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**Occurrence of Anatidae in Sawa Lake: A Ramsar Wetland Site in Southern Iraq**

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**ABSTRACT:** Biannual surveys (2015-2016) were conducted in Sawa Lake (Ramsar Site) targeting Anatidae taxa, where ten duck species had been historically recorded there. Only 3 of the observed species were found in Sawa Lake during the survey, where the remaining of the species were observed in winter. The Eurasian Teal *Anas crecca* represented the most common bird in terms of numbers in comparison with other duck species, where 195 individuals were observed in winter 2016. The research aimed to determine the status of these economically important taxa of birds, in addition to document the list of threats that are facing these species in Sawa Lake. A set of recommendations was developed to be considered in any upcoming conservation measure for this important wetland.

**Keywords:** Anatidae, Sawa Lake, Ramsar Site, Ducks, Iraq.

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**INTRODUCTION**

The current study represents the first attempt to investigate the Anatidae taxa in Sawa Lake, a poorly-known wetland in southern Iraq, which makes it difficult to compare the results to any previous fieldwork that targeted the same study area. Anatidae are water bird species most of which are migratory or nomadic species that inhabit different wetland types all over the world<sup>1</sup>. These taxa of birds are divided into two groups based on their feeding behavior: the first group is the dabbling ducks or so-called surface-feeding ducks that forage mainly on the surface of water bodies; the second group is the diving ducks that forage by diving to different levels in these water bodies<sup>2</sup>. Usually, individuals of both groups can be found mixed together in a particular wetland or part of a wetland, for this reason, the diving

ducks are usually found concentrated in the relatively deeper lakes, while the dabbling ducks are more likely to be in the shallow marshes of the edges of the lakes<sup>3</sup>.

Iraq's relative richness in wetlands and wetland diversity, has contributed to the qualitative and quantitative abundance of Anseriformes and Anatidae in Iraq<sup>4</sup>, and Sawa Lake is considered as one of the wetlands that are of international importance<sup>5</sup>.

Sawa Lake is a permanent lake that is located in the western site of the Mesopotamia. The lake is unique for the biogeographic region as it is a closed water body in an area of Sabkha with no inlet and outlet and fed by groundwater that originates from the higher western desert areas<sup>6</sup>. The lake is isolated with gypsum barriers that surrounding the lake. It is also

distinguishable by its unique water chemistry<sup>7</sup>.

Sawa Lake was listed as a wetland of international importance (Ramsar Site No.2240) in 2014. Throughout winter, considerable numbers of birds pass over the lake during their local and global movements within water bodies of southern Iraq.

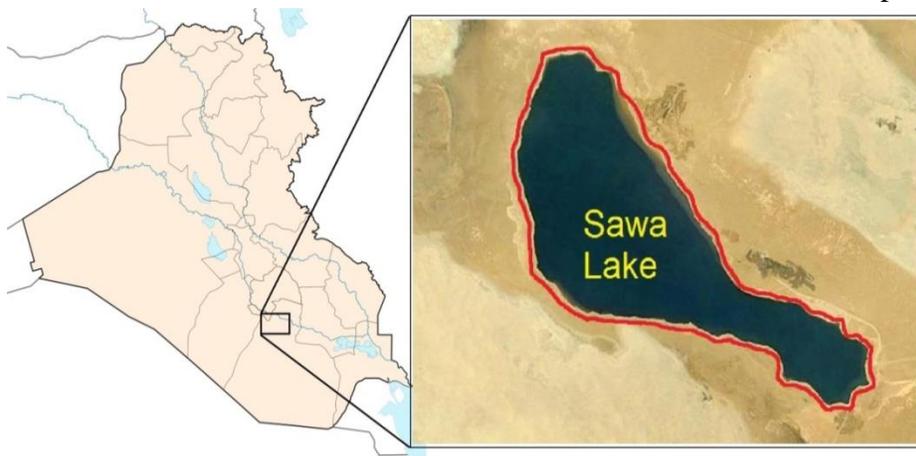
The goal of the current study was to shed light on the status of the Anatidae taxa of ducks, and show their occurrence in this wetland. In addition to this, this research represents the first dedicated study of these taxa of birds in the Middle Euphrates parts of Iraq, where a former attempt was carried on the same taxa in other wetlands in Iraq<sup>8</sup>. It is also to enrich the knowledge of Sawa Lake Ramsar site (a wetland of international importance) that is unique

closed lake in the upper parts of southern Iraq.

## METHODOLOGY

### Study area:

Sawa Lake is located between longitudes (44°59'35.64" and 45°0'44.73") and Latitudes (31°18'36.91" and 31°18'53.95"), 23 km to the west of Al-Samawah City (Figure.1). There is no surface water inlet feeding the Sawa Lake and no outlet either. The source of its water may be groundwater from the Euphrates and Dammam aquifers through a system of joints, cracks and fissures<sup>9</sup>. Despite the seasonal fluctuation in the water level, but has an equilibrium state between water feed up and evaporation<sup>10</sup>, so it doesn't dry up completely. It is a land-locked lake with maximum length of 4.74 km and maximum width of 1.77 km isolated by a gypsum barrier with total perimeter of 12.5 km.



**Figure.1:** Shows Iraq and the study area in Sawa Lake

### Field Work:

Anatidae Counts was done by walking at a slow pace along the bank of the lakes. Identification, counting of the birds was made in the morning between 07:00 and 10:30 hrs. Or in the afternoon depending on the light conditions <sup>11,12,13</sup>.

The researcher used 12x50 binoculars, Canon D500 and Canon 7D cameras with 100-400 and 18-55mm lenses to conduct the bird surveys. The counts were conducted in two seasons for the years (2015-2016) by direct observation from a 4X4 vehicle or by walking through the site for recording of individual Anatidae or flocks. The surveys were conducted using the Point-Counts methodology<sup>12</sup>, which involves stopping at the selected site for a given amount of time, then noting birds seen within the area. The bird lists were made based on direct observation of each individual bird or group of birds in the field, or by noting down a detailed description of the unidentified birds, then checking it with references later. A unified field form was designed and used for counting of the duck species, and a field guide was used to identify the birds.

Different meetings with locals and hunters were made in order to assess the hunting pressure on the duck species in Sawa Lake. The following field guides were used during the fieldwork: (Svensson, 2009)<sup>14</sup> (Porter and Aspinall, 2010)<sup>15</sup>, and (Salim *et al.*, 2006)<sup>16</sup>.

### RESULTS AND DISCUSSION

Ten bird species were observed directly in Sawa Lake over two years of surveys on bi-annual bases. These bird species were observed on various occasions during different survey trips that covered the entire water body of the lake. Both types of ducks (the dabbling ducks and diving ducks) were observed in the lake in different numbers. The observed numbers of these species are considered very poor in comparison with other neighboring wetlands, especially in the southern marshes of Iraq<sup>17</sup> and this might be due to the small size of the lake and to the absence of plant shelter where the ducks can hide from hunters or visitors to the Lake <sup>18</sup>.

Gadwall *Anas strepera* - This duck species was observed only once during the winter surveys of 2015 in Sawa Lake where 12 individuals were observed mixed with other duck species (Table.1). As for Iraq, this species is "a wide passage migrant and also some small population's winter in Iraq especially in southern Iraq"<sup>19</sup>.

Season/Year	2015	2016
Winter	12	0
Summer	0	0

**Table.1: Gadwell Count**

**Eurasian Wigeon** *Anas Penelope* - Only four live individuals were observed for aging with a flock of other ducks in Sawa Lake during winter observations in 2015. Another two individuals were found dead

in winter 2016, after they got shot by poachers with a shotgun (Table.2). This bird species seems to be a fairly widespread wintering and passage migrant in the wetlands of Iraq<sup>20</sup>.

Season/Year	2015	2016
Winter	4	2
Summer	0	0

**Table.2: Eurasian Wigeon Count**

**Mallard** *Anas platyrhynchos* - Two individuals were found in winter 2015, and 22 in winter 2016, in the study area where they were mixed with other duck species

(Mainly Shoveler and Teal) for aging together in the lake (Table.3). Mallard seems to be a fairly widespread passage migrant and winter visitor to the marshes and lakes of Iraq<sup>20</sup>.

Season/Year	2015	2016
Winter	2	22
Summer	0	0

**Table.3:Mallard Count**

**Northern Shoveler** *Anas clypeata* – A total of 28 individuals were recorded during winter observations in 2015, while 11 individuals were observed in winter 2016 (Table.4). According to Salim (2006 and

2012)<sup>16,20</sup>, this bird species is a frequent visitor to the wetlands of Iraq during its passage over the country and winter seasons with very few individuals remaining in summer<sup>21,16,20</sup>.

Season/Year	2015	2016
Winter	28	11
Summer	0	0

**Table.4: Northern Shoveler Count**

**Northern Pintail** *Anas acuta* – Only two birds of this species were found mixed with other duck species during winter 2016 Surveys in Sawa Lake. One dead individual

was found shot by a hunter at the southern edge of the lake during winter surveys in 2016 (Table.5). This duck species is considered as a widespread passage migrant and winter visitor, with more

concentrations in southern marshes of Iraq<sup>20</sup>.

Season/Year	2015	2016
Winter	0	3
Summer	0	0

**Table.5: Northern Pintail Count**

**Garganey** *Anas querquedula* - Only five individuals mixed with other species of Anatidae were seen on the lake in winter

survey in 2015 (Table.6). This bird was not sighted on the lake during the summer surveys.

Season/Year	2015	2016
Winter	5	0
Summer	0	0

**Table.6: Garganey Count**

**Eurasian Teal** *Anas crecca* - Seventy-seven individuals were seen in the winter survey of 2015, while the highest count (195) of this duck species was recorded in Sawa Lake during winter 2016 (Table.7).

These birds were found only during winter survey but no other seasons. It seems that this species is a fairly widespread passage migrant and winter visitor, with more concentrations in southern marshes<sup>22</sup>.

Season/Year	2015	2016
Winter	77	195
Summer	0	0

**Table.7: Eurasian Teal Count**

**Marbled Teal** *Marmaronetta angustirostris* - This threatened species (IUCN, 2012)<sup>24</sup> was found in Sawa Lake almost over the entire year. The highest count of this duck was 110 during the winter survey of 2015, followed by 16 individuals in summer of the same year,

while 23 individuals were recorded in 2016, and only two were seen in summer of 2016 (Table.8). However, it was observed in some other times at the same place. Referring to Salim *et. al.* (2012)<sup>20</sup>, the suitable Iraqi wetlands are considered the most important wetlands that probably harbor the highest wintering population of this duck in the world<sup>20</sup>.

Season/Year	2015	2016
Winter	110	23
Summer	16	2

**Table.8: Marbled Teal Count**

**Red-crested Pochard** *Nettarufina* -Only four individuals of this species were observed in winter 2015, while 13 individuals were recorded in winter 2016, followed by nine individuals in summer of the same year (Table.9). It seems that the observed birds were using this water body

during their passage over the area towards a nearby marsh as Abed has indicated its presence in Dalmaj marsh lands<sup>23</sup>, while Salim indicated its frequent presence in the marshes of southern Iraq as a very local breeding resident in the southern marshes; fairly widespread but generally uncommon passage migrant and winter visitor<sup>17</sup>.

Season/Year	2015	2016
Winter	4	13
Summer	0	9

**Table.9: Red-crested Pochard Count**

**Ferruginous Duck** *Aythya nyroca* - This duck species was observed only one time during the winter survey of 2016, with 38 individuals which is considered the highest

count of this bird in Sawa Lake followed by seven individuals in summer 2015 (Table.10). This local breeding species might be an uncommon passage migrant and winter visitor<sup>20</sup>.

Season/Year	2015	2016
Winter	0	38
Summer	7	0

**Table.10: Ferruginous Duck Count**

Based on the results of the current study, it seems that the occurrence of Anatidae in Sawa is highly concentrated in the winter season, while it reaches the lowest numbers during summer.

The Eurasian Teal *Anas crecca* had the highest count of the Anatidae (195 individuals) observed on Sawa Lake, while the lowest count was that of the Northern Pintail *Anas acuta* of which only three individuals were seen just like the case over entire wetland in Iraq<sup>8</sup>, (figure.2).

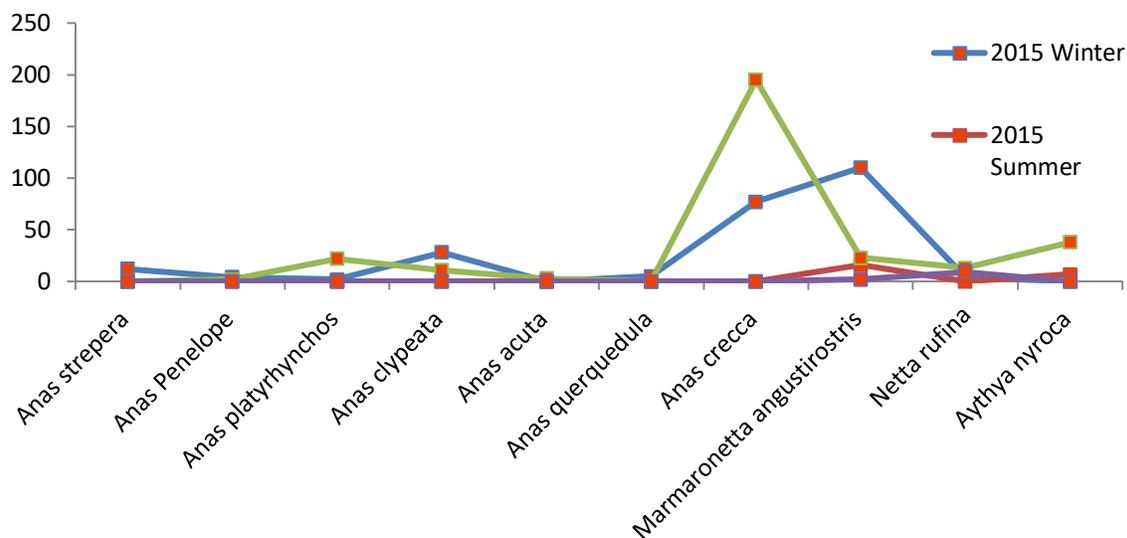


Figure (2) shows the occurrence of the Anatidae in Sawa Lake

### Conservation issues and recommendations:

Sawa Lake is a unique and very important ecological component in the local biodiversity map in the Middle Euphrates region in Iraq. The absence of inlet and outlet sources of water makes this water body a special hydrological system and forms the only such system on the national level. These natural features, in addition to the ecotourism, economic benefits, and recreational value that this site provides, are considerable reasons and drivers towards setting plans to conserve this nationally unique inland hydrological system. In addition, Sawa Lake should be considered as protected area reinforced by well-prepared management plan that ensures conserving the natural features of

the lake. The scientific approach should be adopted to discover more about the unique features that the lake and the surrounding habitats consist of.

For the above-mentioned reasons, this study recommends:

- Further ecological and biological studies should be planned and conducted on the lake and the surrounding areas.
- More hydrological and geological studies should be conducted to discover the hidden features of the Lake.
- The fishing and hunting should be regulated to ensure a sustainable source for food for the locals.
- The random picnic activities should be restricted and controlled.

- The lake should be considered for legal protection with a management plan.
- A thorough educational and awareness campaign should be designed and conducted on the local, regional, and national levels to raise awareness of the importance of the lake and how to make the best use of its natural resources.
- Clean-up campaigns are needed to remove the accumulated rubbish and solid waste from inside and around the lake.

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