

BREEDING ECOLOGY OF LARIDAE AND STERNIDAE IN THE COMACCHIO  
WETLANDS (PO DELTA) AND RECENT POPULATION TRENDS

Pierandrea Brichetti, Gran Museo Civico Scienze Naturali,  
via Ozanam, 4 - Brescia

Ugo F. Foschi, Museo Ornitologico "F. Foschi",  
via Pedriali, 12 - Forli

The Northern Adriatic coastal band (Valli di Comacchio, Po Delta, the Venice and Friuli Lagoons) is the most important wetland in Italy for waterbirds and one of the most important in southern Europe. This aquatic zone is not only an important area for wintering nordic populations, but the southernmost part ("Valli di Comacchio") hosts the largest populations of Laridae and Sternidae breeding in Italy. 8 of the 11 species constantly present in Italy reproduce in the 10,200 hectares saved from reclamation (the reclamation of the approx. 18,000 hectares in the western part of the Valli was terminated in 1962). An additional two species (Sterna caspia, Sterna bengalensis) have been occasionally found breeding there.

The Valli di Comacchio represents today a vast brackish area (witness of the former wetlands formed by the Po delta). They are characterized by a large surface area of open water interrupted in the middle by a series of islets or remains of an old dune complex prevalently aligned from north to south. The mean depth varies from 60 to 80 cm, reaching a maximum of 150-200 cm. The percentage of salinity varies seasonally and increases from south to north (18-48‰). The "Valli" communicate with the sea by way of several canals whereof the flow can be controlled. The salt-work and fishfarming basins, which are situated in the north-eastern part of the Valli have formed a specific habitat.

The islets which host the colonies of gulls and terns emerge generally only about 20 to 40 cm. They are covered by a halophyte vegetation known as Salsolium sodae on sandy soils enriched by

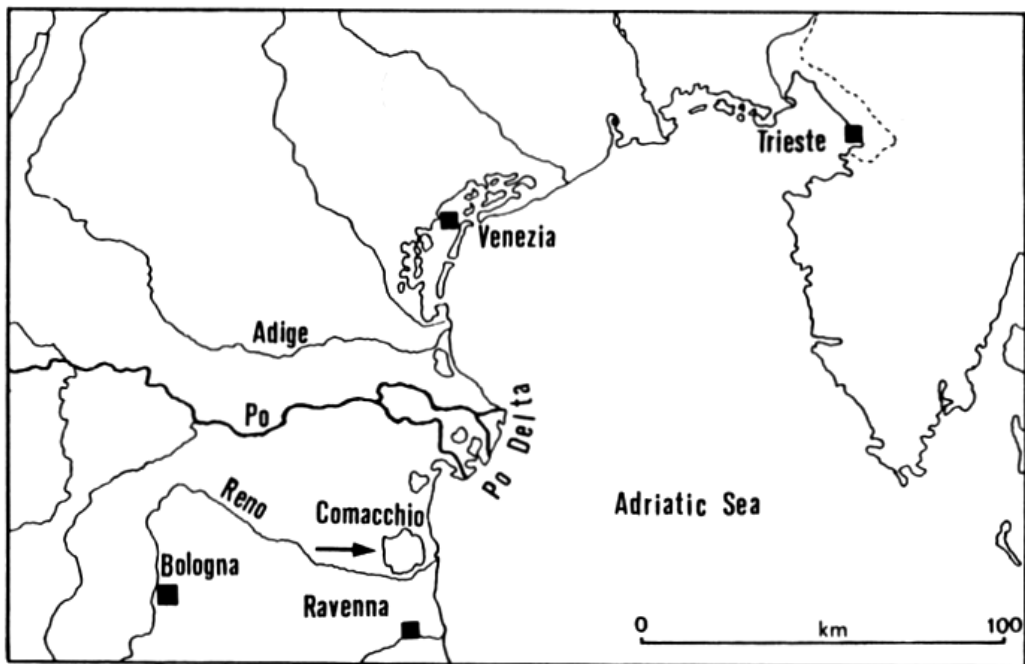


Fig. 1: Geographical situation of the Comacchio wetlands.

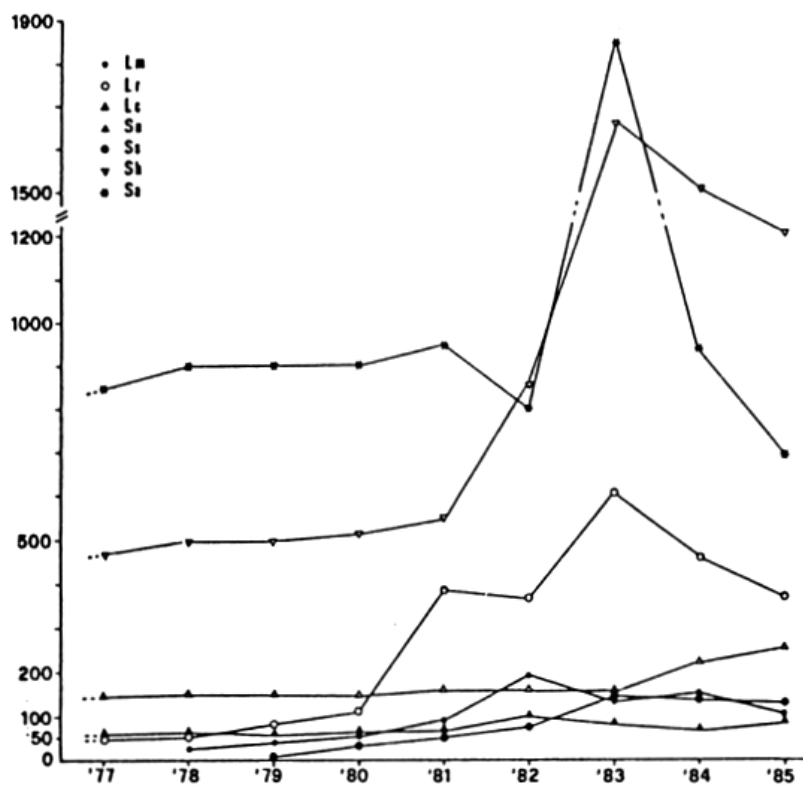


Fig. 2: Number of breeding pairs of *Laridae* and *Sternidae* in the Comacchio wetlands from 1977 to 1985 (*Larus genei* excluded).

organic substances, Salicornietum fruticosae on wet clay and Salicornietum herbaceae in the areas where the waters are calm. Large areas of some islets lack vegetation and are covered completely with shell debris.

#### The structure and dynamics of breeding populations

The scarcity of past available ornithological data seems to indicate that the Valli di Comacchio have become increasingly more important in recent years. The species found breeding here in the first half of this century were: Larus cachinnans, Sterna hirundo and Sterna albifrons. Around the 1950's Sterna nilotica was found nesting, and in 1960 Larus ridibundus bred.

There was an increase of the existing populations of S. hirundo and S. albifrons. At the end of the 1970's three other species formed colonies: Larus melanocephalus (1978), Larus genei (1978) and Sterna sandvicensis (1979). This was accompanied by a general increase of the population of other species and the creation of new colonies, some of them in neighbouring wetlands (Valle Bertuzzi). Additionally, in 1978, the occasional breeding of Sterna caspia was noted (1-2? pairs). One pair of Sterna bengalensis bred in 1985. The detailed numerical evolution and spatial distribution can be summed up as follows:

- The population of Larus melanocephalus increased from approximately 25 pairs in 1978 to 103 in 1985 (with a maximum of 197 in 1982). In 1982 two pairs were found colonizing the neighbouring Valle Bertuzzi. They breed mainly in areas covered with low halophyte vegetation (Obione portulacoides) and secondarily in Salicornietum of medium height, preferably in areas close to both L. ridibundus and S. hirundo.
- The population of Larus ridibundus has increased from the three nests found in 1960 to 30-50 pairs during the seventies with a sizable increase since 1980 passing from 115 to 372 pairs in 1985 (with a maximum of 614 in 1982). The species clearly prefers the high and thick Salicornietum fruticosae and associates predominantly with S. hirundo and L. melanocephalus but only marginally with S. sandvicensis.
- Larus genei seems to have failed to establish a stable breeding pattern after having bred in 1978 (2 pairs). From a maximum of 10 to 13 pairs in 1983-84 the population dropped to 4 pairs in 1985. The nests are found mostly in areas with low sparse vegetation, bordering the colonies of S. nilotica, S. hirundo, L. melanocephalus and L. ridibundus.
- Larus cachinnans: the population dynamics of this species, which showed difficulties in establishing itself in the past, seemed stable during the 1970's-early 1980's (150-168 pairs) and has shown an increase in recent years (230-260 pairs in 1984-85). The Yellow-legged gull breeds in scattered pairs or in monospecific colonies both on islets with and without halophyte vegetation as well as on wooded artificial banks.

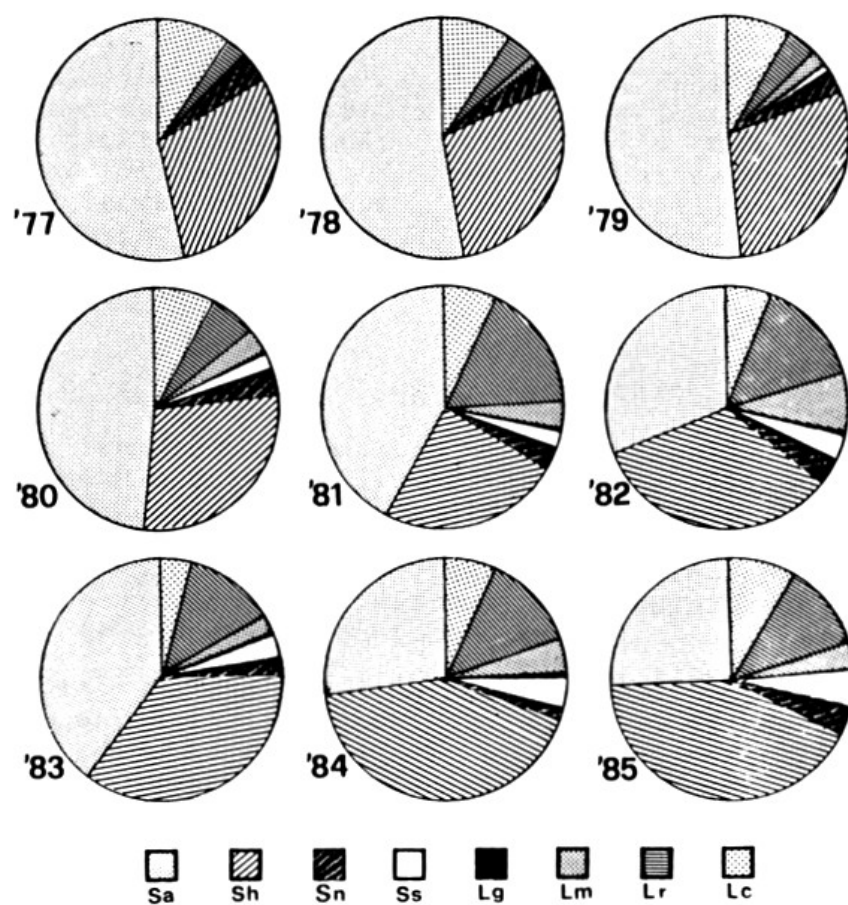


Fig. 3: Frequency (%) of every breeding species population on the total *Laridae* and *Sternidae* population in Comacchio wetlands (excluding the occasionally breeding species). Numeric values are given in the following table.

	1977	1978	1979	1980	1981	1982	1983	1984	1985
Lm	-	1.5	2.2	3.3	4.0	7.7	2.8	4.4	3.6
Lr	3.2	3.5	4.6	6.2	16.9	14.4	13.1	13.1	12.8
Lg	-	.1	.1	.1	.2	.3	.2	.4	.1
Lc	9.5	9.4	8.6	8.1	7.1	6.2	3.6	6.5	9.0
Sn	3.8	3.7	3.6	3.5	3.2	4.0	2.0	2.2	3.5
Ss	-	-	.4	1.9	2.3	3.2	3.0	4.2	4.8
Sh	29.7	29.2	28.7	28.1	24.3	33.1	35.7	42.5	41.9
Sa	53.8	52.6	51.7	48.6	42.0	31.1	39.6	26.7	24.2

● The population of Sterna albifrons grew from an estimated 400-500 pairs during the 1960's to 850-900 in the 1970's and to greatly fluctuating numbers in the 1980's (800 in 1982, 1,850 in 1983 and 700 in 1985). The nests are situated both in areas with low, sparse plant cover, such as Salsolietum sodae, as well as on barren terrain covered with sand, mud, or shell debris. Having a late breeding season, it is sometimes found associated with S. nilotica.

### The importance of the Comacchio population within Italy

The recent trend of the various breeding populations to increase has had both a quantitative and qualitative importance on a national scale. The 1,580 pairs in 1977 (5 species) have grown to 2,895 in 1985 (8 species), peaking to 4,670 in 1983 and 3,559 in 1984, years in which the populations of certain species (L. ridibundus, S. hirundo and S. albifrons) were doubled due to the favourable weather and environment conditions.

From 1981 to 1983 the breeding population of Comacchio (min./max.) accounted for between 37.2 and 38.9% of the Italian population (excluding L. cachinnans). S. sandvicensis breeds only in this area. L. genei and L. cachinnans represent only a small percentage of the national population. The percentage of L. melanocephalus has fluctuated from 59.2 to 100% of the national population. The population of L. ridibundus rose from 72.9 to 88.5% and S. hirundo increased from 39.3 to 42.7%. The population of S. albifrons, between 1981 to 1984, rose from 15.8 to 36.5% of the Italian population which in turn represents 40% of the European population.

The Valli di Comacchio is currently used for fish production. Controlled hunting is permitted and although access to the public is theoretically forbidden during the breeding season, the presence of photographers creates notable disturbances. Therefore the "Parco del Delta Padano" must be created in order to assure the conservation and management of this important wetland.

### References

- Angle, G. (1978). Il gabbiano corallino (Larus melanocephalus) nidifica in Italia. Avocetta 2: 47-48.
- Boldreghini, P. & Montanari, F. (1978). Note preliminari sullo status delle popolazioni di uccelli delle zone umide costiere dell'Emilia Romagna. Atti II Conv. siciliano ecologia, Noto: 151-158.
- Brandolini, A. (1961). Catalogo della mia collezione di Uccelli del Ravennate. Faenza.
- Brichetti, P. (1978). Sulla nidificazione in Italia di: Gabbiano corallino Larus melanocephalus, Gabbiano roseo

- Larus genei, Rondine di mare maggiore Hydroprogne tschegrava. Riv. ital. Orn. 48: 215-233.
- Brichetti, P. (1979). Sulla nidificazione in Italia di Sterna sandvicensis Latham (Beccapesci). Riv. ital. Orn. 49: 147-207.
- Brichetti, P. & Foschi, U. (1982). Valli di Comacchio: situazione Laridae e Sternidae 1982. Riv. ital. Orn. 52: 207.
- Brichetti, P. & Foschi, U. (in press). Status of Laridae and Sternidae breeding in the Valli di Comacchio (Italy). Proceedings Colonial Waterbirds and Pacific Seabirds Symposium, San Francisco, 1985.
- Brichetti, P. & Isenmann, P. (1981). Studio preliminare sulla evoluzione degli effettivi nidificanti di Laridae e Sternidae nelle Valli di Comacchio (Italia) e nella Camargue (Francia). Riv. ital. Orn. 51: 133-161.
- Fasola, M. (ed.) (1982/1983). Rapporti preliminari Laridae - Italia. INBS e Dip. Biol. Anim., Pavia.
- Foschi, U. (1979). Accertamento di nidificazione in Italia del Beccapesci (Sterna sandvicensis). Uccelli d'Italia 4: 271-272.
- Foschi, U. & Teodorani, G. (1978). Accertamento di nidificazione di Gabbiano corallino (Larus melanocephalus) e Gabbiano roseo (Larus genei). Uccelli d'Italia 3: 144-148.
- Toschi, A. (1955). Sulla nidificazione di alcuni uccelli nelle Valli di Comacchio. Ric. zool. appl. caccia Bologna n. 26.
- Toschi, A. (1960). La nidificazione in Italia della Cicogna bianca, del Mignattaio e del Gabbiano comune. Ric. zool. appl. caccia, Bologna n. 32.
- Warncke, K. (1962). Die avifaunistische Sonderstellung der Valli di Comacchio für Italien. Vogelwelt 83: 129-139.