loss, use of chemicals, land use for farming etc. should be made properly.
- The hunting federation can play key role in changing the attitude of hunters towards every specie. The course they are providing needs modification before

licensing the new hunters to have complete awareness about snake species. The day are providing is inadequate.

- Controlling the increasing number of hunters is most important as the hunters on the island are increasing every year. More hunters mean more hunting and that will have a drastic effect on the country's fauna. Also excessive hunting should be controlled as the country is small and cannot sustain constant hunting.
- The habitats which are sensitive should be prohibited from hunting, they should be conserved as soon as possible to minimize the threat to specific species.
- Prohibition of hunting except specific seasons should be done. As all year hunting can disturb sexual periods and young offspring's who need time for growth. That way the number of declining species can improve significantly.
- There are illegal hunting as well on the island. So control of un-licensed hunters should be taken seriously as they have no specific knowledge about species and are a major threat for every specie. The unlicensed hunters should be taken in account to conserve the natural fauna on the island.

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Appendix-1

QUESTIONNAIRE

Dear Respondents

The objective of the questionnaire is to collect information about **Hunter's Attitude towards Snakes Population in North Cyprus**. The information you will provide will be valuable for academic purpose of Near East University, Turkish Republic of Northern Cyprus. Therefore your genuine honest and prompt response is a valuable input for the quality and successful completion of the research. The information you give is used only for academic purpose and will be kept confidential.

I. **Demographic Data**

i. Gender: Male □ Female □

ii. Age:

25-30 □ 31-45 □ 46-60 □ 60+ □

iii. Education:

Primary □ Elementary □ College □ University □

iv. Location:

Lefkosha and surroundings □ Girne and Lapta Region □ Famagusta Region: □

Guzelyurt Region □ Karpasya Region □

1. How many snake species are present in North Cyprus?
2. How many names of the snake species of North Cyprus you know?
3. How many snake species are poisonous/venomous?
4. Which snake species are venomous?
5. Do snake play important role in our environment?
6. How snakes play important role in our environment?
7. Do snake population is increasing or decreasing?
8. What are the factors impacting snakes population to decrease?

9. Do snake population impact positively or negatively from hunting?-
10. Which generation is more protective to snake population?
11. How you react when face a snake while hunting?
12. What you do if dogs are intact with the snake while hunting?

CURRICULUM VITAE

My name is ZEESHAN NASRULLAH. I was born on 21st, March 1992 in Peshawar, Pakistan. I completed my college in the year of 2010. I started my Bachelors of Science in Edwardes College Peshawar Pakistan and completed in September 2012, awarded by the degree of Bachelor of Science. My Masters began at the University of Peshawar in Environmental Sciences which completed in the year of2016, and specialized in the degree of Master of Science in Environmental Sciences with the GPA 3.0. I have studied all of my education in English language. I got the opportunity to travel to the Turkish Republic of Northern Cyprus to get good education in this country. My masters at Near East University began in 2016 in the department of Environmental Education and Management.