ABSTRACTS

✦ Section I - Biodiversity and nature conservation, natural resources & Socio-economic aspects

1. DALMATIAN PELICANS IN GREECE AND AVIAN FLU OUTBREAK 2022: IMPACT AND PRELIMINARY RESULTS OF AN ECOEPIDEMIOLOGY STUDY

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The 2022 outbreak of highly pathogenic avian influenza (HPAI) caused a 60% loss at the world's biggest colony of Dalmatian pelicans *Pelecanus crispus* (DP), at Lake Mikri Prespa, Greece. Overall, 2,286 DP deaths were recorded in 13 Greek wetlands, of which 1,734 at the Prespa colony. The sympatric great white pelican *Pelecanus onocrotalus* (GWP) was hardly affected. The devastating effects at the Prespa colony prompted a study on HPAI and other pathogens to understand the exposure and susceptibility of DP to the virus. The study involved extensive post-outbreak (late 2022 and 2023) sampling at Prespa and four more Greek pelican colonies. A wide array of samples was taken from live nestlings of both pelican species and from live adult DP, while DP nesting material and fresh faecal samples from sympatric waterbirds were also collected. None of the sampled pelicans tested positive for AI, however a significant proportion of adult DP had antibodies against H5N1 AI, providing circumstantial evidence for potential survival of infected individuals. None of the sampled GWP were seropositive. Likewise, all ambient samples tested negative for AI, suggesting that the persistence of AI on nesting grounds is highly unlikely. Several factors may have contributed to high infection rates and high susceptibility of DP, especially at the Prespa colony: early nesting combined with low temperatures, high densities on nesting islets, courtship behavior, contamination of pelican nesting grounds by other infected migratory waterfowl species, and the potential co-occurrence of other immunosuppressive pathogens.

2. ON THE METHOD FOR CENSUSING GREAT WHITE PELICAN NESTING AGGREGATIONS THROUGH AERIAL PHOTOS TAKEN BY UAVS, IN LAKE MIKRI PRESPA, NE GREECE

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The second largest colony of great white pelicans *Pelecanus onocrotalus* (GWP) in Europe lies in Lake Mikri Prespa, Greece. Numbers of nests and near-fledged chicks are censused annually since 1983. The last 10 years the number of nests varied from 600 to 850. Formerly, the census was carried out during onsite visits, but to minimize disturbance and effort, after 2014 it is done through examination of aerial photos taken by an UAV flying fortnightly or monthly, from early March to mid-July. Not all dates, however, are suitable to count nests in photos. The reason is that at least during incubation and early chick stages, both pair members, when attending, stay close to each other, and it is impossible to distinguish between birds that sit on nest and mates sitting by. Circa 15 days after egg laying, the non-incubating members fly, in flocks, to distant parts of the basin or other wetlands outside it to feed. At average spring and summer weather, they depart at around 09:30 to 10:00 and return mostly 1-3 days later, after 14:00 in the afternoon. Thus, to have the most reliable estimation of AON, photos of colonies should be taken roughly at the second fortnight of the incubation period and first week after hatching, between 12:00 and 14:00, when only incubating or brooding birds are present. For Prespa, for the last six years, this time slot has been between 10/5 and 20/6. The result of not following these guidelines is likely an overestimation of nests.

order to better understand the migration of adult sturgeons through these branches, telemetry equipment has been installed for monitoring their migration. Consequently, throughout the years 2022-2023, several sturgeon specimens tagged by the INCDDD team, along with others tagged earlier, were recorded migrating through these Danube branches.

12. NEW RECORDS OF CHAROPHYTES IN EASTERN SERBIA: DISTRIBUTION AND CONSERVATION PERSPECTIVES

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The work presented is a result of research on charophyte algae (Charales) in E Serbia during the spring of 2022. Charophytes were for the first time investigated more systematically in this region, as so far, the data were scarce and sporadic. Almost 150 localities were examined, located at Veliki Krš, Mali Krš, Veliki Stol, Devica, Tresibaba, Svrljig mountains, Belava, Šljivovački vis as well as slopes of Vlaška Mountain. Charophyte representatives were found at 15 sites only. Five species belonging to genera *Chara*: *C. globularis, C. vulgaris, C. gymnophylla, C. contraria, C. squamosa*, and three belonging to genera *Nitella*: *N. mucronata, N. syncarp*a and *N. capillaris*, were found. In total, eight species of Charales were found which can be considered a significant number keeping in mind that most of the species are rare and strictly protected by national law in Serbia and are on Red Lists of almost all European countries. The majority of aquatic habitats with charophyte algae were small and shallow. The most represented were ponds, puddles, streams and springs, but charophytes were also found in thermal waters as well as peat bogs. This research highlights and confirms the importance of protecting small water bodies, as guardians of rare and endangered species.

13. ESTIMATION OF GROWTH PARAMETERS AND EXPLOITATION STATUS OF *CARASSIUS GIBELIO* (GIEBEL CARP) STOCKS, IN THE FISHERY RESOURCE OF THE DANUBE DELTA IN 2023

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To estimate the state of fish stocks of *Carassius gibelio* (Giebel carp) in the Danube Delta Biosphere Reserve (DDBR) in 2023, a number of 4024 specimens were sampled - 1613.6 kg from the 4 lake-complexes. For data analyses we used the virtual population analysis method where the samples were taken from the commercial catches brought to the collection points related to the fishing grounds. The length (TL)–weight (TW) relationship was analyzed for individuals from which scales were harvested to determine ages for the main commercial species sampled from commercial fisheries in the DDBR. This relationship was analyzed for the entire sample in the ESP program (Estimation of Fish Stocks Program developed by Danube Delta National Institute according with specialized literature) for estimating further stock (relationship and frequency of lengths). In order to assess the state of main fish stocks, length and weight measurements were made on the dominant species in commercial catches. The length-frequency distribution of a population suggests some preliminary data regarding the relative exploitation level of the stock: when under limits exploitation individuals predominate the stock is heavily fished and vice versa, in the case of the abundant presence of the elderly, the stocks are underexploitation. In the areas of the complexes-lakes of Danube delta, the samples were taken from the commercial fishing with relon multifilament nets, with the side of the mesh of a=45-55 mm. From the point of view of the numerical strength of the *Carassius gibelio* population from the samples taken, the presence of individuals within the limits of lengths 20-42 cm, with average values in the range of 26.1-29.2 cm, can be found.

understanding crucial driving factors and navigating the intricate interactions among different state variables. Overcoming these hurdles demands robust data acquisition and analysis techniques, alongside an interdisciplinary modelling approach. This is crucial to effectively address the complexity and interconnectedness of water quality dynamics, enhance predictive accuracy, and facilitate effective water quality management strategies. In this presentation, we present a holistic approach to combing monitoring program and modelling system at the catchment scale. It includes: 1) the integration of various data sources such as real-time sensor data, grab sampling measurements, and modelling outputs to ensure comprehensive input datasets; 2) a sophisticated watershed modelling system that incorporates hydrological/hydraulic models, emission and transport models to capture the complex interactions within the catchment; 3) the implementation of a coupled 3D receiving water body modelling system, integrating hydrodynamic and water quality models to accurately simulate the dynamics of the change of water quality ; and 4) the utilization of data assimilation techniques to improve the accuracy and reliability of model outputs. This integrated approach enables a thorough understanding of water quality dynamics at the catchment scale, facilitating effective long-term planning, management, and short-term forecasting. It provides valuable insights for future research endeavors and ensures sustainable practices for water resource management.