

Invasive Species and Ecosystem Disruption: Evaluating the Consequences of Territorial Intrusion in *Kaala Paani*

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Abstract

This paper argues that the Netflix series, Kaala Paani, manifests the occurrence of ecological disturbance in the native species by the invasive species. The paper also analyzes how the invasion as well as the aftermath of the invasion affects the species involved in it. The paper particularly analyzes the state of ecological imbalance as a result of two phenomena, species invasion and ecological disruption, which is the result of the first one. Specifically, the paper is a Darwinian study of Kaala Paani, which portrays the problems of territory intrusion by alien species into the native territory.

Keywords: darwinism, invasion, species, kaala paani, and ecological disruption.

Introduction

Invasive species have been one of the main disruptive agents to native ecosystems through changing food chains, rearranging habitats, and being direct competitors to native species. As a result, biodiversity and ecosystem functionality have collapsed. The research shows that invasive species employ a range of mechanisms through which they affect the native ones. The microbes in soils that are native to invasive plants, such as *Centaurea maculosa*, show higher inhibitory effects on such plants. Those on invasive lands, in contrast, show lower inhibitory effects on the plant (Flory & Clay, 2010). This strongly suggests that invasive species might escape soil-borne pathogens, thereby gaining success in their new territories (Callaway et al., 2004). For instance, *Alliaria petiolata* is a type of invasive species that disturbs the growth of native tree seedlings by interfering with their relationship with arbuscular mycorrhizal fungi. Native plants are not able to grow properly. This highlights the direct effects of invasion on native biodiversity (Stinson et al., 2016). This conclusion restates the necessity of applying successful invasive species management techniques in order to

preserve the native diversity of the biosphere and its ecological integrity.

As each unique habitat gathers in its own finely tuned ecosystem, each species of the system proposes to overcome the challenges of living in that particular environment. Tiny ecosystems within the larger system provide management to more than one species at a time, each of them keeping on with their own jurisdiction. This fence or sort of delimitation of their territory is of utmost importance, as it ensures the smooth functioning of social interactions between different species living in the same ecosystem and helps avoid conflicts. These strategies include but are not limited to stings, spits, and the colour blue utilized to defend against or evade their enemies. Boundaries are seen and creatures' defence mechanisms against overstepping are a normal part of favourable coexistence in an ecosystem.

Ecosystem equilibrium tends to be maintained till the day the alien species from another ecosystem invade. In the face of such occurrences, natural selection, as shown by Charles Darwin's theory, has a tendency to produce the fittest surrogate. The genetically diverse

species being able to adapt readily to the different struggles and dangers of the new ecosystem may not accomplish the same in the unfamiliar environment with no or less selection stress. On the contrary, the local species that can be employed are well adapted and accustomed to local threats has evolved resistance biological means and survival tactics to reduce the risk. Unlike native species which are fully adapted to local threats, and have mechanisms to circumvent these threats, invasive species are not resilient against such risks. The invasive species may have problems leading to the establishment if they are not aware of the local knowledge as well as adaptation. The intrusive species, not having this particular competence, may struggle to keep on living. Consequently, the success of such ecological interactions is heavily dependent on the adaptability and resilience of the species involved, and native species usually have a survival advantage because they have already developed adjustments to local environmental challenges.

Competition for Resources

The competition for resources between invasive and native species is one of the key processes in ecology that can lead to a reduction in biodiversity and the instability of ecosystems. Undefined. Invasive species like the Argentine ant (*Linpithema humile*) can indeed outcompete native ant species like the odorous ant (*Tapinoma sessile*) by prioritizing shelter over food resources, thus showing how an efficient allocation of efforts into the competition can eventually result in a dominance of the invaded ecosystem (Neumann & Pinter-Wollman, 2022). Moreover, the invasive attributes of *Acacia longifolia*, such as the ability to employ resource pulses such as those experienced after wildfire suppression, may affect community composition and result in the annual discard of the dominance exhibited by native perennials, thereby discouraging the idea that well-adapted indigenous species are better competitors in resource-limited environments (Besaw et al., 2011). This indicates that invasive species have a chance to cause fundamental alterations in resource use and the sustainability of the invaded ecosystems, which mostly influence indigenous biodiversity (Werner et al., 2009).

Predation and Herbivory

In many cases invasive species can be very invasive by altering predation and herbivory relationship. This form of change a link that can has its of consequences on the community structure and the functioning of the ecosystem. This is well documented in multiple studies that have examined these effects in various ecosystems. Modification of Herbivore and Predator Populations: Non-native communities can disturb the number and population behavior of indigenous herbivores and predators, consequently resulting into weighty modifications of community dynamics. For example, the entry of invading plants can make the preferences and performances of the key herbivores change and shift the balance between native and invading plants so this affects the overall biodiversity (Kenis et al., 2008; Vermeij et al., 2009). Invasive species can keep native plants and herbivores from settling like they should be on land This can be manifested in changed meal plans and thus the survival possibility and successful reproduction of the native plants may decrease (Gallardo et al., 2016).

Introduced species may bring about changes in abundance of the herbivores. These changes may lead to the interference of key ecological processes such as nutrient cycling and primary production. Sometimes invasive herbivores can impose greater dominance on native plants in comparison to native herbivores as evidenced in reduced plant structure and correlated ecosystem performance (Huang et al. 2012). Invasive plants can also affect how native species and another introduced species interact, and complex food-web changes may be the result. Another case is when plants such as invasive ones are providing for the habitat or for the resources for the invasive herbivores thus leading to additional waves of destruction on the native ecosystems (Strauss et al., 2009). To summarize, the introduction of invasive species often entails serious changes in the food-chain that may result in a high level of instability and ecological influence.

Disease and Parasites

Rising from the interaction between invasive and native species, the dispersion of diseases and parasites associated with invasive species may become endemic to native populations without any immunity to combat the threats from this new spread. One of the main challenges

posed by this process is the disruption of biodiversity, ecosystem health, and the lives of people living in areas where invasive species are to be found. Invasive species can operate as channels for newly propagated diseases and infections, which may include parasites and other pathogens, as host natives have not had the time to develop immunizations to them, threatening the existence of these populations and leading to changes in the whole ecosystem dynamics. In particular, invasive species such as mice have been proven to cross the immune responses of native rodent populations, where both ecological and public health experts are affected (Landaeta-Aqueveque et al., 2021). "Pathogen pollution," or the human movement of infectious diseases to previously unfamiliar geographic locations, is a major health concern all over the world, especially for humans and animals. Such movement frequently concurrently implies the relocation of invasive species, which in turn can cause diseases to be reinstalled in a new area, from which toxic effects emanate (Chinchio et al., 2020). The role of invasive species in disease dynamics development largely makes them an essential part of the native wildlife parasites and pathogen interactions patterns, where such effects can lead to either the decline or increase of a disease risk for the native species. Invasive species may act as disease vectors for both new disease introductions and existing transmissions, illustrating the complex interactions between invasive species, native populations, and the ecology of disease (Telfer & Bown, 2012).

Transformation of Habitat

The invasion of the new species absolutely upsets the local ecosystems in a number of ways that gradually turn into the habitats of invaders. The original structure of the habitats, the resource availability, and the broader ecosystem dynamics are strongly affected by them. The ecosystem may be destabilized in many ways as invasive species pose a more serious threat to native biodiversity. Invasive species very often behave as ecosystem's engineers; they change the physical structure of habitat, hydrology, nutrient cycling, or light availability; these changes create favorable conditions for the invasion of the native species. Invasive plant species are one of the causes of changing structural and compositional patterns

in the soil. So, the results of this may be unaccommodating habitats for native plant species. The modification of food resources in this way can cause a sequence of effects across trophic levels beyond the target species, which also reviews the ecosystem involving pollinators, herbivores, and predators (Rodriguez, 2006). Amidst invasive species invasions, native species often have species-specific needs for resources. This may cause the displacement of native populations that cannot adjust to the new competition scheme. This can further result in the loss of biodiversity in the area. Examples of invasive grasses can take over the native grassland by rapidly putting light, water, and soil nutrients to full use, therefore suppressing native biodiversity and changing the community structure. (Flory & Clay, 2010) In certain situations, invasive species may generate environmental conditions that would make the easy establishment of more non-native species possible, leading to the emergence of compound phenomena. The community composition could be significantly transformed, from a state where native species are dominant to one where invasive species become dominant, hence the reduction of biodiversity and the ecosystem's resilience (Simberloff, 2009).

Disruption of Food Webs

An intrusion of species brings to the food web an anarchy by not only rearranging the ecological predator-prey associations but also reducing the biodiversity and realigning the trophic levels. These disruptions can manifest in various ways: A zebra mussel such as a carp and trout, which happened to be an omnivorous aquatic predator, has been recently found to affect food webs by forcing native fish species to feed on inadequate food resources. Consequently, the native prey that is considered to be threatened species, like bull trout, is for no doubt showing how invasive species disrupt the frippery web by means of trophic dispersion and replacement (Wainright et al., 2021). The invasive species are the sources of the strong destructive effects on all the primary consumers in the varied ecosystems. This influence not only applies to top consumers that take existence in particular situations, which reveals that invasive plants can occupy the upper level of the prey pyramid, particularly in wetlands and forests, but not so much on grasslands

(McCary et al., 2016). Disturbance by an Invasive Pathogenic Fungus: An advance of a fungal pathogen can cause a disruption of arthropod predator-prey food webs in forest landscapes. Among the group of invasive feathered species, pathogens such as *Hymenoscyphus fraxineus*, known to cause ash tree dieback, by simplifying food webs, manage to restrict plant and animal diversity, contrary to the disturbance-succession theory, as it has been one of the topic areas studied (Michalko et al., 2021). The fact that invasive species, especially non-native predators, have also been proven to decrease native ones and even change the whole food web in lakes is a good haven for biologists investigating the extent to which lakes can lose their biodiversity due to all kinds of biological invasions (Zanden et al., 1999).

Invasion in Kaala Paani

The concept of invasion is prevalent throughout the series which causes great destruction. Invasion is the primary cause of the widespread Leptospirosis Hemorrhage Fever (LHF-27). Tourism is a "serious threat to population maintenance and survival" (32:04). Several tourists, including the Savla family, visit Port Blair unaware of their tragic fate. Local tourist guides along with their tourists visit the Laathikaata forest reserved for the Oraka tribes ("Nature Wins" 33:48) where tourist guides indulge in illegal activities like smuggling of turtle eggs in a conservative area. When one of the NGOs took a snapshot in the reserved forest, Parvathy's words, "This isn't some tourist spot" ("The Switch" 22:36) highlight that non-native species should be aware of their own limits in a new ecosystem.

One instance of invasion occurs when Santosh is offered a fried egg by a fellow tourist, he coughs and covers his mouth and nose in disgust, unable to bear its smell. Further, when he came across the turtle eggs in the Jenkins forest, he began to vomit at once. When he was struck in a pit, he killed a snake and consumed its eggs contrasting his previous actions. Even Though he had his juice, he invaded the snake's eggs for his existence. Invasive species are harmful to the native species. Vinayak, an environmental activist tries to defend the Oraka community from invasive multinational companies like ATOM. In the protest against the exotic species, it is

obvious that "Orakas are the indigenous tribes of the Andamans" ("Nature Wins" 58:10). As an activist, he strives hard to save the native tribes from the invaders as they are a major threat to their survival. In addition, Vinayak's statement, "So we should just let them raze the forest and build hotels?" (47:57 - 54) depicts invasive species exploiting the resources of the natives which leads to environmental degradation.

Another instance of invasion is urbanization. In order to receive the ATOM CEO, a topmost employee of the company eradicated the land which is said to be Orakas' graveyard reservoir, which prevails that invasion causes environmental degradation. Mr.Wan's statement, "Where you stand today used to be a jungle 25 years ago. Every big city on earth is built on the graveyard of the jungles, Mr.Ketan. And people like us help build them!" ("Darwin's Bay" 51:19 -13) is a paradigm that urbanization leads to deforestation as invasive species impose control on native land. The most shocking incident occurs in the final episode, which reveals 'the Attavous project' of the ATOM company, which is something beyond their pipeline project. The ghastly truth is revealed by Mr. Wan which is none other than the illegal act of building a helipad . Ketan's statement, "All of this just to land a bloody helicopter?" (52:14) reveals the terrifying cause behind the epidemic. A crisis arose when an "environmental buffer zone" (51:55) was seized to build a helipad. Further, when Mr Wani was inquired about the land grabbing he stated, "Because we could. We could and therefore, we did" (51:47 - 45) exhibiting the illegal act of acquiring indigenous land by means of power, causing great harm to the native species. In order to build a helipad, Jenkins Island has been invaded by the ATOM company, which is the root cause of the mysterious LHF-27. From the Oraka gathering, it is obvious that they have been greatly affected due to invasion where one of the Orakas states, "First they came for our trees, then they came for our land, and soon they'll come for our bodies. What will we do then?" (1:03:20 - 11) prevails how the Oraka tribes have been tormented in every aspect of their lives in which mankind has been invading their habitat as survival becomes a major threat to them. Also, Chiru's utterance after being caught red-handed, "I know it's illegal to be in the reserved forest" ("The Immortal Being" 16:15 -13) unveils that intruding

species are indulging in illicit activities unaware of their actions in the new ecosystem.

In the words of Dr Southamny Singh, "Always look for the simplest explanation" (Nature Wins 53:10), which is simple yet beneficial. Finally, an expert in communicable disease discovers that the easiest way to cure this deadly disease is Andamani Echinacea, a flora. The multinational company destroyed the entire graveyard where the Orakas have been sowing seeds over the years. The most striking statement of Ketan is, "But centuries later, some people chose the very same land for a project of theirs. Not only did they clear all vegetation on it, but also dug out the monster that was underneath" ("Darwin's Bay" 54:52 - 43) unveiling the fact that invasive species dominate their ecosystem. This act of venture had a huge impact on the environment that gave rise to the extinction of Andamani Echinacea.

The health and police officials' words and actions are extremely dangerous for the welfare of the Oraka tribes. After their herculean task, the doctors discovered the plant's peptides are found in Orakas, as their ancestors had consumed the plant many years ago in which they're naturally resistant to the bacteria. In search of them, a police official snatched an Oraka by force to sacrifice his life to save the wife of ATOM's CEO. Further a police officer's utterance, "Then we leave them no choice" ("Darwin's Bay" 01:01) exemplifies that Orakas are becoming prey to the actions of non-indigenous species as there is a high risk of their community being eradicated. As a result of it, a pair of Orakas were captured in their habitat, by the police officers who invaded the community to save the lives of mankind. The researchers argue that the actions of these invasive species led to the destruction of the ecosystem and the displacement of the indigenous community.

Habitat Displacement

In the series, it is prevalent that habitat displacement occurs as a result of invasion where a multinational company invaded the Oraka graveyard which led to the widespread of the LHF-27 bacteria. For instance, a scene in "The Switch" portrays where Veenu's mom visits the Orakas' habitat and discovers that "the entire settlement is deserted" (22.10). Also, her conversation with an Oraka

further reveals that "The Orakas are leaving their settlement" (21:29). In addition, Ename's statement, "a great curse has been unleashed on earth. Runaway or you shall perish!" (21:52-48) is obvious that they are forced to move from their habitat, which is a result of invasion. Another instance is when Chiru and Santosh are stranded in Jenkins's forest, they come across the corpses of the poachers where none of the Orakas was found which exemplifies that the whole community is migrated. Chiru states, "Where have they gone after setting up the tents?" ("Eraba Reta Mono" 35:31). In addition on their journey to Portblair, Santosh is suspicious as he states, "Why haven't we seen any Orakas yet?" (36:15) also exhibits the displacement of the Orakas', in which they are required to leave their habitat. Moreover, when Jyotsna and Veenu are conversing about the salt-water crocodiles and how they "don't abandon their habitat and leave" (Nature Wins 42:14) emphasize the importance of staying in habitat and problems of habitat displacement.

Jyotsna, despite her traumatic grief, becomes a caretaker to Parth and Vidisha which displaces her to live with them. The trio is forced to move from Portblair to a reserved forest, in order to safeguard from the epidemic, violating the curfew. Unaware of the impending danger, Parth exceeds the prohibited area and meets his tragic fate where habitat displacement is acquired due to human actions. Throughout his journey, Santosh experiences various challenges and comes across different environments, which is also a facet of habitat displacement. As a result of it, he kills a snake in Jenkins forest and Jyotsna in Portblair, while heading towards Huxley island. This act of homicide is a result of habitat displacement as he is forced to adapt to a new ecosystem. Having lost his wife and son, his firm decision to migrate to Huxley Island with his daughter prone to both epilepsy and LHF-27 bacteria, becomes a major threat for the uninfected people which puts their lives in danger.

The aftermath of habitat displacement is like a double-edged sword where people who are able to survive in a new environment continue to live, whereas those who fail to adapt themselves either get infected or succumb to death. The reason behind Basu uncle's forced displacement is the death of his beloved son as well as his siblings, which made him leave his habitat and

accommodate himself in a new place. Similarly, Santosh after losing his spouse and son, was left only with his daughter as he was required to fit in an unknown place. It is heart-rending that circumstances force him to take the role of an ambulance driver where he leaves an old man with respiratory issues on the road while he searches for his children and he cremates his own son without revealing his identity, Chiru's search for Orakas after his mother's death exemplifies that these characters having survived in an alienated environment, are considered to be "the chosen ones" ("Eraba Reta Mono" 05:39) after the displacement of their habitats. On the other hand, a lack of awareness of the alien territory resulted in the death of Parvathy, Gargi and Parth which shows their inability to adapt themselves to unknown surroundings.

Ecological Disruption

Another instance of ecological disruption can be identified when Southamny Singh visits the physician and finds the dead bodies of many who died with the same black rashes. The human interference with LHF Bacteria (ATOM Water Project) leads to the spread of the infection to other areas ("Nature Wins" 09:08). This reveals the law that if nature is suppressed in one place it emerges through the other. The reason for the bacteria from Jenkin's spread is because of the invasion. Another invasion is Chiru's smuggling of the eggs. In the beginning of Kaala Paani itself has instances of Invasion of Species and Territory Intrusion. In the beginning of the "Nature Wins" the Oraka tribes enter into the places where the pipelines go. Here the contact between the Orakas and the civilized people is established in the scene. Another instance of ecological displacement happens through the coming of visitors to Jenkins and Andaman. They belong to the mainland but they come to the Jenkins Island to while away their time, which is not their native place. The idea that even timid or weaker species would become stronger when danger approaches is revealed through Santosh Savla who travels with his wife. He is timid even to get water in the flight but he kills a snake with a stone at the end.

The ecological disruption is evident in "Nature Wins" Where a man with dark patches behind his neck is scrutinized by a group of doctors (50:50). Dr Singh's report also proves that the black rash was already there in 1989.

Chiru's mother's statement "Nature continues to be at work, even under earth, Venu. Sometimes it takes a while but somehow, nature always finds its way"(48:20) The conversation between Chiru and Veenu reveals that Chiru and his partner have the habit of stealing tortoise eggs (48:05). Another instance of ecological disruption is when the water from Jenkins Island becomes a threat for "half a million" people (53:13-46). The severity of the disruption is further felt in the discussion between LG and the Doctors. The LG's understanding that the disease is life-threatening is explicit in his utterance, "ambush" (46:19). Ename's statement, "a great curse has been unleashed on earth. Runaway or you shall perish!" (21:52-48) further reveals the ecological disruption. Another instance of ecological disruption is evident at the beginning of "Erba Reta Mono" where the soldiers are dying of an unknown disease (57:03).

Territory Intrusion

An instance of territory intrusion is revealed in the conversation between Chiru and Veenu where Veenu says, "so we should just let them raze the forest and build hotels? " (47:57-54). This reveals there is a dispute between who tries to occupy the land of Orakas and who tries to save them. The salter-water crocodiles' leaving from Tulip's island is also indicative of ecological disruption (41:14). The crocodiles don't go away from their habitat but their movement clearly implies something is unusual in the habitat. Chiru's mother's intention to help the Orakas also leads to territorial intrusion. She has a territory but she transgresses the territory by following the Orakas which eventually leads to her death. The real reason for the ecological disruption is implicated by the officers and the policeman who reveals that the ATOM company has also done something else besides the Water Line Project ("Garnjen" 58:06). When Santhosh intrudes the territory of the snake by taking the stones, it comes out and threatens him ("The Immortals" 38:38). The snake leaves him only when he accepts that he has taken the stones unintentionally and promises, "I won't do anything. Nothing at all. I am not here to harm you" (38:13). This again emphasises the importance of maintaining the territory. But again he intrudes the territory by taking the eggs of the snake and eating them to satisfy his hunger. When the

snake sees the egg in Santhosh's hand it senses that he has intruded its territory and tries to kill him.

Basu Uncle lives in a territory alone without the intrusion of others. The words on the board, "No Trespassing" (Eraba 44:59) and "incase you missed it NO TRESPASSING" (44:45) clearly indicate that he wants to live alone and hates the intrusion of strangers. Basu Uncle does not want others to enter his house, this is revealed in his words, "My first rule is no one else enters my house" (33:52). Further his insistence on six-foot distance, his allegory of people also shows he does not want other people to help him. Basu Uncle's territory always has saved him from intrusion. His revelation of his survival even though his brothers died of smallpox, and half of his family died of a malaria epidemic, and his survival from COVID also is because of his demarcation of his boundaries. This shows that his survival is because of his isolation from the other people. Chiru and his partner's poaching of tortoise eggs is also a territory intrusion. Chiru's statement that "Poachers come here and there get the Oraka boys and girls drunk and high and take advantage of them. They've even raped Oraka girls" (14:45-22) clearly exhibits the territory intrusion of outsiders in the place of Orakas.

An instance of territory intrusion is depicted in the beginning of "The Immortals" where an Oraka girl is impregnated by the outsiders (the people of city). The Orakas live in an isolated place, the impregnation of the girl by violence exemplifies intrusion into their territory. Chiru's act of beating Ename epitomizes the invasive attitude and dehumanization of the Orakas by the people of the city. Parth's act of going away from the boundary also demonstrates territory extrusion, where species go away from their safe zone. Parth might have been infected through the cat, Sundari, who feeds every day. The other areas around the boundary are infected, which is evident through the death of the goat with black rashes (27:58-53). If he had not extruded the territory the infection would not have infected him. The importance of maintaining the territory is emphasised in the scene where Santhosh encounters the snake in the pit. Ketan and Mr. Wani's conversation in "Darwin's Bay" also denotes the problems of territory intrusion. The spread of bacteria is the result of Mr Wani's Attavus Project, which aims to destroy the

graveyard of the Orakas. The intrusion resulted in Jenkin's bio park full of bacterial infections.

Tinnotu: The Native Knowledge

The fact that the Tsunami destroyed the whole island but "No Oraka was harmed from it. Not even a scratch" ("Erba"40:34) shows that they have a deeper knowledge of their habitat and the threats around them. As the Orakas know the threats around them and the way to escape them they alter their habitat for good. Mother of Venu's statement, "their entire settlement left the island for highlands" (40:35) shows their knowledge of escaping from the impending doom. Further, the clarification, "they already knew something bad was about to happen" (40:32) proves that the Orakas foresaw the peril. The word, "Tinnotu" (40:18) means "understanding something so deeply, that you can sense the slightest discomfort in it" (40:04) further demonstrates the fact that natives know their habitat, the threats around it, and the way of escaping from it. The second displacement of the Oraka tribe from their habitat also reveals their knowledge of precarity (22:28-08).

The strategic intentional displacement is for the good of their tribe. The fight-or-flight disposition of the tribe is evident here. The doctor's statement "The disease has long history with these islands" (22:56) proves that the disease is common to the island and the people who are there are survivors of the disease. This exhibits their native knowledge of the disease. The episode, "Forefathers," depicts the history of how Orakas became immune to the LHF. The depiction reveals the notion that native tribes are superior in handling the threats of nature. The "first vanquisher of the illness" (53:14) is immune to the disease because he consumes the Anthamani Ethnetia. This also shows that nature always has antidotes for every biological threat the natives face. When the alien species invades the native land the native threat threatens the outsiders. The fact that the Orakas are immune to LHF even after the extinction of the plant makes it clear that the native species is genetically imbued with the antidote to the threats which protects them from the local threats.

Survival of the Fittest

Another Prominent idea reflected in the series is the survival of the fittest. The adrenaline rush that happens

during the fight or flight movement is clearly depicted through the father of Parth. He is portrayed from the beginning as a coward. He doesn't even dare to get a water bottle from the air hostess. He also exhibits his timid nature when his daughter experiences fits. One more instance where he reveals his timidity is when he practices to be harsh to Chiru and Bunti (39:13-10). Santhosh's timidity is further exhibited while he converses with his wife in the hospital. Santosh, as a hen-pecked husband, is always guided by her wife, Gargi. When he witnesses her hiccups, which is one of the symptoms of the second stage, he breaks down, saying, "how will we live without you?" ("Garjen" 12:11). For which his wife comforts him with the words "you don't know how strong you are" (12:11). His bravery emerges after his wife's death. He becomes a real guardian to his children. His boldness is exhibited through his act of stealing the boat to save his children (06:28). Though Santhosh is portrayed as an intimidated person, he kills a snake when it comes to the fight or flight situation ("The Immortal" 30:40)

The police officer's statement, "Shake hands with the hunter or you'll get hunted" ("Eraba" 47:26) epitomises the idea of survival of the fittest. Further, the statement, "This is your chance to rise up the food chain" (47:22), shows the ideology behind the series. Even though Santhosh is weak and timid, when he keeps the ant inside his shirt it makes him move towards his survival. The adrenaline rush makes him come out of the pit.

The police officer advises Ketan with an analogy of a food chain thus: "The smallest animals are the first to die in a food chain" (37:48). This also explains the idea of the survival of the fittest. The analogy of the food chain is constant in the episode of Ketan. Ketan mentions the food chain thus: "Because there is a food chain, ma'am. Lion eats deer, deer eats the grass" (12:50). The reference to natural selection also plays a pivotal role in the series. The statement, "Nature only selects the survivors. In order to survive, Giraffes had to stretch their necks. Turtles did not have the ability to run from predators, so they developed strong shells on their backs. Elephants became so strong that it was impossible to hunt them" (08:59-08:03). The further elaborations that the existence of Orakas in the island for seven thousand years and they learnt to fight the LHF exemplifies the concept of survival of the fittest.

The conversation between Ketan and Wani in "Darwin's Bay" reveals the real reason behind the LHF spread, which occurred because of the human interruption in the ecological buffer zone, where the natives bury the people infected with LHF. The conversation also reveals that apart from dead bodies the natives also plant Andamani Echinacea which is believed to kill the disease. Thus the people both the problem and the solution which makes them the fittest for survival. Santhosh's act of killing Jyotsna also has a survival instinct in it as Santosh acts just to save her child. The General's words, in "Darwin's Bay," "nature gave them all a chance to evolve. Those who couldn't be considered weak, and got wiped by nature. And those who could adapt to the situation, they were considered to be the fittest" (10:24-09:40) exemplifies the philosophy proposed by the whole series that the fittest survives.

Coda

To sum up, the analysis of Kaala Paani as seen within the framework of invaders and ecological disruption yields the significance of environmental science and narrative storytelling at their crossroads. Furthermore, the show represents a dual facet both in terms of the severe outcomes that involvement of alien species poses and also in the sense that the series depicts the intricate interplay that exists between biodiversity, ecological stability, and human socio- economic dynamics. Under the eye of 'Darwinian' theory, the movie Kaala Paani increases the importance of dealing with introduced species and the trailing consequences to environment and communities. The main suggestion of our research is that the conservation of nature must be integrated into cultural and educational frames of reference that prevail in society and influence public perception and attitude towards environment as a whole. Through the analysis of complex representation of invasion biology in Kaala Paani, we support multi-disciplinary learning of ecological education which harnesses the enchantment of stories to get and keep the knowledge concerning the importance of ecological balance and the maintenance of the woven tapestry of life on earth. Lastly, the crux of this writing is the fact that the Kaala Paani stories are a missing link between

science, which is the inquiry, and the society, which is the action towards a greener and biodiversity-rich world.

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