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Information Sheet on Ramsar Wetlands (RIS)

1. Name and address of the compiler of this form:

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Designation date Site Reference Number

2. Date this sheet was completed/updated: 20 February 2003

3. Country: France

4. Name of the Ramsar site: Lac du Bourget–Marais de Chautagne

5. Map of site included:

(a) hard copy: yes -or- no

(b) digital format: yes -or- no

6. Geographical coordinates: 45° 44' North latitude - 5° 51' East longitude

7. General location: This site is located in the Rhone-Alps Region in the French pre-Alps, between the cities of Lyons (100 kilometres) and Chambéry (10 kilometres). The only city on the lake is Aix-les-Bains. The valley of Lac du Bourget is an annex of the Rhone Valley, which is three kilometres westward in a straight line, between the Bauges and Chartreuse massifs and the last secondary chain of the Jura.

8. Elevation: An average of 235 metres (minimum 232; maximum 240 metres)

9. Area: 5500 hectares

10. Overview: This site is a 4500-hectare lake (the largest lake that is completely within France) closely linked to the Upper Rhone, with either peaty (an extension of the Marais de Lavours) or alluvial shore marshes. Fifty per cent of the lakeshore has remained natural, either rocky or with reed beds (11 kilometres). Human activity is intense (20 kilometres of means of communication and urbanisation). Tourism (beaches and boating) is concentrated at only a few points, and hunting is practiced on 50 per cent of the water surface.

11. Ramsar Criteria: 1, 2, 3, 5, 6, 7 and 8

12. Justification for the application of each Criterion listed in 11 above: From the point of view of hydrology and biodiversity, the proposed site forms an inseparable functional unit with the Rhone River (where there is a population of beavers and with which there is constant exchange of waterfowl) and the Marais de Lavours (where there are populations of bluethroat and butterflies that are sites of community importance for the European Union).

1: Lac du Bourget is the largest natural lake completely within France with 32 species of macrophytes including several large populations of rare species. It is one of the main reservoirs of biodiversity among all the Alpine lakes and is in good conservation status.

2: The main population of bluethroat (*Luscinia svecica*) in eastern France live partly in the Marais de Chautagne (mainly east of the Marais de Lavours). The lake provides habitat for several couples of little bittern (*Ixobrychus minutus*).

3: This is an important refuge during flooding of the Rhone (part of the same functional unit) and during the freezing of waterways in eastern and northern Europe. There are populations of nesting and wintering species listed in annex 1 of the E.U. Directive on Wild Birds (see annex).

5: Populations of *Aythya ferina*, *A. fuligula* and *Fulica atra* alone reach 20,000 specimens some years, although because of the functional tie with the Upper Rhone, these counts might have been lower on the day of the survey in mid-January (figures for only the lake).

- Mute swan: an average of 200 specimens between 1990 and 2000
- Common coot: more than 8000 specimens since 1990 (12,000 in 2002)
- Common pochard: more than 4000 specimens since 1997 (12,000 in 2002)
- Tufted pochard: 1000 to 3000 specimens since 1990

6: This criterion is met for the fuligule milouin (January 2002: 16,000 specimens).

7: This site provides habitat for one of the two main natural French populations of lavaret (*Coregonus lavaretus*).

8: This is an important spawning area for *Coregonus lavaretus*, *Lota lota* and *Salvelinus alpinus*.

13. Biogeography:

(a) biogeographic region: Alpine

(b) system of biogeographic regionalisation: The system adopted by the European Union for implementation of the E.U. Directive on Habitats (Interpretation Manuel of European Union Habitats. European Commission, D.-G. Environment, 1999).

14. Physical features of the site:

Geology and geomorphology: Located among calcareous secondary chains of the Alps and the Jura, Lac du Bourget occupies a fault that was expanded by glaciation.

Hydrology: This is a natural lake that empties into the Rhone River. However, this current is naturally inversed during about two months of the year (the Rhone River then flows into the lake), although this now happens only several days per year since construction of engineering works. Most flooding occurs during the winter and spring.

Soils: The soils are relics of a much larger lake. The marshy ends of the lake are dominated by clay in the south and peat in the north.

Water quality: The water is meso-eutrophic and in good status following 20 years of treatment.

Depth and permanence of the water: Maximum depth is 145 metres and the average depth is 80 metres (in the "lac profond").

Fluctuations of water level: Since 1982, regulation of the water level has led to drastic reduction of marling and has lowered the annual average water level, creating lower water during the vegetative season and disappearance of drought.

Climate: Located at the junction of the continental and montane bioclimatic regions, Lac du Bourget has a temperate climate, and there is no record of freezing.

15. Physical features of the catchment area: The hydrographical basin covers 62,400 hectares among the Bauges, Chartreuse and Jura (Chaîne de l'Épine) mountains. Most of the basin is an area of karst (pre-Alpine massif of the Bauges) with moraines and montane piedmonts. Underlying moraines, alternating with several zones of Miocene mudstone, as well as the summits of hills, ravines and steep slopes, are covered with forests up to 1500 metres in altitude. The rest of the area is occupied by dairy farms (450 farms), vineyards (100), large farms growing primarily maize (50), truck farms and tree plantations and tree nurseries (70). The climate is continental in the valley bottom with a temperate microclimate that is sub-Mediterranean at places and sub-Alpine higher up. Rainfall is relatively plentiful (1300 millimetres, because of the effect of the pre-Alpine massifs in the face of westerly winds).

16. Hydrological values: The lake (3.6 billion cubic metres) and the Marais de Chautagne are extremely dependent on the Rhone River, which empties into them at times of heavy flooding. Unfortunately, this has become a rare phenomenon since construction of hydroelectric installations on the Rhone River. This results in a deficit of floodwater (for filling-in the marshes and erosion of shore helophytes) and also in alluvial material supplied to the lake (sedimentary deficit). The lake itself feeds several communes with potable water. Its water table is relatively restricted. It is used as a flood plain for high water of the Rhone River, which has led to a policy of changing water levels in order to increase retention capacity.

17. Wetland Types:

(a) **presence:** Continental: O, Tp, Ts, U and Xp

(b) **dominance:** O, Ts, Xp, Tp and U

18. General ecological features:

At the lake, there are large grass areas with Characea (*Nitellopsis* spp., *Chara vulgaris* and *C. globularis*).

Wooded bogs: Groves of alder (*Aulus glutinus*) and ash

Areas of sedge with *Carex davalliana* and others with lesser pond-sedge (*C. acutiformis*) and *C. elata*

Aquatic reed beds of the common reed (*Phragmites australis*)

19. Noteworthy flora: Species in bold are protected by French law.

Allium angulosum	
Carex appropinquata Schumach.	
<i>Carex disticha</i> Hudson	Rare at this site
Carex lasiocarpa	
<i>Eleocharis acicularis</i>	Rare at this site
Euphorbia palustris	
Gratiola officinalis	
<i>Hippuris vulgaris</i>	Rare at this site
<i>Hydrocharis morsus-ranae</i> L.	Rare at this site
Hydrocotyle vulgaris	
Juncus anceps Laharpe	
Lathyrus palustris	Rare (This is a priority of the Conservatoire National Botanique)
Leucojum aestivum L.	
Ludwigia palustris (L.)	
Najas marina	
Najas minor	
<i>Chara vulgaris</i>	Outstanding populations, bio-indicators
<i>Chara globularis</i>	
<i>Nitella mucronata</i>	
<i>Nitellopsis obtusa</i>	
<i>Nuphar lutea</i>	Outstanding populations
<i>Nymphaea alba</i>	
<i>Nymphoides peltata</i>	Rare at this site
Ophioglossum vulgatum	
Orchis laxiflora	
Orchis palustris	

<i>Pedicularis palustris</i> L.	Rare at this site
Peucedanum palustre	
<i>Potamogeton nodosus</i>	Rare at this site
<i>Potamogeton pectinatus</i>	
<i>Potamogeton perfoliatus</i>	Rare at this site
Ranunculus lingua	
Ranunculus sceleratus L.	
<i>Rumex hydrolapathum</i>	Rare at this site
Senecio paludosus	
Spiranthes aestivalis	
<i>Utricularia australis</i>	Rare at this site
Viola elatior	
Zannichellia palustris	

20. Noteworthy fauna:

Species listed in annex 2 of the E.U. Directive on Habitats

<i>Bombina variegata</i>
<i>Castor fiber</i>
<i>Coenonympha oedippus</i> (one of the main European populations)
<i>Emys orbicularis</i>
<i>Euphydrias aurinia</i>
<i>Maculinea nausithous</i>
<i>Maculinea teleius</i>
<i>Oxygastra curtisii</i>
<i>Thersamolycaena dispar</i>

Species of exceptional or rare nesting birds in the Alpine region

<i>Anas strepera</i>
<i>Netta rufina</i>
<i>Phalacrocorax carbo</i> (only nesting site in the Rhone-Alps region)

Species of nesting birds rare in Western Europe

<i>Mergus merganser</i> (a rare species in France)
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21. Social and cultural values: Nine professional fishermen catch a total of about 80 tonnes of fish per year. There are many archaeological sites of lake dwellers. There is also a strong cultural dimension connected to the lake in the form of the Romanticism of Lamartine and J.-J. Rousseau.

22. Land tenure/ownership:

(a) within the Ramsar site: This is made up of primarily a public lacustrine domain and inalienable properties of the Conservatoire de l'Espace Littoral et des Rivages Lacustres (a public institution for conservation of nature areas). On government

land, there are poplar plantations and mowed meadows. Natural poplar groves are being restored.

(b) in the surrounding area: Essentially private and communal land.

23. Current land (including water) use:

(a) within the Ramsar site: Open water is exploited mainly for tourism and drinking water. There is no direct use of the hydroelectric potential despite the link with the installations on the Rhone. Meadows are mowed for agriculture (animal litter and a bit of forage for cattle). A poplar grove is exploited by the Office National des Forêts.

(b) in the surrounding area/the catchment basin: There is widespread agricultural pollution (dairy farming, maize), and domestic pollution affects the rural environment (a collector for waste water from urban centres).

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects: Dissociation of the lake and the Marais de Chautagne on the one hand from the Rhone and the Marais de Lavours on the other does not allow a coherent understanding of the importance and the problems of the hydrology and tourism at the site.

(a) within the Ramsar site: There is a programme for stabilization and lowering of the water level, drainage of the alkaline bogs in the north, plantation of poplars (800 hectares) and maize (80 hectares) and various activities of light tourist development around the lake. There are also plans for development of nautical activities (project for river tourism in continuity with the Upper Rhone).

(b) in the surrounding area: There is very active urbanization.

25. Conservation measures taken: A single prefectural order for protection of the biotope of 132 hectares has been issued. Lac du Bourget has no protected area at the national level. A management plan was adopted in 2001 for the six main areas of reed beds in the lacustrine public domain (200 hectares) and a contract for the catchment basin (2003-2009) has been signed.

The site belongs to a Special Conservation Area (SCA), along with a nature reserve (Marais de Lavours) and a prefectural order for protection of the biotope (island of Chautagne-Malourdie) has been issued. A Special Protection Area (SPA) is also being prepared for the current Ramsar site, plus the part of the Rhone in Savoie (at the request of the steering committee).

26. Conservation measures proposed but not yet implemented: An overall guide, prepared by the Direction Départementale de l'Équipement (DDE) (1993), provides for creation of a nature reserve, but this has not yet been implemented. There is a proposal for changing the calendar for releasing water from the lake in order to adjust the water level. There is a project for installing a floating barrier to recover waste. An SCA has been created, and an SPA is in preparation.

27. Current scientific research and facilities: There is no field station but the University of Savoie is nearby. Surveys of waterfowl have been carried out. An observatory for macrophytes was created in 1999. Monitoring of fish farming will begin in 2004. There are occasional scientific programmes for the study of molluscs and crustaceans.

28. Current conservation education: Two observation towers with trails and an aquarium with a building and exposition area have been built. The Marais de Lavours nature reserve and the Upper Rhone have much more important public information sites.

29. Current recreation and tourism: There are five beaches, five ports and two campsites. Several thousand amateur fishing licences are sold annually. There are schools for kayaking and sailing, and rowing and sailing activities exist. Schoolchildren are given introductory nature classes here.

30. Jurisdiction: National government: There are two domains: a public lacustrine domain (Lac du Bourget) and fluvial domain (Canal de Savières)/Ministère de l'Équipement. The meadows are under the jurisdiction of either the national government (government lands), local communes (communal lands) or private owners (private property). Part of the private land has been acquired by the Conservatoire du Patrimoine naturel de la Savoie and will be ceded to the Conservatoire de l'Espace Littoral et des Rivages Lacustres, a public institution.

31. Management authority: The DDE is responsible for water, navigation and urbanization policy (the law on lake shores).

Lac du Bourget: Direction Départementale de l'Équipement de la Savoie, Chambéry

Canal de Savières: Voies Navigables de France, Lyons

Fishing, hunting and nature areas: Direction Départementale pour l'Agriculture et de la Forêt (DDAF) de la Savoie, Chambéry

Management of nature areas: Conservatoire du Patrimoine naturel de la Savoie

Overall management: The office in Aix-en-Provence of the Conservatoire de l'Espace Littoral et des Rivages Lacustres

32. Bibliographical references:

Annexes

- I. Map of the SCA (boundaries of the Ramsar site and the Rhone-Lac du Bourget functional unit)
- II. Maps of distribution of waterfowl on Lac du Bourget
- III. Evolution of the populations as of mid-January on Lac du Bourget and the Upper Rhone
- IV. List and status of birds at the Ramsar site

Status of Birds on Lac du Bourget/Chautagne

Species	Type	Frequency of use	Level of vulnerability
<i>Gavia arctica</i>	H	Occasional (1-4)	Vulnerable (H)
<i>Gavia immer</i>	H	Occasional (1-2)	Vulnerable (H)
<i>Gavia stellata</i>	H	Occasional (1-3)	Vulnerable (H)
<i>Podiceps auritus</i>	H	Occasional (1-5)	Vulnerable (H)
<i>Ardea purpurea</i>	NE, P	Occasional (1-3 cc)	In decline (N)
<i>Ardeola ralloides</i>	P	Occasional (1)	Vulnerable (N)
<i>Botaurus stellaris</i>	H, P	Regular (2-5)	Vulnerable (N)
<i>Egretta alba</i>	H	de + en + regular (1-5)	Vulnerable (H, N)
<i>Egretta garzetta</i>	P	de + en + regular (1-11)	
<i>Ixobrychus minutus</i>	NE	Regular (3-5 cc)	Endangered (N)
<i>Nycticorax nycticorax</i>	P	Regular (1-3)	
<i>Ciconia ciconia</i>	P	Regular (1-12)	Rare (N)
<i>Platalea leucorodia</i>	P	Exceptional (1-2)	Vulnerable (N, H)
<i>Plegadis falcinellus</i>	P	Exceptional (1)	
<i>Aythya nyroca</i>	H, P	Regular (1-2)	
<i>Pernis apivorus</i>	NE outside, P	Feeding biotope (5-10)	
<i>Milvus migrans</i>	NE, P	Regular	
<i>Milvus milvus</i>	P, (D)	Regular (1-5)	
<i>Haliaeetus leucocephalus</i>	P	Occasional (1-2)	Vulnerable (H)
<i>Circus gallicus</i>	NE outside	Feeding biotope (3-4)	Rare (N)
<i>Circus aeruginosus</i>	NE	Regular (1-2 cc)	
<i>Circus cyaneus</i>	H, P, D	Regular (5-10)	
<i>Pandion haliaetus</i>	P	Regular	Vulnerable (N)
<i>Falco columbarius</i>	P	Occasional (1)	Vulnerable (H)
<i>Falco peregrinus</i>	NS outside	Feeding biotope (8-9 cc)	Rare (N)
<i>Porzana porzana</i>	N	Regular (1-8)	Endangered (N)
<i>Grus grus</i>	P	Exceptional (1-8)	Vulnerable (N)
<i>Himantopus himantopus</i>	P	Occasional (1-8)	
<i>Recurvirostra avosetta</i>	P	Occasional (1-2)	Localized (N)
<i>Burhinus oedicephalus</i>	P,	Occasional (1-2)	In decline (N)
<i>Philomachus pugnax</i>	P	Occasional (1-35)	Vulnerable (H)
<i>Tringa glareola</i>	P	Regular (1-10)	
<i>Sterna nilotica</i>	P		Rare (N)
<i>Sterna caspia</i>	P	Exceptional (2)	
<i>Sterna sandvicensis</i>	P	Exceptional (1-2)	Localized (N)
<i>Sterna hirundo</i>	P	Regular (1-10)	
<i>Sterna albifrons</i>	P	Exceptional (1)	Rare (N)
<i>Chlidonias hybridus</i>	P	Regular (5-10)	
<i>Chlidonias niger</i>	P	Regular (50-150)	Vulnerable (N)
<i>Bubo bubo</i>	NS	Feeding biotope (3-5)	Rare (N)
<i>Alcedo atthis</i>	NS	Regular (15-30)	
<i>Dryocopus martius</i>	NS	Occasional (1 cc)	
<i>Lullula arborea</i>	NE	Regular (1-2 cc)	
<i>Luscinia svecica</i>	NE	Regular (10-15)	
<i>Acrocephalus melanopogon</i>	P	Regular (tens)	Rare (N)
<i>Acrocephalus paludicola</i>	P, (D)	Rare (frequent visits)	
<i>Lanius collurio</i>	NE	Regular (10-20)	In decline (N)

NS: sedentary nesting bird
 NE: summer nesting
 P: non-nesting, passing
 H: non nesting, wintering
 D: No longer nesting here

cc: Populations in number of couples for nesting
 birds and number of observations during the past 10 to 20 years
 for migratory and wintering birds