It rained fishes too. But then this is not just an idiom, it is for real. The rainfall on the night of Friday the 19th of June 2015 will not be easily forgotten for a long time to come by the residents of the twin coastal villages of Gollamudi and Pallagiri of Nandigama mandal under Krishna district of Andhra Pradesh. It was an unusual rainfall because with the pitter-patter of rains came down a number of fishes!

According to the newspaper report titled “Pitter platter of fish from sky” in The Telegraph of 21 June 2015, when word spread about the rain of fishes hundreds of villagers of the twin villages rushed out of the comforts of their homes to catch the free fall of fishes. There was no report of any breach of fish tank near the village.

Moreover the fish that fell from the skies were sea fishes and not fish raised in fish tanks. A resident reminisces that about 37 years ago during heavy monsoon rains frogs, crabs and even baby octopuses fell in Nuziveedu mandal of Krishna district!

Rains of fishes are not a new phenomenon and this has been happening since a very long time. The Daily Mail of UK of 2nd March 2010 reported a rain of hundreds of live fishes in remote Lajamanu town, which is 400 miles south of Darwin in Australia’s Northern territory. Last year one of our neighbouring countries, Sri Lanka too witnessed these unusual rains of fishes. In May 2014, villagers in the district of Chilaw in western Sri Lanka were pleasantly surprised by a rain of small fishes. Villagers in the district of Chilaw heard something heavy falling and found fish lying on roads, grass and roofs. The fishes collected amounted to about 50 kg in weight and some of the fish – each 3 to 5 inches in length – were still alive and were put in a bucket of water by villagers who later enjoyed the fish platter. In 2012, an unusual “prawn rain” was recorded in the southern part of Sri Lanka.

On 12th February 2008, residents of Kandanassery village in Kerala were taken aback by rain of small fishes towards the end of a sudden downpour. Similarly, on 21 July 2010 natives at Sarnath in Varanasi were surprised to see a live fish in the middle of the road after a strong monsoon shower in the afternoon. They believed that the fish came from the clouds with the raindrops. The fishery department later identified the fish to be Tawai Fish or Climbing perch (Anabas testudineus) and said that this species of fish can wander across land to find new habitats.

A small city called Yoro in Honduras is well known for its rain of fishes which...
usually occur in May or June during heavy thundershowers. In Yoro every year during these months it has been raining fishes for the past 100 years or so. Locally this phenomenon is called “Lluvia de Peces” or “rain of fish”.

Past Accounts
The first and oldest record of a rain of fishes is found in *The Deipnosophists or Banquet of the Learned* published in 1524. It is also believed that the Roman naturalist Pliny the Elder wrote about rains of fishes as far back as 1 AD!

In 1698, Robert Conny wrote an account of a rain of fishes in Kent in 1666 which appeared in the *Philosophical Transactions* of the Royal Society of London. He described in detail how a pasture field about two acres located at Cranstead near Wrotham in Kent was overspread with little fishes the length of a man’s little finger. They fell during a great tempest of thunder and rain. Hasted’s History of Kent Volume V published in 1798 too contained this event. Here the fishes were described as “…some were like small whitings, others like sprats, and some smaller like smelts. Several of these fish were shown publicly at Maidstone and Dartford.”

The Edinburgh New Philosophical Journal (1826) contains many accounts of rain of fishes in Scotland. Again in 1828 a short account of rains of fishes in Ross-shire Scotland was published in the Gentleman’s Magazine. Once a number of fishes, which fell with the rains, were even exhibited for several weeks at the Aquaria House of the London Zoological gardens (Regents Park).

The Monthly Weather Review (June 1901) has a very fascinating account of a rains of fishes in the United States written by J.W. Gardner who happened to be a volunteer weather observer at Tiller’s Ferry, South Carolina. He writes, “during a heavy local rain about June 27, there fell hundreds of little fish (cat, perch, trout, etc.) that were afterwards found swimming in the pools between the cotton rows in (an adjacent) field.”

Probably the first ever record of rains of fishes in the Indian subcontinent can be traced to John Harriott’s work “Struggles through Life” (1808). He experienced this unusual rain himself and describes it as, “In a heavy shower of rain, while our army was on the march, a short distance from Pondicherry, a quantity of small fish fell with the rain, to the astonishment of all. Many of them lodged on the men’s hats; when General Smith, who commanded, desired them to be collected, and afterwards, when we came to our [camping] ground, they were dressed, making a small dish that was served up and eaten at the general’s table. These were not flying fish, they were dead, and falling from the common well-known effect of gravity; but how they ascended, or where they existed, I do not pretend to account. I merely relate the simple fact.”

In the Annals of Philosophy 1816 the following accounts appear regarding rains of fishes in the then undivided Bengal and Prince of Wales Islands (at present Penang, Malaysia): “In Prince of Wales Island, in the East Indies, the inhabitants usually catch the rain-water in tanks placed on the tops of their houses. Frequently these tanks are completely dry for weeks together. When the rainy season comes, they are speedily filled with water. Some fishes are found swimming about in this water, which gradually increase, and acquire the length of several inches. I have been told that the same thing happens in Bengal. These fishes must come down with the rain. It is a matter of some curiosity to be able to explain the source from which these animals are derived…..My information was obtained
Most of the fish or any other small aquatic creature may survive due to the moisture content of the clouds and fall alive with the rains.

from an East India Captain, who assured me that he had seen the fishes frequently, though he was ignorant of their name, and could not describe their appearance with sufficient precision to enable us to make out the species."

Naturalist and Indologist of acclaim James Prinsep who also happened to be a long term serving secretary of the Asiatic Society of Bengal wrote an account about the rains of fishes from his own experience. The Journal of the Asiatic Society of Bengal December 1833 as well as The Nautical Magazine and Nautical Chronicle 1838 carried this amazing account: “I once found a small fish, which had apparently been alive when it first fell, in the brass funnel of my pluviometer at Benares, which stood on an isolated stone pillar, raised five feet above the ground in my garden.” He then records a similar happening on a much larger scale, which was communicated by a Mr. Cameron, who took the pains to have the depositions of ten native witnesses taken and attested before a magistrate. The shower of fish referred to took place on 19 February 1830 near the then Nokulhatty Factory, Zillah Dacca, Jelalpur. Boduli, mirgal, saul, sale, guzal and nouchi (local Bengali names of different species of fishes) were the types of fish that fell. The fishes were not eaten by most of the residents due to fear.

In the Journal of the Asiatic Society of Bengal 1834 a fall of fish is reported from Futtehpur (present Fatehpur, Uttar Pradesh) on May 16 or 17. “At noon...a blast of high wind, accompanied with much dust,...came on....When the storm had passed over....the ground south of the village, to the extent of two bighas, was strewed with fish, in number not less than three or four thousand. The fish were all of the Chawla species (Clupea cultrate) a span or less in length, and from one to one and one-half seer in weight; when found, they were all dead and dry. Chawla fish are found in the tanks and rivers in the neighbourhood. The nearest tank in which there is water is about half a mile south of the village. The Jumna runs about three miles south of the village, the Ganges 14 miles north by east.”

The Transactions of the Linnaean Society of London Volume XVI 1833 describes a rain of fishes at Morarabad (in present Uttar Pradesh) on the 29th July 1829.

Again at the Sunderbans, (south of Kolkata) on 20 September 1839 during a heavy squall a number of small, live fish about three inches long fell with the rains. These were not scattered but found in a long, narrow and fairly straight row. Scientist Professor Charles Tomlinson in his book Rainclouds and Snowstorms 1864 describes this unique rainfall as follows: “About two o’clock P.M., of the 20th inst. (September 1839), we had a very smart shower of rain, and with it descended a quantity of live fish, about three inches in length, and all of one kind only. They fell in a straight line on the road from my house to the tank, which is about 40 or 50 yards distant. Those which fell on the hard ground were, as a matter of course, killed from the fall, but those which fell where there was grass sustained no injury; and I picked up a large quantity of them, ‘alive and kicking’, and let them go into my tank. The most strange fact that struck me in connection with this event was, that the fish did not fall helter-skelter, everywhere, or ‘here and there’, but they fell in a straight line, not more than a cubit in breadth.”

How Does This Happen?
Earlier scientists attributed the rains of fishes to volcanic eruptions or migration of fish or fish aestivation, etc. Now most scientists and meteorologists agree that the reason behind the rains of fishes, frogs, or of any small aquatic creature is often the tornadic waterspout.

A waterspout is a column of cloud-filled wind rotating over a body of water. According to the National Oceanic and Atmospheric Administration (NOAA), US, despite its name, a waterspout is not filled with water from the ocean or lake. A waterspout descends from a cumulus cloud i.e. the water inside a waterspout is formed by condensation in the cloud.

They fall into two categories – fair weather waterspouts and tornadic waterspouts.

Fair weather waterspout usually forms along the dark flat base of a line of developing cumulus clouds. It is generally not associated with thunderstorms and is comparatively more common. A fair weather waterspout develops on the surface of the water and works its way upward. Fair weather waterspouts form in light wind conditions so they normally move very little.

On the other hand, tornadic waterspouts have the same characteristics as a land tornado. Tornadic waterspouts form over water, or move from land to water. The tornadic waterspouts require high levels of humidity and a relatively warm temperature compared to the overlying air. This kind of tornado is
usually sparked by the high pressure system preceding a severe thunderstorm. Influenced by winds associated with severe thunderstorms, air rises and rotates on a vertical axis. They are associated with severe thunderstorms, and are accompanied by high winds, large hail and frequent dangerous lightning. They are very powerful and destructive.

The average spout is around 50 meters (165 feet) in diameter and can last for a mere 5 to 10 minutes whereas the largest waterspout can have diameters of 100 meters (330 feet) and may last up to an hour.

According to the Colorado State University, US, waterspout winds can spin at an amazing speed of up to 200 mph. NOAA scientist Joseph Golden recorded winds in one waterspout that swirled around the vortex at 27 m/s (about 60 mph) which was moving upwards at 9 m/s (about 20 mph), but some waterspouts can involve speeds of up to 85 m/s (nearly 200 mph)!

Such wind speeds can pick up a very wide range of cargo because they can suck up objects from up to 3 feet (1 meter) below the water surface, and the low pressure core they form is an extremely powerful vacuum compared with the speeding winds surrounding it. So it is not surprising that such speeding waterspout can pick up things like a school of fish, frogs, etc. The objects stay up in the sky until rain begins falling from the cloud, cooling the air that was keeping the waterspout going. Objects raining from the sky have been reported up to 100 miles inland.

As with a land-based tornado, the centre of the waterspout is a low-pressure tunnel within a high-pressure cone. This is why the relatively low weight items are sucked up into the vacuum of the vortex (column of rotating winds). But, since the waterspout is over water and not land, it is not automobiles that end up caught in its swirling winds, but water and sea creatures. The waterspout sucks up the fishes, which end up in the vortex that continues to move across the water with the high-pressure storm clouds. When a particularly powerful storm hits land, the waterspout might go with it.

When the storm hits land, it loses some of its energy and slows down. The pressure drops. Eventually, the clouds release the water they are carrying. As the rain falls, the vortex eventually loses all the pressure that keeps it going, and releases whatever it has picked up in its travels. Waterspouts can carry all sorts of items.

Most of the fish or any other small aquatic creature may survive due to the moisture content of the clouds and fall alive with the rains.

According to NOAA, waterspouts not only put swimmers and boaters at risk they also pose a threat to aircraft. Helicopters flying near waterspouts can be damaged and thrown off-course by such intense winds. The National Weather office, US, recognises the dangers posed by waterspouts as part of its “severe local storm” warning.

Now, why don’t we see similar events occurring over places such as the infamous “Tornado Alley” in the United States? Steve Cleaton, Forecaster of BBC Weather Centre, explains that tornadoes there usually form well away from mass expanses of water thereby reducing the likelihood of any fish being sucked up. The stronger tornadoes also tend to form more frequently across large land masses where huge temperature and humidity differences are more commonplace.

The Little Shop of Physics at Colorado State University, US, is sure that it can rain fish and frogs. It has developed a simple experiment model, to prove this point.

So, the next time when it rains heavily, watch out. Who knows it can be a rain of fishes in your backyard!

Acknowledgement
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