



Report on the Methodology of Flag Species Identification in the Arzhan Plain Region

AvayeBoom Land Bird Conservation Association

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Identification

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Introduction

The Importance of Choosing a Flag Species

The selection and use of a flag species have been utilized for decades in nature conservation (1). A flag species is a well-known, charismatic species suitable for selection as a symbol to increase public awareness and expand wildlife conservation efforts (2). The use of a flag species for nature conservation in protected areas is one of the main promotional tools used by conservationists to arouse public support and increase awareness among local communities (3, 4), alongside helping wildlife conservation organizations to raise funds for their projects in the targeted area (5). Choosing a flag species effectively aids conservationists in attracting tourists to protected areas, using their presence to improve the local economy (6). There have been many successful examples of flag species selection that ultimately contributed significantly to the conservation and restoration of the flag species itself and its habitat, including the bald eagle in America, identified as the flag species of American forests, which changed its status to the least concern (7), the giant panda, whose selection helped its population return to nature in China (8), and the manatee, whose selection played a significant role in preserving mangrove forests in Brazil (9).

The Arzhan International Wetland, covering an area of approximately 2,200 hectares that varies seasonally with periods of wet and dry conditions, is a freshwater lake located in Fars province, 60 kilometers southwest of Shiraz city, near the main road from Shiraz to Bushehr, positioned at geographical coordinates 51°56' E to 51°59' E longitude and 29°36' N to 29°37' N latitude. Arzhan boasts significant biodiversity. In the Arzhan-Parishan area, 393 plant species thrive (10), and the diversity of aquatic and shorebird species includes 71 species, with populations reaching over 77,000 birds in some years (11).

For more effective protection of plant and animal species diversity in this area, introducing a flagship species can serve as a tool to raise awareness and garner public support.

Various methods have been proposed and used to select a flagship species. Depending on the target audience conservationists in a region aim to reach, they can choose a flagship species using different methods such as social marketing, environmental economics, or conservation biology. Here, to select a flagship species to protect the ecosystem of the Arzhan Plain protected area, we employ the Endwistle and Bowen method, which outlines 10 criteria for the final selection of a flagship species.

Introduction to the Area

The Arzhan lakes are in the southern part of the Zagros Mountains, approximately 60 kilometers west of Shiraz and near the southeast of the Arzhan Plain village. The average elevation of the plain above sea level is about 1,990 meters.

The Arzhan and Parishan Biosphere Reserve was designated as a national park in 1972 with an area of 191,000 hectares. It was reduced to 65,000 hectares as a protected area in 1974 before being listed in the UNESCO Biosphere Reserve Network in 1975.

The Arzhan and Parishan lakes were also registered in the Ramsar Convention's list of international wetlands in 1976.

This lake is part of the Arzhan and Parishan protected area, with an approximate area of 2,200 hectares. The size of this lake can reach about 20 square kilometers during high water periods but may decrease to less than 4 square kilometers during droughts.



Image 1: A Single Tree Revered by the Local Community on the Edge of the Wetland

Due to the increase in the drilling of exploitation wells on the edge of the plain and especially the successive stresses caused by drought, the wetland and marshy extent of the lake, both in terms of area and duration of stay, has gradually decreased. Following an earthquake in 1999, the rate of water subsidence (escape) through sinkholes at the southeastern end of the lake increased significantly, to the extent that in recent years, a large part of the submerged area of the lake completely dries up by the end of spring in the wet season.

According to the IUCN classification of lakes (1990), Arzhan Lake is a freshwater lake with two parts: a lake and a marsh.

The lake part includes rivers, seasonal and irregular water flows, and seasonal flood-induced marsh grasslands. The marshy part includes waterlogged plants and permanent freshwater marshes and

springs that feed the lake (such as the Shah Salman spring of the Arzhan plain) as an almost permanent source, and temporary springs like Marvarid and Bisoo.



Image 2: The Arzhan Wetland from Above

The primary water source for the region is atmospheric precipitation. The abundant Salman spring near the village of Arjen and the Arjen Plain waterfall in the east of the region, along with several springs in the southern part of the region, are other sources of water supply. Less than 100 years ago, this area was covered with dense vegetation and rich wildlife. Currently, it boasts a unique biodiversity in most of its regions and habitats. Due to the presence of two international wetlands, Arjen and Parishan, over 200 bird species, both migratory and native, are observed in this area. Moreover, the climatic diversity in the northern and southern parts of this area has resulted in the observation of 49 mammal species. In addition, 9 fish species, 3 amphibian species, and 37 reptile species live in the Arjen and Parishan Biosphere Reserve. (Based on information published on the Environmental Protection Agency's website)



Image 3: Rich Vegetation in the Meadows Surrounding the Arzhan Wetland Plains

The necessity of action

The selection of a flagship species in the Arjen Plain is one of the projects under the plan to facilitate participatory ecosystem management in the Arjen watershed and to raise public awareness about the risks of drying up the Parishan wetland.

The implementers of this plan aim to identify and educate the Arjen Plain on habitat conservation and biodiversity and ultimately facilitate participatory ecosystem management. For this reason, understanding the region and making the local people aware of the importance of bird habitats is one of the defined bases of the plan.

Transforming the flagship species into a part of the local identity and thereby increasing attention to it and efforts to preserve its habitat (Arjen wetland) is the plan's ultimate goal.

As shown in the diagram below, the purpose of selecting a flagship species is primarily to increase people's awareness of the importance of animal species in the ecosystem and to enhance interest in birds and wildlife, thereby increasing the fear among illegal hunters of local community action against their illegal activities. Assessing the impact of this tool on attitudes, behaviors, and threats to the wetland and its biodiversity requires a planned research study, which is currently underway.

Biodiversity in Dashte-e Arzhan Wetland - CURRENT SITUATION DIAGRAM

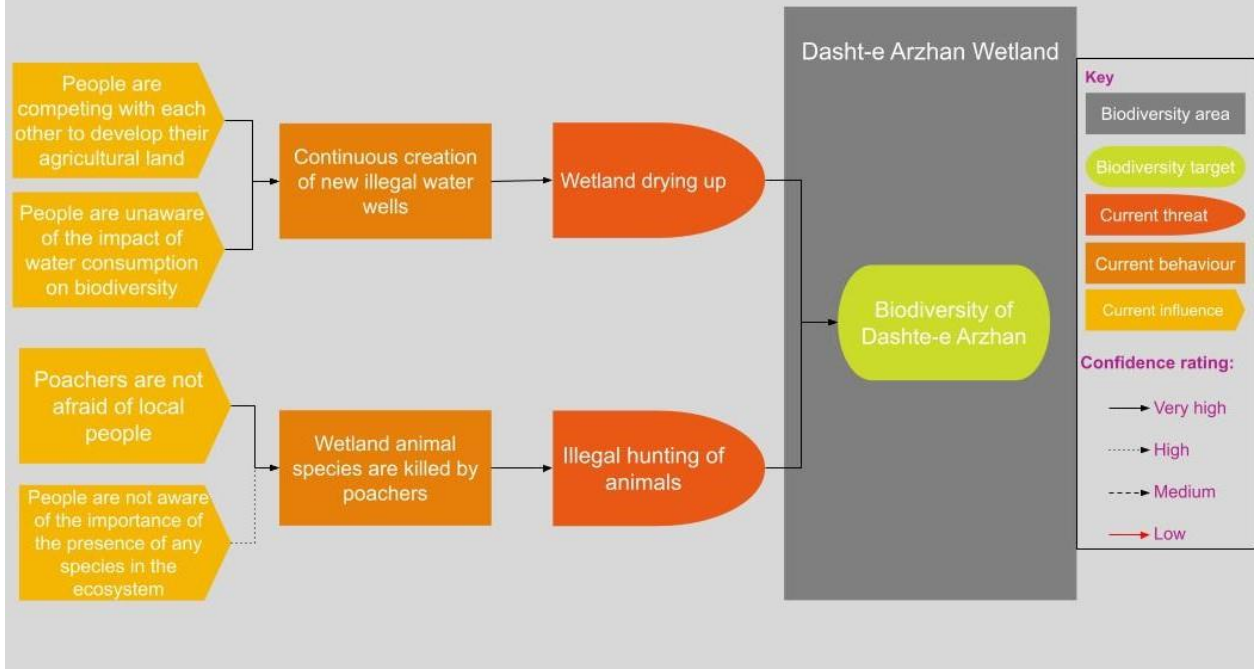


Chart 1: Current State of Biodiversity Conflicts and Threats in the Arzhan Plains

Biodiversity in Dashte-e Arzhan Wetland - PLANNED SITUATION DIAGRAM

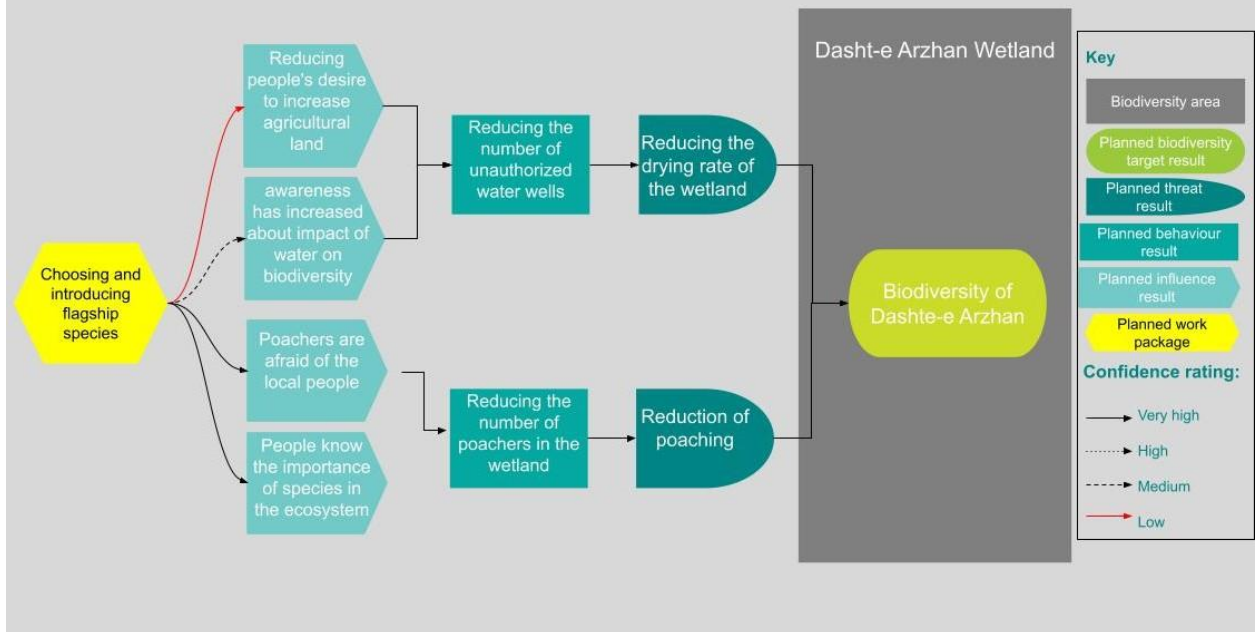


Chart 2: Predictable State of Biodiversity Conflicts and Threats in the Arzhan Plains Following the Introduction of the Flag Species

Method of Execution Introduction to Selection Indicators The selection of a flagship species is conducted through various methods tailored to the objective of species selection and the audience group of the project. Numerous articles have been published in this field, considering different indicators to aid conservation and raise awareness. This research references the method introduced by Brown and Entwistle, where 10 indicators and criteria are defined as the leading indicators for the selection of a flagship species, as follows:

1. **Geographical Distribution:** Being endemic or having a limited and regionally dependent distribution (habitat of importance) increases the likelihood of being selected as a flagship species.
2. **Conservation Status:** The conservation status of the species, especially those that are endangered or critically endangered, is influential in their selection as a flagship species.
3. **Ecological Role:** The impact of the species on the ecosystem and the protection of other species that appear to be of lesser value is important in selecting a flagship species.
4. **Recognition:** The chosen species as a flagship should be recognized and distinct to the target audience.
5. **Existing Usage:** The existing flagship species and their impact on the target group should be reviewed. If it leads to synergies in conservation, identical species can be used.
6. **Charisma:** The attractiveness of the species is compelling in the selection of a flagship species and has been a consideration in the past based on their charisma.
7. **Cultural Significance:** The species' connection and presence in the cultural aspects of the region, like in songs, art, or usage in local food or handicrafts, is essential.
8. **Positive Associations:** Species with a positive reputation and associations in local communities have a more significant impact.
9. **Traditional Knowledge:** Traditional knowledge about the species lays the groundwork for opportunities to improve and strengthen the current understanding of the local community and aid in conservation.
10. **Common Names:** The existence of local names for the species (without negative connotations) influences public perception and acceptance.

How It Was Done

According to the selected criteria for identifying a flagship species, collecting information from the local people of Dasht-e Arzhan regarding their knowledge of species, their ability to identify species compared to each other, examining the local and current understanding of people about each species, and the presence of each species in culture and art (criteria 4-5-6-7-8-9) required field interviews with the local population. According to the last census in 2016, the area's population was 2,340 people (693 families). 65 individuals were conveniently selected from among the residents and nomads of the area for interviews (2.7% of the population), and interviews were conducted with all these individuals. A call for participation was published on social networks of the area one week in advance, inviting people to come together at a specified time and day in the village community hall. Nomads interested in participating in the interviews but could not attend at the specified time and place were interviewed in the field.



Image 4: Field Interview with the Local Community of Arzhan Plains Village



Image 5: Explanation of the Importance of the Flag Species to the Local Community - Arzhan Plains Village Community Hall

Results

Based on the selected criteria, questions and images were prepared for interviews with the local community. After conducting interviews with the local people, ultimately, eight birds were identified, among which the species of the Common Crane, Ruddy Shelduck, and Eurasian Coot were most frequently mentioned. Below, you can see a comparison of the status of these three species across the 10 selected criteria.

	Index / Bird Species	Common Crane (<i>Grus grus</i>)	Ruddy Shelduck (<i>Tadorna ferruginea</i>)	Eurasian Coot (<i>Fulica atra</i>)
1	Geographical Distribution	Spread across Eurasia, North Africa, and Southeast Asia	Spread across Eurasia and North Africa	Spread across Eurasia, North Africa, Southeast Asia, and Oceania; Distribution in all of Iran
2	Conservation Status	Global status: Least Concern; Status in Iran: Decreasing population	Global status: Least Concern; Status in Iran: Decreasing population	Global status: Least Concern; Status in Iran: Population increasing or stable
3	Ecological Role	It affects the population control of invertebrates and insects	It is a source of food for birds of prey and plays a role in dispersing plant seeds	Effective in controlling invertebrate populations; Affects rodent populations and plays a role in dispersing plant seeds
4	Recognition	Known by 29 people (44.6%)	Known by 29 people (44.6%)	Known by 22 people (33.8%)
5	Current Use in Iran	Flagship species in the Mighan Wetland	Not introduced as a flagship species in any region	Not introduced as a flagship species in any region
6	Attractiveness	It has a distinctive shape and color but may be confused with ducks; it Lacks unique visual appeal	It has a very distinctive color compared to all other birds in Iran, which prevents it from being	Immense size and social life; Cannot be confused with any other bird confused with any other bird

7	Cultural Significance	The only animal species observed in the region's art, poetry, architecture, and other cultural products and symbols is the now-extinct Persian Lion.		
8	Positive Reputation	12 people feel positive when hearing the species' name (18.46%)	23 people think positively when hearing the species' name (35.38%)	21 people think positively when hearing the species' name (32.3%)
9	Local Knowledge and Recognition	51 people recognized the image of the crane (78.46%)	40 people recognized the image of the Ruddy Shelduck (61.53%)	38 people recognized the image of the Eurasian Coot (58.46%)
10	Common / Local Names	Qalang / Kolang	Red Goose / Sorkh Ghaz	Chalchalak

Table Description

- **Indicator 4 - Familiarity:** To assess the familiarity level of species, respondents were asked to list the birds they knew orally. The species such as crane, pelican, and mallard had the highest number of mentions.
- **Indicator 8 - Positive Reputation:** Local communities were asked which bird's name evokes a positive feeling. The table data is completed based on the first bird named by the individuals.
- **Indicator 9 - Indigenous Knowledge and Recognition:** By showing pictures of the species under study to the respondents, their recognition of the bird's physical appearance and ability to identify them were determined.
- **Indicator 10 - Common/Local Names:** None of the names used in local communities for the reported birds have a negative connotation.

Conclusion

Based on the results obtained from the determination of indicators, review, and field interviews, and finally, the arrangement of the table examining the indicators among the candidate species, the pelican was selected as the flagship species in the Arzhan Plain area. Considering the recommendation to use the local names of flagship species, this bird will be introduced to the local community and all stakeholders as the "Red Goose" flagship species.

The impact of introducing the flagship species on the local community, species conservation, and habitat can be investigated in a scientific study and published after a specific period.

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References

- Bowen-Jones, E., & Entwistle, A. (2002). Identifying appropriate flagship species: The importance of culture and local contexts. *Oryx*, 36(2), 189-195.
- Cruz, J., Windels, S. K., Thogmartin, W. E., Crimmins, S. M., Grim, L. H., Larson, J. H., & Zuckerberg, B. (2019). Top-down effects of repatriating Bald Eagles hinder jointly recovering competitors. *Journal of Animal Ecology*, 88(7), 1054-1065.
- Dolatkahi, M., Asri, Y., & Dolatkahi, A. (2012). Floristic study of Arjan-Parishan protected area in Fars province. *Taxonomy and Biosystematics*, 3(9), 31-46.
- Heywood, V. H., & Watson, R. T. (1995). *Global biodiversity assessment* (Vol. 1140). Cambridge: Cambridge University Press.
- Home, R., Keller, C., Nagel, P., Bauer, N., & Hunziker, M. (2009). Selection criteria for flagship species by conservation organizations. *Environmental Conservation*, 36(2), 139-148.
- Normande, I. C., Costa, A. F., Coelho-Jr, C., dos Santos, J. U., & Ladle, R. J. (2023). Flagship species: Manatees as tools for mangrove conservation in Northeast Brazil. In *Brazilian Mangroves and Salt Marshes* (pp. 281-295). Cham: Springer International Publishing.
- Smith, A. M., & Sutton, S. G. (2008). The role of a flagship species in the formation of conservation intentions. *Human Dimensions of Wildlife*, 13(2), 127-140.
- Veríssimo, D., Fraser, I., Groombridge, J., Bristol, R., & MacMillan, D. C. (2009). Birds as tourism flagship species: A case study of tropical islands. *Animal Conservation*, 12(6), 549-558.
- Verissimo, D., MacMillan, D. C., & Smith, R. J. (2011). Toward a systematic approach for identifying conservation flagships. *Conservation Letters*, 4(1), 1-8.
- Walpole, M. J., & Leader-Williams, N. (2002). Tourism and flagship species in conservation. *Biodiversity and Conservation*, 11(3), 543-547.
- Yang, Z., Gu, X., Nie, Y., Huang, F., Huang, Y., Dai, Q., ... & Wei, F. (2018). Reintroduction of the giant panda into the wild: A good start suggests a bright future. *Biological Conservation*, 217, 181-186.