

# Wild Owl Conservation May be Immunized-Community Against 'Future-Disease-X': Provide Clue Clinical-Biomedical-Research Global-Health-Enriched-Biodiversity-Forestry-Agriculture-Environment-Science-Technology-Communication-Issues!

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## Article Info

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## Abstract

Though some-potential-RNA-vaccines have been prevented-clinically-significant coronavirus-disease-2019 (Covid-19) caused by severe-acute-respiratory-syndrome-coronavirus-2 (SARS-CoV-2), reducing the infection, however, and the breakthrough of infections with SARS-CoV-2 again, have been reported among the fully-vaccinated-healthcare-workers, and badly impacted on global-health-ecology, even in countries with sophisticated-medical-facilities. Still, now no potential 'Buster-Dose-Vaccine' is discovered for life-long-preventing-future-pandemics. On the other hand, food production in the agriculture sector significantly decreases due to various-pests attacks. So, to tackle and overcome both the critical-situations, the naturally-growing "Wildlife-Conservation of 'Barn-Owls-Breeding-Project' in the Kanchannagar D. N.Das High School (HS)" forming a 'Enriched-Typical-Ecosystem' in the food-chain-relationships-landscaping by trees-park-garden-playground-ponds with nearby Damodar-and-Banka-river, agriculture-horticulture-brave-yard creating the 'Ideal-Place' for keeping-and-caring of 'Wild Owls and Bats', the natural-reservoirs of many-adenoviruses including-'Future-Disease-X causing SARSCoV-3' also, and recently, the similar-coronaviruses of healthy 'Barn Owls and Bats' cause infective-COVID-19 disease in humans-and-other-animals, restoring-asymptomatic-carriers in the Burdwan-Municipality covering of area 26.3 sq. km occupying diverse-ecological-niches. Here, the 'Barn Owls and bats' not only control the different-pests in agriculture-forest-and-pisciculture etc., increasing production of food, but also plays an important role in controlling the high-rate-of-morbidity-and-mortality, showing the "Wildlife-Conservation May be Immunized-Community Against 'Future-Disease-X' Providing the treatments-Clue in Clinical-Biomedical-Research, Global-Health-Enriched-Biodiversity-Forestry-Agriculture-Environment-Science-Technology-Communication-Issues, and Barn Owls and Bats, Act as a Natural-Booster-Community-Vaccine-Immunization Against COVID-19 causing 'SARS-CoV-3' also", and developing-and-administering-potentially life-saving-immunomodulatory different-therapies by improving-natural-immunities, and also provides them "Preventive-Community-Health-Care-Health-Risk-Services-Healthy-Lifestyle-Clinical-Research-Education-and-Enriched-Wildlife-Biodiversity-Conservation-Agriculture-Forestry-Environments-Socioeconomy-and-Science-Technology-Communication-Application-Issues with Joyful-Learning-Environment-with-Human-Health-Ecology, and Food-Chain-Relationships, and Community as Well as Families'-Health-Awareness-Development". They are also opening-a-path-of-more-future-research-and-communication, especially for the emergence-of-variants-concern that may-pose-new-challenges-for-medicated-vaccines and neutralizing-antibodies for the future-epidemic also.

**Keywords:** wild-owl-conservation; immunized-community- 'future-disease-x'; clue clinical-biomedical-research; global-health-enriched-biodiversity-forestry-agriculture-environment-science-technology-communication-issues.

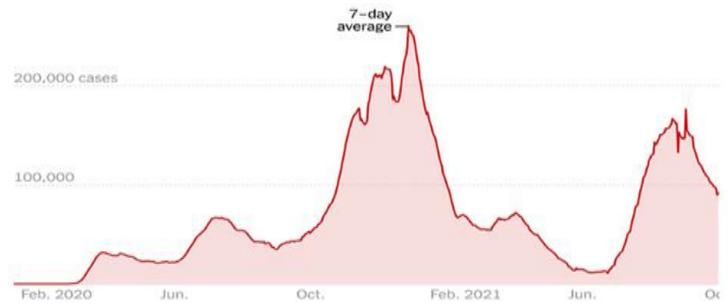
## Introduction:

Though some-potential-RNA-vaccines have been prevented-clinically-significant coronavirus-disease-2019 (Covid-19) caused by severe-acute-respiratory-syndrome-

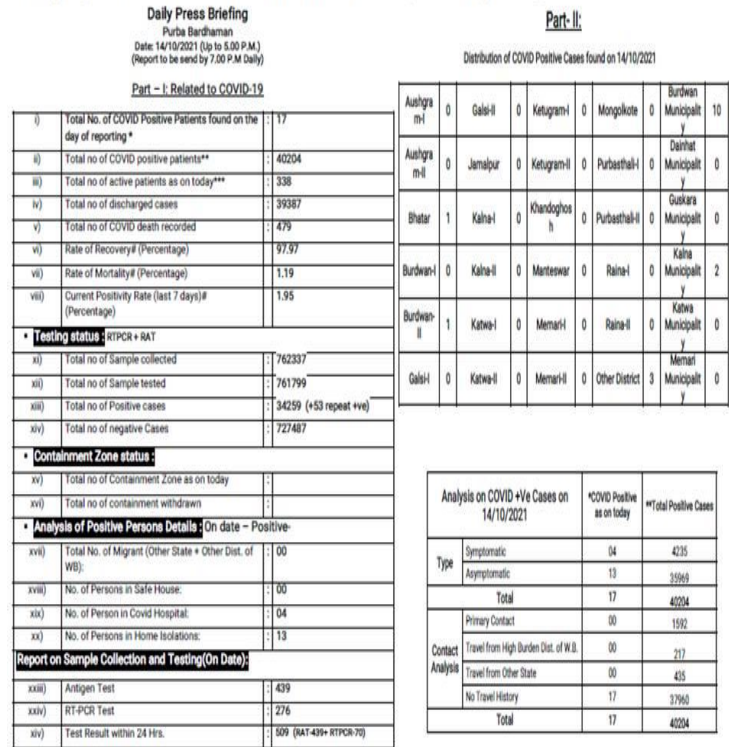


coronavirus-2 (SARS-CoV-2), reducing the infection, however, and the breakthrough of infections with SARS-CoV-2 again, have been reported among the fully-vaccinated-healthcare-workers [1]. And the 7th-coronavirus-2 (SARS-CoV-2), is highly infective, and often causes severe acute and/or long-term illness, and is badly impacted on global health ecology, medical pharmaceutical, education, clinical, research, agriculture, forestry, horticulture, environment, wildlife conservation, biodiversity, science-technology-communication, and socio-economy-issues, even in countries with sophisticated medical-facilities, and post-vaccination also, and wilds owls and bats, act as a natural adenoviruses reservoir, from a physiological and ecological perspective, and play active role in the transmission of various animals, the domestic animal is the bridging host to human infection, causing major effect on the population of their hosts, and provide new insights into the diversity, evolution, host variety, and distribution [2-33]. Still, now several vaccines have come up with limited efficacy in managing COVID-19 disease with the advanced stage of their release, and now immunity is waning [34-37]. Still, now no potential ‘Buster-Dose-Vaccine’ is discovered for permanently preventing 21st-century-pandemic because the “Concerns over waning immunity and SARS-CoV-2 variants have convinced some countries to deploy extra vaccine doses which not clear to scientists whether most people need them” [38]. Apart from this, many new chemical entities and repurposed drugs like ‘Remdesivir, Favipiravir, Galidesivir, Actemra, Azithromycin, Thalidomide, Hydroxychloroquine /Chloroquine, and Ivermectin in combination with doxycycline’, currently used for managing COVID-19 disease showing very limited efficacy [39,40].

In the New York Times, October 14, 2021, Wolfe J. (Figure 1), reported that the U.S. is about to reach 700,000 deaths from Covid-19, and the last 100,000 people to die passed away months after vaccines were American adults, and the majority of unvaccinated Americans have died in recent months, they also analyzed that the people who died in the last three and a half months for the spreading widely ‘Delta variant’ in the South lagging in vaccinations, and in the Delhi, high transmissibility and partial evasion of immunity by the Delta variant contributing to an overwhelming surge [41], and recently after long lockdowns in Purba Bardhaman, West Bengal, India (Figure 1), only 14<sup>th</sup>-October 2021 showed that the total COVID-19 positive cases are 40204, the total number of discharge cases were 39387, the total number of COVID-19 death is 479, rate of recovery was 97.97%, and rate of mortality was 1.19%, and the distribution of COVID positive patient in Burdwan Municipality was 10. So, it is an urgent need to find out policy-initiative, cheap, non-phytotoxic, and non-pollutant strategies to develop future support and treatments of COVID-19.



Daily reported coronavirus cases in the United States, seven-day average. The New York Times



**Figure 1:** COVID-19 report of the United States, seven-day average in 14<sup>th</sup>-October 2021 in The New York Times, and of Purba Bardhaman District from 14<sup>th</sup>-October 2021.

On the other hand, food production in midday-meal kitchen-gardens and agriculture significantly reduces due to different-pests-attacks. Though chemical pesticides are the most potent means of control, they are costly with badly impact on the environment, global health-ecology, medical-pharmaceutical-education, clinical-research, agriculture-forestry-horticulture-environment, and wildlife-conservation-biodiversity, etc. [7-32]. So, to move forward, it will need new and more efficient innovative solutions, technologies, and products or systems to fulfill the above-mentioned requirements by improving ‘Science, Technology, Communication and Application-Issues’ by which ‘World will retain in old forms again’.

Primarily it has been observed, “The wild ‘Owls’ becomes the ‘Social Guards, Bio-Indicator, and Social Vaccine’ against COVID-19 by consuming especially Coronavirus-carrier wild bats and mongoose, enriching community health, health-risk-services, healthy-lifestyle, wildlife-conservation, agriculture, forestry, horticulture, science, technology, and communication-application-issues, socioeconomic, joyful learning environment, communities-and-health-ecology, food chain relationships issues,



and contribute to sustainable pisciculture, and kitchen garden management, micro-and macro-climate issues, where it is mentioned that the wild bats secrets of immunity confirm the clues of treatment against various mutant Coronavirus with developing the policy also, and arouse the interest of students about conservation of biodiversity” [14,15,42-45]. And recently in ‘Science’, a cave in a mountain in Laos not far from the one shown here is home to bats infected with the closest coronavirus to SARS-CoV-2 yet, and the new viruses, the SARS-CoV-3, show for the first time that a key feature of the pandemic virus exists in the wild, that viruses genetic sequence to SARS-CoV-2 up to 96.8% identical, using its surface protein, spike, angiotensin-converting enzyme 2(ACE2) for initiating an infection, and may cause ‘Future Pandemic’ due to evolution, several decades separate these bat viruses remain inactive [46].

So, to handle and overcome both the situations, the present studies, our best endeavor is to focus on the observations on the naturally growing “Wildlife-Conservation-Project of ‘Barn-Owl’ in the heritage, Kanchannagar D.N. Das High School (HS), is considered for the behaviors and activities of owls, which may have acted as an important preventive COVID-19 community vaccine, with the improvement of the science , technology and communications by joyful school environment, and economic implications for wildlife conservations, and agriculture by better crop quality and production for a midday meal in future. The results would be more realistic in terms of the potentiality of the wild ‘Barn Owl’, use as potential Science and Technology Communication Social-Vaccine-Bio-Indicator, or Bio-Monitor or Environment-Friendly Predator Mammals, in controlling numerous pests, unknown threaten microorganism like novel Coronavirus, the COVID-19, as well as ecosystem. Our main aim is to investigate new and more efficient solutions, technologies, systems or products and it has to improve “Science and Technology Communication Social-Community-Vaccine against COVID-19” forming joyful school as well as community-environment, and fulfill its food and nutrition requirement which indirectly-influence or –indicate any kinds of thresholds or natural calamities for the climate change and resource productive socio-economies enriching the quality of midday meal as well as a joyful educational environment.

## Materials and Methods:

### Location and Weather:

The experiment was carried out at the probably more than 210 year old, Middle English School, Kanchannagar D.N. Das High School (HS), building and campus, Kanchannagar Burdwan Municipality, Purba Bardhaman-713102, West Bengal, India, (Plate 1), where the temperature was  $22\pm 5^{\circ}\text{C}$ , relative humidity was  $75\pm 5\%$ , is situated near the Damodar and Banka river, and is surrounded by ponds, forest, different trees, park, garden, playground, different storehouse, rice mill, markets, agriculture-horticulture-land, brave-yard, wildlife sanctuary, masjid, temples, etc. forming the ‘Location-Wise an Ideal Place’ for keeping-and-caring of ‘Wild-Bats’, with the average rainfall was 150 millimeters. The school campus prevails the different old- and tall-tree, nutritional kitchen garden with a midday meal, exhibited an enriched faunal diversity comprising small mammals, pigeons, different small birds, reptiles, toads, and insects [14,15,42-45].

### Duration and Habitat:

The observation of the experiment was conducted for 18 months, from 18th-March 2020 to 3rd-October 2021 in the 12 ft height ceiling of the 10-big rooms, big under-ground, big core-door, artificial long- nest in the veranda, and big trees in the large campus, and owls and bat, make their habitat, homes (roosts) in a variety of different structures in the cracks in wooden bar and buildings, artificial different kinds of nest hanging in trees, and even the attic artificial nest of the building (Plate 1). The bats were observed every day thrice or more. All the data were counted for statistical analysis by the analysis of variance (ANOVA) [14,15,42-45].

### Activity of NGO:

The Burdwan Green Haunter and Students’ Goal, NGO, forms four main activity-groups; core group, working group, advisory group, and social media group, guided and guided by Dr. Subhas Chandra Datta, and coordinated by the secretary, Mr. Rakesh Khan, M.A., B.Ed. (Gold Medalist), and president, Mr. Subhendu Bose, Administrator of B.Ed. College ) [14,15,42-45].

- Core Group- has 22-members with 10-subgroup, decision-making, and leading-working group.
- Working Group- has 210-members with 11-subgroup, engaged in different social activities.
- Advisory Group- has 10-members in different disciplines like academicians, administrators, doctors, teachers, scientists, business personalities, engineers, accountant, social reformer, reporter, government employee, and entrepreneur with different-subgroup, give advice and problem solve, if necessary.
- Social-media Group- has more than 1300 members, followers 21,000, engaged mainly for publicity.

### Counting:

A team of students helped to the proper count of wild owls in trees as well as in the building (Plate1). The direct counting technique is used for counting bats roosting in buildings but is difficult to count bats inside trees [47].

### Maintenance of Records:

All the data were maintained for record and were counted for statistical analysis by the analysis of variance (ANOVA) [14,15,42-45]. The survey was randomly recorded by the young students Non-Governmental-Organization (NGO) named “Burdwan-Green-Haunter and Students’-Goal”, at ward no. 24 and adjacent surrounding total area of the Burdwan Municipality, Bardhaman, Purba Bardhaman District, India. Total families were 739 and also the total population was 1698, and therefore the activities were conducted and measured from the 18<sup>th</sup>-March2020 to 14<sup>th</sup>-October 2021 and up to date [14,15,42-45].

### Observation on Different Behaviors:

Nesting and hunting behavior, sound-producing behaviors, wild behavior, and social behaviors, as well as bio-indicator behaviors, has been observed, and the relationship with other bats, pigeons, small birds, dogs, cats, visitors as well as staff, has also been



observed, and the ‘Bardhaman Fire Brigade Service-Team’ helped to conduct examination on 26<sup>th</sup>-September 2021 (Sunday) without fear from owls and bats [14,15,42-45].

**Observation of Human Interactions:**

Human interactions with wild barn owls are observed and recorded of interactions, extinction and reduction, uncountable human deaths and economic losses, which may be positive or negative, and common people compete with wildlife for different disciplinary perspectives to address human-wildlife conservation conflict and coexistence outcomes [10,11,36-39,41,42].

**Observations:**

Different behavior and attitude of the barn owls, students, teachers, guards, guardians, communities, photographers, and different types of visitors have been observed by NGO-direct physical access, and everyone the information was counted for statistical analysis by analysis of variance (ANOVA).

**Science and Technology Communication:**

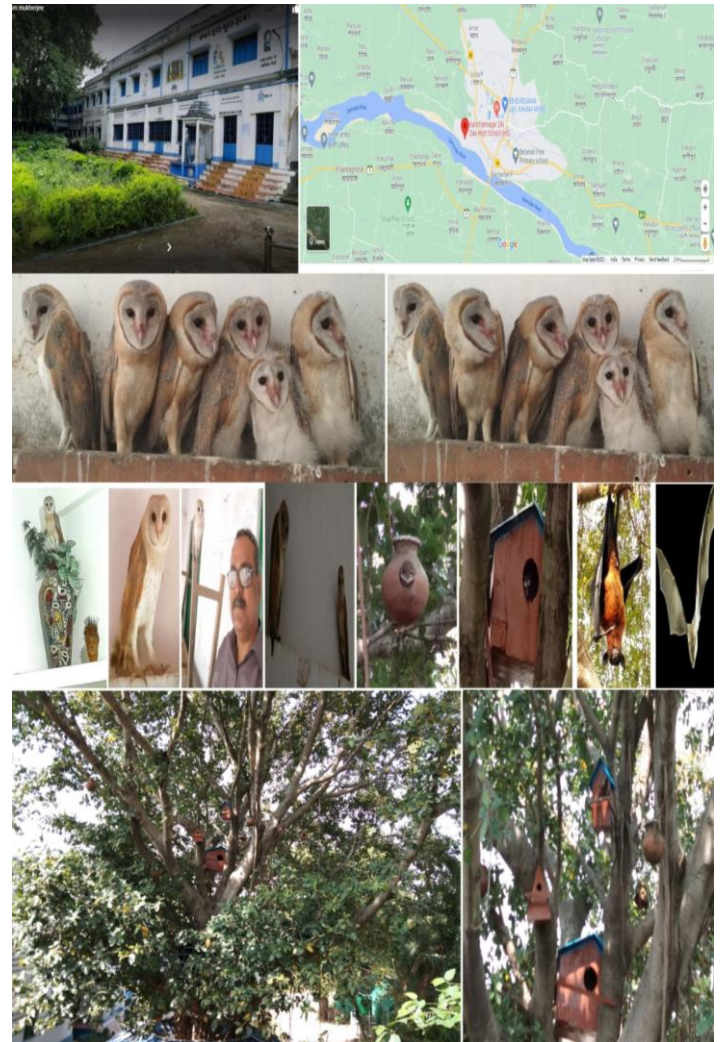
The activity of the community, different visitors and media personnel, campaign or aware or make the news or publications regarding importance is recorded [6-23,26-32,42-45].

**Results:**

**Different Activities and Behaviors:**

**Table 1** shows the relation, feelings, and activities to wild barn owls and bats in the school during COVID-19 periods with visitors at the Kanchannagar D.N. Das High School from 18<sup>th</sup>-March2020 to 14<sup>th</sup>-October 2021 (18 months) up-to-date, and observation of the infection or re-infection (before and during COVID-19) of Coronavirus-2, and all the data were counted for the statistical analysis by the analysis of variance ANOVA ( $P \leq 0.01$ ). A large number of owls, pigeons and communities (students, teachers, staff, and guests) visitors came or resided before COVID-19 in comparison to bats and other animals, and bats only live in the roof of the gymnasium hall from a very long time, and the highest number of barn owls and pigeons were resided but reversed in the COVID-19 period, and the highest numbers of bats were present during COVID-19 to up-to-date (Plate 1). The owls, bats, pigeons, different animals including communities behaved normally and socially and sometimes alert in the case of different animals. During COVID-19, the owls and bats only behaved normally and socially with alerting in the intraspecific relationship, though other animals behaved normally but curious and alerting, and the pigeons behaved abnormally with curiosity, and the communities were always frightened, curious, and alert. Inetrspecific behaviors of bats were alerting, aggressive, and fighting, but in the case of pigeons were ‘Abnormal Frighten Avoiding’, other animals were ‘Curious Caucus Alert’, and communities were always ‘Caucus, Frighten and Alerting’ against COVID-19. Special behaviors (Plate 1) were observed during the preparation of the ‘Police Recruitment Exam on 26th-August 2021, Sunday’ for taking some measures (3 types) especially for temporary displacement of owls and especially bats by forcefully application of; (i) Water Spray, (ii) Bursting Crackers, and (iii) Fire Smog. In the ‘Water Spray’, bats and pigeons were

temporarily flying away from their home, other animals (Birds, Squirrels, Cats, Dogs, Monkeys, etc.) were hide and ran away, and communities were disliked it. In the ‘Bursting Crackers’, bats and pigeons were frightened and temporarily flew away from their school, and other animals were frightened, and temporarily left the place, and communities were disliked it and became irritated. In the ‘Fire Smog’, bats were frightened and flew away from their school campus for some days, pigeons just flew away from the nest, other animals temporarily leave the place, and communities were disliked it and became disturbed (Plate 1 and Table 1).



**Plate 1:** Wild Barn Owl and Bats in the Kanchannagar D.N.Das High School (HS) during COVID-19



Location: Kanchannagar D.N. das High School (HS), Kanchannagar, Burdwan Municipality, Duration: 18/3/2020 to 14/10/2021								
Samples in School (Living)	Visitor Before COVID-19 (number)	Visitor After COVID-19 (number)	Behavior Before COVID-19	Special Behavior (Before Police Exam on 26 <sup>th</sup> -September 2021)			Relationship During COVID-19	
				Forcefully Application of			Intraspecific	Interspecific
				Water Spray	Bursting Crackers	Fire Smog		
Barn Owls	1483ax±17	1825by±15	Normal Social	Temporarily Flew Away	Frighten Temporarily Flew Away	Frighten Temporarily Flew Away	Normal Social Alert	Alert Aggressive Fighting
Bats	125dx±5	8365ay±25	Normal Social Flocking	Temporarily Flew Away	Frighten Temporarily Flew Away	Frighten Flew Away	Normal Social Alert	Alert Aggressive Fighting
Pigeons	1287bx±11	16ey±2	Normal Social	Temporarily Flew Away	Frighten Temporarily Flew Away	Just Flew Away	Abnormal Curious	Abnormal Frighten Avoiding
Other Animals (Birds, Squirrels, Cats, Monkeys, etc.)	55ex±5	193cy±7	Normal Alert	Hide Ran Away	Frighten Temporarily Leave	Temporarily Leave	Normal Curious Alert	Curious Caucus Alert
Communities (Students, Staff & Guest, etc.)	685cx±10	37dy±3	Normal Social	Dislike	Dislike Irritation	Dislike Disturb	Frighten Curious Alert	Curious Frighten Alert

**Table 1:** Activities of wild barn owls in the school during COVID-19 periods with different visitor.

‘a,b,c..’- different small letters in a column, and ‘x,y’ different small letters in a row show significant difference by the analysis of variance ‘ANOVA’ (P<0.01).

**Social Spectrum and Frequency of Immunization:**

Table 2 shows the social family-immunization effects of wild barn owls and bat against COVID-19 among various communities surrounding the Kanchannagar D. N. Das High School (HS), Burdwan Municipality, from 18<sup>th</sup>-March2020 to 14<sup>th</sup>-October 2021 (18 months) up-to-date, and observation of the infection or re-infection (before and after COVID-19 vaccines) of coronavirus-2, and all the data were counted for the statistical analysis by the analysis of variance ANOVA (P≤0.01). The NGO-“Burdwan-Green-Haunter and Students’-Goal” visited and counted at randomly in Bardhaman Town were; the average number of 739 families, the average number of 1698 family

members, the average number of 10 active COVID-19 patients, the average number of 803 COVID-19 passive patients, the average number of 803 home quarantine, and the average number of 810 patient recoveries from COVID-19. And out of an average number of 813 positive COVID-19 patients, an average number of 10 patients admitted to the Burdwan Medical College and Hospital, Bardhaman, an average number of 810 patients (99.63%) recovery from COVID-19, and an average number of 3 patients died due to senior (60-99) aged and comorbid, heart and a diabetic patient with ‘Multisystem-Inflammatory-Syndrome (MIS-C)’ , and no mortality occurred below 60 middle age, adolescent and children age group (Table 2).



Average Family Age Groups (years)	Visited Area: Kanchannagar D.N. Das High School (HS), Burdwan Municipality, Duration: 18/3/2020 to 14/10/2021						
	Average Number of Family Visited	Average Number of Family Members	Average COVID-19 Active Patients	Average COVID-19 Passive Patients	Average Home Quarantine	Average Number of Recovery	Remarks
Senior: (60-99)	171.25a ±00.02	231.18ax ±00.02	07.00ay ±00.04	156.82az ±00.26	154.42az ±00.12	157.97az ±00.11	Died only aged and comorbid heart and diabetic patient
Middle: (20-59)	255.87b ±00.01	767.61cx ±00.17	03.00by ±00.02	248.23bz ±00.07	248.22bz ±00.11	251.18bz ±00.14	One died due to heart attack
Early: (00-19)	311.89c ±00.03	698.73bx ±00.11	00.00cy ±00.01	397.97cz ±00.11	397.03cz ±00.01	397.01cz ±00.16	No mortality occur due to increase effective natural immunity
Total: (01-99)	739	1698	10	803	803	810	Potential social natural immunization results due to effective natural immunity

**Table 2:** Community immunization of wild barn owls against COVID-19 among various communities

‘a,b,c’- different small letters in a column, and ‘x,y,z’ different small letters in a row show significant difference by the analysis of variance ‘ANOVA’ (P<0.01).

## Discussion:

### Activities and General Behaviors:

Before the COVID-19 pandemic as well as lockdown from 18<sup>th</sup>-March 2020, the coexistence of a large number of owls, pigeons, students, teachers, staff, different communities, guests, and visitors, were remarkably occurred in comparison to bats and other animals like different birds, squirrels, cats, wild cats, monkeys, dogs, etc., and owls are also the regular frequenters of this tree, and the highest number of pigeons were resided peacefully showing normal social behaviors, due to everything is normal, and normal situation, enriched midday meal, and they always manage everything and feel like home, the school as well as campus, forming the joyful environment. But reversed in the COVID-19 periods, and the highest numbers of owls and bats, were present during COVID-19 to up-to-date, due to; the appropriate comfortable solitary resident home, the pigeons and other animals like dogs, cats, squirrels, etc., left the school for the deficiency of food, and protection, and the aggressive fighting noisy behavior among the owls and bats, though both are extremely social, the “Human-Wildlife Conflict and Coexistence” [41-54]. The Hon’ble Nature-lover Headmaster, Dr. Subhas Chandra Datta, day and night guards, interested assistant teachers, and the neighbor family members of school, have informed that most of the wilds barn owls and insectivores’ fruits bats have come from the different trees to campus, and in the pigeons have behaved as ‘Abnormal Frighten Avoiding’, and the majority of them have left the nest of school, and other animals became ‘Curious Caucus Alert’, and communities were always ‘Caucus, Frighten and Alerting’ against COVID-19. They act as main pollinators among the flowering trees and can eat the insects as his body weight that prey on the plants of the campus as well as the surrounding of the major forage part of Burdwan Municipality enriching the environment, agriculture, horticulture, plant protections, and biodiversity.

### Special Behaviors:

Special behaviors were seen during the preparation of the ‘Police Recruitment Exam on 26th-August 2021’ for taking some artificial measures (3 types) especially for temporary displacement of bats by forcefully application of; (i) Water Spray, (ii) Bursting Crackers, and (iii) Fire Smog. They return shortly due to safety shelters from predators, protection from fluctuations in weather, and seclusion for rearing the young, and due to availability of foods. It is not only badly impacted on the social behaviors of the owls and bat, but also affects the pigeons and other different animals including communities, and it should be resisted for the benefit of society because they support valuable contribution to the environment, the “ecologically indispensable”, and badly impact on the “Family-Health-Care, Health-Risk-Services, Healthy-Lifestyle, Clinical-Research, Education, and Enriched Wildlife-Conservation, Agriculture-Forestry-Biodiversity-Environments, Socioeconomic, and Science-Technology-Communication, Application-Issues with Joyful Learning Environment with Human-Health-Ecology, and Food-Chain-Relationships, and Community as Well as Families’-Health-Awareness-Development” [41-54].

### Social Behavior:

The wild owls and bats always gives positive responses for the relationship or interaction or attitude among the parent's, among the babies, pigeons, students, teachers, communities, and closely related staff specially headmaster and guards family members, but bats give negative responses to pigeons, other birds, cats, dogs, photographers, visitors, and media personnel [42-54].

### In Social Spectrum and Frequency of Immunization:

The social family or community immunization effects of wild barn owls and bat against COVID-19 among different communities surrounding the Kanchannagar D. N. Das High



School (HS), Burdwan Municipality, from 18<sup>th</sup>-March2020 to 14<sup>th</sup>-October 2021 (18 months) up-to-date, and observation of the infection or re-infection (before and after COVID-19 vaccines) of coronavirus-2 [1-6], were very high because out of 98.53% home quarantine-patients, and 99.63% recovered from COVID-19 up-to-date, and 0.36% COVID-19 patients mortality occurred in the Burdwan Municipality due to comorbid, heart and a diabetic patient with 'Multisystem-Inflammatory-Syndrome (MIS-C)'. Recently it is observed that the wild bats are natural reservoirs of similar kinds of coronaviruses [33], and they act as asymptomatic carriers of COVID-19 disease-causing pathogens in humans and other mammals, with diverse ecological niches and colonizes most of the planet, and SARS-CoV-2 found in a cave in Laos yield new clues about pandemic's origins that were infected with viruses up to 96.8% identical in genetic sequence to SARS-CoV-2 through bat anal swabs, and the SARS-CoV-2 of bats use its surface protein, spike, to dock onto human cellular receptors known as angiotensin-converting enzyme 2 (ACE2) and initiate an infection, and the 'Human-Wildlife Conflict and Coexistence also' [33,46-49]. The coronavirus can spread large area of the Burdwan Municipality because of owls, only bats can travel flocking and interacting with different animals and humans around 50 miles per night, and can get back to their roosting place, and some bats are extremely social in respect of infection, bats can live a pretty long time, up to 40 years [49]. And the bats can resist coronaviruses holds substantial promise not just for infections with SARS-CoV-2, but will "better prepare us for the following epidemic or pandemic", though bats can infect one another with SARS-CoV-2 they show no clinical effects nor show the identical issues within the lungs that impact humans so badly, and bats can help in immunomodulatory treatment options for COVID-19 against man by the immunopathology of SARS-CoV-2 infection, and it can provide pivotal guidance to researchers and clinicians developing and administering potentially life-saving immunomodulatory therapies, and the decisions making therapeutic for selecting the essential potential immunotherapeutic agents and timing for application to prevent morbidity and mortality of COVID-19, and also the science immunology are responsible of bats' responses to SARS-CoV-2 which can be the key factors for the "How and When to Best Use the Existing Therapies for COVID-19 for the Develop of New Treatments", and also the way the virus that has caused this pandemic wreaks havoc on the human system, and there remains an urgent "need for effective therapies, a minimum of partly because of the emergence of mutations", and it will be understandable for 'owls and bats resist COVID-19 could inform human treatments' [50-54].

### **Social Natural Booster Family Vaccine Immunization Against COVID-19:**

The wild barn owls and bats, natural reservoirs of coronaviruses, apparently acts as a "Social Environment Friendly Visitor Species of the Family as well as in the Community Involving the Food Chain Relationships in the Burdwan Municipality" [41-54], spreading different types of new virus including non-expressive infective SARS-CoV-2 (or may be SARS-CoV-3 for oldest placed), through their anal swabs travel around 50 miles per night from the school, and return home after infecting its surface protein, spike, to dock onto human cellular receptors known as angiotensin-converting enzyme 2 (ACE2) and initiate an infection

of different families and communities of the society, and increase the natural immunity of human beings of different-age groups, and different domestic as well as migratory animals, acting as "Social Natural Booster Family Vaccine Immunization Against COVID-19", and it may not only prevent the various mutant variant causing typical or long-haul COVID-19 but also may prevent 'Future Epidemic or Pandemic' due to exists pandemic virus in the wild owls and bats, that update in pipeline of 'Social COVID Vaccine Boosters', medicated vaccines design and development strategies, or drugs for the managements with future 'Efficacy and Safety' treatment options of reality or dream enriching 'Human-Wildlife Conflict and Coexistence', preventing the impact of COVID-19 pandemic on food security, agriculture, and livelihoods, and the bats and men is opening the path of immunomodulatory treatment options for COVID-19, acting as "21st-Century Preventive Non-Medical-COVID19-Students-NGO- Model" preventing deaths and social anxiety [41-54].

### **Biodiversity Conservation:**

The biodiversity of the campus of school, is enriched 'Complex Wildlife Ecosystem' where students, staffs, communities, visitors, and birds and animals like mynah, dove, magpie, drongo, oriole, bulbul, crow, cuckoo, babbler, kingfisher, woodpecker, migratory birds, squirrel, bats, tailor birds, snake, mongoose, mice, frogs, cats, stray dogs, different types of insects, monkeys, etc. are amicably co-existing with wild bats, and it is also helped to the sustainable reopening of school with joyful learning environments and is also acquired natural immunity from wild bats, and prevent pandemic deaths and social anxiety from Covid [41-55].

### **Science Technology Communication Application Issues:**

The activity of teachers, students, teachers, staffs, guards, community, photographers, visitors, and media personnel campaign, arrange workshops and seminars, make news and publish, the importance of wild bats in different national- and local- audiovisual media (TV channels), different social media, different -national and -local newspaper, and different -national and -international journals, and aware the "Bats Act as a Natural-Booster-Family-Vaccine-Immunization Against COVID-19 Providing Preventive Family-Health-Care Health-Risk-Services Healthy-Lifestyle-Enriched-Wildlife-Conservation-Agriculture-Forestry-Environment--Science-Technology-Communication-Application-Issues" [7-32,42-45,52-55].

### **Future Research:**

The wild barn owls and bats, both may be "Potential Policy Developer Family-Based-Social-Natural-Booster-Community-Vaccine COVID 19 Epidemic-Models Against Future SARS-CoV-3 (Coronavirus-3) Crisis Achieved Sustainable Development Socio-Economic Welfare Science Technology Innovations Application Issues", focusing on methods of drug and clinical research, and technology development innovation for larger green-socio-economic-welfare, supported the theme "Vision 2040" that might help policymakers, solving any future virus-induced crisis of epidemic or pandemic enriching natural resources with cost-effective treatment methods, and the world



will be retained in old form [42-45,52-55].

### Conclusions:

Both the owls and bats, not only control the different pests in agriculture, forest, horticulture, and pisciculture, etc., increasing food production, but also plays a vital role in preventing the high rate of morbidity and mortality, showing the “Wildlife-Owl and Bats Conservation May be Immunized-Community Against ‘Future-Disease-X’: Provide Clue Clinical Biomedical Research Global-Health-Enriched-Biodiversity-Forestry-Agriculture-Environment-Science-Technology-Communication-Issues”, and developing and administering potentially life-saving immunomodulator therapies by improving natural immunities, and provides “Preventive Family Health Care, Health-Risk-Services, Healthy-Lifestyle, Clinical-Research-Education and Enriched Wildlife-Biodiversity-Conservation, Agriculture-Forestry-Environments, Socioeconomic, and Science-Technology-Communication Application Issues with Joyful Learning Environment with Human-Health-Ecology, and Food-Chain-Relationships, and Community as Well as Families’ Health Awareness Development”. They are also opening a path of more future research and communication, for the betterment of the society benefitting global humanity by advancing innovations in the fields of scientific and clinical research, and needs for such therapies in COVID-19, especially for the emergence of variants concern that may pose new challenges for medicated vaccines and neutralizing antibodies for the future epidemic enhancing the success of clinical trials for therapeutics, and the recommendation for multiple immune targets as candidates for the treatment, prevention and management of COVID-19 like various variant virus diseases also.

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The author declared that he has no conflict of interest regarding the research work.

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