Rats & Shrews in the Pacific

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Author’s Note: The researcher has prepared a study to find out what diseases rats and shrews carry and how are they being transferred to us human beings. In addition to that, the researcher is also finding out various methods on how to eliminate these rodents, and which one is the safest, quickest, and most effective. Lastly, the researcher is also searching for any general information on these rodents and maybe some new information that may seem useful for future references.

Rats/Shrews in the Pacific

The island of Saipan is filled with vivid and lush vegetation and fruits, which unfortunately may be at risk or danger to rats/shrews. Upon doing research, the researcher has done a google search with the key words “Rats/shrews and the diseases they carry” and it came up to around 25 million results which of course some of them being garbage. The researcher has found that these rodents carry many diseases and many of these are transferrable to human beings. Diseases included were retrieved from: Eugene M. Mcarthy, Phd. Diseases carried by rats. Retrieved from: http://www.macroevolution.net/diseases-carried-by-rats.html . Diseases are: Bubonic plague, salmonella, leptospirosis, and rat bite fever all being caused by their fleas, droppings, and urine. Not only are the diseases these rodents carry deadly and viral, the pesticides used to keep them away puts human lives in danger as well. People sometimes do not clean our fruits and vegetable well and just sell them causing other people to become sick. Rats don’t only transfer diseases to crops, but also destroy them by rummaging through whatever they can eat.

These rodents are also destroying our crops. The student researcher found some data from this website: Gemma Q. Casas (November 18, 2004) Retrieved from http://pidp.eastwestcenter.org/pireport/2004/November/11-18-14.html. This was actually an article from the Marianas Variety issued out on November 2004. A local farmer stated that the rats are eating his crops in the Kagman area leaving him with very little to sell. Isidoro Cabrera, an agricultural consultant from the NMC CREES stated that the rat population is in the millions and they are still rapidly growing. This was back in 2004. This is very important because not only will the rat population keep growing, but they will continue to eat crops not just in Kagman, but everywhere around the island according to some of the local farmers that I have spoken with at the Saturday market that have farms around the island. Some lawmakers at the time were pushing to help local farmers by funding them with pesticides to eliminate the rodents which cost around $20,000-$30,000. Gemma Q. Casas (November 18, 2004) Retrieved from <http://pidp.eastwestcenter.org/pireport/2004/November/11-18-14.html>.

The researcher also did a research on the EBSCO host site and came up with about more than 400 results but out of the bunch, only 5 seemed useful however, there were no PDF files or full text, just abstracts. There is still being research done on EBSO to find any useful information so additional information from EBSCO will be added later if there is any found. There is very ample information in regards to rats and shrews in the pacific islands, mostly dealing with the south pacific region. On the other hand, with the library research, there was no information whatsoever on rodents. Some secondary sources were mentioned in the first paragraph that was retrieved from an old newspaper article involving the local farmers and their experiences with rats and their crops. This brings up the researcher’s primary question. What are the roles of rats/shrews in the pacific islands and how has the population been since these rodents have arrived?

Rats/shrews carry all sorts of diseases and plagues and spread them wherever they may be. Whether it’s through physical contact, bites, or even just inhaling their droppings or urine it all comes down to maybe a serious illness or death. The most memorable pandemic of rat disease was the bulbonic plague also known as the black plague which killed millions of people all over the world around the 1330’s. It had originated in China, and soon later had spread by trade ships that had come to the port and return back home. It was called the black plague because it started off as just a red dot, then later turning into a black dot spreading all over the body. Many people abandoned their families and friends just to get to safety. (2011) Retrieved from <http://www.themiddleages.net/plague.html>. Rats are classified under many different types.

There are many different types of rats that have similar features and some are just really different. For example: There is the Polynesian rat, which is common in the pacific area, the black rat, which is common all over the world, Norway rat, and then there is the roof rat. The Polynesian rat (Rattus exulans) is smaller than either the Norway rat (R. norvegicus) or the roof rat (R. rattus). Polynesian rats have slender bodies, pointed snouts, large ears, and relatively small, delicate feet. A ruddy brown back contrasts with a whitish belly. Mature individuals are 4.5 to 6 inches long. Polynesian rats are a major agricultural pest throughout Southeast Asia and the Pacific region. Crops damaged by this species include rice, maize, sugarcane, coconut, cacao, pineapple, and root crops. The methods that are used to prevent rats from destroying their crops are electric fences, toxicants, and trappings. (Mark E. Tobin. (2005). Polynesian Rats. Retrieved from <http://icwdm.org/handbook/rodents/PolynesianRats.asp>).

The roof rat (Rattus rattus, Fig. 1) is one of two introduced rats found in the contiguous 48 states. The Norway rat (R. norvegicus) is the other species and is better known because of its widespread distribution. A third rat species, the Polynesian rat (R. exulans) is present in the Hawaiian Islands but not on the mainland. Rattus rattus is commonly known as the roof rat, black rat, and ship rat. Roof rats were common on early sailing ships and apparently arrived in North America by that route. This rat has a long history as a carrier of plague. The roof rat is more at home in warm climates, and apparently less adaptable, than the Norway rat, which is why it has not spread throughout the country. Its worldwide geographic distribution suggests that it is much more suited to tropical and semitropical climates. Roof rats are more aerial than Norway rats in their habitat selection and often live in trees or on vine-covered fences. Landscaped residential or industrial areas provide good habitat, as does riparian vegetation of riverbanks and streams. Parks with natural and artificial ponds or reservoirs may also be infested. Roof rats will often move into sugarcane and citrus groves. They are sometimes found living in rice fields or around poultry or other farm buildings as well as in industrial sites where food and shelter are available. Rats usually begin searching for food shortly after sunset. If the food is in an exposed area and too large to be eaten quickly, but not too large to be moved, they will usually carry it to a hiding place before eating it. Extermination is the same as the Polynesian Rat and all other rats. (Rex E. Marsh. (2005) Roof Rat. Retrieved from: <http://icwdm.org/handbook/rodents/RoofRats.asp>. The black rat is one of the common rats found around the world today and is known for its rapid and quick spread throughout the countries.

The Black Rat was introduced to the British by the Romans, which is usually nocturnal and but is sometimes active in the day. They usually feed on plants and in some occasions, insects. A single female can therefore produce a huge number of offspring; 56 young were recorded on a London ship for a single female. The black rat originates from Asia, and today is widely distributed around the globe. (Black rat videos, photos and facts. (n.d.). Retrieved April 8, 2015, from <http://www.arkive.org/black-rat/rattus-rattus/>) Now we move onto the Norway rat, which also originated from China and has spread throughout the world.

The genus Rattus emerged from the Murid family about 3.5 million years ago, and Norway rats themselves emerged about 2 million years ago. Norway rats originated in what is now northern China. Norway rats traveled to Europe in human ships in the 16th century and reached the New World in the 18th century. The organization of male rats and the rat mating system changes depending on the population density of the colony. At low densities, a male rat monopolizes a burrow of females. He defends a territory, keeping other males away from the burrow and the surrounding area, and he mates only with the females of his group. One male mating with multiple females is a polygynous mating system. At low densities, Norway rats are therefore territorial and polygynous. Polygynous is the state or practice of having more than one wife or female mate at one time. On the other hand, At high densities, males can no longer defend a burrow against intruders. There are simply too many intruders. The social system becomes chaotic, with one male becoming socially dominant while others become socially subordinate. Males no longer defend female burrows. Males may mate with multiple females this way, and females mate with multiple males. This mating system is polygynandrous. So at high densities, Norway rats are therefore despotic and polygynandrous. The average lifespan of these rats in the wild is one year. Rats moved in to the early human settlements. They invaded human homes and farms, barns and buildings and villages. This relationship probably benefitted the rats because humans provided them with food in the form of scraps and garbage. Humans provided warmth and shelter in and under their homes, and humans kept the rat's natural predators away. (Wild Norway Rat Behavior. (2005, January 1). Retrieved April 8, 2015, from <http://www.ratbehavior.org/WildRats.html>) Norway rats are primarily nocturnal. They usually become active about dusk, when they begin to seek food and water. Some individuals may be active during daylight hours when rat populations are high.

Rats have poor eyesight, relying more on their hearing and their excellent senses of smell, taste, and touch. They are considered color-blind. Therefore, for safety reasons, baits can be dyed distinctive colors without causing avoidance by rats, as long as the dye does not have an objectionable taste or odor. Norway rats consume and contaminate foodstuffs and animal feed. They may damage crops in fields prior to and during harvest, and during processing and storage. Rats also damage containers and packaging materials in which foods and feed are stored. Rats can also cause structural damage to buildings by burrowing and gnawing. (Timm, R. (n.d.). NORWAY RATS. Retrieved April 8, 2015, from <http://icwdm.org/handbook/rodents/NorwayRats.asp>)

The student researcher interviewed a couple of farmers at the Saturday market and asked them about their experience with rats on their farms and how it affects them and their crops. The researcher found out that most of the farmers indeed had problems with rats on their farms and have tried many extermination methods to eliminate these rodents. He also found out that rats were not only contaminating their crops by pooping all over and urinating, but also eating through the crops which cost them a lot of money, in terms of overall sales. And not only were they destroying crops, but they were killing of their animals as well. Such as: Young ducklings, chicks, cats, dogs, and chicken eggs.

The student researcher prepared a questionnaire for a formal interview but no contact has been made so far. It consisted of 10 questions all relating to rat problems in the CNMI and different various extermination methods. The questionnaire was sent out to a couple of local extermination programs, well known farmers, the agriculture presidents of the farmer’s market, and one or two farmers from the Saturday market.

The student researcher prepared a survey on the website, surveymonkey.com in early March. It was composed of 10 questions, asking about various methods on eliminating rats, experiences with rats, and personal opinions on rats and what general knowledge they have on rats. Only 10 people had answered the survey. Out of the 10, 3 were males, and 7 were females. There were 3 Chamorros, 3 Filipinos, 3 Americans, and 1 Palauan. And all 10 of them definitely had rat/shrews problem. It was then sent out to peers in class, and was emailed to friends to answer the survey, and was then dispersed by those researcher’s friends to other people. The information analyzed was very helpful and will definitely be utilized in the academic paper. Below is a table of the student researcher’s schedule for the research process. This is basically an everyday schedule but it is subjected to change along the way.

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| --- | --- | --- | --- | --- | --- |
| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| Writing up drafts | Tuesday market farmer interviews | Writing up draft, research, and findings | Research | Research  Calling experts on rodent extermination | Final touch ups, Saturday market farmer interviews |
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In conclusion, the researcher has found out many new things about rat & shrews and how they can affect us in many ways. The researcher has interviewed farmers, has tried contacting exterminating programs on islands but no reply yet, and has prepared a survey that was distributed among class peers, and various students in the college. The survey and interview has gathered much information. Although some did not prove to be useful but most were legitimate. The researcher is still gathering information until now so more will be included later in the final draft.

References

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Primary research question: What are the roles of rats/shrews in the pacific islands and how has the population been since these rodents have arrived?

References

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