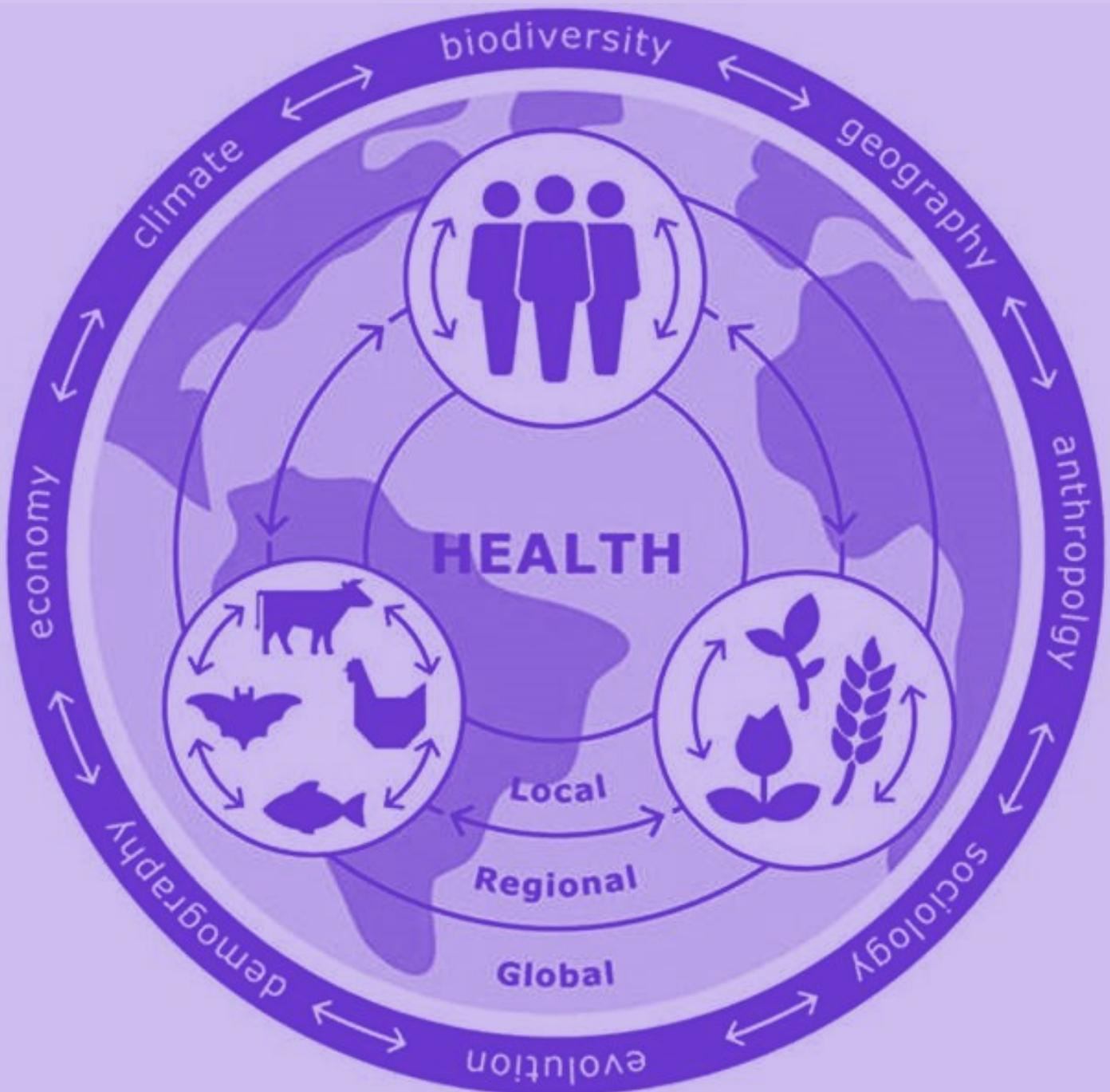




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## Monkey Fever - No longer confined to Karnataka

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In 2018, Goa witnessed a total of 12 cases of Kyasanur Forest Disease (KFD) also called Monkey fever; least cases encountered among last four years. Goa watched KFD's first outbreak in 2015, afterwards it's been recurring every season. Last year in total numbers of 2017; KFD cases were trolled to 80, this year until September it's reached to 35. Simultaneously, KFD keeps on finding the new pockets for infection encroaching into new areas. In 2016, it was first time reported in Maharashtra nearby Goa regions while in 2018, a total of 30 reports came from Raigad districts of Maharashtra. The KFD cases were did not remain restricted to the particular district even for a month crossing boundaries to other districts; the picture revealed from Goa annual KFD cases. Every year, 400-500 human's cases are reporting with a morbidity rate of around 2-10% in South India. The KFD growing pattern is forcing to think about provoking drivers. Ultimately; it infers to the modern changes in society leads to adverse effects on

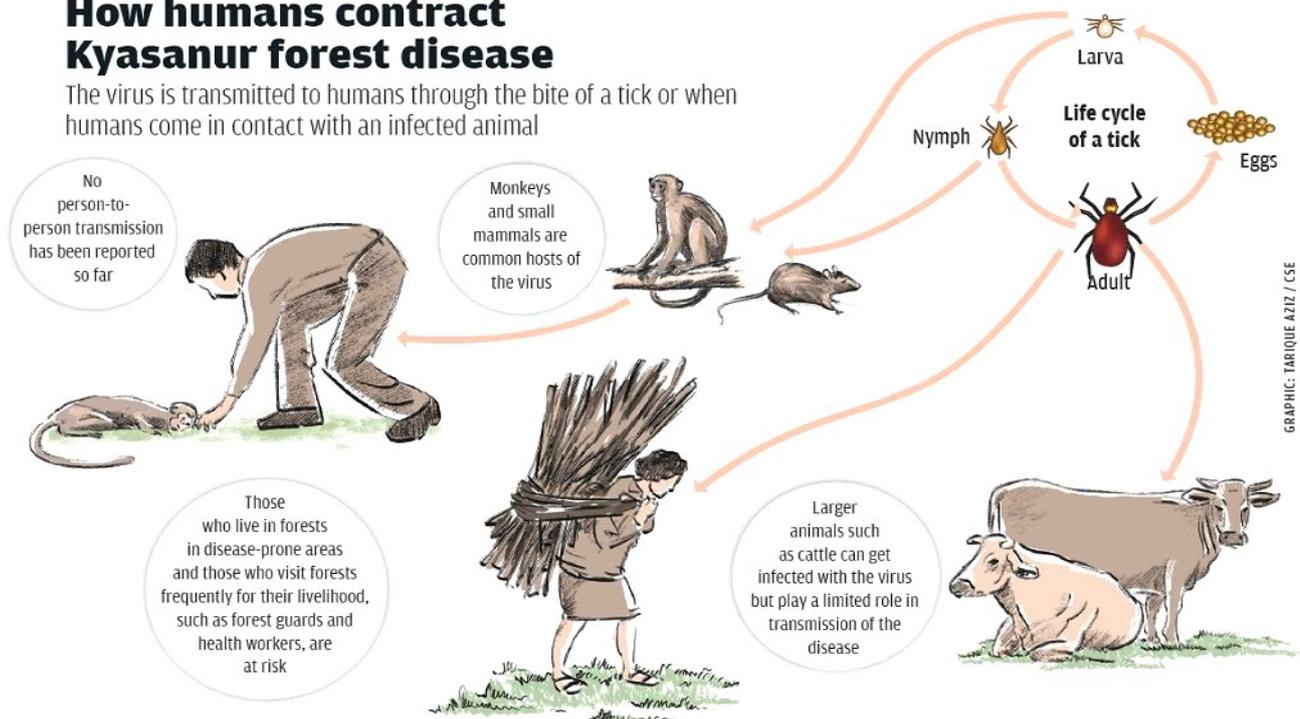
ecological balance of forest. The successive adaptation of KFD virus and vectors to these changes in environment resulted into encroachment in human habitats. Herewith, we made efforts to highlights some of the research updates regarding the dynamics of KFD cases in new areas with raised number of cases.

### **In Brief: What is KFD?**

Kyasanur Forest Disease (KFD) is a zoonotic viral tick borne disease caused by Kyasanur Forest Disease virus (KFDV). KFDV was first isolated during an outbreak of febrile disease in 1957 in people living in the Kyasanur forest area of the Shimoga district in the Karnataka (then Mysore) state of India which led to its nomenclature. The virus was initially suspected as a Russian spring-summer (RSS) complex of viruses. Transmission to humans may occur after a tick bite or contact with an infected animal, most importantly a sick or recently dead monkey. In fact, the heavy mortality among monkeys in 1955 led to the discovery of disease. KFD epizo-

## How humans contract Kyasanur forest disease

The virus is transmitted to humans through the bite of a tick or when humans come in contact with an infected animal



Courtesy: Madhuparna Majumdar, Medical Entomology

otics in monkeys are also a regular feature in the area, 2,442 monkey deaths were recorded from 1957 to 1975. KFD virus has been isolated from 16 species of ticks of genus *Haemaphysalis*. However, *Haemaphysalis spinigera* is considered as the main vector. In enzootic areas, the KFDV was maintained and circulated in small mammals especially rodents, shrews, ground birds and ticks. The appearance of dead monkeys, particularly target species such as the red-face bonnet monkey (*Macaca radiata*) and the black-faced langur (*Semnopithecus entellus*) are considered sentinels for the presence of KFDV. No person-to-person transmission has been described. Large animals such as goats, cows, and sheep may become infected with KFD but play a limited role in the transmission

of the disease. These animals provide the blood meals for ticks and it is possible for infected animals with viremia to infect other ticks, but transmission of KFDV to humans from these larger animals is extremely rare. Furthermore, there is no evidence of disease transmission via the unpasteurized milk of any of these animals.

The incubation period is of 2-7 days. The onset is sudden with chills; frontal headache and high fever about 40C. The clinical symptoms include continuous fever for 12 days or longer, usually associated with severe myalgia, cough, diarrhea, vomiting and photophobia. The convalescent phase is prolonged. Often, there is a relapse after 1 to 2 weeks of a febrile period. The second phase lasts for 2-12 days and is marked by the same symptoms. Neck stiffness, mental disturbance,

giddiness and abnormality of reflexes are additional complications in the second phase of illness. The cases are generally appeared in months of January to May coincides with elevated nymphal activity which is important stage of vector for transmission. During these months of March to May holding a summer season in India; farmers and farm workers were encounter more in forest areas for different livelihood reasons and they get attacked. In enzootic areas, the KFDV was maintained and circulated in small mammals especially rodents, shrews, ground birds and ticks.

**How KFD encroaches to newer districts?**

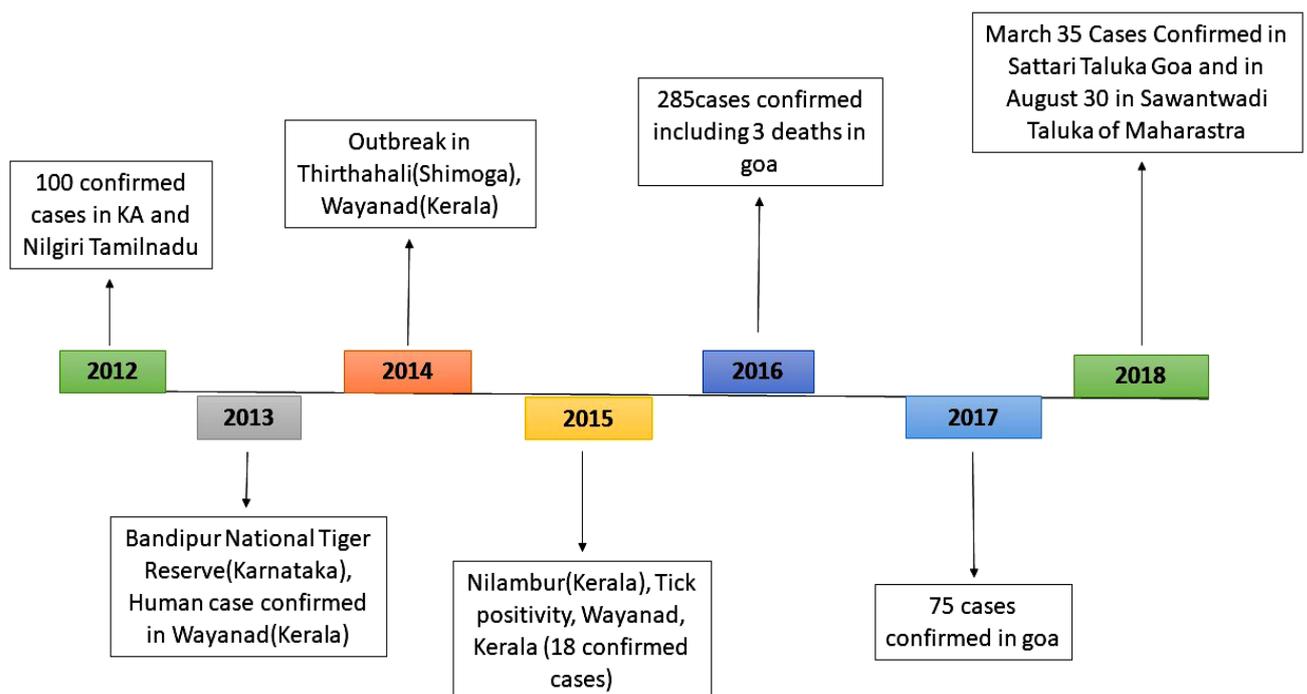
Factors such as deforestation and land use practices, climate change, diverse Migratory bird population, population densities, decreas-

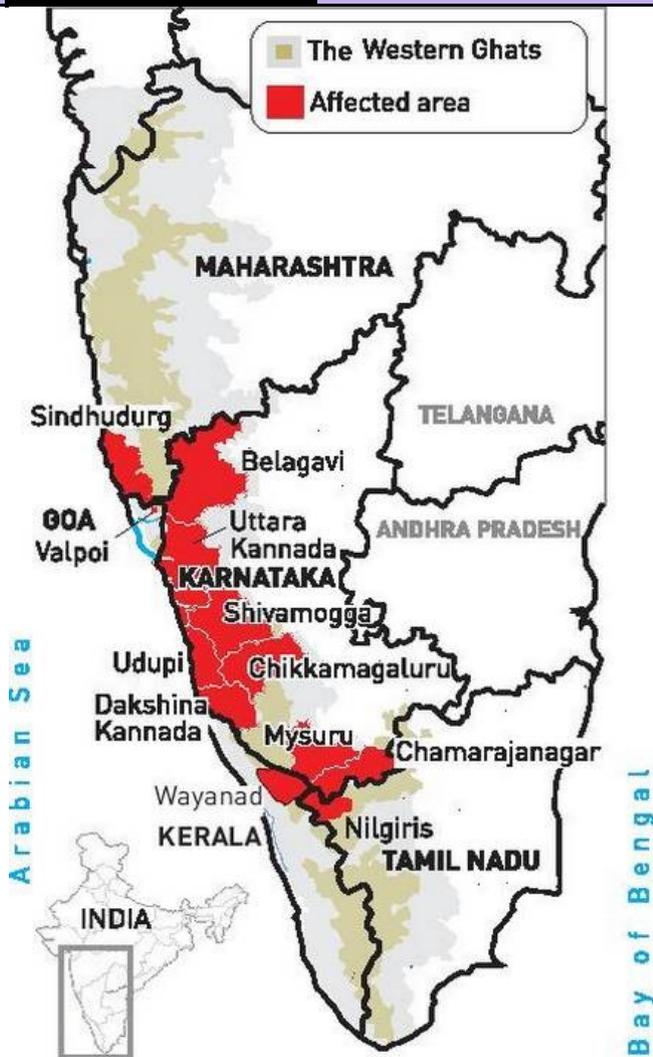
ing wildlife habitats and changes in human behavior have been speculated to play a vital role in the resurgence of this zoonotic pathogen at a higher frequency in endemic regions and its emergence in newer areas.

Monkey fever cases in Goa are connected directly to deforestation, diverse land uses and hence climate change. Goa’s landscape is changing rapidly due to activities such as Illegal mining; is a long-standing concern in the state. Most forest area was converted to agricultural land uses like for cashew nut production. The ticks have now adopted this new habitat. In the absence of monkeys, they are attacking humans. Hence cases of KFD are remain persistent in Goa from last four years.

Monkey fever has spreaded to a new area that is Sawantwadi, as disease was

**Time Line of KFD**





**courtesy: Vikhar ahmed sayeed: beware of kyashnur ticks**

earlier present in Sindhudurg. The virus has killed two and infected 30 peoples in the villages of Sawantwadi taluka. According to the District Health Officer “Monkeys keep moving from place to place, their activity is not in control and this is the reason for spread of disease to newer areas”. Mainly as a greater number of people encroaching into forests for working in cashew farms, hunters, to collect firewood or to graze their cattle, and the villages which are nearer to forest areas are at highest risk of getting infected by KFD disease. Deforestation and Rising temperatures, as a result of

climate change, could be responsible for the growth in the tick population. According to experts, “Temperature increase, has widened habitats of insects that transit diseases to people”.

- Use of tick repellent should be advised to the local villagers, forest camp workers and staff, tourist and wild-life photographers.
- As association of human infections in the vicinity of dead monkeys has been shown, and the use of spray insecticides has been recommended in a 50-m radius around a dead monkey
- If visit is inevitable, use protective clothing’s and gum boots to cover the whole body and apply some insect repellent to exposed body part.
- Vaccination is one of the main control strategies for KFD. An inactivated or killed tissue culture vaccine has been used in endemic areas of Karnataka, India since 1990. Initially 2 doses were used in persons of 7– 65 years of age, in an interval of 4 weeks. Revaccination is required after 6–9 months for five years.

### Conclusion

Kyasanur Forest Disease (KFD) is emerging as a result of climatic changes due to deforestation activity leads to migration of tick population and spread of disease. As of earlier it was restricted five districts of Karnataka state and now it is widely speeded to five states and some parts of

western Ghats. Also, there may be emergence of new variant of virus due to ecological adaptations. Proper vaccination schedule should be strictly followed in endemic areas coupled with increasing awareness among people about disease spreading drivers like deforestation and wild habitat destruction. Prevention measures are should be strictly followed whoever working in endemic areas.

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